



# Examiners' Report/ Lead Examiner Feedback

June 2016

NQF BTEC Level 1/Level 2 Firsts in  
Construction and the Built  
Environment  
Unit 11: Sustainability in Construction  
(21635E)

## **Edexcel and BTEC Qualifications**

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at [www.edexcel.com](http://www.edexcel.com) or [www.btec.co.uk](http://www.btec.co.uk) for our BTEC qualifications.

Alternatively, you can get in touch with us using the details on our contact us page at [www.edexcel.com/contactus](http://www.edexcel.com/contactus).

If you have any subject specific questions about this specification that require the help of a subject specialist, you can speak directly to the subject team at Pearson.

Their contact details can be found on this link: [www.edexcel.com/teachingservices](http://www.edexcel.com/teachingservices).

You can also use our online Ask the Expert service at [www.edexcel.com/ask](http://www.edexcel.com/ask). You will need an Edexcel username and password to access this service.

### **Pearson: helping people progress, everywhere**

Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your learners at: [www.pearson.com/uk](http://www.pearson.com/uk)

June 2016

Publications Code 21635E\_ER

All the material in this publication is copyright

© Pearson Education Ltd 2016

## Grade Boundaries

### External assessment

The suite of 'next generation' NQF BTECs include an element of external assessment. This external assessment may be through a timetabled paper-based examination, an onscreen, on demand test or a set-task conducted under controlled conditions.

### What is a grade boundary?

A grade boundary is where we 'set' the level of achievement required to obtain a certain grade for the externally assessed unit. We set grade boundaries for each grade (Distinction, Merit, Pass and Level 1 fallback).

### Setting grade boundaries

When we set grade boundaries, we look at the performance of every learner who took the assessment. When we can see the full picture of performance, our experts are then able to decide where best to place the grade boundaries - this means that they decide what the lowest possible mark should be for a particular grade.

When our experts set the grade boundaries, they make sure that learners receive grades which reflect their ability. Awarding grade boundaries ensures that a learner who receives a Distinction grade next year, will have similar ability to a learner who has received an Distinction grade this year. Awarding grade boundaries is conducted to make sure learners achieve the grade they deserve to achieve, irrespective of variation in the external assessment.

### Variations in externally assessed question papers

Each exam we set asks different questions and may assess different parts of the unit content outlined in the specification. It would be unfair to learners if we set the same grade boundaries year on year because then it wouldn't take into account that a paper may be slightly easier or more difficult than the year before.

Grade boundaries for this, and all other papers, can be found on the website on this link:

<http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx>

Grade	Unclassified	Level 1 Pass	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Boundary Mark	0	11	21	31	41

## **Introduction**

This report has been written by the Lead Examiner for BTEC Construction and the Built Environment Unit 11 – Sustainability in Construction. It is designed to help you understand how learners performed overall in the exam. For each question there is a brief analysis of learner responses. You will also find some examples of learner responses at a range of different marks. We hope you will find this will help you to prepare your learners for future examination series.

## **General Comments on Exam**

This was the fifth examination for this unit, and overall the paper produced a range of responses.

It is noticeable that some learners did not attempt all of the questions; however, learners did appear to manage their time effectively and appeared to be able to complete the paper in the allotted time. There did not appear to be evidence of rushed work towards the end of the paper. Therefore, where questions were not answered this may have been due to learners not having the knowledge to provide a response.

The more demanding questions require learners to apply their knowledge in response to sustainability issues related to a range of construction scenarios. It was evident from the responses to some questions that learners had limited knowledge of sustainability in relation to construction. Learners may have some prior learning in respect of environmental and sustainability issues, but it is important that learners are taught sustainability in the context of construction covering the lifecycle of a development and the full range of topics covered in the unit specification. For example, learners appeared to have little knowledge and understanding of grey water systems.

Learners would also benefit from being taught examination skills and techniques as often they did not appear to have read the question properly. This resulted in questions not being answered using an appropriate methodology. Where questions required learners to 'identify' many provided extended responses where only naming is required. Learners should be familiar with the command verbs to be able to effectively answer questions that require them to 'describe', 'explain', 'discuss' and 'compare'. Learners need to provide a response that answers the question and not just repeat information from either the question or the scenario in Section B. Many responses to Question 16 were largely a list of the information provided in the scenario. Learners did not go on to discuss the technologies and features of Building 2 that make it more sustainable than Building 1.

## Section A

### Question 1

A multiple choice question that required the identification of two ways in which dust from construction sites can be reduced.

**Targeted Specification Area: Learning Aim B5**

**Q1:** Many learners were able to identify at least one of the correct answers 'damping down' and 'wheel cleaning'.

### Question 2

This question required naming two types of pollution that may affect the local environment during the construction of a large building.

**Targeted Specification Area: Learning Aim A2.1/B1**

**Q2:** Many learners were able to identify two types of pollution. Frequent responses were 'dust' and 'light'.

### Question 3

A multiple choice question that required the identification of two ways to reduce air leakage from buildings.

**Targeted Specification Area: Learning Aim B1**

**Q3:** Many learners were able to identify 'use of weather stripping materials' and 'use of automatic external door closers'.

#### Question 4

This question assessed learners' understanding of safe disposal of waste materials.

<b>Targeted Specification Area: Learning Aim</b> <b>A2.3/B5</b>
--

**Q4(a):** A large number of correct responses were given. Frequent responses were 'so materials do not get mixed up' and 'prevent contamination of recyclable materials'.

**Q4(b):** Many learners were able to give a reason for using licensed waste disposal contractors. Frequent responses were 'to avoid fly tipping', 'there is a legal requirement' and 'so materials are correctly handled'.

**Q4(c):** The majority of learners were able to name two materials from a traditionally built house that could be recycled when the building is demolished. Typical responses included 'bricks', 'blocks', 'timber', 'glass' and 'concrete'.

2 mark example:

**(c) Name two materials from a traditionally built house that could be recycled when the building is demolished.**

**(2)**

1 timber

2 The bricks.

## Question 5

This question required learners to explain one way in which a major new construction development can provide employment and training opportunities to the local community.

### Targeted Specification Area: Learning Aim A4

**Q5:** Many learners provided a response to this question and were able to identify why a new construction development can provide local employment, with a frequent response 'the need for labour to work on the project'. Fewer learners were able to provide a linked response that provides an explanation of how this would benefit the local community. For example 'because of the higher cost of importing labour from outside the area'.

2 mark example:

**5** Explain one way in which a major new construction development can provide employment and training opportunities to the local community.

Because if there is new job & construction workers or people who are training to be ~~can~~ in the construction trade can work close at a low travel cost.

## Question 6

This question required learners to have an understanding of community facilities and community safety.

### Targeted Specification Area: Learning Aim A3.1

**Q6(a):** A number of learners were able to give at least one community facility that needs to be considered when planning sustainable developments. The mark scheme provided a number of correct answers. Frequent responses from learners were 'infrastructure', 'retail', 'health' and 'education'.

**Q6(b):** A number of learners were able to provide at least one feature of the built environment that can promote increased feelings of community safety. Frequent responses were 'lighting', 'CCTV' and 'secure locks or door entry systems'. The question requires responses that relate to the 'built environment'. A number of learners provided the incorrect response of 'police patrols' and 'security guards'.

2 mark example

7 Give two reasons why a developer would involve the local community at the design stage of a construction project.

- 1 The people can have a say on what they want it to look like
- 2 They are less likely to object to the construction project if they know what it's about.

### Question 7

This question required learners to give two reasons why a developer would involve the local community at the design stage of a construction project.

**Targeted Specification Area: Learning Aim A3.2**

**Q7:** The majority of learners were able to give at least one reason with many giving two reasons to access all the marks available. Frequent responses were 'to find out the community's needs/opinions' and 'develop a relationship with the community'.

2 mark example

9 An eco-tourism visitor centre is being created at a bird sanctuary as part of a local development.

State two benefits the visitor centre could provide to the local community.

- 1 boost sales in local shops
- 2 attract lots more visitors

### Question 8

A multiple choice question that required learners to identify two benefits to the community of reducing crime.

**Targeted Specification Area: Learning Aim A1.2**

**Q8:** Many learners were able to identify the correct responses of 'would attract commercial enterprise' and 'would reduce insurance costs'.

### Question 9

This question required learners to state two benefits of an eco-tourism visitor centre could provide to the local community.

**Targeted Specification Area: Learning Aim A1.2**

**Q9:** Many learners were able to identify two benefits to the local community of the visitor centre. Frequent responses were 'provides employment to the local community' and 'attracts visitors to the area'.

2 mark example:

**10 Explain one way that the depletion of finite resources can be reduced.**

by using renewable energy resources such as wind and solar you reduce the need to use fossil fuels

### Question 10

This question assessed the learners' understanding of reducing the depletion of finite resources.

**Targeted Specification Area: Learning Aim A2.1/B2**

**Q10:** A number of learners were able to identify a way of reducing the depletion of finite resources, but fewer learners were able to provide a linked response of how the way would reduce the depletion of finite resources. Frequent ways identified were 'use of renewable materials' and 'use of alternative energy sources'.

2 mark example:

**10** Explain one way that the depletion of finite resources can be reduced.

by using renewable ~~res~~ energy resources such as wind and solar you reduce the need to use fossil fuels

### Question 11

This question assessed the learners' understanding of ways of reducing noise from construction sites so as not to disturb the local community.

<b>Targeted Specification Area: Learning Aim A2.4/A3.2/B5</b>
---

**Q11:** Many learners were able to identify a way of reducing noise from a construction site. The most common response was by the use of 'hoardings', and a number of learners were also able to provide a linked response of how these will reduce noise disturbance 'keeping the noise within the site and reducing its impact outside of the site'.

2 mark example:

**11** Noise from a construction site can disturb the local community. The use of silencers and maintenance of machinery reduce noise from a construction site.

Explain one other way in which a contractor could minimise noise from construction work that must take place at night.

the use of ~~the~~ acoustic boarding can minimise the noise pollution from a construction ~~site~~ because sound bounces off the walls

## Question 12

This question required the explanation of two benefits for the community of a developer building on a site that is disused and contaminated.

<b>Targeted</b> A2.1/A4	<b>Specification</b>	<b>Area:</b>	<b>Learning</b>	<b>Aim</b>
----------------------------	----------------------	--------------	-----------------	------------

**Q12:** A number of learners were able to identify one benefit, but were not able to go on and provide either a second benefit or linked responses to explain the benefits for the community. The mark scheme provides a number of benefits with explanations. Frequent responses given were 'regeneration' and 'less greenfield sites used'

4 mark example:

**12** Explain **two** benefits for the community of a developer building on a site that is disused and contaminated.

1 Regeneration of the area will take place all members of the community will be pleased with it because it makes it look better and can bring in benefits such as shops.

2 The contamination will be cleaned up preventing it from spreading and causing any more damage.

**SECTION B**

**Question 13**

This question was scenario-based and required learners to have an understanding of sustainable materials and where insulation could be placed to reduce heat loss.

**Targeted Specification Area: Learning Aim B1/B2**

**Q13(a):** Learners showed a poor understanding and the majority of learners were not able to identify one or two sustainable materials that could be used to insulate Building 1 in the scenario from heat loss. Correct responses included 'sheep's wool', 'hemp' and 'flax'.

**Q13(b):** Learners showed a slightly better understanding of where insulation could be placed within Building 1 of the scenario. Correct responses included 'roof', 'within floors' and 'walls'. However, a number of learners gave the response 'in the cavity of the external walls'. This is incorrect as the scenario clearly states that the external walls are of solid brick construction.

2 mark example:

**(b) Identify two locations, within Building 1, where insulation material could be placed to reduce heat loss.**

**(2)**

- 1. Walls
- 2. Roof

## Question 14

This question was scenario-based and required learners to explain two transport strategies to reduce the use of cars in a town centre.

<b>Targeted Specification Area: Learning Aim B4</b>
---

**Q14:** Learners demonstrated some understanding of transport strategies to reduce car use. Learners did not have to relate their response to the town where Building 1 is located. The scenario provides an example of a suitable strategy, the introduction of cycle lanes. A number of learners identified a variety of strategies 'mass transport (buses/trams)', 'two people car lanes/car sharing' and 'park and ride schemes'. Some learners went on to provide a linked response to access further marks. For example for mass transport 'because they provide a means of transport for large numbers of people and reduce the number of private cars'.

4 mark example:

**14** Cycle tracks have been introduced in the town where Building 1 is located.

Explain **two** other transport strategies to reduce the use of cars in a town centre.

1 Park and ride schemes outside of the town let people park their cars and travel into the town. This reduces carbon emissions from cars.

2 Walk paths could be introduced to encourage people to walk places. This reduces the cars on the road and therefore reduces carbon emissions.

## Question 15

This question was scenario-based and required learners to explain two design features of a grey water system.

<b>Targeted Specification Area: Learning Aim B1</b>
---

**Q15:** Learners demonstrated a poor understanding of the design features of a grey water system. Many learners did not appear to be able to differentiate between 'grey water' and 'rain harvesting'. The question was about 'grey water' not 'rain harvesting'. Many learners described what a grey water system or rain harvesting system is and were unable to identify or explain design features. Learners who were able to identify design features identified 'storage', 'water treatment' and 'pumping/distribution system'. Some learners after identifying a design feature were able to access further marks by providing a linked response to explain the feature. For example storage tank 'to collect the water for future re-use'.

4 mark example:

**15** Building 2 uses rainwater harvesting and a grey water system to reduce the amount of mains water required. Toilets are flushed using grey water.

Explain **two** design features of a grey water system.

1 Filtration of the water to make sure no  
Perforalates are in it.

2 Storage tank that hold the water before  
useage.

## Question 16

This question was scenario-based and required learners to explain two advantages of building the park and ride facility on the greenfield site.

This question was scenario-based and required a discussion of the technologies and features of Building 2 that make it more sustainable than Building 1.

<b>Targeted Specification Area: Learning Aim B</b>
--

**Q16:** The majority of learners provided a response to this question.

Learners were required to discuss the technologies and features of Building 2 that make it more sustainable than Building 1.

Most learners who provided a response were able to pick out a number of technologies and features from the scenario. However, few learners were able to discuss in any detail how the technologies and features of Building 2 will make it more sustainable than Building 1.

The mark scheme provides a range of technologies and features that learners could discuss and make arguments and conclusions as to why Building 2 is more sustainable than Building 1. The mark scheme also provides three descriptor mark bands by which the responses are assessed and awarded marks. The learner's application of understanding of sustainability in relation to the scenario is taken into consideration. The majority of learners concentrated on presenting the information given in the scenario, both from the text and the photographs. Many responses were in the form of a list and the learners failed to develop their responses to demonstrate an understanding of why one building will be more sustainable than another.

Learners should only use material that can be gained from the scenario and should not make assumptions where the scenario provides no basis for these. An example of this is where learners discussed transport issues.

Many learners made the incorrect assumption that Building 1 had no sustainable features and was about to fall down.

Lower mark band learners are expected to identify the technologies and features, most likely, in the form of a list with superficial/generic explanation, and show basic understanding of sustainability.

For the mid mark band learners will provide some further discussion of the technologies and features relating to the two buildings in the scenario. The response will show a good understanding of sustainability.

For the higher mark band learners will provide a detailed discussion of the technologies and features relating these to the two buildings in the scenario. The response will show a developed understanding of sustainability.

The descriptors for the mark bands can be found at the end of the mark scheme.

Top of Band 1 Descriptor Example (3 Marks)

16 Discuss the technologies and features of Building 2 that make it more sustainable than Building 1.

- Building 2 is built at the edge of a village which means less congestion instead of building 1 in the town.

- Building 2 will last longer than 1 because it is made from steel frame construction making it sustainable.

- Building 2 has insulated wall panels, triple glazed windows also the air is heated by energy efficient gas fired burning which all reduces the cost of paying for the school to be heated up unlike building 1 which struggles to keep heat in.

There is LED lights which last longer than normal lights so it means they do not have to keep replacing the lights also they have sensors so they don't have to be on all day which lowers the

cost of any bills and makes it more sustainable.

Building 2 has a grey water system that cleans up rainwater so you can use it for the taps and toilets making it more efficient.

There is a large car park in building 2 which lowers the chance of congestion because cars can park there.

Mid Band 2 Descriptor Example ( 5 Marks)

16 Discuss the technologies and features of Building 2 that make it more sustainable than Building 1.

Building 2 has triple glazing windows where Building 1 has only got single glazing installed. Triple glazing is much more efficient at keeping the heat in meaning it's much more sustainable ~~than~~ than building 1 as building 1 will be using more gas to heat the building as single glazing allows a lot of heat loss to ~~occur~~ occur.

Building 2 has been constructed with large amounts of insulation in the floor and roof with external insulated wall panels, there is no mention of insulation in building 1. <sup>Building</sup> Building 2 is much more sustainable as it's large amounts of insulation along with triple glazing windows means it won't lose great amounts of heat away ~~to~~ ~~through~~ meaning it will be cheaper to heat than building 1 as building 1 has no insulation and will lose a great amount of heat.

Even with the ~~to~~ minimised heat loss from building 2 it will be reabsorbed via a computer controlled heating system which will re pump the heat back into the ~~building~~ building. Building 1 <sup>does</sup> ~~does~~ ~~to~~ not ~~have~~ have such technology so the massive amounts of heat it loses stays lost.

In building 2 the heated air is produced by energy efficient gas-fired boilers meaning the minimum amount of energy is used to heat the air along with the massively low heat loss means only tiny amounts of air need to be heated. Building 1 has improved from a solid fuel boiler to a gas fired boiler but it's still not energy efficient meaning it's much less sustainable than building 2.

The lighting of building 2 is super efficient as they only turn on when it detects movement eg if a room is unoccupied the lights will turn off automatically which saves wasting energy and lowers energy bills.

Building 1 uses fluorescent tube lighting which isn't very energy efficient at all.

Overall building 2 with its <sup>sustainable</sup> technology beats building 1 in every single platform & as its technology makes it massively efficient. This means it's got lower energy bills, the building is much better for pupils and it's kind to the environment.

For more information on Edexcel qualifications, please visit  
[www.edexcel.com/quals](http://www.edexcel.com/quals)

Pearson Education Limited. Registered company number 872828  
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Ofqual  




Llywodraeth Cynulliad Cymru  
Welsh Assembly Government

