Examiners' Report
Lead Examiner Feedback

January 2021

Pearson BTEC First in Construction and the Built Environment (21635E)
Unit 11: Sustainability in Construction

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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. It may be helpful to read this report in conjunction with the mark scheme for the examination. We hope you will find this will help you to prepare your learners for future examination series.

Introduction to the Overall Performance of the Unit

General Comments on Exam

This was the thirteenth examination for this unit, and 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 life cycle of a development within the built environment and the full range of topics covered in the unit specification. For example, learners appeared to have limited knowledge and understanding of the characteristics of a pond within a surface water drainage system in an urban environment.

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 'give' many provided

extended responses where only naming or a short response 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.

Individual Questions

Section A

Question 1

A multiple choice question that required the identification of two characteristics of materials with high embodied energy.

Targeted Specification Area: Learning Aim A.2.5

Q1: Many learners were able to identify both of the correct answers 'High carbon content' and 'Manufactured'.

Question 2

This question required learners to name two natural insulation materials.

Targeted Specification Area: Learning Aim B.1

Q2: Many learners were able to give a correct response. Frequent correct responses were 'Sheep's wool' and 'Flax'.

Question 3

A multiple choice question that required learners to identify two reasons for categorisation of waste materials on a construction site.

Targeted Specification Area: Learning Aim A2.3

Q3: Many learners were able to identify both correct responses 'To allow for correct disposal' and 'To promote recycling'.

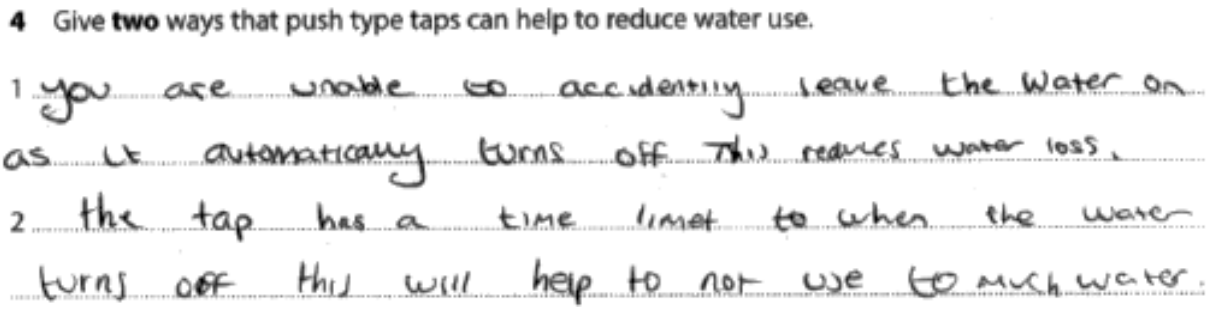
Question 4

This question required learners to have an understanding of push type taps.

Targeted Specification Area: Learning Aim B.1

Q4: Learners were required to give two ways that push type taps can help to reduce water use. Many learners were able to provide at least one response. A typical response was 'cannot be left running'.

2 mark response:


4 Give **two** ways that push type taps can help to reduce water use.

1 you are unable to accidentily leave the water on as it automatically turns off This reduces water loss.

2 the tap has a time limet to when the water turns off this will help to not use to much water.

Question 5

A multiple choice question that required learners to identify two ways that communities in low-lying coastal areas may be affected by global warming.

Targeted Specification Area: Learning Aim A2.1

Q5: Many learners were able to identify both correct responses 'Rising sea levels' and 'Greater risk of flooding'.

Question 6

This question required learners to have a knowledge of how undeveloped land can be negatively affected by construction activity.

Targeted Specification Area: Learning Aim A2.2

Q6: Learners were required to give two ways that undeveloped land can be negatively affected by construction activity. Learners provided a variety of responses and correct responses related to loss of natural habitats and woodland and ground contamination.

Question 7

This question required learners to have knowledge and understanding of waste disposal to landfill.

Targeted Specification Area: Learning Aim A2.2

Q7: Learners were required to explain one way that disposing of waste construction materials to landfill can harm the environment. Some learners were able to identify how the environment may be harmed, but were not able to provide a linked response to provide an explanation. An example is where a learner identifies that material will not degrade, but does not go on to say that it will be in the ground for many years.

2 mark response:

7 Explain **one** way that disposing of waste construction materials to landfill can harm the environment.

Because your burying plastics and waste which takes years to biodigrade, and it can also leak toxic waste into the ground if its not contained properly

Question 8

A multiple choice question that required learners to identify two benefits of sustainable design.

Targeted Specification Area: Learning Aim A1.2

Q8: Many learners were able to identify both correct responses 'Green open spaces will be provided' and 'Animal habitats will be kept'.

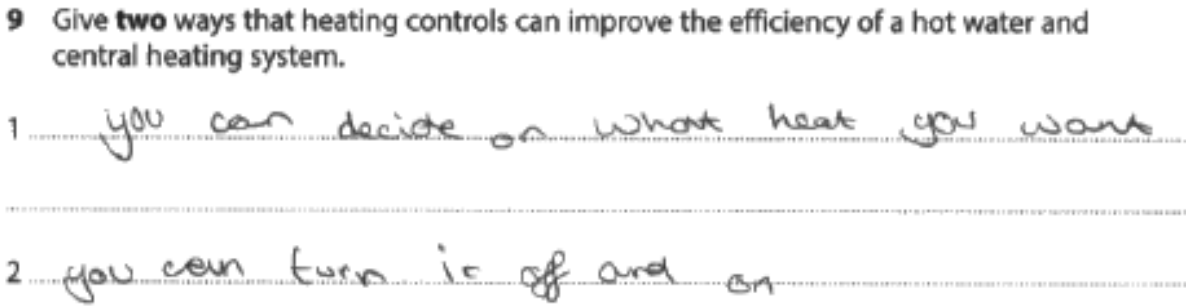
Question 9

This question required learners to have an understanding of how heating systems are controlled.

Targeted Specification Area: Learning Aim B.1

Q9: Learners were required to give two ways that heating controls can improve the efficiency of a hot water and central heating system. Many learners were able to give at least one way. Typical learner responses were 'controls when the heating is on or off' and 'controls the heat'.

2 mark response:


9 Give **two** ways that heating controls can improve the efficiency of a hot water and central heating system.

1 you can decide on what heat you want

2 you can turn it off and on

Question 10

This question assessed the learners' understanding of passive stack ventilation.

Targeted Specification Area: Learning Aim B.4

Q10: The question required learners to give two drawbacks of passive stack ventilation. Few learners appeared to understand the operation of passive stack ventilation. Correct responses related to less control and not suitable in all situations.

1 mark response:

The first response provides an acceptable response. The second response is a generic response and does not only relate to passive stack ventilation.

10 Give **two** drawbacks of passive stack ventilation.

1 can only be installed in certain conditions

2 it's pre-fabricated so it may take time to arrive on-site ready to be installed

Question 11

This question assessed the learners' understanding of timber engineered joists.

Targeted Specification Area: Learning Aim A1.2

Q11: Learners were required to give two reasons why timber engineered joists contribute to sustainability, other than timber being a sustainable material. Some learners were able to provide at least one correct response. Correct responses included 'economic use of material' and 'reduces construction time'.

2 mark response:

11 Timber is a sustainable material.

Give **two other** reasons why timber engineered joists contribute to sustainability.

1 Prefabricated = no wastage of materials,

2 ~~less fuel~~ less time and money on labouring = quick alternative

Question 12

This question assessed the learners' understanding of the use of small-scale wind turbines.

Targeted Specification Area: Learning Aim B3.1

Q12: The question required learners to give two reasons why small-scale wind turbines are not used in urban areas. The question was asking for reasons why they are not used in urban areas. Many learners gave incorrect responses that related to

wind turbines generally and not related to urban areas. Correct responses provided included 'noisy' and 'may be shaded by buildings'.

1 mark response:

The first response is generic and can apply to wherever wind turbines are located. The second response provides an acceptable response.

12 Give **two** reasons why small-scale wind turbines are not used in urban areas.

1 wind turbines are unattractive and can ruin the look of an area.

2 wind turbine mainly depend on wind and alot less wind will be going into the wind turbine if it is surrounded by buildings

(Total for Question 12 = 2 marks)

Question 13

This question required learners to have an understanding of demolition site practices.

Targeted Specification Area: Learning Aim 2.4

Q13: Learners were required to explain one way that spraying water on a demolition site will reduce pollution. A number of learners were able to identify one way, that spraying water will reduce pollution, but were not able to provide a linked response to provide an explanation. The correct identification of 'prevent dust from blowing in the air' was given, but no linked response was provided. A correct linked response would have been 'causing pollution to the surrounding area'.

2 mark response:

13 Explain **one** way that spraying water on a demolition site will reduce pollution.

it will reduce the ammount of dust that gets ~~pulled~~ thrown off the bricks and rubble, so all of the dust and bits of bricks can all be contained at the demolition site. To stop it polluting the air aswell

Question 14

This question required learners to have an understanding of how construction can help regenerate a run-down area.

Targeted Specification Area: Learning Aim A3.1

Q14: Learners were required to explain two ways that construction can help to regenerate a run-down seaside town. A number of learners were able to identify at least one way and a few learners were able to provide a linked response.

4 mark response:

14 Explain **two** ways that construction work can help to regenerate a run-down seaside town.

1 the first way is torist attractions, building a new family attraction / more house can bring in alot of money and will help to regenerate the run down town.

2 Secondary the town will use local businesses which will bring the business alot of money and that money will most likly be spent in the local town which will help the econimy.

(Total for Question 14 = 4 marks)

SECTION B

Question 15

This question was scenario-based and required learners to have a knowledge of sustainable site practices.

Targeted Specification Area: Learning Aim B.5

Q15: Learners were required to identify two sustainable site practices that the developer of Building 2 may use. This question required learners to recall site practices that are given in the unit content. Most learners were unable to do this and in many cases provided a response relating to technology and specification and not site practices. A correct response is 'wheel washing'.

Question 16

This question was scenario-based and required learners to demonstrate knowledge and understanding of economic issues.

Targeted Specification Area: Learning Aim A.4

Q16: Learners were required to explain one reason why the use of local labour for Building 2 may contribute to sustainability locally. Some learners were able to identify a reason, but were not able to provide a linked response to provide an explanation. Correct identification was 'adding money to the local economy'. A correct linked response would be 'through the provision of local employment' to provide an explanation.

2 mark response:

16 Explain **one** reason why the use of local labour for **Building 2** may contribute to sustainability locally.

Because there not traveling long distances to arrive on site so there wont be as much carbon emmisions on the commute to work

Question 17

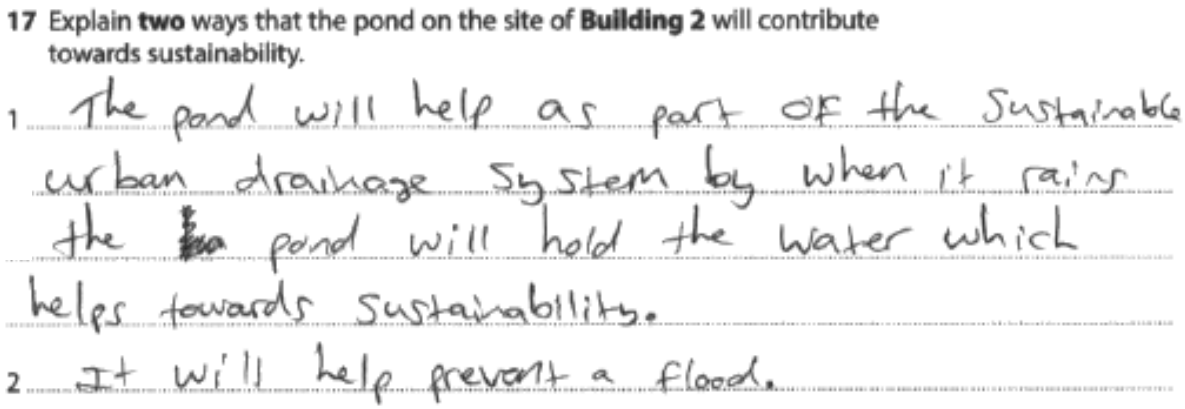
This question was scenario-based and required learners to demonstrate an understanding of sustainable surface water drainage solutions.

Targeted Specification Area: Learning Aim B.4

Q17: Learners were required to explain two ways that the pond on the site of Building 2 will contribute towards sustainability. Some learners were able to identify a reason, but were not able to provide a linked response to provide an explanation. The inclusion of a pond would be related to a sustainable Urban Drainage System (SuDs), but learners did not demonstrate an understanding of SuDs and how the pond would contribute to this. Learners that did provide a correct response related to supporting natural habitats in most instances. The mark scheme provides a number of correct responses.

2 mark response:

The response provides one linked response. The response identifies that the pond will store water and the linked response adds that this will prevent flooding.



17 Explain **two** ways that the pond on the site of **Building 2** will contribute towards sustainability.

1 The pond will help as part of the Sustainable urban drainage system by when it rains the pond will hold the water which helps towards sustainability.

2 It will help prevent a flood.

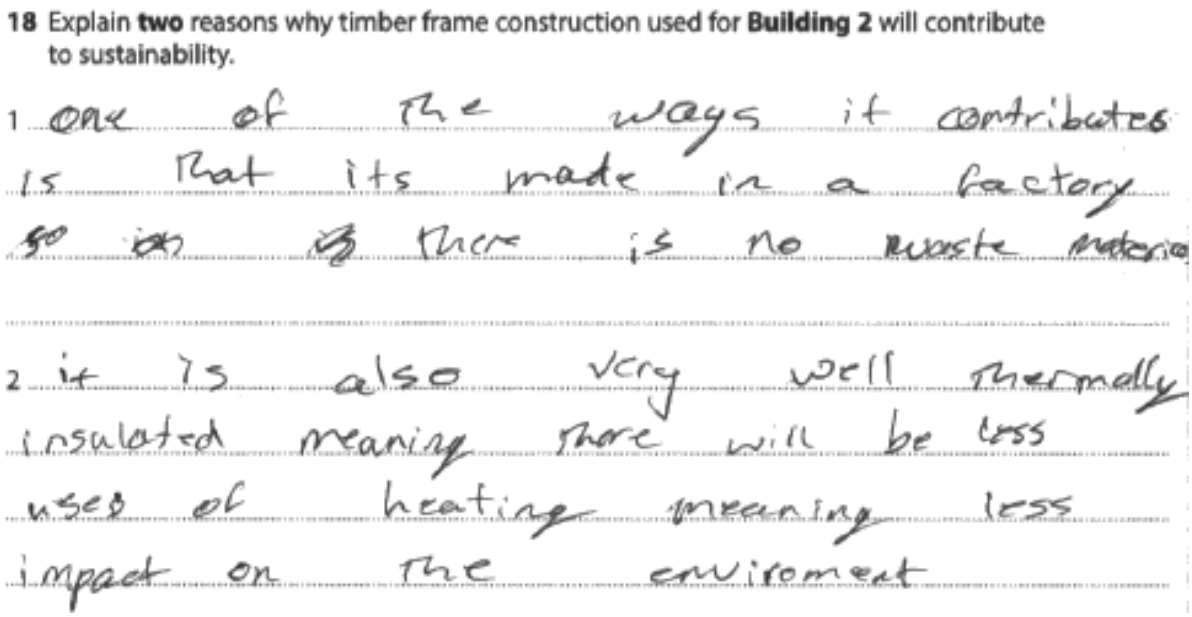
Question 18

This question was scenario-based and required learners to demonstrate an understanding of timber frame construction.

Targeted Specification Area: Learning Aim B.2

Q18: Learners were required to explain two reasons why timber frame construction used for Building 2 will contribute towards sustainability. Some learners were able to identify at least one reason why timber frame construction contributes towards sustainability. Most of these related to timber being a sustainable material and prefabrication. Few learners were able to provide a suitable linked response to give an explanation. The mark scheme provides a number of suitable linked responses. The example below provides two linked response.

4 mark response:



18 Explain **two** reasons why timber frame construction used for **Building 2** will contribute to sustainability.

1 one of the ways it contributes is that its made in a factory so there is no waste materia

2 it is also very well thermally insulated meaning there will be less uses of heating meaning less impact on the enviroment

Question 19

This question was scenario-based and required learners to demonstrate an understanding of refurbishment to improve sustainability.

Targeted Specification Area: Learning Aim B.1,2,3,4 & 5

Q20: Learners were required to discuss how Building 1 could be refurbished to improve sustainability.

Most learners provided a response to this question. Learners were able to draw out some relevant points from the scenario that relate to sustainability.

The mark scheme provides a range of points that could have been considered in the discussion as to how the building could be refurbished to improve sustainability. Learners provided a limited range of improvements that could be made and with limited discussion.

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.

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.

The scenario clearly states that Building 1 'faces directly on to the street with no front garden' and from the photograph there is only an alley between the property and the neighbouring property to the right. However, a number of learners referred to adding a front garden and a parking space. The question asks for a discussion on the refurbishment of the property, but a number of learners responses made mention of timber frame construction.

Lower mark band learners are expected to identify a few ways that the building could be refurbished to improve sustainability, with some superficial/generic explanation, and show basic understanding of sustainability. The example response below identifies a limited range of points and very little discussion is provided.

For the mid mark band learners will provide some further discussion on how refurbishment may improve sustainability. The response will show a good understanding of sustainability. The example response below has identified a range of points and provides some discussion.

For the higher mark band learners would be expected to provide a detailed discussion of how the building could be refurbished to improve sustainability. The response will show a developed understanding of sustainability. Learner responses should also be well balanced and cover a wide range of reasons. No examples within this mark band are available.
Mark band 1 response:

19 Discuss how **Building 1** could be refurbished to improve its sustainability.

It could Improve by having triple glazing windows to keep the heat in It could also build behind the house to have ~~a~~ a garden to use. It could also have a proper bathroom and heating which is sustainable. It could also be re-painted and have anything thats broken repaced. It would sell for a lot as its only a five minute walk to the train station and to the town. It could also Impe by having a driveway ~~I~~ instead ofs street parking.

Mark band 2 response:

19 Discuss how **Building 1** could be refurbished to improve its sustainability.

It could be refurbished to improve its sustainability by giving the windows triple glazing which is better than single glazing because it helps [redacted] prevent sound from coming in. Giving the building thermal insulation so it keeps the house more warmer. [redacted] Use timber frame construction on this building because it will [redacted] contribute to sustainability by energy requirements minimised which will help save you money and it will make the building better. Put rubbering weather seals around the windows because it will help keep the building drier. Add more maitenance or upgrades to the building. change the windows to windows that have a handle so you can lock the window by pulling it. Give the building external [redacted] walls so it can make the building more secure. Give the building ventillation so it can have air in the building. When refurbishing the building, make it more modern and improve all the rooms by giving it central heating.

Summary

Following the review of learner responses to the examination paper the following recommendations are made:

- Learners should be taught the whole of the unit specification
- Learners should understand sustainability in relation to construction technology and practice
- Learners should carefully read each question to understand what is required before attempting their response
- Learners should be taught the form that a response should take when answering questions that ask for a 'description', 'discussion' or an 'explanation'.
- In responding to scenario-based questions that require a discussion or explanation learners are required to provide more than repeating parts of the scenario.

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