L2 Lead Examiner Report 1806

June 2018

Level 1/2 BTEC Firsts in

NQF BTEC Level 1/Level 2 Firsts in Construction

Unit 11: Sustainability in Construction (21635E)

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Grade Boundaries

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 and Pass.

Setting grade boundaries
When we set grade boundaries, we look at the performance of every learner who took the external 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 is conducted to ensure learners achieve the grade they deserve to achieve, irrespective of variation in the external assessment.

Variations in external assessments
Each external assessment 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 for each test, because then it would not take into account that a test might be slightly easier or more difficult than any other.

Grade boundaries for this, and all other papers, are on the website via this link:
http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx

Unit name of number of unit.

Grade	Unclassified	Level 1	Level 2		
		Pass	P	M	D

Boundary Mark	**0**	**10**	**20**	**30**	**40**

To be completed by Assessment

Introduction

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.

General Comments on Exam

This was the ninth 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 limited knowledge and understanding of timber frame construction and Combined Heat and Power units.

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. Some responses to Question 17 identified information provided in the scenario. Learners did not go on to discuss why the building built in 1900 could be considered sustainable.

Section A

Question 1

A multiple choice question that required the identification of two water saving solutions.

Targeted Specification Area: Learning Aim B1

Q1: Many learners were able to identify both of the correct answers 'Push type taps' and 'Shower flow restrictors'.

Question 2

This question required learners to name two forms of physical pollution, other than dust, that could be reduced during construction operations.

Targeted Specification Area: Learning Aim A2.1

Q2: Many learners were unable to give two correct responses to this question. Correct responses include 'carbon emissions' and 'ground water'.

Question 3

A multiple choice question that required the identification of two ways of reducing dust during demolition work.

Targeted Specification Area: Learning Aim A2.4

Q3: Many learners were able to identify both correct responses 'Damping down' and 'Road sweeping'.

Question 4

This question assessed learners' knowledge of the inclusion of green spaces within developments.

Targeted Specification Area: Learning Aim A1.1

Q4: A number of learners were able to name at least one benefit of including green spaces. Responses included 'making it an attractive place to live' and 'place to socialize or play'.

Question 5

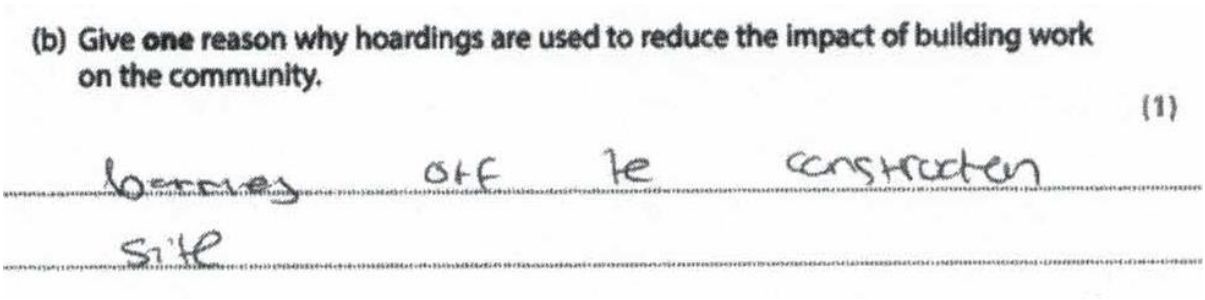
This question required learners to have an understanding of how building work can impact on the local community.

Targeted Specification Area: Learning Aim A3.2

Q5(a): Many learners were able to name at least one site practice, other than hoardings and on-site car parking, that can minimize the impact of building work on the community. Frequent responses from learners included 'Noise reduction equipment', 'Wheel cleaning facilities' and 'Agreed working hours'.

Q5(b): Some learners were able to give one reason why hoardings are used to reduce the impact of building work on the community. Frequent responses included 'Prevents people getting onto the site' and 'Prevents dust and litter blowing off the site'.

1 mark example:

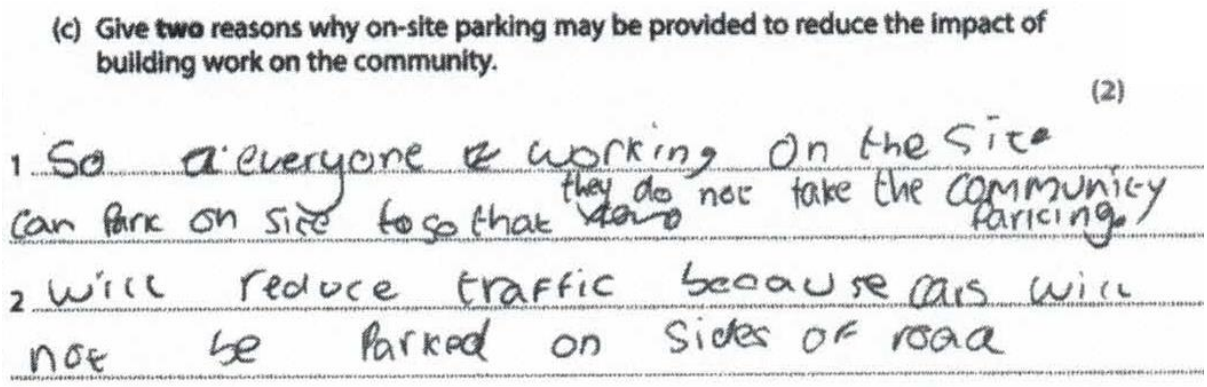

(b) Give **one** reason why hoardings are used to reduce the impact of building work on the community.

(1)

barriers off the construction site

Q5(c): Learners were required to give two reasons why on-street parking may be provided to reduce the impact of building work on the community. Many learners were able to give at least one reason. Frequent responses included 'Prevent local roads from becoming blocked' and 'prevent the community's parking spaces being taken up by workers'.

2 mark example:


(c) Give **two** reasons why on-site parking may be provided to reduce the impact of building work on the community.

(2)

1 So a everyone is working on the site can park on site so that they do not take the community parking.

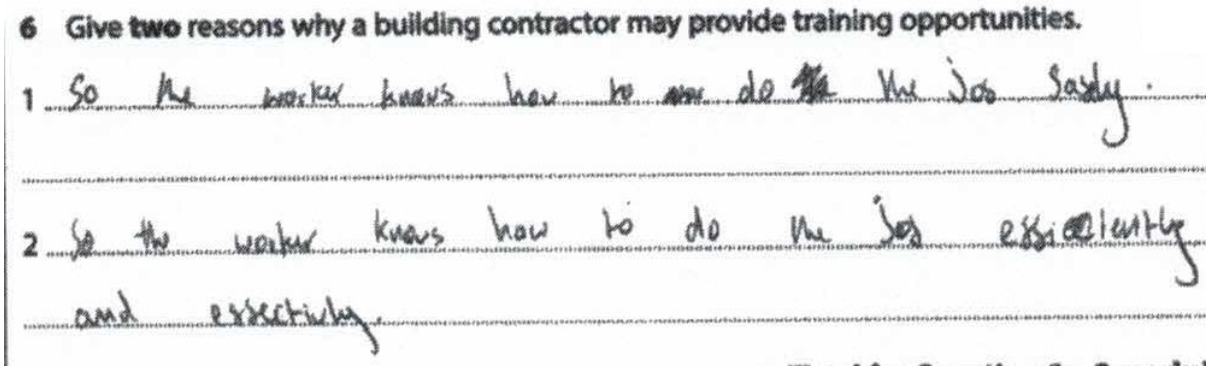
2 will reduce traffic because cars will not be parked on sides of road

Question 6

This question required learners to have a knowledge and understanding of training provided within the construction industry.

Targeted Specification Area: Learning Aim A4

Q6: Learners were required to provide two reasons why a building contractor may provide training opportunities. Some learners were able to provide two reasons and many were able to give one reason. Frequent responses were 'Need for additional worker', 'Train workers in new skills' and 'Statutory obligations of Health and Safety'.


6 Give **two** reasons why a building contractor may provide training opportunities.

1 So the worker knows how to do the job safely.

2 So the worker knows how to do the job efficiently and effectively.

Question 7

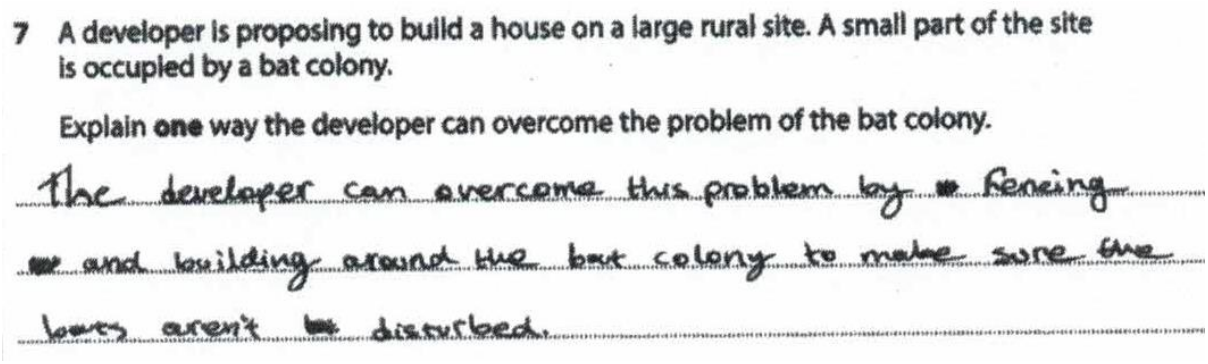
This question required learners to have an understanding of the protection of wildlife.

Targeted Specification Area: Learning Aim A2.1

Q7: Learners were required to explain how a developer could build a house on a site with a bat colony occupying a small area of the site.

Some learners were able to identify a way the developer could build the house whilst protecting the bat colony, but fewer learners were able to provide a linked response that provided an explanation. A suitable response would be 'Select an area of the site away from the bat colony' with a linked response 'because this will not disturb the colony that will be protected'.

2 mark example:


7 A developer is proposing to build a house on a large rural site. A small part of the site is occupied by a bat colony.

Explain **one** way the developer can overcome the problem of the bat colony.

The developer can overcome this problem by fencing and building around the bat colony to make sure the bats aren't disturbed.

Question 8

This question required the learners to have an understanding of mass transport.

Targeted Specification Area: Learning Aim B1

Q8: A multiple choice question that required learners to identify two forms of mass rapid transport. A large number of learners were able to identify both correct responses 'Tram' and 'Bus', with fewer learners identifying both correct responses.

Question 9

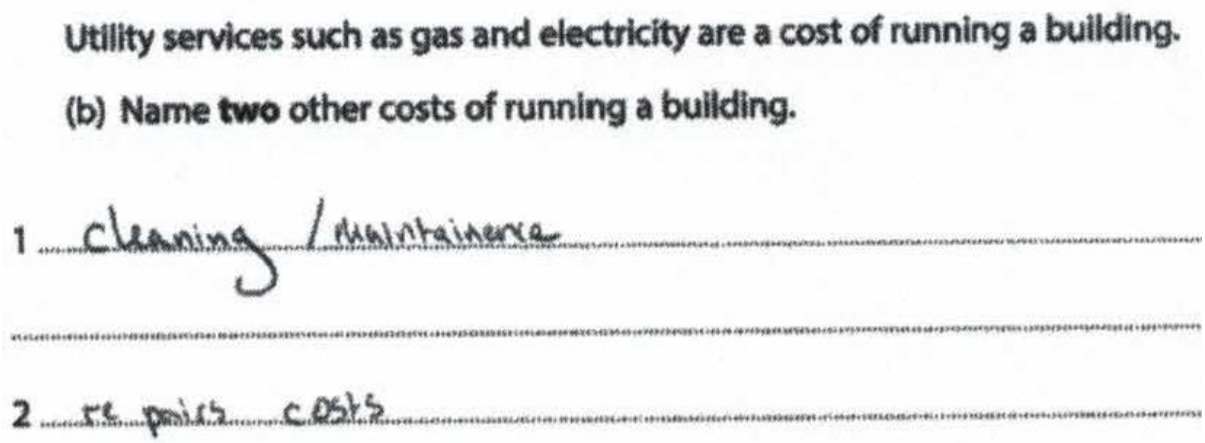
This question required learners to demonstrate an understanding of the economics of construction.

Targeted Specification Area: Learning Aim A4

Q9(a): Learners were required to name the term used for the cost of a building from initial design to final demolition. Learners were not able to name the term 'Life cycle costing'.

Q9(b): Learners were required to name two costs of running a building other than utility services. Many learners were able to provide one response with some being able to name two. Frequent responses were 'Maintenance' and 'Repairs'.

2 mark example:


Utility services such as gas and electricity are a cost of running a building.

(b) Name **two** other costs of running a building.

1 cleaning / maintainence

2 re pairs costs

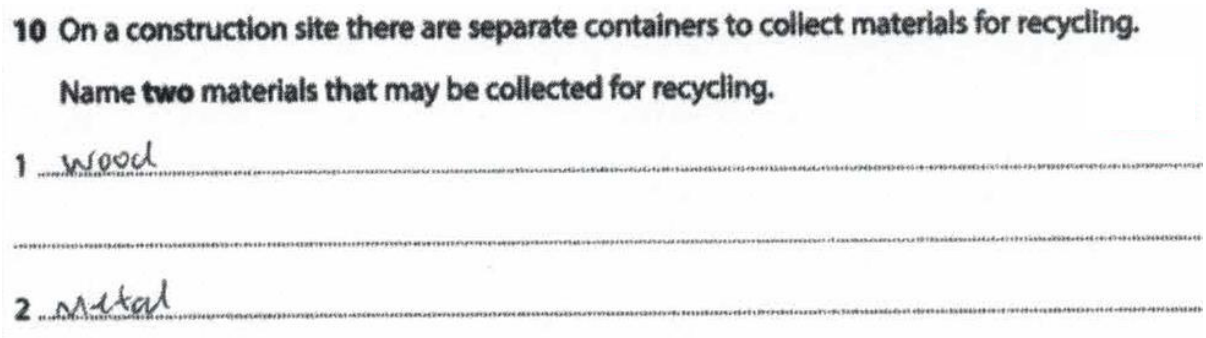
Question 10

This question required learners to have an understanding of materials that can be recycled from a construction site.

Targeted Specification Area: Learning Aim A2.3

Q10: The majority of learners were able to name two materials. Frequent responses were 'wood' and 'metal'.

2 mark example:


10 On a construction site there are separate containers to collect materials for recycling.

Name **two** materials that may be collected for recycling.

1 wood

2 metal

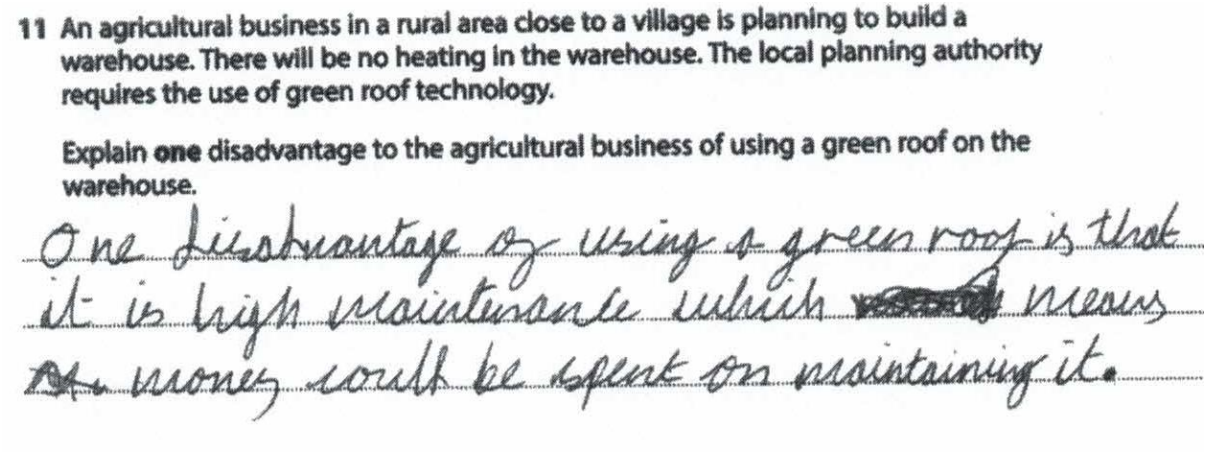
Question 11

The question requires learners to have an understanding of green roof technology.

Targeted Specification Area: Learning Aim B4

Q11: Learners were required to explain one disadvantage of having to use a green roof to an unheated warehouse in a rural area. Some learners were able to identify a disadvantage, but fewer were able to provide a linked response to explain the disadvantage. A correct response would be 'ongoing maintenance is required' with a linked response 'because the planting will need regular attention'.

2 mark example:



11 An agricultural business in a rural area close to a village is planning to build a warehouse. There will be no heating in the warehouse. The local planning authority requires the use of green roof technology.

Explain **one** disadvantage to the agricultural business of using a green roof on the warehouse.

One disadvantage of using a green roof is that it is high maintenance which means money could be spent on maintaining it.

Question 12

This question assessed the learners' understanding of timber panel construction.

Targeted Specification Area: Learning Aim B1

Q12: The question required learners to explain two reasons why timber panel construction had been selected for new student accommodation at a university. The accommodation had to be built during the summer holidays and the university has a policy for sustainable development. Some learners were able to identify a reason, but few were able to provide linked explanations. A suitable response would be 'the design is ideal for factory manufacture' with the linked response 'because of the repetitive design'.

2 mark example, no linked explanations are provided:

12 A university has a policy for sustainable development. The university is proposing to build new student accommodation in the summer holidays. The proposal is for five identical two-storey blocks constructed using timber panel construction.

Explain two reasons why timber panel construction has been selected.

1 it is cheap ~~not to make~~ Produce large amounts

2 can be Prefabricated in a factory to reduce Pollution and waste materials

SECTION B

Question 13

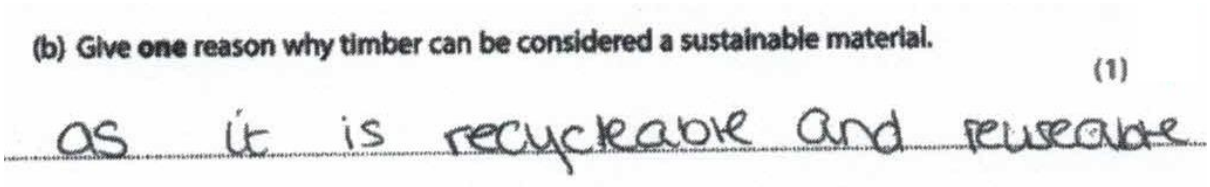
This question was scenario-based and required learners to have an understanding of timber cladding.

Targeted Specification Area: Learning Aim B2

Q13(a): Learners were required to give one sustainable timber suitable for the cladding used on Building B on Site 1. A number of learners were able to name a sustainable timber. A frequent response was 'cedar'.

Q13(b): Learners were required to give one reason why timber can be considered a sustainable material. Many learners were able to give a correct response with frequent responses being 'renewable', 'naturally occurring' and 'low embodied energy'.

1 mark example:


(b) Give **one** reason why timber can be considered a sustainable material.

(1)

as it is recyclable and reusable

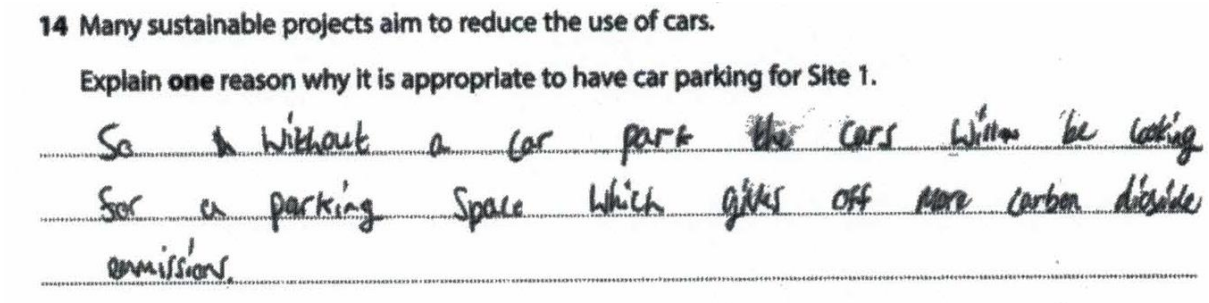
uestion 14

This question was scenario-based and required learners to have a knowledge and understanding of designing for sustainability

Targeted Specification Area: Learning Aim B1

Q14(a): Learners were required to explain one reason why it is appropriate to have car parking for Site 1, the medical centre. A number of learners were able to identify a reason, but were not able to give a linked explanation. A correct response is 'allow patients to access the centre' with a linked response 'who don't have access to alternative public transport'.

2 mark example:


14 Many sustainable projects aim to reduce the use of cars.

Explain **one** reason why it is appropriate to have car parking for Site 1.

So if without a car park the cars will be looking for a parking space which gives off more carbon dioxide emissions.

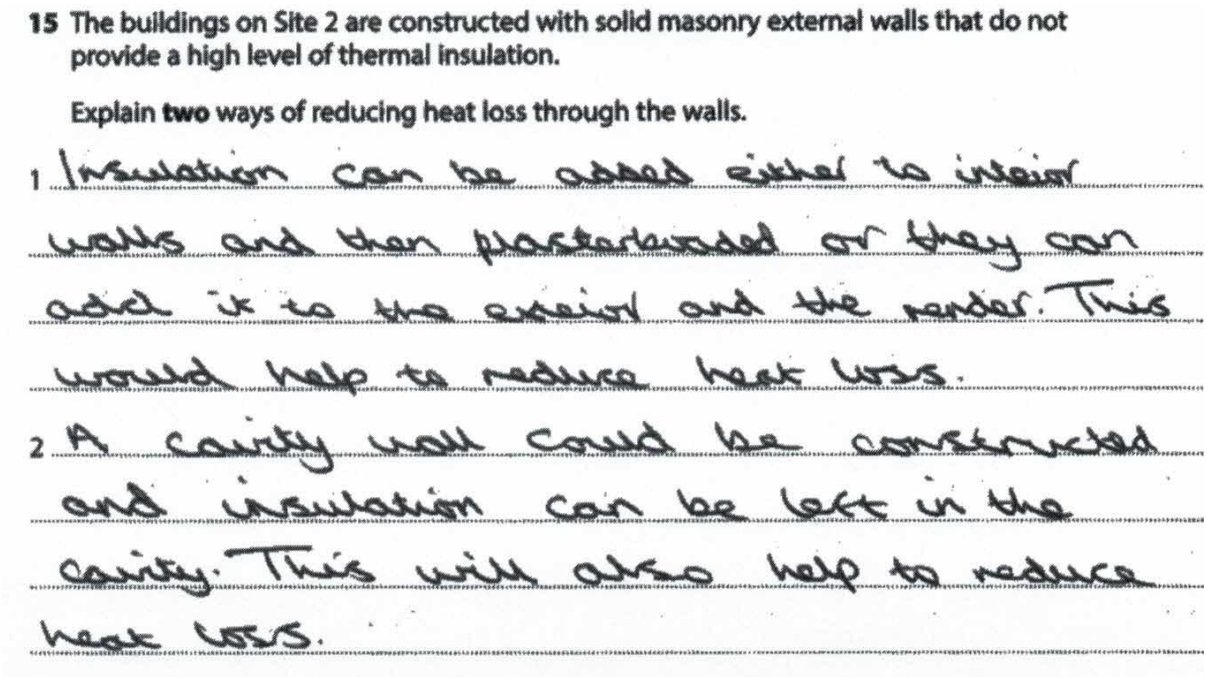
Question 15

This question was scenario-based and required learners to have a knowledge and understanding of external wall construction and how to reduce heat loss.

Targeted Specification Area: Learning Aim A3.2

Q15: Some learners were able to identify a way of reducing heat loss, but very few were able to provide a linked response. A suitable response is 'place insulation on the outside of the building' with a linked response 'which increases the U value of the wall'. Many learners did not appear to understand the construction of a solid masonry external wall as they responded that the cavity should be filled.

4 mark example:



15 The buildings on Site 2 are constructed with solid masonry external walls that do not provide a high level of thermal insulation.

Explain **two** ways of reducing heat loss through the walls.

1 Insulation can be added either to inside walls and then plasterboarded or they can add it to the outside and the render. This would help to reduce heat loss.

2 A cavity wall could be constructed and insulation can be left in the cavity. This will also help to reduce heat loss.

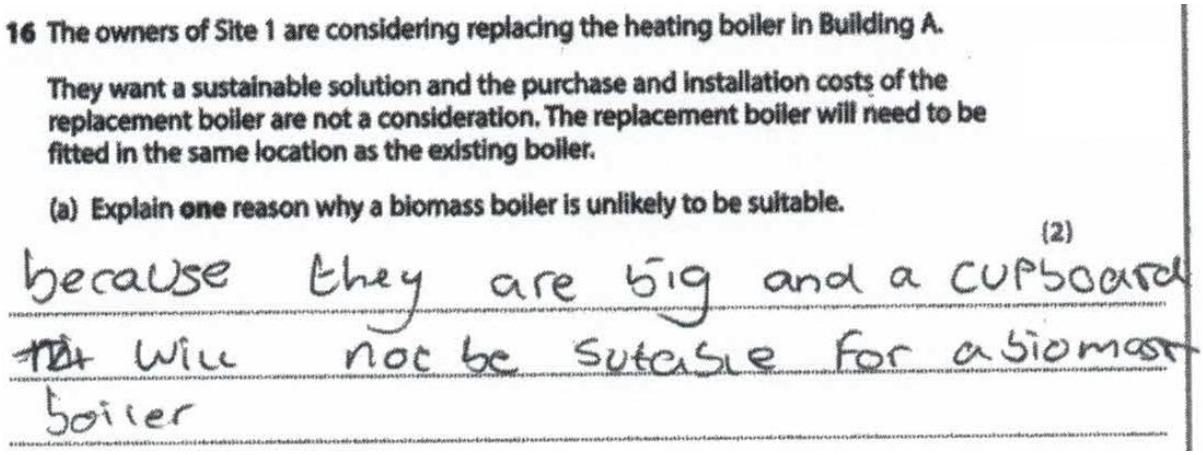
Question 16

This question was scenario-based and required learners to demonstrate a knowledge and understanding of alternative forms of energy, biomass boilers and combined heat and power units.

Targeted Specification Area: Learning Aim B2

Q16(a): Some learners were able to identify that a biomass boiler would need more space than the current boiler or that it would not fit into the cupboard. However, few learners were able to put the two aspects together to provide a linked response to give an explanation. A suitable response is 'due to the plant room being small (cupboard)' with a linked response 'there is unlikely to be space for a larger biomass boiler'. Alternative possible responses are given in the mark scheme.

2 mark example:



16 The owners of Site 1 are considering replacing the heating boiler in Building A.

They want a sustainable solution and the purchase and installation costs of the replacement boiler are not a consideration. The replacement boiler will need to be fitted in the same location as the existing boiler.

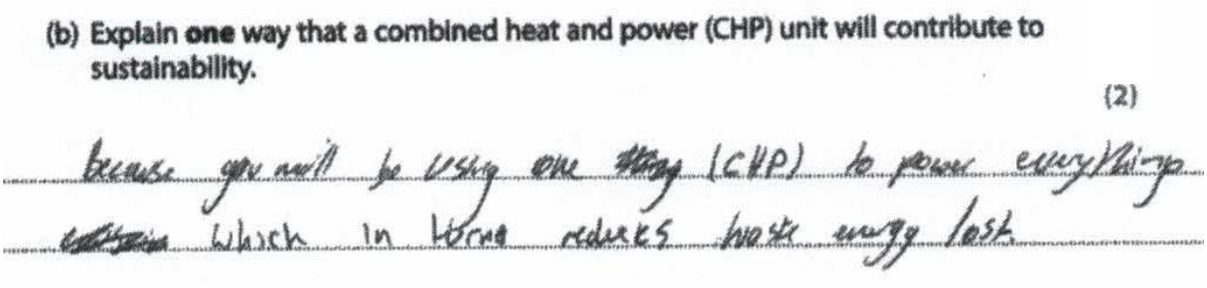
(a) Explain **one** reason why a biomass boiler is unlikely to be suitable.

(2)

because they are big and a cupboard will not be suitable for a biomass boiler

Q16(b): Few learners were able to provide a correct response and those that did were able to identify that there would be a saving in energy used. Learners did not appear to understand the concept of how a combined heat and power boiler operates to provide both heat and electrical power. A suitable response to explain one way that a combined heat and power unit will contribute to sustainability is 'waste heat energy is used to generate electricity' with a linked response 'maximum use is made of input energy'.

1 mark example, no linked explanation is provided:



(b) Explain **one** way that a combined heat and power (CHP) unit will contribute to sustainability.

(2)

because you will be using one thing (CHP) to power everything which in turn reduces waste energy lost

Question 17

This question was scenario-based and required learners to demonstrate an understanding of sustainability by discussing how the buildings on site 2, although built in 1900, can be considered sustainable.

Targeted Specification Area: Learning Aim B1,2,3 & 4

Learners were required to discuss why the buildings on site 2, although built in 1900, can be considered sustainable.

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

The mark scheme provides a range of points that could have been considered in the discussion as to why the building can be considered sustainable.

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.

Some learners compared the buildings on Site 1 and Site 2. This was not asked for in the question. Learners should be encouraged to carefully read the question before attempting to provide a response.

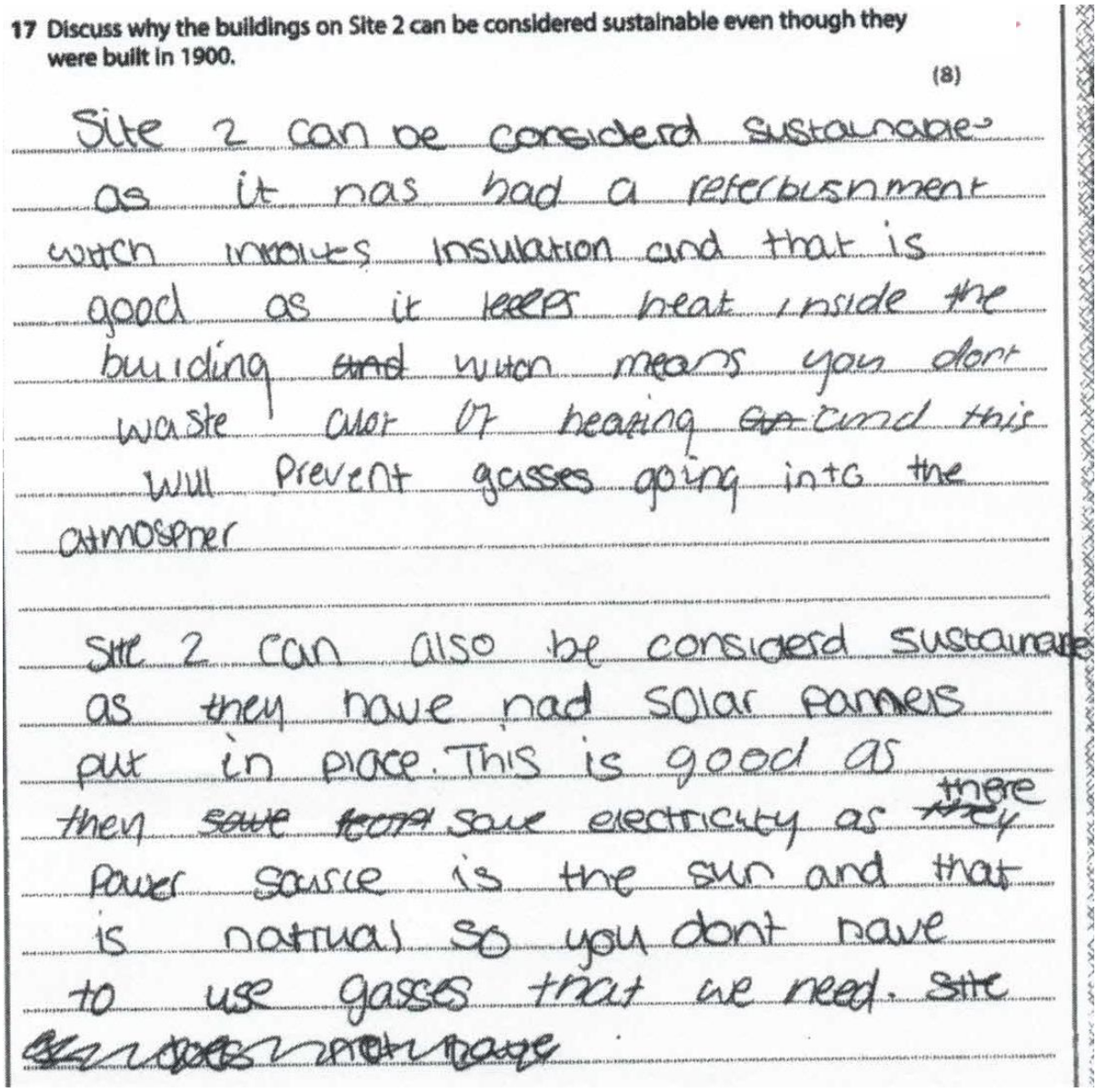
Lower mark band learners are expected to identify a few points of why the buildings can be considered sustainable, with superficial/generic explanation, and show basic understanding sustainability. The learner in the example below has identified only two aspects of the refurbishment with a basic explanation. There is no mention of the existing structure or use of the building.

For the mid mark band learners will provide some further discussion of why the building can be considered sustainable. The response will show a good understanding of sustainability. The learner in the example below has identified that the building was built in 1900, but is still in use. Aspects of the refurbishment have been identified with an explanation of the benefits that these will bring, relating them to sustainability issues.

For the higher mark band learners would be expected to provide a detailed discussion of why the building can be considered sustainable, although built in 1900. The response will show a developed understanding of sustainability. Learner responses should also be well balanced and cover a wide range of reasons.

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

Middle of Band 1 Descriptor Example (2 Marks)



17 Discuss why the buildings on Site 2 can be considered sustainable even though they were built in 1900.

(8)

Site 2 can be considerd sustainable as it has had a refurbishment which includes insulation and that is good as it keeps heat inside the building and which means you dont waste color of heating and this will prevent gasses going into the atmospher

Site 2 can also be considerd sustainable as they have had solar pamels put in place. This is good as then save ~~energy~~ save electricity as there power sourse is the sun and that is natrual so you dont have to use gasses that we need. Site ~~can also have~~

Middle of Band 2 Descriptor Example (5 Marks)

17 Discuss why the buildings on Site 2 can be considered sustainable even though they were built in 1900.

[8]

Because when it was refurbished in 1935 they removed a suspended ceiling to restore its original volume, the roof was raised slightly so the insulation could be installed to increase the building u-value they also kept reused the same roof by putting artificial slates on it to to increase the insulation of the building, along with installing roof lights, solar panels and rotating ventilation to make the building more sustainable as it provides its own energy from solar panels so they didn't need to spend as much on electricity bills and had their own ventilation so they didn't have to install a proper ventilation system, only using natural resources to make the place cooler, overall making the site self-sufficient. However they also restored windows to keep the historic value of the building, therefore reducing the building u-value of the building making the building warmer and internal structure alterations were made also so there could be a cinema, the area was fitted with insulation to increase the u-value of the building and the roof covering was

replaced. The refurbishment also included the replacement of all services that were outdated to make the building more efficient and instead installed a new kitchen to make the building more modern. Furthermore the site is located in the town center close to shopping and residential areas with a public car park nearby so to reduce the amount of traffic directly on the stag site.

In conclusion the site would be considered sustainable because of the refurbishment of the site even though it was built is 1900 because the reused most of the original features of the building and modernized it to building standards.

Band 3 Descriptor - There is no example.

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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