



A project to reinvent Ballymun's old Boiler House and create a National Centre of excellence in Education for Sustainable Development

Designed to ensure a minimum carbon footprint in construction and throughout its operational lifetime.

A detailed sustainable construction specification was developed to support the project's objective to demonstrate the importance, scale and challenge of living in a more connected way with the resources around us so that they are not wasted but protected and preserved and fully utilised.





The re-use of existing structure and components.

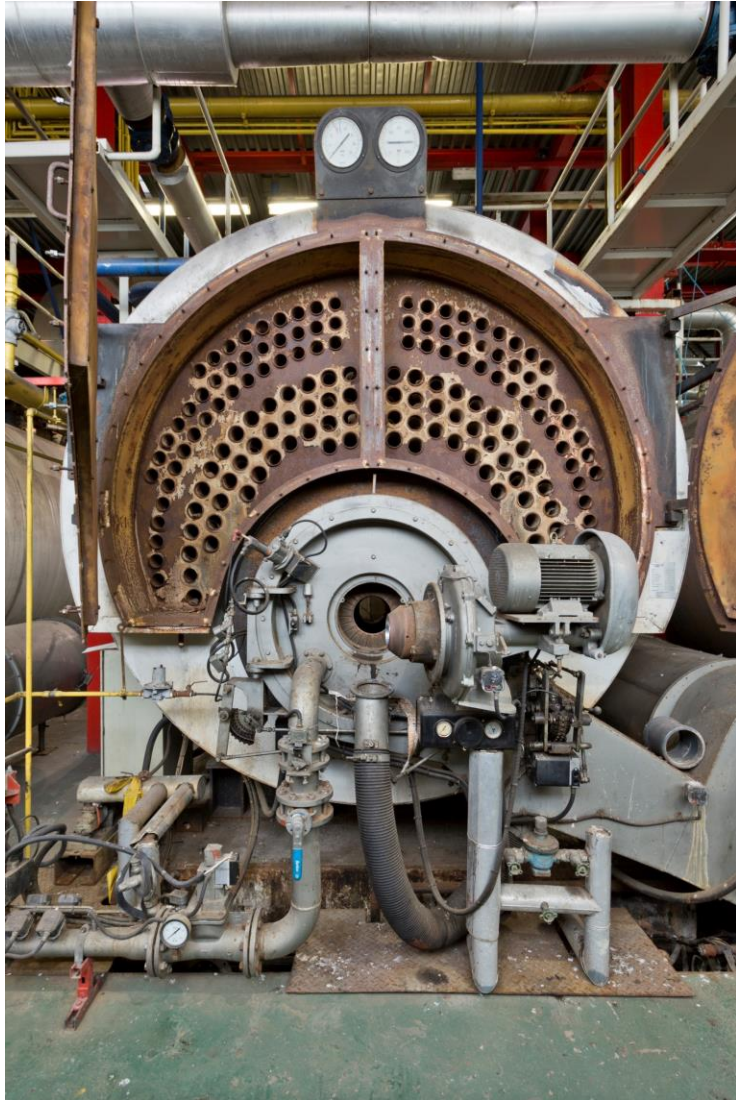
Concrete ground slab
Concrete mezzanine floor
Steel structure – columns, beams, roof
Steel Roof decking
Felt Roof membrane
Masonry brick & block wall
Concrete Chimney Site
Concrete Reservoir building
Aluminium louvres
Brick cladding
Recycled concrete - Site Fill
Windows
Insulation – wool
Old Boilers
Gas & Water pipes





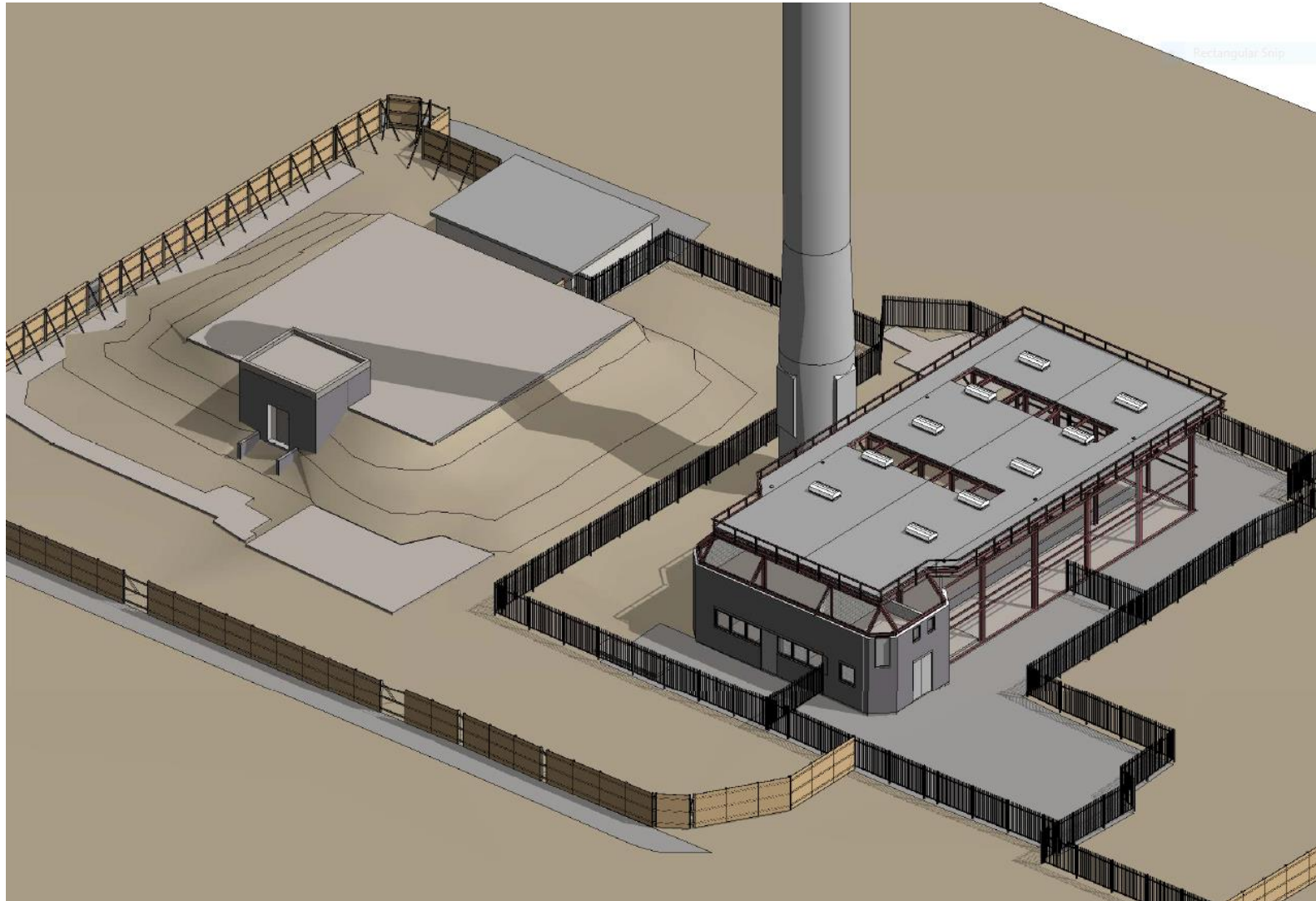
Achieving compliance with Building Regulations Part D - Materials and Workmanship

“In the case of material alterations or material changes of use of existing buildings, the adoption without modification of the guidance in this document may not, in all circumstances, be appropriate. In particular, the adherence to guidance including codes, standards or technical specifications, intended for application to new work may be unduly restrictive or impracticable. Buildings of architectural or historical interest are especially likely to give rise to such circumstances. In these situations, alternative approaches based on the principles contained in the document may be more relevant and should be considered.”



Pursuit of energy, water and waste
efficient processes

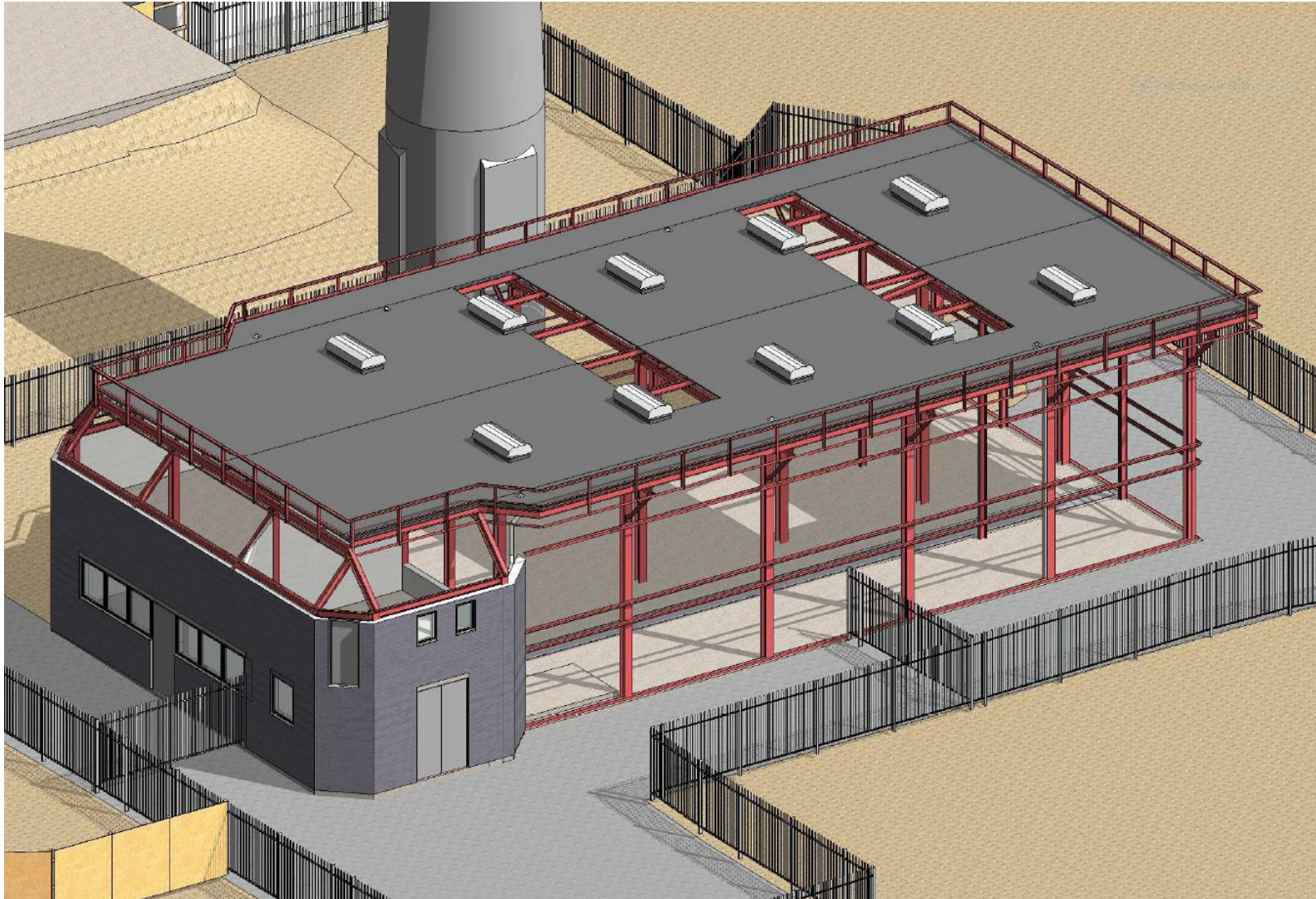
solar panels - PV & thermal
rainwater harvesting
air source heat pump
combined heat and power
willow fuel stove,
composting toilets
liquid waste plant fertilization
compost creation
liquid waste reed bed water treatment
smart metering
air quality monitoring
interactive BMS.



Proposed Reused elements

Reservoir building to left

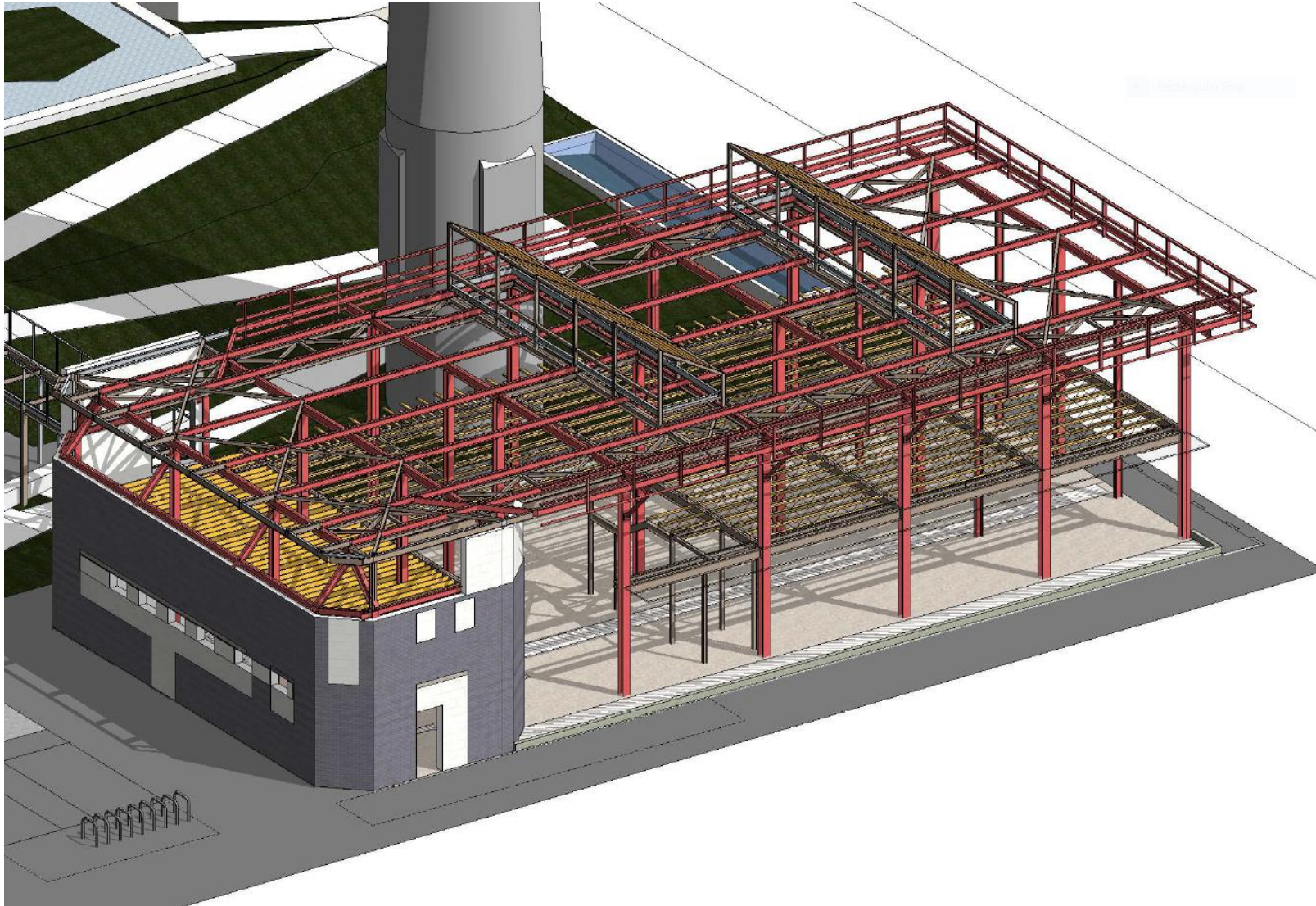
The reuse of the steel and concrete structure alone resulted in the avoidance of approximately 55 tonnes of embodied carbon based purely on production impacts and not considering the impact of transport or disposal. This is comparable to the sequestering capacity of 5000 trees over 20 years.



TGD D Materials and Workmanship

Materials should be:

- (a) of a suitable nature and quality in relation to the purposes and conditions of their use, and
- (b) adequately mixed or prepared, and
- (c) applied, used or fixed so as to perform adequately the functions for which they are intended.

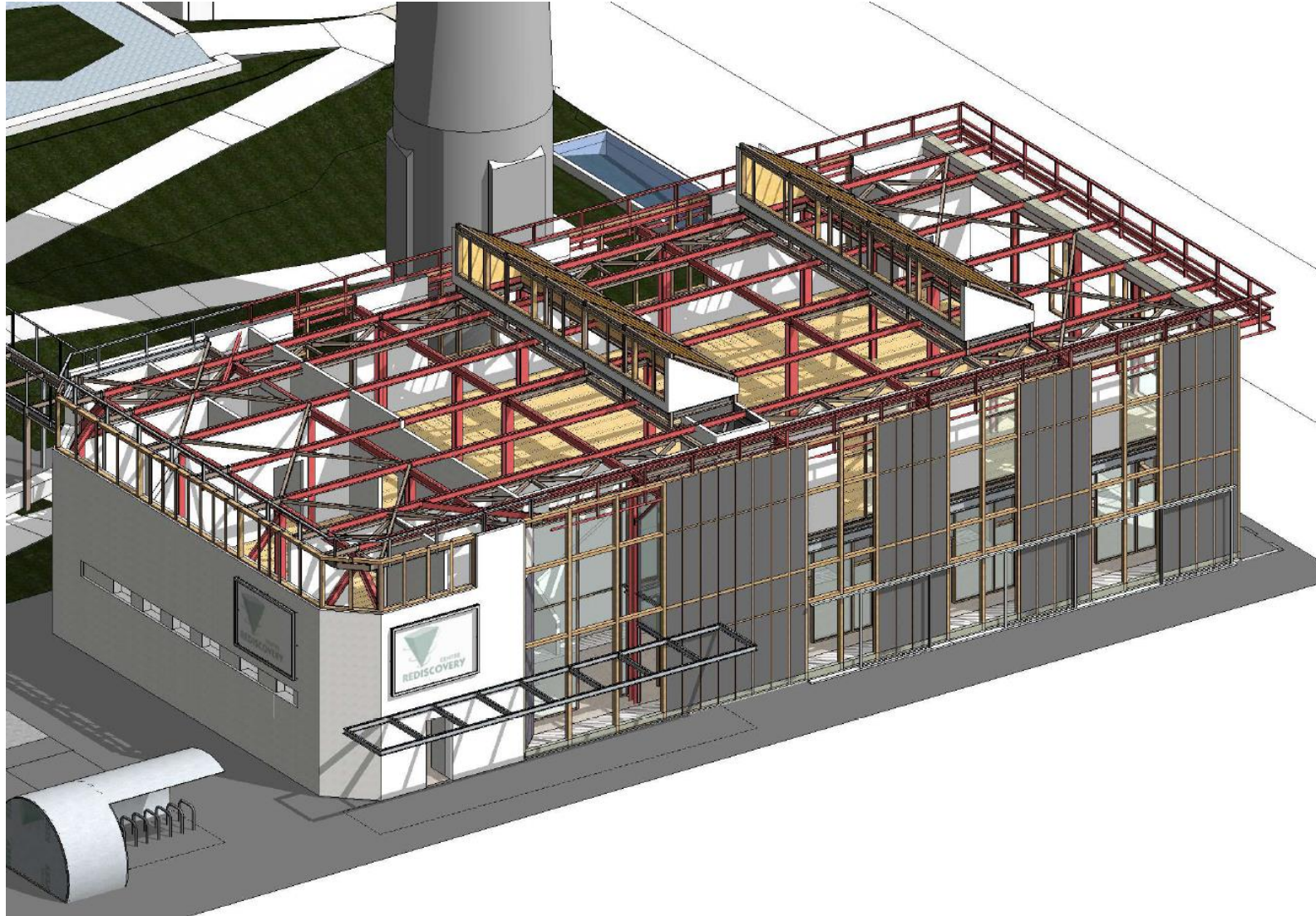


Theoretical and Empirical – empirical is in fact a much better way to test things. Theory still depends on installation to conform to certificates etc.

Investigation works required to test materials to demonstrate compliance.

Reused materials have been used and shown to 'work'

Roof deck however proved to be made of different materials and needed to be strengthened with expanding rivet fixing of plywood

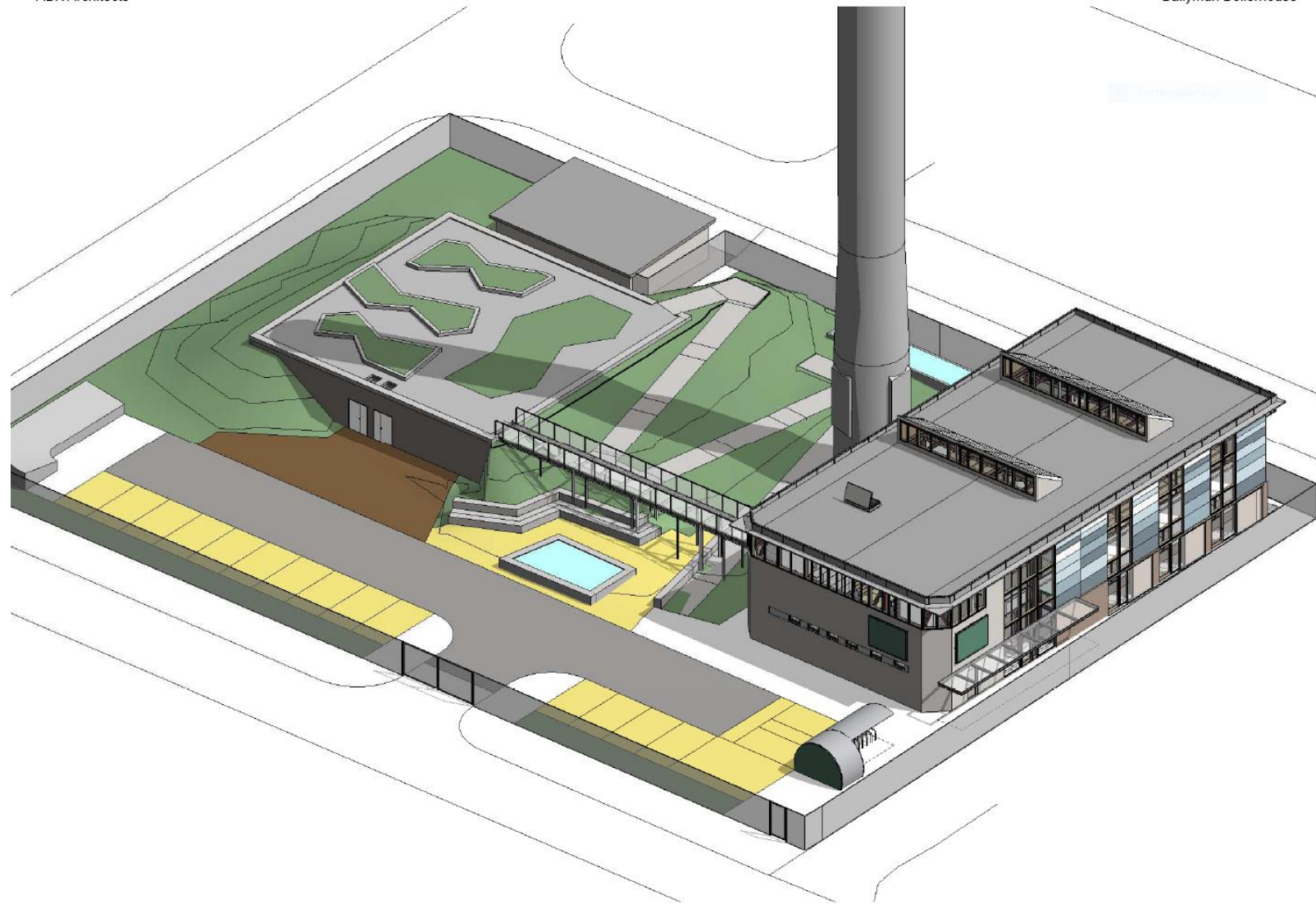




Modern Structural Codes

Retained Structure stiffened

Under existing deck



Bridge to new Store building replaces
an unfeasible fire stairs

Exhibition route is created

Boiler bike shed not practical



Demolition/ Removal

Time

Investigation





Inspection

Examination

Investigation

Survey

Time

Solution

Predictability

Cost





Obstacles to the use of recovered materials

Provenance

Delivery

Assessing Condition

Possible refurbishment

Time

Cost

Certification



NBCO CPD Ballymun Boilerhouse – Rediscovery Centre Upcycling Buildings



Hempcrete

Lime plaster

Birch plywood

Structure

Roof Decking



Reused Windows



Liquid waste plant fertilization

Hydroponic feed from collection tank

Liquid waste to Reed bed filtration

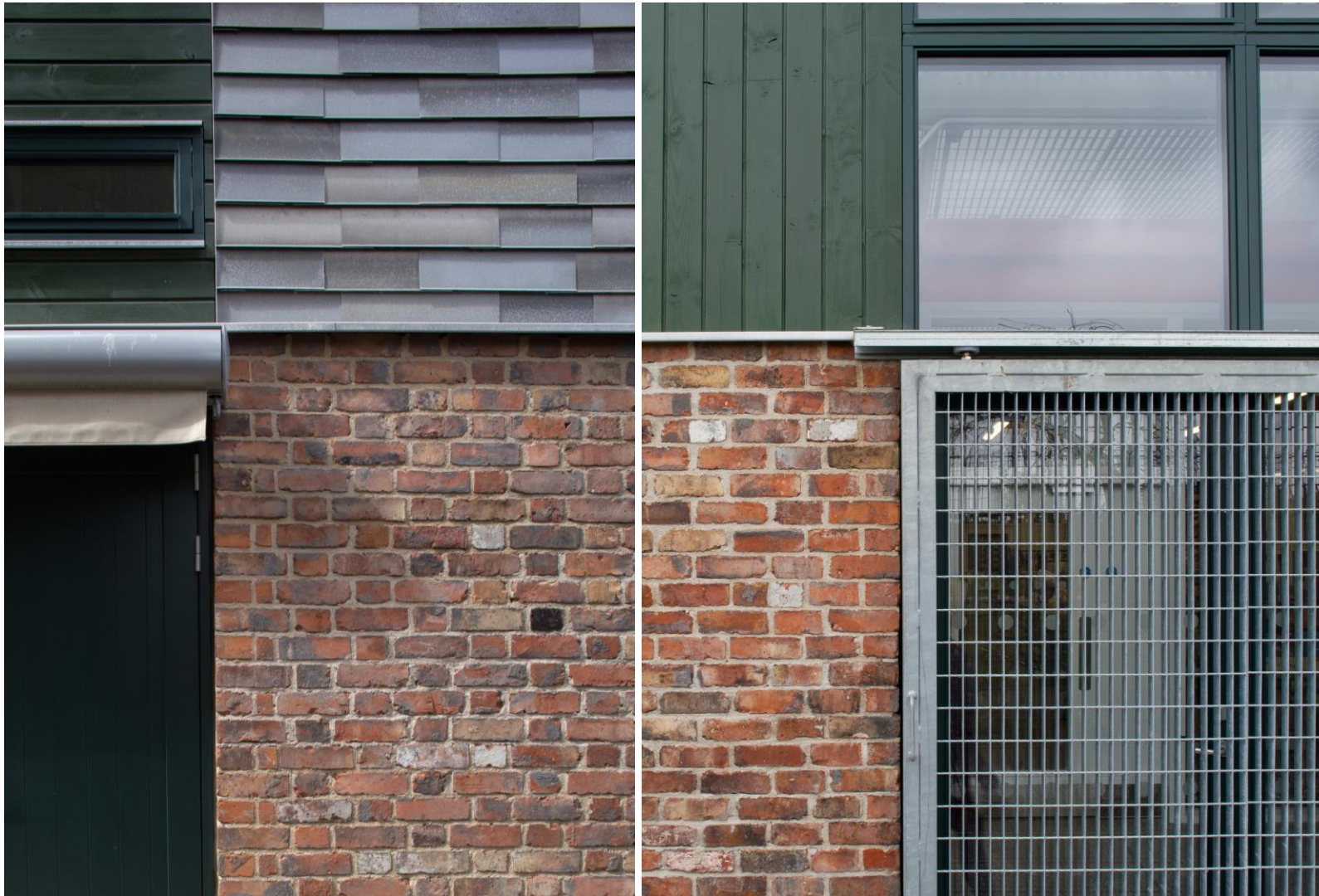


Old pipes used as planter edges

Willow coppices for solid fuel



Art from old tubing



Upcycled aluminium louvres

Reused brick

Thermo treated timber



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