



## Project Fact Sheet

Lusk Community College, Lusk, Co. Dublin



### PROJECT: Lusk Community College, Lusk, Co. Dublin

<b>Projects</b>	Lusk Community College
<b>Value</b>	€4.56 million
<b>Client</b>	Department of Education & Science
<b>Stage</b>	Complete
<b>Completion Date</b>	July 2013
<b>Description</b>	Design & Build of new 350 pupil post primary school comprising of 7 nr general classrooms, 8 nr specialist classrooms a GP Hall & ancillary accommodation

### FACTFILE

The design and build consortium planned a fast-track on-site construction duration of 36 weeks. This project consisted of two storey new build post primary school, 6 nr ballcourts and road and bridge widening works. This was one of two school new-build contracts awarded to ABM by the Department of Education and Science under the Rapid Build Schools Programme.



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### PROJECT DETAILS

#### Schools in rapidly developing areas

In August 2012, the Department of Education and Science (DoES) advertised an ITT to contractors to submit design & build tenders for construction of the Rapid Delivery Design & Build Schools and Framework 2013-2015. The Department of Education and Science prioritised funding to facilitate the construction of schools in rapidly developing areas such as Lusk through a public rapid build schools tender. The programme was tendered on a design and build basis with contracts awarded to the successful candidates under the GCCC for Works Designed by The Contractor. It was intended that the new schools were operational for commencement of school term in September 2013. ABM's Design & Build proposals were successful and they were awarded the project in October 2012.

The project consisted of the construction of a 350 pupil post primary school including specialist classrooms. The existing site was a greenfield site bounded primarily by agricultural areas lands and to the south an existing primary school. The new build comprised of 7 nr general classrooms, a GP Hall, 8 nr specialist teaching spaces including Science Labs, Technology Rooms and Home Economics. Also included were general ancillary accommodation including library, office space and staff room. External works included the provision of 6 nr ballcourts, car parking, turning circle, additional play areas and landscaping to the site. Improvements were required to facilitate public access and road widening works along with widening of a bridge were included in the works contract.



Image 1 – Site plan Lusk Community College



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The project was broken down into several parts, namely bulk excavation giving the sloping nature of the site, the building itself, car parking and ballcourts and road and bridge widening works. The overall programme for the full Works, i.e. the Contract Period, was 32 weeks. ABM Design & Build were required to complete the works whilst protecting the existing boundaries of the neighbouring primary school and placed restrictions on delivery times etc so as to avoid disruption during school drop off and pick up times.

The ground floor construction consisted of a selected colour Polyfloor floor finish on Liquid DPM on 150mm Powerfloated in situ concrete floor slab on 90mm thick Polyisocyanurate rigid insulation on Radon Barrier DPM on 50mm sand blinding on min. 225mm Clause 804 compacted Hardcore.

The external walls consisted of three coats internal matt finish paint on high impact plasterboard with super Insulated Hadley Metal Frame with 140mm insulation with 40mm cavity. Externally, the facades comprised of 100mm block work & a sand cement painted render system. This system has BBA certification. The first floor construction consisted of a selected colour Polyfloor floor finish on Liquid DPM on a precast hollowcore concrete floor.

All civil works were carried out in accordance with The National Roads Authorities guidelines and parameters.

The roof envelope on the school extension was installed in five weeks and consisted of a pre-fabricated Kingspan 120mm RW system. The windows were also installed simultaneously allowing the building to be 'watertight' which in turn made way for the internal finishes to begin. Wherever possible, off-site fabrication of the internal components were used such as pre-hung door sets, internal wall partitions, kitchens, cubicles, and heating pipe work runs.

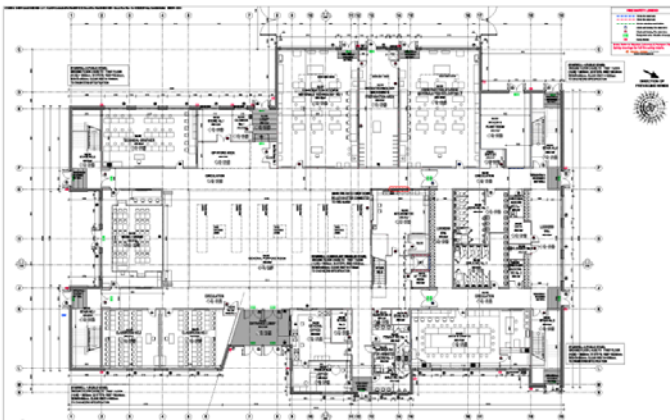


Image 2 - Ground Floor Plan

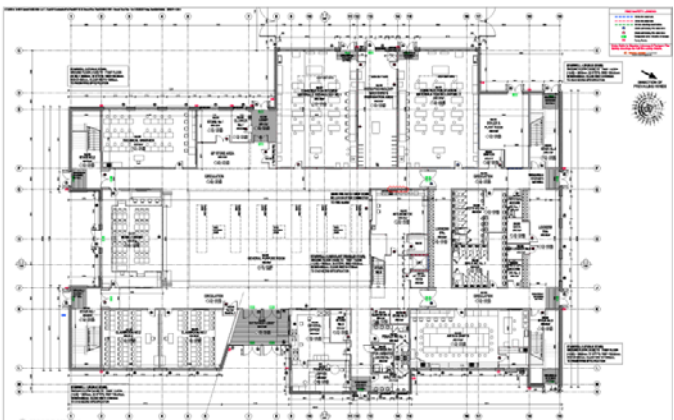


Image 3 - First Floor Plan



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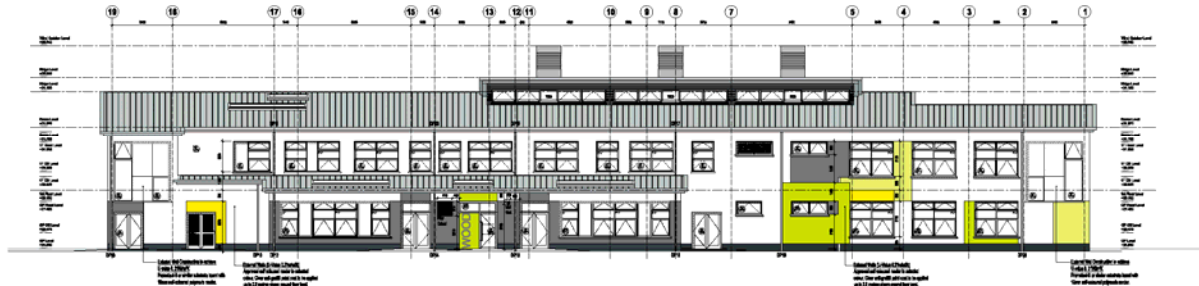


Image 4 - West Elevation

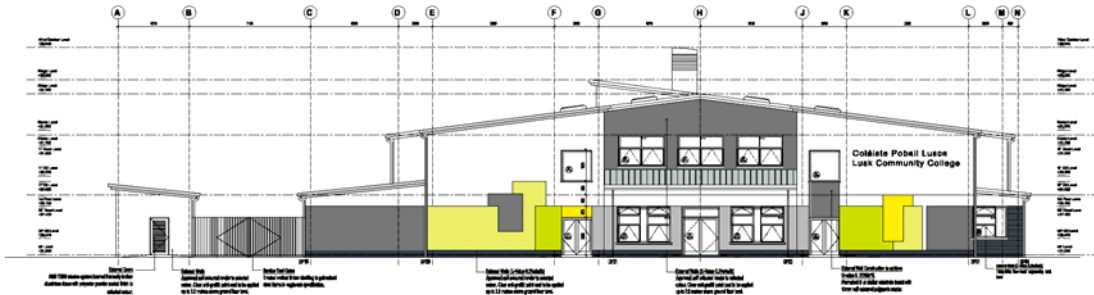


Image 5 - South Elevation



Image 6 - East Elevation



Image 7 - North Elevation



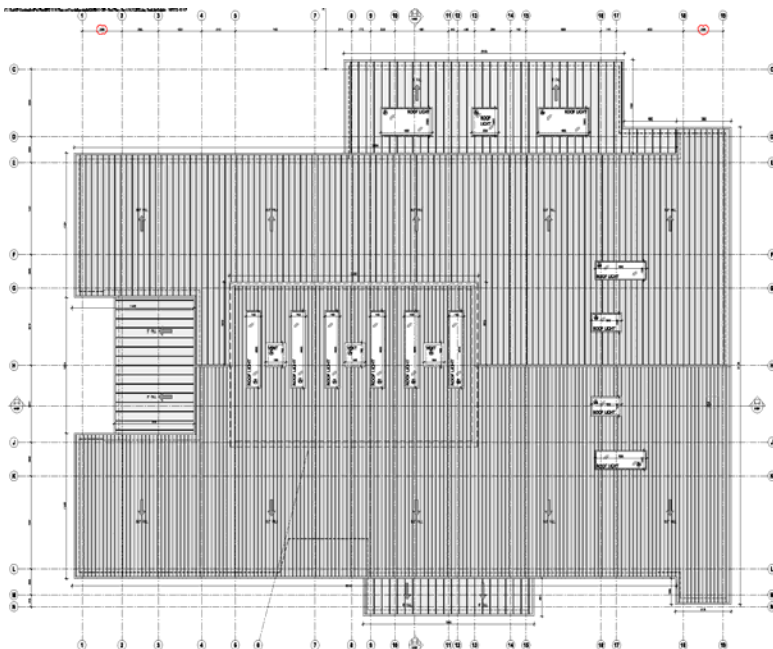
## Sustainability

In accordance with the Department of Education and Science school specification, the buildings were constructed to facilitate a passive environment entailing light sensitive light fittings, excellent natural daylight, natural ventilation, air infiltration and water efficiency. The building elements were specified with a high emphasis on sustainability & efficiency. See below building elemental u-values which have been excelled with the construction of Lusk Community College.

Building Element	TGD Part L 2008 required u-value U value w/m <sup>2</sup> k	As built U value w/m <sup>2</sup> k	ABM Surpassed TGD Part L Requirements by U value w/m <sup>2</sup> k
Ground floor	0.25	0.12	0.13
Walls	0.27	0.16	0.11
Windows	1.8	1.5	0.3
Doors	1.8	1.5	0.3
Roof	0.16	0.14	0.02

The requirements set out in the Department's TGD documents for air-tightness required an air loss of 3m<sup>3</sup>/h/m<sup>2</sup> at a test pressure of 50Pa. The actual results from the tests were: 2.33 m<sup>3</sup>.h<sup>-1</sup>.m<sup>-2</sup> @ 50 Pa which surpassed TGD requirements. This resulted from the quality of installation and construction of all building elements. A breather membrane was installed throughout giving the building excellent air-tightness. Energy conservation was conveyed through thermal performance & air tightness requirements which when constructed surpassed part L requirements. See below actual air tightness characteristics which have been extracted from air tightness certificates:

Image 8 – Roof plan showing air pressure results.



Air Permeability,  $AP_{50}$ : 2.33 m<sup>3</sup>.h<sup>-1</sup>.m<sup>-2</sup> @ 50 Pa  
 Effective Leakage Area: 0.68 m<sup>2</sup> @ 50 Pa  
 Correlation of results,  $r^2$ : 0.9962  
 Slope,  $n$ : Air Flow 0.67 1,013.7 m<sup>3</sup>.h<sup>-1</sup> .Pa<sup>-n</sup>  
 Coefficient,  $C_{env}$ : Intercept, 1,016.5 m<sup>3</sup> .h<sup>-1</sup>.Pa<sup>-n</sup>  
 $CL$ :



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## Building Energy Rating (BER)

BER for the building detailed below is: **A3**

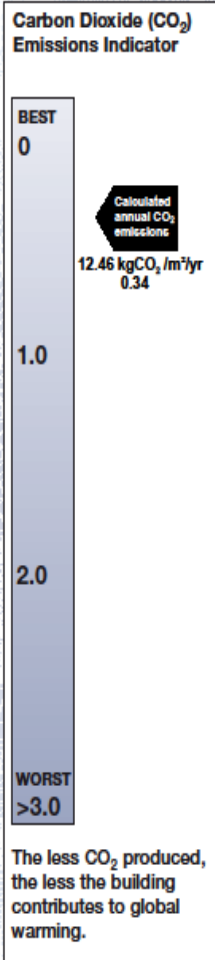
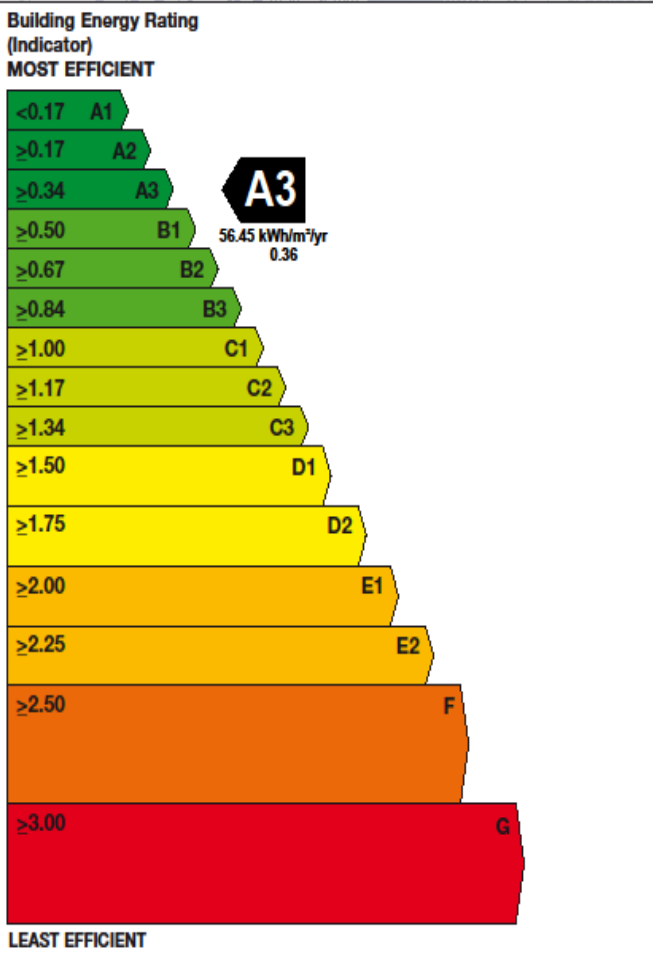
Lusk Community College  
 Raheny Lane  
 Rathmore Road  
 Lusk  
 Co. Dublin

The Building Energy Rating (BER) is an indicator of the energy performance of this building. It covers energy use for space heating and cooling, water heating, ventilation and lighting, calculated on the basis of standard operating patterns. It is accompanied by a CO<sub>2</sub> emissions indicator. These indicators are expressed as respective ratios of primary energy use and CO<sub>2</sub> emissions, relative to what would apply for a similar building generally satisfying the Building Regulations 2005. 'A' rated properties are the most energy efficient and will tend to have the lowest energy bills.

BER Number:	800188799	Date of Issue:	27 Jun 2013
Building Type:	Secondary school	Valid Until:	26 Jun 2023
Useful Floor Area (m <sup>2</sup> ):	4834	BER Assessor No.:	105458
Main Heating Fuel:	Natural Gas	Assessor Company No.:	101502
Building Environment:	Heating and Natural Ventilation	Assessor Scheme:	SEI Interim AS

A building energy rating certificate and advisory report formed part of the original TGD documents. The BER is an indicator of energy performance covering energy use for space heating and cooling, water heating, ventilation and lighting, calculated on the basis of standard operating patterns. It is accompanied by a CO<sub>2</sub> emissions indicator. The Building energy rating survey was carried out in November 2011 which resulted in the building receiving a highly sustainable building energy rating band of A3. The estimated annual energy consumption is a highly efficient value of 56.45kWh/m<sup>2</sup>/yr and the annual estimated CO<sub>2</sub> consumption is estimated to be 12.46kgCO<sub>2</sub>/m<sup>2</sup>/yr.

Other sustainable technology incorporated into the design was a rainwater water harvesting system. Installed to collect rainwater at roof level, the water is then fed by gravity, through a dedicated system of underground medium density polyethylene (MDPE) pipe work to a leaf filter. Leaves and other debris are passed through the storm water system and the "filtered" rainwater is passed by gravity to an underground glass rainwater holding tank. This grey water is then re-used throughout the building.



**IMPORTANT:** This BER is calculated on the basis of data provided to and by the BER Assessor, and using the version of the assessment software quoted above. A future BER assigned to this building may be different as a result of changes to the building, its use or the assessment software.



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