Examiners' Report/
Lead Examiner Feedback

January 2016

NQF BTEC Level 1/Level 2 Firsts in Construction

Unit 11: Sustainability in Construction (21635E)

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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 fourth 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 Sustainable Urban Drainage 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 17 were largely a list of the information provided in the scenario. Learners did not go on to discuss how the advantages and disadvantages of the mainline railway station and the park and ride facility would help or detract from creating sustainable communities.

Section A

Question 1

This question required the identification of two ways in which damage caused by fuel and oil spillages can be minimised.

Targeted Specification Area: Learning Aim A2.4

Q1: Many learners were able to identify one of the correct answers ‘bunded tanks’ and ‘absorbent mats’.

Question 2

This question required identifying two ways in which locally sourced materials may contribute to sustainable construction projects.

Targeted Specification Area: Learning Aim B1

Q2: Most learners were able to identify both ‘reduced local pollution’ and ‘reduced transportation costs’.

Question 3

This question required the identification of two low embodied energy materials.

Targeted Specification Area: Learning Aim B1

Q3: Many learners were able to identify ‘stone’ and ‘timber’.

Question 4

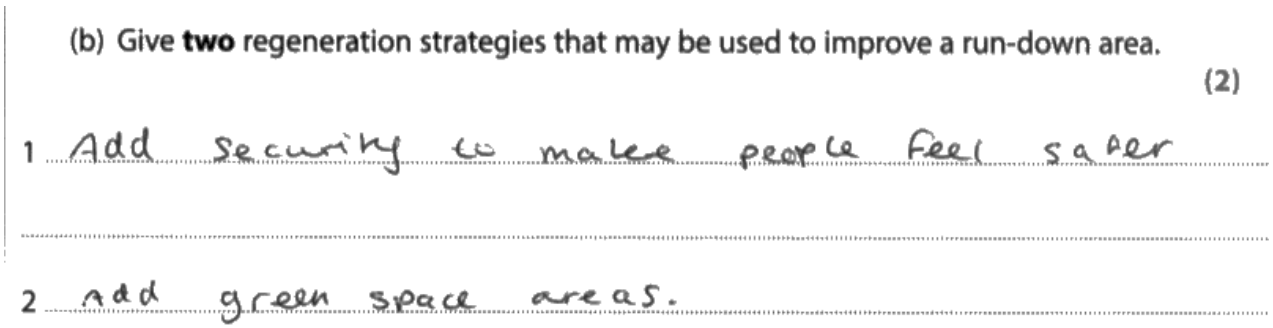
This question assessed learners' understanding of social issues resulting from over-development and areas becoming run-down.

Targeted Specification Area: Learning Aim A3.1

Q4(a): A large number of correct responses were given. Frequent responses were 'crime', 'pollution', 'overpopulation' and 'increase in traffic'.

Q4(b): Many learners were able to identify regeneration strategies that may be used to improve a run-down area. Frequent responses were 'refurbishment', 'redevelopment to current standards', 'clean the area up' and 'improved community facilities'.

2 mark example:


(b) Give **two** regeneration strategies that may be used to improve a run-down area.

(2)

1 Add security to make people feel safer

2 add green space areas.

Question 5

This question required learners to name two natural insulation products.

Targeted Specification Area: Learning Aim B2

Q5: Many learners provided correct responses with the most frequent correct response being 'sheep's wool'.

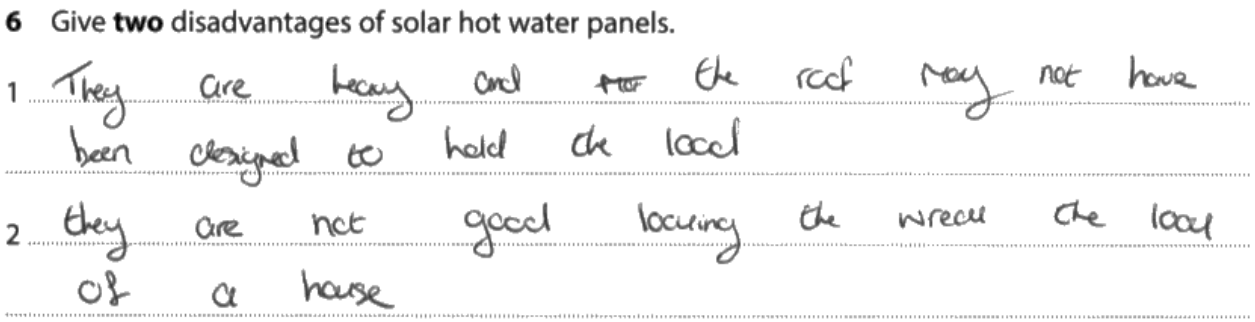
Question 6

This question required learners to give two disadvantages of solar hot water panels.

Targeted Specification Area: Learning Aim B3

Q6: A number of learners were able to identify at least one disadvantage, with the most frequent response being 'requires sunlight'. From the responses given it suggests that learners only had a limited understanding of solar hot water systems and there was little or no knowledge that solar hot water panels are not used as a primary source of heating water for domestic or commercial use. Thus many learners were not able to access all the marks available.

2 mark example:


6 Give **two** disadvantages of solar hot water panels.

1 They are heavy and ~~not~~ the roof may not have been designed to hold the load

2 they are not good leaving the wreck the load of a house

Question 7

This question required learners to give a way in which damage to materials on a construction site can be prevented.

Targeted Specification Area: Learning Aim B5

Q7: The majority of learners were able to identify a way that damage can be prevented. A range of responses were given with common responses being 'secure storage' and 'correct handling'.

Question 8

This question assessed the learners understanding of pre-fabricated components.

Targeted Specification Area: Learning Aim B1

Q8(a): Few learners were able to name a pre-fabricated component. Frequent correct responses were 'timber frames' and 'structural insulated panels (SIPs).

1 mark example:

8 Pre-fabricated components are frequently specified by architects in the design of buildings.

(a) Name **one** pre-fabricated structural building component that may be used in housing.

Structurally insulated panels.

Q8(b): A number of learners provided a response to this question, but not all the responses provided a linked response to provide an explanation of a way wastage is reduced by the use of pre-fabrication. For example a response may state 'higher degree of accuracy', but fails to link this to pre-fabrication being a 'factory process'. Some learners demonstrated a weak understanding of the topic and responded with a generic response 'recycling materials' that is not an aspect only of pre-fabricated components. Many learners failed to access all the marks available for this question.

4 mark example:

(b) Explain **two** ways in which waste is reduced by the use of pre-fabricated components.

(4)

1 On site you only have to assemble them so no waste is produce which means it saves money and resorces.

2 All the components come altogether this would mean they dont have lots of lorrys coming in and out only one. In addition this would cut down transportation cost too.

(Total for Question 8 = 5 marks)

Question 9

This question required learners to give two ways in which excavated soil from the substructure of a building could be used.

Targeted Specification Area: Learning Aim A2.3

Q9: Many learners were able to identify at least one way in which the excavated material could be used. Common responses were 'landscaping/garden' and 'levelling ground'.

2 mark example:

9 Give **two** ways in which excavated soil from the substructure of a building could be used.

1 the soil could be reused for the garden of the final building.

2 the soil could be used for grass roof insulating.

Question 10

This question assessed the learners understanding of infrastructure required as part of a housing development.

Targeted Specification Area: Learning Aim A4

Q10: A number of learners were able to identify at least one type of infrastructure required with 'roads' and 'services' being frequent correct responses. Some learners appeared not to understand what is meant by 'infrastructure' in the context of a new development and gave examples of building components or materials as their response.

2 mark example:

10 Developers incur costs when providing the infrastructure required for their projects.

Name **two** types of infrastructure required for a large housing project.

1 Sewage/gas/electric and water lines to the new area

2 Roads connecting each of the houses

Question 11

This question assessed the learners' understanding of techniques and methods for sustainable construction and design.

Targeted Specification Area: Learning Aim B.4/B.1

Q11(a): Many learners were able to name two materials that sun-screens can be made from. Frequent responses were 'timber' and 'metal'.

Q11(b): Many learners were able to give a benefit of constructing a building facing south. Common responses were 'natural light' and 'solar gain'.

1 mark example:

(b) Give **one** benefit of constructing a building to face south.

(1)

So that the house can get natural lighting from the sun

Question 12

This question required the explanation of two ways in which the architect can ensure the loss of trees, hedgerows and planting is minimised on a housing development.

Targeted Specification Area: Learning Aim A2.2

Q12: Many learners were able to identify at least one way of how to minimise the loss of trees. A number of learners were able to identify a way and also provide a linked response to form an explanation and thus be awarded a further mark. Few learners were able to provide two linked responses to access all the marks available. A typical response was 'plan the layout of buildings' with the link 'so trees can be retained / incorporated in the design'.

4 mark example:

12 An architect is designing a housing development on a site that has existing mature trees, hedgerows and other planting.

Explain **two** ways in which the architect can ensure the loss of trees, hedgerows and planting is minimised.

1 Fencing could be put into place to protect the trees, hedgerows and planting so theyre not cut down.

2 you could also re plant the trees close, hedgerows and planting nearby so the area doesn't lose any greenary

SECTION B

Question 13

This question was scenario-based and required learners to identify two benefits of reducing pollution from transport.

Targeted Specification Area: Learning Aim A1.2

Q13: The majority of learners were able to identify one or both of 'cleaner air' and 'improved health'.

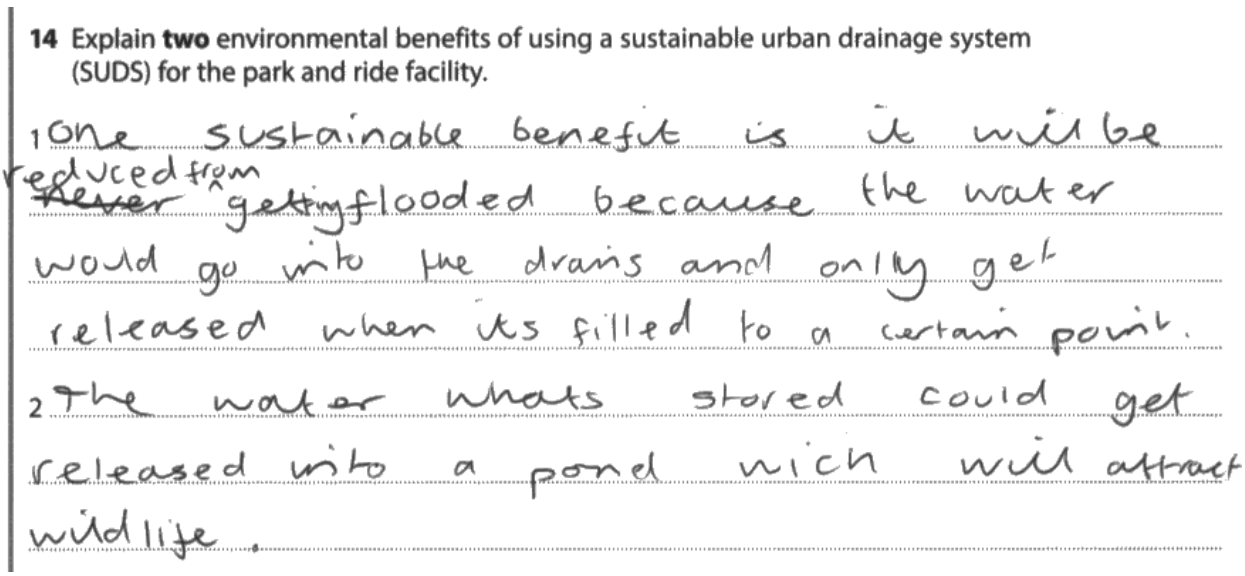
Question 14

This question was scenario-based and required learners to explain two environmental benefits of using a sustainable urban drainage system (SUDs) for the park and ride facility.

Targeted Specification Area: Learning Aim B4

Q14: Learners demonstrated a poor understanding of sustainable urban drainage systems and correct responses were largely limited to 'reducing flooding'. Many learners confused SUDs with rainwater harvesting. The unit specification Topic B.4 states that learners need to 'understand the characteristics, design and construction details, applications and advantage/disadvantages of using sustainable urban drainage systems (SUDs)'.

4 mark example:



14 Explain **two** environmental benefits of using a sustainable urban drainage system (SUDS) for the park and ride facility.

1 One sustainable benefit is it will be reduced from ~~never~~ getting flooded because the water would go into the drains and only get released when its filled to a certain point.

2 The water whats stored could get released into a pond wich will attract wildlife.

Question 15

This question was scenario-based and required learners to explain one way local infrastructure could be developed to encourage rail users to cycle to the station.

Targeted Specification Area: Learning Aim B1

Q15: A number of learners were able to both identify 'cycle paths' and provide a linked response of why this may encourage cycling 'safe route'. A few learners identified cycle storage at the station. This is described within the scenario and thus is not a valid response as this question was a scenario-based question.

2 mark example:

15 Explain **one** way the local infrastructure could be developed to encourage rail users to cycle to the station.

By the addition of an bike lane to allow people to safely cycle to the station

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.

Targeted Specification Area: Learning Aim A2.2 / B

Q16: Learners provided a variety of responses to this question with most focusing on the site not having been previously developed, therefore no site clearance or decontamination was required. A number of learner responses were limited to identifying an advantage and did not provide a linked response to gain an additional mark. Few learners were able to access all the marks available.

4 mark example:

16 Explain **two** advantages of locating the park and ride facility on the greenfield site.

1 By building on a Greenfield site you do not need to check for pipes and gas lines underground, this will make it much safer to build on.

2 It will be slightly cheaper because you do not need to check for any wastage or problems the building before had.

Question 17

This question was scenario-based and required a discussion of the advantages and disadvantages of the mainline railway station and the park and ride facility in creating sustainable communities in the two towns.

Targeted Specification Area: Learning Aim A

Q17: The majority of learners provided a response to this question.

Learners were required to discuss the advantages and disadvantages of the mainline railway station and the park and ride facility and how these would or would not contribute to creating sustainable communities in the two towns.

Most learners who provided a response were able to pick out a number of elements from the scenario and identify these as advantages or disadvantages. However, few learners were able to link the advantages or disadvantages to how these would contribute or detract from creating sustainable communities in the two towns. The links that were made generally related to reducing pollution from vehicles and the railway's contribution to employment. However, links and related discussion were not fully developed. For example:

'*The railway can take labour away from the town as they can easily travel to the large city. On the other hand the railway allows people from the town to travel to the large city for work. This may make the town a popular place for people to live and raise the prosperity of the area……'*

The mark scheme provides a range of advantages and disadvantages for both the railway station and park and ride that could be included in a discussion on how these facilities will play a part in creating sustainable communities. 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 sustainable communities 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, but failed to develop their responses to demonstrate an understanding of sustainable communities.

Lower mark band learners are expected to identify advantages and disadvantages in the form of a list with little or no explanation, and show basic understanding of sustainable communities.

For the mid mark band learners will provide some further discussion of the advantages and disadvantages relating these to sustainable communities. The response will show a good understanding of sustainable communities.

For the higher mark band learners will provide a detailed discussion of the advantages and disadvantages relating these to sustainable communities. The response will show a developed understanding of sustainable communities.

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

Mid Band 1 Descriptor Example (2 Marks)

17 Discuss the advantages and disadvantages of the mainline railway station and the park and ride facility in creating sustainable communities in the two towns.

The advantages for the railway line are that it is a small journey under 1 hour to get to the city and services to local towns and villages which tickets can be paid daily or season tickets. Also in a Residential area close the the town centre which will be a busy place so Reduce cars or cheapes for them to travel on the train.

The disadvantages of the Railway mainline are there are no bustops located near the station so more taxis and the ticket office are staffed at busy times. instead of machines so can cause fine problems if it gets to busy and people may not be able to catch the right train if they do not have a season ticket.

The advantages for the buses are that it runs to a local hospital which would safe driving time and good for people who rife on their own and don't drive another is the parking are is provided with CCTV which will reduce crime.
The disadvantages of the bus facility is the previously concidered consdoct was going to build a prime farmland which would have provided the town centre's local shops / markets with food that was grown on the farm.
Another disadvantage is the access to the bus facility is a Major trunk Road and if you live to far to walk it will be busy trying to go through the town centre especialy through the daytime and on weekends.

Top of Band 2 Descriptor Example (6 Marks)

17 Discuss the advantages and disadvantages of the mainline railway station and the park and ride facility in creating sustainable communities in the two towns.

Firstly the railway station uses a varied selection of transportation options and allows access by all means with the use of taxi drop off and pick up. it allows people to get in and out of the local area without the use of their car - resulting in less cars in community, to back up this point more car park spaces have been built to promote the use of train transportation which with benifit the town financially and environmentally. The simple underlying message is, don't drive, use the train, its ~~easier~~ easier, quicker and more or less cheaper. However the lack of cycle lanes and routes really limits the towns potential to cut out the over trafficing and reduce CO_2 carbon emission leading in a better air quality and cleaner environment, Also having no bus stops cuts out potential for park and ride ~~add~~, why not use the car park more effectively? ~~Al~~although it has been upgraded the result is neither gain or loss ~~in~~ the way I personaly feel is that it has wasted time and money doing the wrong changes when it could of solved nearly all the problems by thinking the plans through a bit more with ~~us~~ utilising the space and facilities more.

~~In the~~ In comparison the park and ride facility is performing in a manor which best suites the local community. With the use of buses to transport people to and from the town it cuts out the problem of congested roads and excessive CO_2 carbon emission damaging the environment and biodiversity. Like I have mentioned previously

In this paper exam the use of a greenfield site isn't always the best solution as it is normally taking from the environment instead of giving. However because the carpark has a sustainable use of SUDS in a way it is trying to compensate for the greenfield site use. Having the inner town car free leads to safer and less polluted area and in turn gives spaces for business to grow in size without having to rebuild roads. The park and ride facility uses CCTV, this gives people confidence when leaving their car unmanned. Thinking 'your vehicle is safe, come into town' without any worries having spaces for more homes and period tickets encourages people to stay longer. Having regular shuttle buses avoids long queued waits to get into town. Overall I think that out of the two facilities the park and ride is the better option, its a more sustainable option method which has more positives than negatives towards the environment and social communities.

No Mark Band 3 descriptor examples are available.

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