Adapting to the demands of Sustainable Construction Certification

Ian Cox

Director of Construction Solutions, Aggregate Industries UK

Firstly...about me

- Name is Ian Cox
- Chartered Structural Engineer, Civil Engineer and Highway Engineer
- Director of Construction Solutions at Aggregate Industries (Holcim's company in the UK)
- Lead a small team of Architects, Engineers and Sustainability Advisors who help Designers to achieve the most sustainable concrete

Today's Presentation

1. Types of Sustainable Construction Certification **in principle**
2. Examples of Sustainable Construction Certification
   - PassivHaus
   - EU Energy Performance of Buildings Directive
   - Responsible Sourcing
   - BREEAM
3. What lessons can we learn from all this for Slovakia...?

Today's Presentation

1. Types of Sustainable Construction Certification **in principle**

Types of Sustainable Construction Certification

- Three types of Sustainable Construction Certification
  - those that deal with Embodied Impacts
  - those that deal with Operational Impacts
  - those that deal with both

Embodied Impacts










Operational Impacts

Today's Presentation

1. Types of Sustainable Construction Certification **in principle**
2. Examples of Sustainable Construction Certification
   1. PassivHaus
   2. EU Energy Performance of Buildings Directive

These are well known to you

Types of Sustainable Construction Certification

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Embodied Impacts









PassivHaus

EU EPBD
EU Zero Carbon

Operational Impacts

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Embodied Impacts





Resp Sourcing



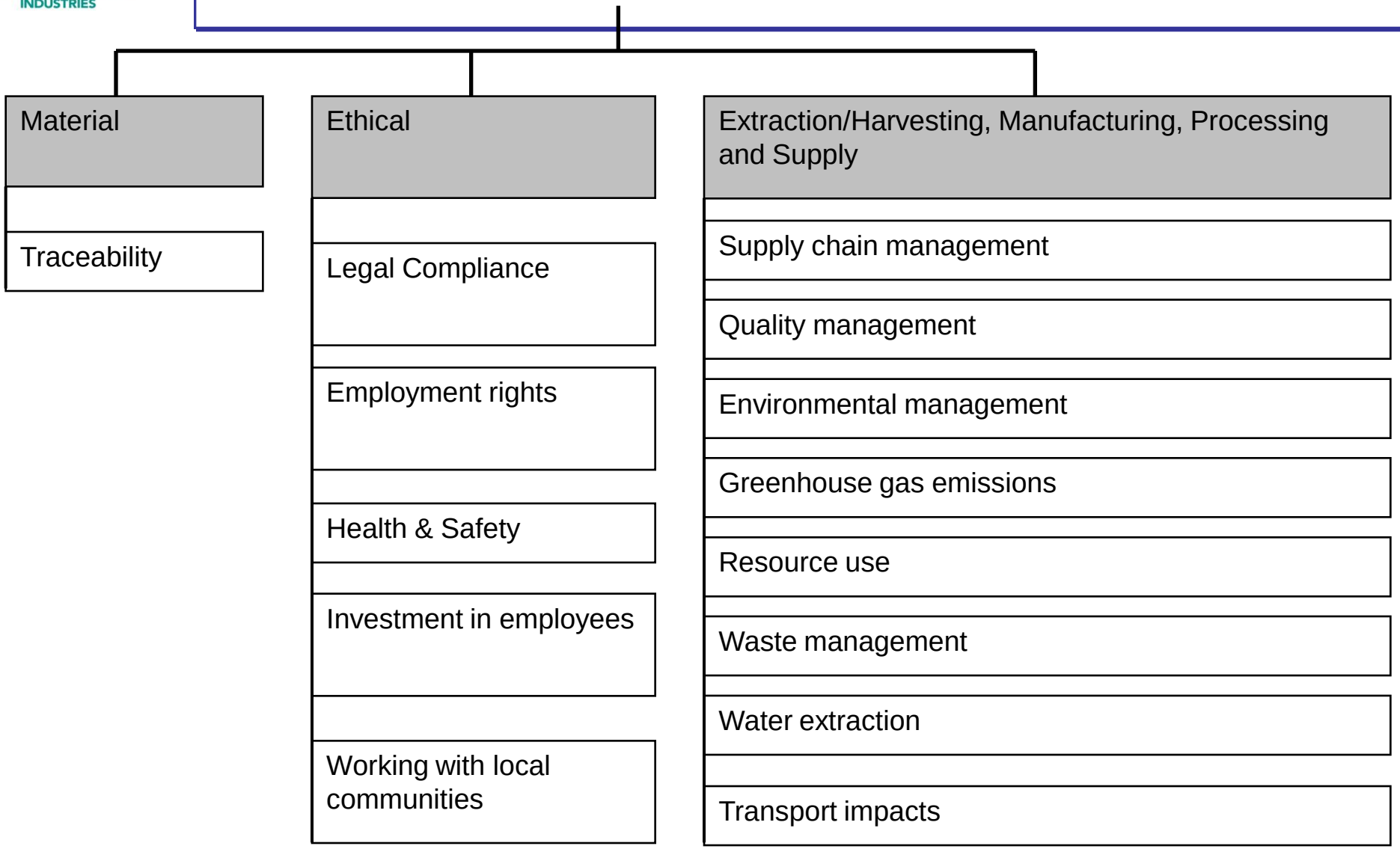


Operational Impacts

Responsible Sourcing

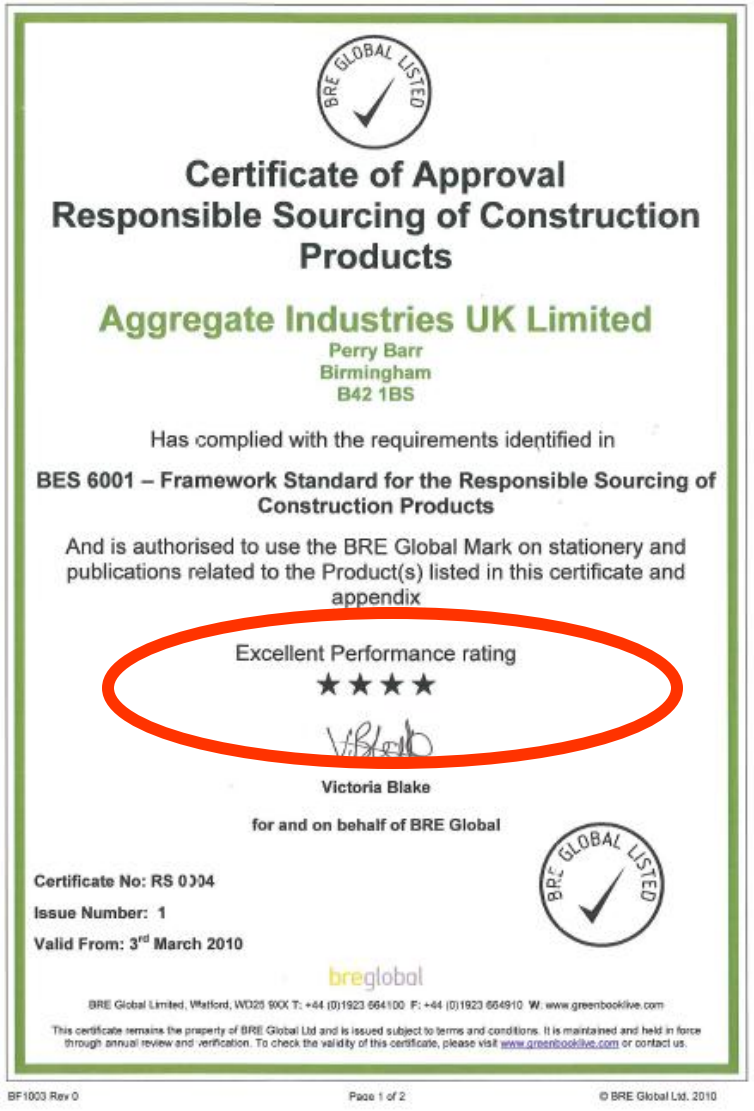
- In Responsible Sourcing certification, the processes used by product manufacturers are examined

BRE 6001 Responsible Sourcing



Responsibly Sourced Materials Credits

- Awarded at various levels
  - Pass
  - Good
  - Very Good
  - Excellent
- AI/Holcim was the first company in the world to be certificated to BES 6001
- Our UK certificate covers 296 combinations of product and production facilities and is by far the most comprehensive in the whole UK construction materials supply industry.



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Certificate of Approval
Responsible Sourcing of Construction Products

Aggregate Industries UK Limited
Perry Barr
Birmingham
B42 1BS

Has complied with the requirements identified in

BES 6001 – Framework Standard for the Responsible Sourcing of Construction Products

And is authorised to use the BRE Global Mark on stationery and publications related to the Product(s) listed in this certificate and appendix

Excellent Performance rating
★★★★

Victoria Blake

for and on behalf of BRE Global

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Embodied Impacts





Resp Sourcing





PassivHaus

EU Zero Carbon

BREEAM

Operational Impacts

So what is BREEAM?

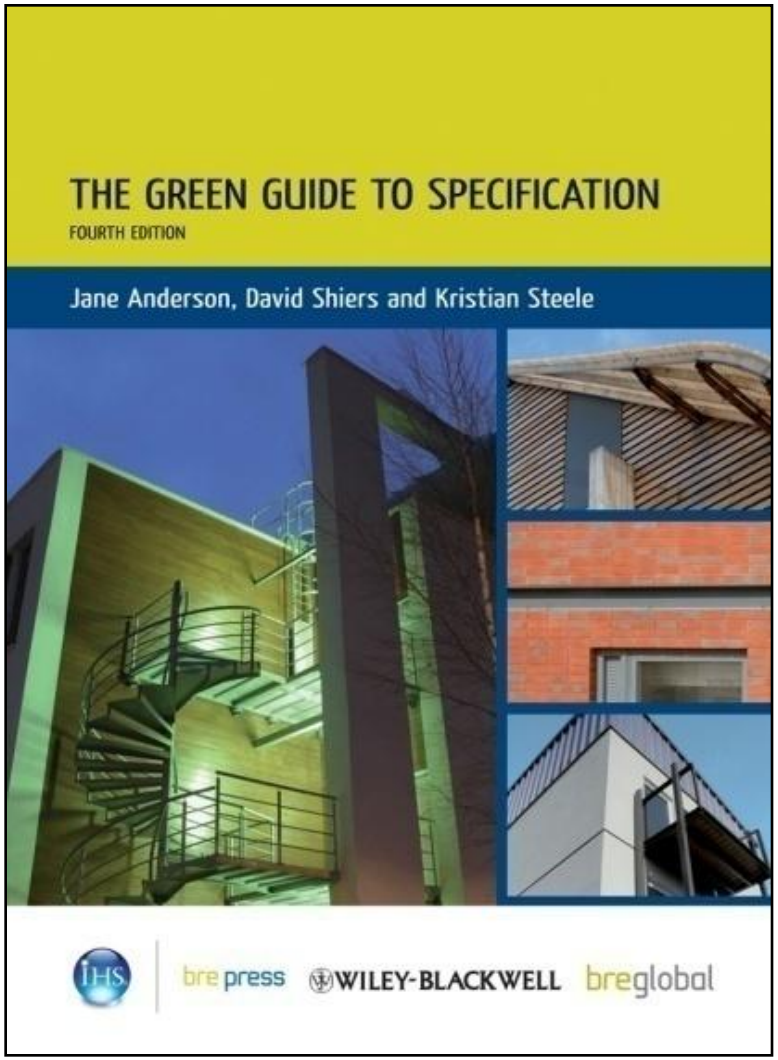
Building Research Establishment Environmental Assessment Method

- Environmental Certification Scheme which covers Embodied and Operational Impacts (not just Energy)
- Internationally recognised
- CERTIFIES a building by giving it a rating
  - Pass 30%
  - Good 45%
  - Very Good 55%
  - Excellent 70%
  - Outstanding 85%
- ....based on how it scores against a number of Environmental Impact Categories

Environmental Impact Categories are laid down in The Green Guide

Classification

1. Climate change
2. Water extraction
3. Mineral resource extraction
4. Stratospheric Ozone depletion
5. Human toxicity
6. Ecotoxicity to fresh water
7. Nuclear waste
8. Ecotoxicity to land
9. Waste disposal
10. Fossil fuel depletion
11. Eutrophication
12. Photochemical ozone creation
13. Acidification



The Process begins...

- All the product manufacturers are asked to provide generic information about the products they make through their Trade Associations

Concrete Block Association supplies details of the processes associated with manufacturing concrete blocks

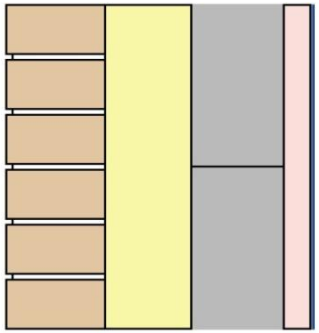
Precast Floor Association supplies details of the processes associated with manufacturing precast concrete floors

- amount of cement and aggregates used, amount of energy and water used by factory, etc

Environmental Assessment

- BREEAM calculates the environmental impacts that each generic product has on the planet during its manufacture and over a 60 year lifespan
- The generic product is then assigned a number of "EcoPoints"
  - the lower the number of EcoPoints the lower the impact on the environment/planet

Products are then joined together into Elements, eg wall



- BREEAM then “joins together” the products into Elements (eg wall, floor, etc)
- ..and calculates the Ecopoints of the element (per sq m) by adding up the EcoPoints of the different materials which make up the complete element, eg blocks, mortar, insulation, render or bricks/mortar, plaster/plasterboard, paint)
- ..to arrive at the total Ecopoints (per sq m) of building the element in this way

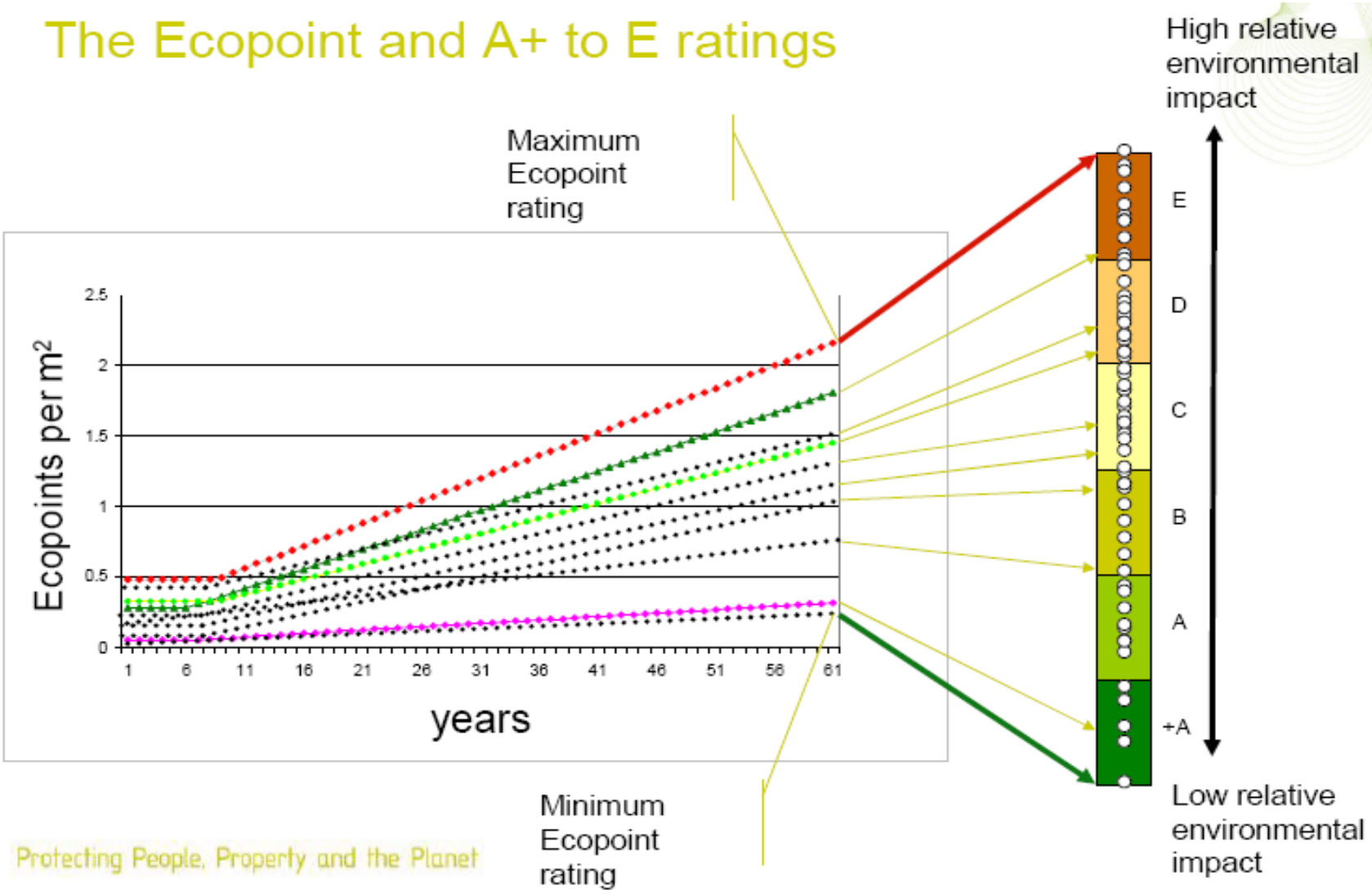
BREEAM

- BREEAM then calculates the environmental impacts of building the same element in other ways
  - eg timber frame wall construction versus concrete block wall construction...
- ...and compares the Ecopoints of each method
- ...to arrive at a comparative “Rating” from A+ to E

...the different ratings are published on-line at
www.greenguide.org.uk

BREEAM compares the environmental impact over 60 years

The Ecopoint and A+ to E ratings



Protecting People, Property and the Planet

Green Guide 2008 ratings

Building type >	Commercial
Category >	External Wall Construction
Sub-category >	Brickwork on Framed Construction
Element type >	Timber Framed Construction

	Element number	Summary rating
Brickwork, cement mortar, cement-bonded particle board, timber frame with insulation, vapour control layer, plasterboard on battens, paint	806190536	A+
Brickwork, cement mortar, OSB/3 sheathing, timber frame with insulation, vapour control layer, plasterboard on battens, paint	806190047	A+
Brickwork, cement mortar, plywood (temperate EN 636-2) sheathing, timber frame with insulation, vapour control layer, plasterboard on battens, paint	806190056	A+
Reclaimed brickwork, cement mortar, OSB/3 sheathing, insulation, timber frame, vapour control layer, plasterboard on battens, paint	806190545	A+
Reclaimed brickwork, plywood (temperate EN 636-2) sheathing, timber frame with insulation, vapour control layer, plasterboard on battens, paint	806190051	A+

Green Guide 2008 ratings

Building type >	Commercial
Category >	External Wall Construction
Sub-category >	Blockwork Cavity Wall
Element type >	Brick, Stone & Block Cavity Wall

	Element number	Summary rating
Brickwork outer leaf, insulation, aircrete blockwork inner leaf, cement mortar, plaster, paint	806170028	A+
Brickwork outer leaf, insulation, aircrete blockwork inner leaf, cement mortar, plasterboard on battens, paint	806170615	A+
Brickwork outer leaf, insulation, aircrete blockwork inner leaf, cement:lime mortar, plaster, paint	806170061	A+
Brickwork outer leaf, insulation, aircrete blockwork inner leaf, cement:lime mortar, plasterboard on battens, paint	806170065	A+
Brickwork outer leaf, insulation, cellular dense blockwork inner leaf, cement mortar, plaster, paint	806170091	A+
Brickwork outer leaf, insulation, cellular dense blockwork inner leaf, cement mortar, plasterboard on battens, paint	806170090	A+
Brickwork outer leaf, insulation, cellular dense blockwork inner leaf, cement:lime mortar, plaster, paint	806170092	A+
Brickwork outer leaf, insulation, cellular dense blockwork inner leaf, cement:lime mortar, plasterboard on battens, paint	806170093	A+