



# Metframe – A 21<sup>st</sup> Century Solution to Mid-Rise Construction



by voestalpine

**Will Worthington**

Metframe Sales Manager  
Framing

Tel: 0121 601 6000  
Mob: 07701 282 989  
[wworthington@metsec.com](mailto:wworthington@metsec.com)

**Nick Winton**

Commercial Manager  
Veitchi Interiors Limited

Tel: 0141 647 9627  
Mob: 07814 282496  
[nick.winton@veitchi.com](mailto:nick.winton@veitchi.com)

# Session Content

1. Veitchi
2. Metframe Video
3. Overview of the Metframe Lightweight Steel Frame System
4. Design
5. Key benefits & cost advantages
6. Case studies
7. Q&A



# Veitchi – 5 separate Business Units



1. Flooring
2. Industrial Flooring
3. Richardson and Starling
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5. Interiors – Metframe and SFS





# Off-Site Pre-Panelised Building System





# Ground / Initial Floor Walls



Pre-panelised wall panels are lifted into position.  
Internal walls are unclad panels for to aid panel connection.  
External walls have rigid insulation, brick tie channels and/or sheathing board pre-fixed in panel assembly. 2-3 Weeks to pour of first floor slab with approximate floor area of 700-1000m<sup>2</sup>



Haddington Pl  
Edinburgh.



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# Panel erection



# Accommodation of Hot Rolled Steel



- Hot rolled steel can readily be incorporated into the structure as necessary.
- This ensures that Metframe structures are as versatile as possible.
- Allows transfer of loads where all walls do not line through.





# Composite Concrete Floors



Metal decking provides a permanent shutter for the concrete floors. Additional reinforcement is provided in the troughs to achieve required fire protection.

Reinforcing bars are used to tie the structure and ensure robustness to prevent disproportionate collapse.



Haddington Pl.  
Edinburgh.

# Cassettes

## Floor or ceiling cassettes



Produces a lightweight alternative to a concrete slab.

Floor / Ceiling cassettes will typically be pre-boarded with plywood decking.

Cassettes are bolted to the head of the Metframe walls.



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# Lift Shaft Frames



Lift shafts are readily integrated into the Metframe structure  
Concrete cover slabs with lifting beams are provided.



# Metframe Lift shaft



Lift shafts are lined with Cement Particle board.  
Guide Rails are supported by bespoke Hepsec support channels.



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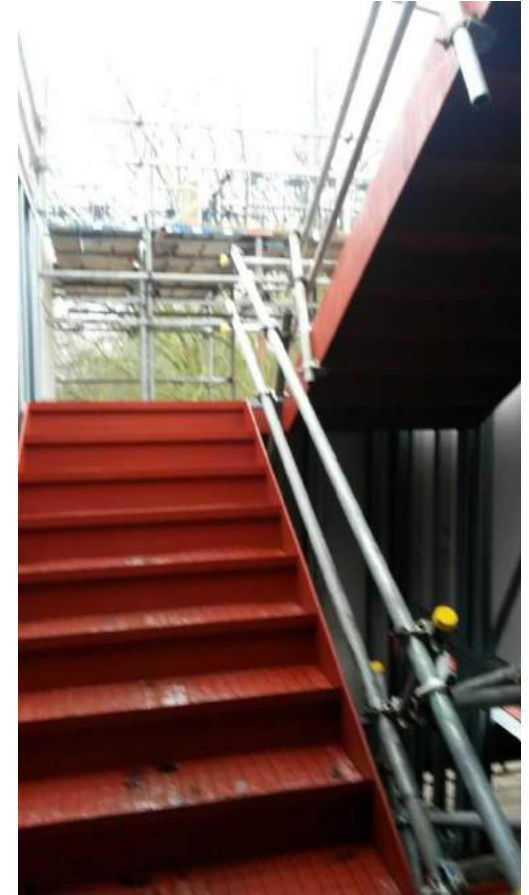
# Staircases



Steel staircases are incorporated into the frame as construction progresses.

Concrete treads are cast insitu.

Half and quarter landings are readily achieved.



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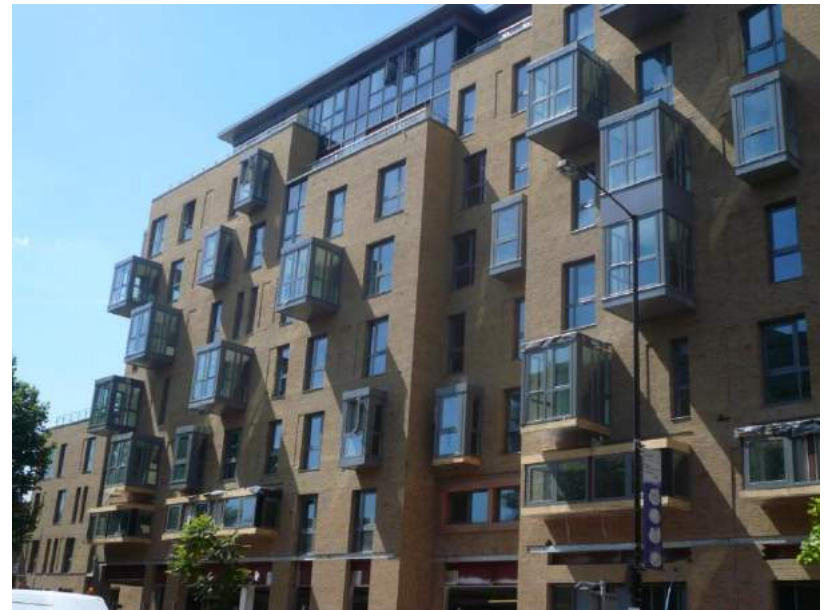
# Balconies



Balconies/projections can readily be incorporated into the frames.

Balconies can be designed to cantilever from the frame.

Balconies can be isolated from the frame to minimise the effects of any cold bridge.



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# Roof Options



Lightweight Metsec steel roof trusses and purlins



Lightweight framing C-sections roof joists



Timber roof trusses



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Concrete roof

Top Floor, plant room, Haddington Place



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# Cassette roof





# Metframe

## External Finishes





# External Finishes



## External wall – Brickwork

Foil faced rigid insulation board with taped joints

Typically 2 layers of plasterboard to inside face

Studs, typically at 600mm centres

Insulation between studs

Sheathing board fixed to studs

Brick ties at 450mm vertical centres

Base track

Concrete slab

## External wall – Insulated render

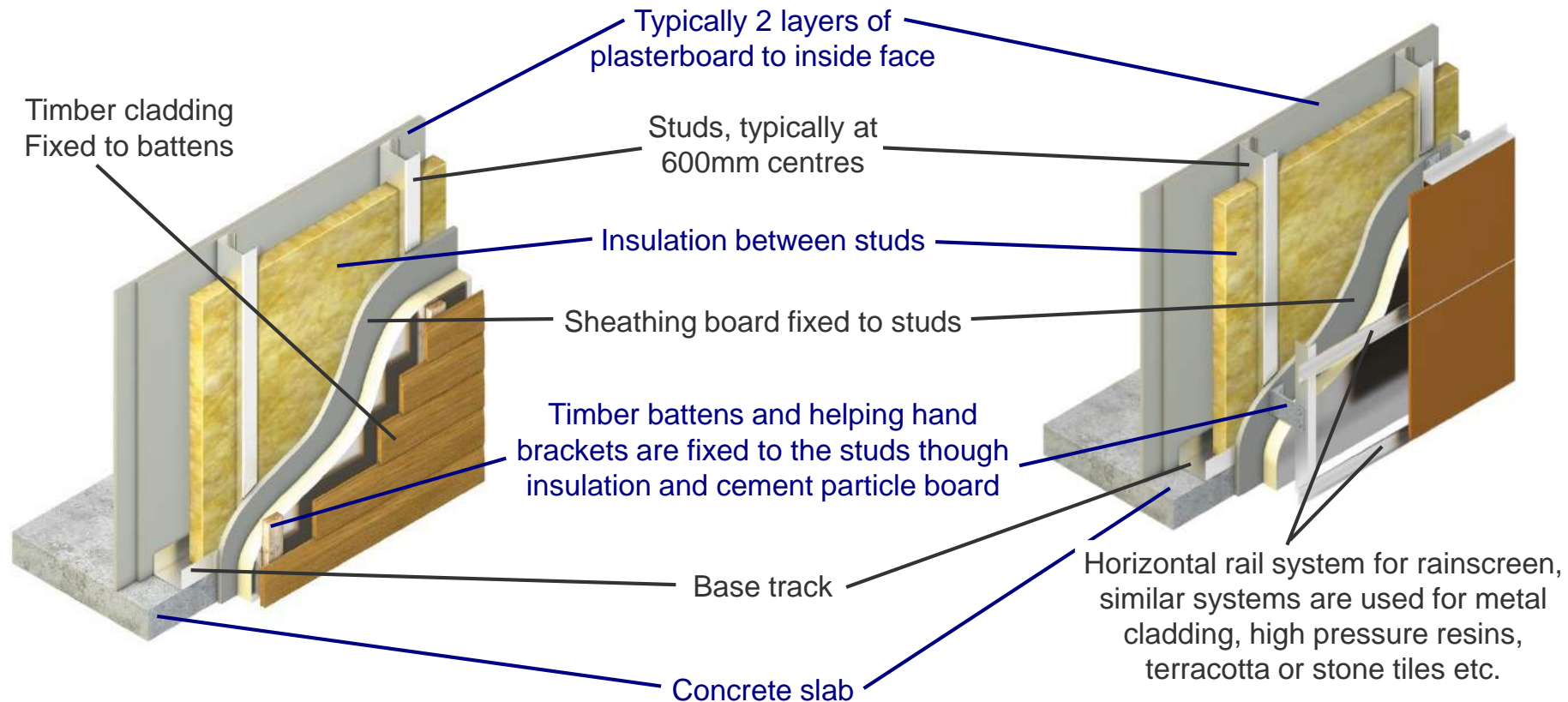
Rail system for render with packs to provide drainage cavity between sheathing board and insulation

# External Finishes



## External wall – Timber cladding

## External wall – Ventilated rainscreen

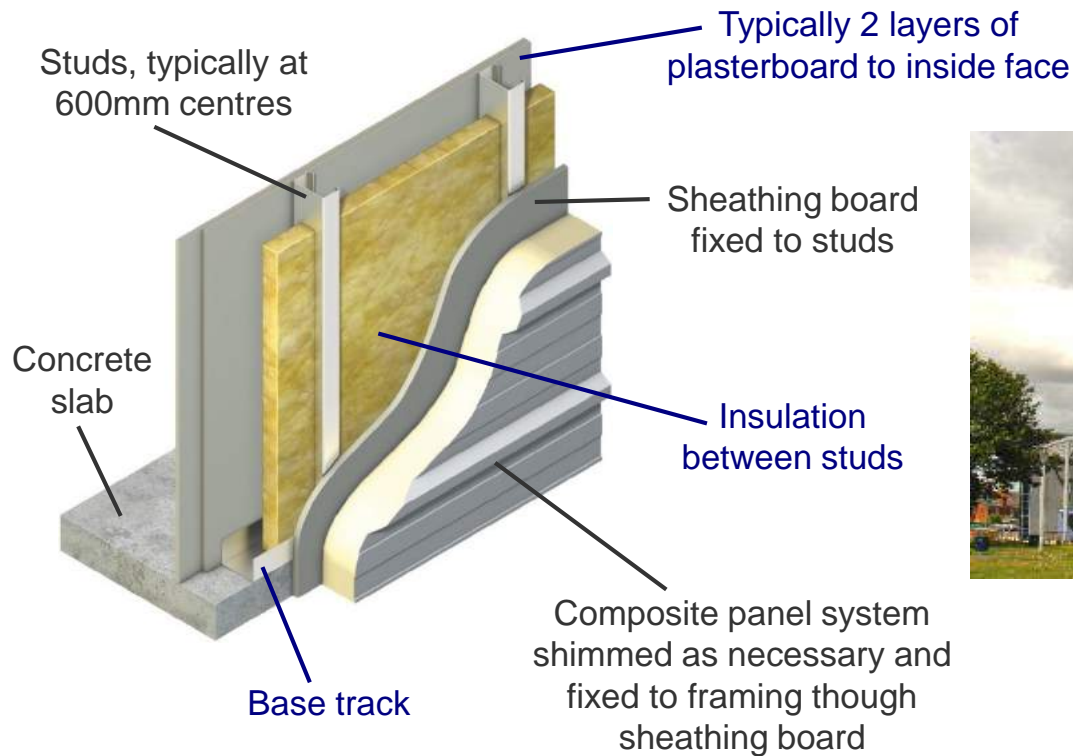


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# External Finishes



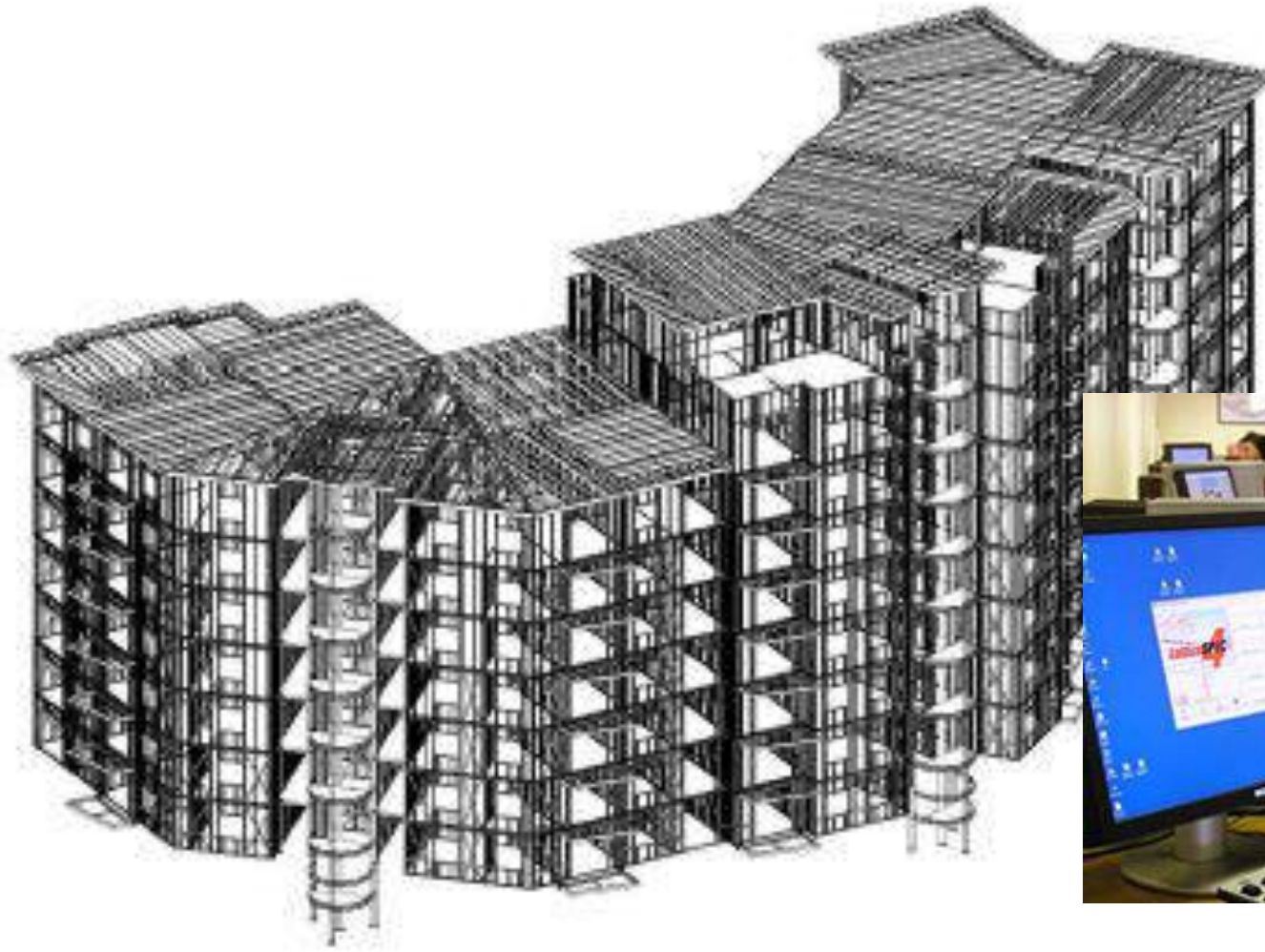
## External wall – Composite panels



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# Metframe

## Design and Detailing Service

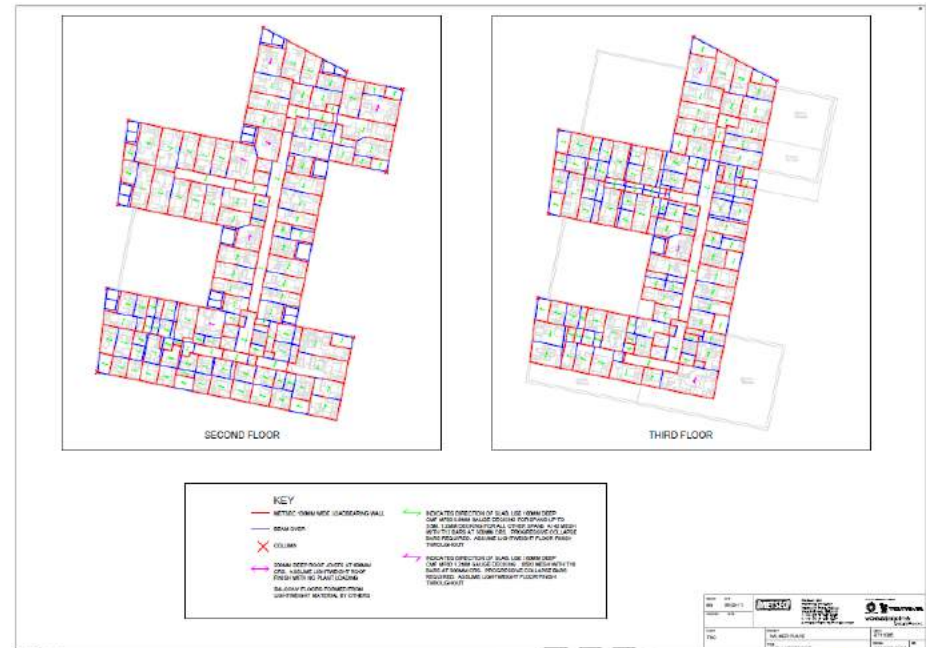




Indicative design to show:

- Structural load bearing walls – External & Internal.
- Joisted floors – Joist sizes & direction of span.
- Structural openings within walls, Floors & Roof framing.

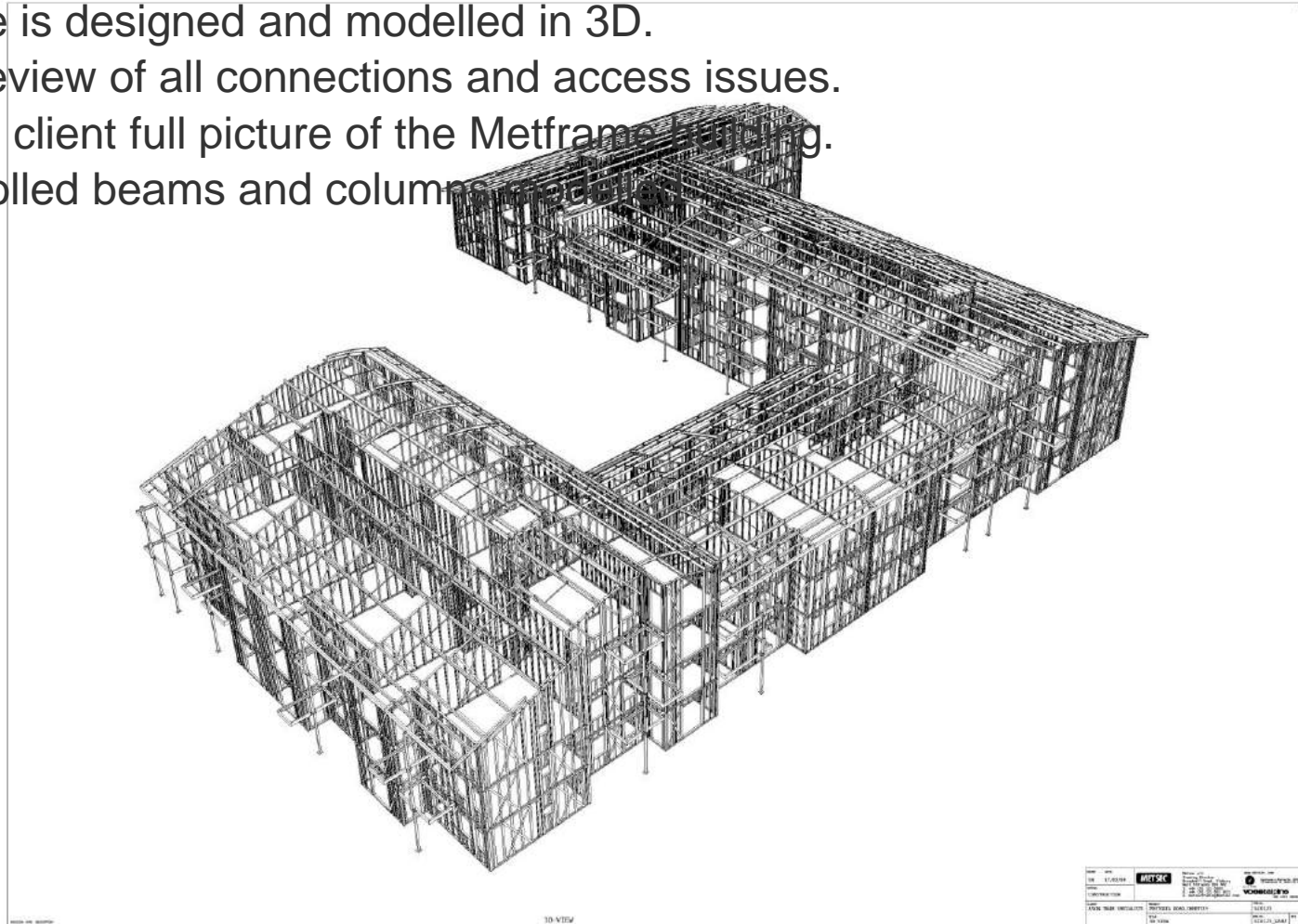
Once the project is secured full construction drawings are produced in Tekla  
Fully BIM compliant



# 3D Design and Drawings



Structure is designed and modelled in 3D.  
Allows review of all connections and access issues.  
Provides client full picture of the Metframe building.  
All Hot rolled beams and columns modelled.

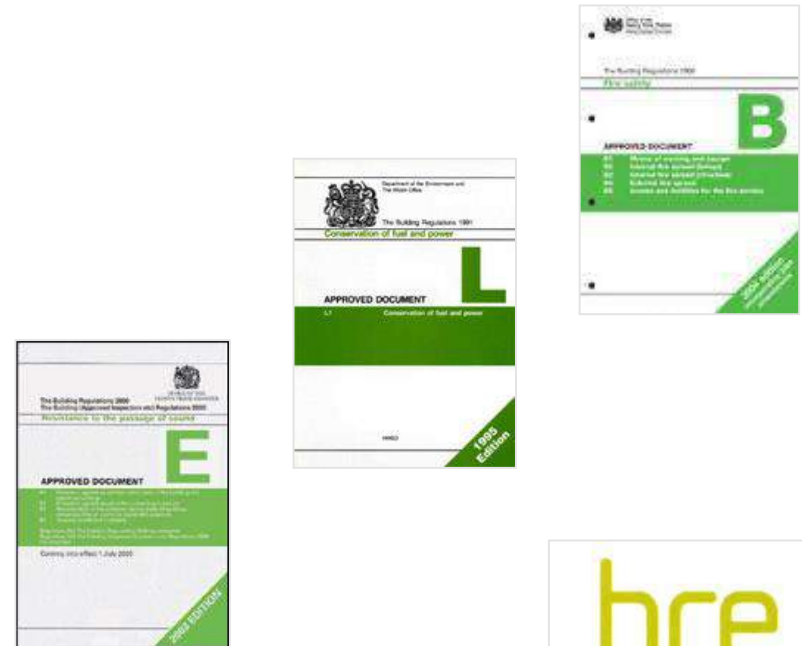


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# Key Benefits....

## Quality

- Traditional feel
- Precision steel design means no shrinkage and dimensional accuracy
- BIM modelled, CE marked and in possession of ETA status
- Concrete or steel joisted floor construction provides excellent acoustic and fire values
- Constructed by experienced, approved installers



BRE approved system



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# Key Benefits....

## Speed

- Pre-fabricated off-site construction
- Special fast build programme
- Build speed of 10-15 days per floor
- Stair and life shaft built as building progresses floor by floor
- Up to 20% reduction in overall site program



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# Key Benefits....

## Health and Safety

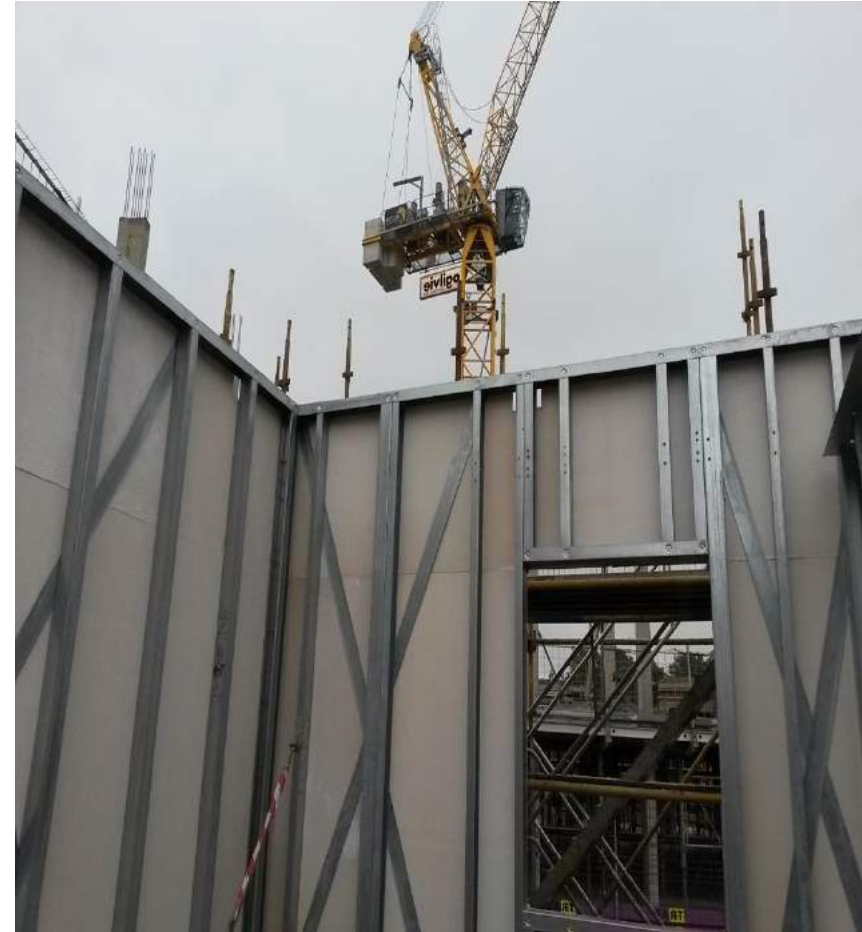
Fast erection time reduces time spent on high risk construction sites.

Off site manufacture means cutting and forming are almost eliminated.

Manual handling is hugely reduced.

House keeping onsite is much easier controlled, very limited waste.

The site is less at risk to fire during the construction process.



# Key Benefits....

## Health and Safety



Falls from height controlled due to stairwells being progressively built as Frame is being erected.

Noise (including environmental noise) reduced due to off site manufacturing

Vibration reduced again due to benefit from offsite fabrication of panels

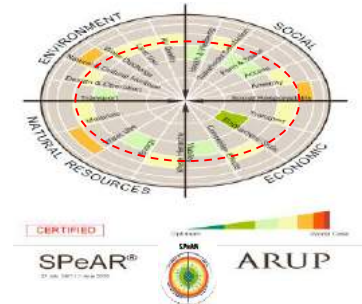




# Key Benefits....

## Sustainability

- Zero waste for main structure
- Metframe steel is fully recyclable
- Low carbon footprint
- High thermal acoustic performance
- BS EN ISO 14001: 2004.
- Material Rated A or A+ in Architectural Green guide



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# Key Benefits....

## Other

- Metframe brings a proven 20-year history
- Bathroom pods can be co-ordinated
- Metframe has a lifecycle of 200 years plus
- Extremely competitive system in comparison to other building solutions
- Up to 20% foundation load savings
- Stairs and Lifts coordinated by design and site teams



Building Design using  
Cold Formed Steel Sections

Durability of Light Steel Framing  
in Residential Building

Light Steel



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# Case Study – Haddington Place, Edinburgh, for Ogilvie Construction



Seven storey student res (approx. 1200m<sup>2</sup> per floor) designed in a tight city location.

Commencing from a hot rolled podium

Completed in 18 weeks



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# Metframe

## Case Study

### Haddington Place for Ogilvie Construction



# Metframe

## Haddington Place for Ogilvie Construction



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ONE STEP AHEAD.

# Metframe

## Haddington Place





# Case Study – Thetford Riverside

## For Farran Construction



Erection of a Metframe hotel structure over Hot rolled Podium, with cassette roof and design feature apex units. Concrete floors throughout



# Case Study – Thetford Riverside



# Metframe Summary



Affordable

Flexible design solution

High Performance

- Acoustic
- Fire
- Thermal
- Structural

Dimensional accuracy

Off site-assembly

Rapid build two weeks per floor

Erection rarely hampered by weather

Improved Health and Safety performance

Environmentally sustainable

Best results achieved from early involvement





# Metframe

## Any Questions?

