

Institute for Apprenticeships & Technical Education

T Level Technical Qualification in Onsite Construction (8711-30)

8711-033 Employer-Set Project Exemplar – E Grade Summer 2022





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0. Introduction

This document is aimed at providers and learners to help understand the standard that was required in the summer 2022 assessment series to achieve an E grade for the 8711-033 Onsite Construction Employer-Set Project (ESP).

Providers and learners may wish to use it to benchmark the performance in formative assessment against this to help understand a potential grade that may be achieved if a learner was to attempt the next summative assessment series.

The Employer-Set Project is graded A* to E and Unclassified.

The exemplar evidence provided for the 8711-033 Onsite Construction Employer-Set Project (ESP) for the E grade displays the holistic standard required across the tasks to achieve **eight marks above** the E grade boundary for the **summer 2022 series**.



The Employer-Set Project brief and tasks can be downloaded from here.

Important things to note:

- The standard required of the E grade for summer 2022 was lower than what will be expected in the summer 2023 series and beyond. This was due to a generosity that was applied in the awarding of the summer and autumn 2022 T Level assessments in recognition of the continued impact of the pandemic on teaching and learning as well as the introduction of these new qualifications.
- The exemplar evidence presented, as a whole, was sufficient to achieve the E grade. However, performance across the tasks may vary (i.e. some tasks completed to a higher/lower standard than an E grade).

Marking of this Employer-Set Project is by task and Assessment Objective, below is a summary of these along with the mark achieved by the evidence presented and the maximum mark available for each aspect.

Task	Assessment Objectives	Mark achieved	Max mark available
Task 1.1 Research	 AO1 Planning skills and strategies AO2a Apply knowledge to the context of the project AO3 Analyse contexts to make informed decisions AO4c Use digital skills 	5	9
	- AO1 Planning skills and strategies	4	6
Task 1 2 Poport	- AO2 Apply knowledge and skills to the context of the project	6	12
	- AO3 Analyse contexts to make informed decisions	1	2
	- AO4 Use maths, English and digital skills	3	6
Task 1.3 Plan	 AO1 Planning skills and strategies AO3 Analyse contexts to make informed decisions AO4a Use maths skills 	3	8
	- AO2 Apply knowledge and skills to the context of the project	6	16
Task 1.4 Presentation	 AO1 Planning skills and strategies AO3 Analyse contexts to make informed decisions AO4b Use English skills 	2	6
	- AO2 Apply knowledge and skills to the context of the project	3	12

Task	Assessment Objectives	Mark achieved	Max mark available
Task 2.1 Collaborative problem-solving	 AO2 Apply knowledge and skills to the context of the project AO3 Analyse contexts to make informed decisions AO5 Carry out tasks and evaluate for fitness for purpose 	4	15
Task 2.2 Evaluation	 AO4b Use English skills AO5 Carry out tasks and evaluate for fitness for purpose 	4	8

1. Task 1.1 Research

Assessment number (eq 1234-033)	8711-033
Assessment title	Employer-Set Project

Candidate name	<first name=""> <surname></surname></first>
City & Guilds candidate No.	ABC1234

Provider name	<provider name=""></provider>
City & Guilds provider No.	999999a

Task(s)	Task 1.1
Evidence title / description	Research on the project brief
Date submitted by	DD/MM/YYYY

For the Longforth development and proposed layout of the various phases of a large new build, i have been asked to propose and develop new sustainability measures that may be included to the houses to help reach zero carbon emissions.

One of the easiest ways of lowering carbon emissions and helping the community it by installing solar panels, theses panels are a long term investment like most are, they transfer solar energy or uv light and transfer it into the mains where it can be distributed across your house hold. the average payback period takes anywhere from 12-26 years to fully be repaid. there are also advantages as once you have used all the electricity you need it can then be sold back to the government to be used else where.

https://www.greenmatch.co.uk/blog/2014/08/what-is-the-installation-cost-for-solar-panels

Involving regulation is important as they need to meet the "standard" part f of the government approved documents states that a building should be able to regulate its temperature and air quality throughout the year allowing for it to be controlled. this allows for users of the house to be cooler in hot weather and warmer in cold weather. The most controllable home ventilation systems are 'active' with fans to create either positive or negative pressure in the home. Often, carefully designed ductwork is used to balance the system across the building. The extract fan extracts the stale, humid air from the wet rooms like bathrooms, kitchen, utility. This stale air is then passed over a heat exchange machine where heat is 'recovered' before it is moved and passed outside the house, to allow fresh air to be brought in, in its place. a big factor of ventilation regardless of weather you have well insulated house or not, if you have got draughts they will ventilate your home but will also be cooling it down making it harder to heat up. You need ventilation to get rid of the stale air but the fresh air coming in is cool and cold as it come from the fresh air outside. Meaning you must put your heating on to warm it back up overall releasing more carbon emissions. the solution, the secret is to seal up these gaps and draughts such as gaps around windows and doors by increasing the airtightness of or homes. as these newer builds become more airtight there is more need for good ventilation. to install a ventilation system in the roof cavity can start from just under 4000 USD and can range to up to £9500-£12000.

https://www.checkatrade.com/blog/cost-guides/mvhr-cost/

The land we are planning to build upon is prone to waterlogs and flooding as it is low lying ex-farmland which makes it a prime target for flooding this can create many problems along the way and in future to people living in the dwellings. that's why we need to stop theses floods and prevent them happening in future. on all roads to be built in the blue outline phase there should be SUDS installed having effective SUDS can help to drain any water that may have flooded the roads and walkways, as normally runoff water would be collected by pipes drains and gutters, SUDS allow for us to collect, transport, treat, retain, infiltrate and drain rainwater in a sustainable way. having these SUDS help runoff water cycle is altered, producing larger volumes of runoff and higher peak flows. It also stops rain from infiltrating

the ground and replenishing the ground doing so.



There are many SUDS that can be incorporated into the new builds and its area to help benefit the community and the environment around it.



all of these SUDS do help towards the minimisation for flooding to occur but they cannot fully stop it. that is where real solution come in, where barriers and gates are set up to protect houses and people from danger and damages especially any elderly groups. domestic flood barriers and gates can be installed outside of houses prone to where the flood water will run, having this knowledge of where hills slope and water runs, you can fully protect your family and belongings with these defences. the defences needed to protect your home don't come cheap as a 1000mm x 600mm aluminium flood barrier cost between $\pounds412 - \pounds416$



Creating green roof and green spaces around and in the area of housing can improve the quality of life and people's mental health and wellbeing. it also contributes to improved stormwater management as it absorbs rainwater and runoff. they help to reduce urban heat and it improves the quality of air in the area, having green spaces and roof helps to reduce your carbon footprint by creating more O2 and taking in more co2. to install a green roof, it will most commonly cost more than having a normal flat roof installed or replaced on it. as the underlying structure may need extra support and strength to help cope with the extra load which is being put on top. green roofs ranges from £16.20 to £19.70 per square foot more compared to a conventional, black roof. higher than for a black roof, by £0.21 to £0.31 per square foot. so really not that expensive but more so that a normally roof.

We want to build all future houses to be as close to zero carbon emission production as possible as doing this can let the environment heal and replenish itself. In Zero Carbon houses, emissions are reduced by using energy efficient materials and innovative space heating and cooling technologies such as solar panels and 'allowable offsite solutions' which is a form of carbon offsetting. A zero-carbon home will also need an efficient mechanical ventilation system. if you don't like the ideal of sonar panels covering the top of your house covering your roof you can think about the idea of wind power production having small wind turbines creating small amounts of energy, the same with the river which will be close to the area of building, it can be used to create power for people using water by having a small paddle wheel system which turns and spins as the river runs which in term turns an electromotor which will then turn that movement into energy to be used in your household. to encourage lower carbon emissions many green buildings encourage their occupants to take advantage of "green transportation" opportunities. this means building near to bus stops and ir building near or installing bicycle lockers to encourage people to use a bike to get to work or even walk. as are main type of transportation we use are gasoline fuelled passenger vehicles which has big impacts on the environment and our own carbon footprint.

2. Task 1.2 Report

Assessment number (eq 1234-033)	8711-033
Assessment title	Employer-Set Project

Candidate name	<first name=""> <surname></surname></first>
City & Guilds candidate No.	ABC1234

Provider name	<provider name=""></provider>
City & Guilds provider No.	999999a

Task(s)	Task 1.2
Evidence title / description	Complete a report on the research you carried out
Date submitted by	DD/MM/YYYY

The Longforth developments project wants to have new builds which come in line with the zero-carbon housing which is the plan, i have been asked to do some research and present my findings to you. As we become more developed so dose technology and understanding of knowledge of the surrounding world, that is why i have found many possible ways of achieving that zero carbon emission goal.

The original site was set aside for farmland as there was no real use to build houses on the land 5-10 years ago, as it has a high risk of flooding and filling with water due to proximity to various watercourses, we simply didn't have the knowledge and technology we have today. To try and abolish this "flooding" problem we have created 'SUDS' which stands for sustainable drainage systems, there are many SUDS that can be incorporated into the project such as bioretention areas, swales, filter strips, detention ponds and many more. Each SUD helps to reduce surface water flooding, it improves water quality and enhances the amenity and biodiversity value of the environment, SUDS achieve this by lowering flow rates across grassy planes and fields, increasing water storage and reducing the transport of pollution to the water environment. The land we are planning to build upon is prone to waterlogs and flooding as it is low lying ex-farmland which makes it a prime target for flooding this can create many problems along the way and in future to people living in the dwellings. That's why we need to stop theses floods and prevent them happening in future. On all roads to be built in the blue outline phase there should be SUDS installed having effective SUDS can help to drain any water that may have flooded the roads and walkways, as normally runoff water would be collected by pipes drains and gutters, SUDS allow for us to collect, transport, treat, retain, infiltrate and drain rainwater in a sustainable way. having these SUDS help runoff water as normally it would be soaked into the ground. As a result of this soil sealing the natural water cycle is altered, producing larger volumes of runoff and higher peak flows. It also stops rain from infiltrating the ground and replenishing the ground doing so. some SUDS components provide water quality improvements by reducing sediment and contaminates from runoff either through settlement or biological breakdown of pollutants. this can overall improve the quality of downstream water bodies such as streams, rivers and lakes.

We can encourage the installation of green roofs and greener gardens by involving more green spaces like parks and botanical gardens which in itself helps improve air quality and peoples well being. If we incorporate these into the project we can encourage and inspire residences to have them installed on any roof that is flat maybe its a shed or a garage, every little helps. Green roofs have many benefits to the world and the community, all green roofs improve quality of life and air, they help with the management of storm water after heavy rainfall or a storm, in local areas it can have economic benefits such as an increased R-

value for your house or garage. Which means less heat is escaping through the roof as there is that extra layer of insulation or protection. Over its estimated lifespan of 40 years a green roof would save about \$200,000, of which, nearly two-thirds would come from reduced energy costs. The economic benefits of any individual green roof will, however, depend on its design, geographic location, surroundings, and the building itself. A green roof can increase the life expectancy of a roofing system by protecting the roofing materials from direct UV radiation and extreme temperatures. As a result, the roof structure can require less maintenance, saving the homeowner money in replacement costs over the long-term life of the roofing system.

figure 1 show the comparison of the amount of water being retained on a normal roof compared to a green roof.

Water Retention for Traditional Roof vs. Green Roof		
Rainfall Retained %	Standard Roof	Green Roof
Average Retention	24%	80%
Retention at Peak Runoff	26%	74%

Figure 1 -

As these are new build houses, they should all be up to standard, meeting the level for what the CEO wants them to be meeting the standard regulations to which they should as in part F of the approved documents it states that a building should be able to regulate its temperature and air quality throughout the year allowing for it to be controlled. This allows for users of the house to be cooler in hot weather and warmer in cold weather. The most controllable home ventilation systems are 'active' with fans to create either positive or negative pressure in the home. Often, carefully designed ductwork is used to balance the system across the building. The extract fan extracts the stale, humid air from the wet rooms like bathrooms, kitchen, utility. This stale air is then passed over a heat exchange machine where heat is 'recovered' before it is moved and passed outside the house, to allow fresh air to be brought in, in its place. A big factor of ventilation regardless of weather you have well insulated house or not, if you have got draughts they will ventilate your home but will also be cooling it down making it harder to heat up. With this all houses should come airtight or as airtight as possible as to not lose heat and to get rid of draughts, it is not all good as without draughts in your home there is no real airflow and especially not of fresh air, this can cause illness or prolonged illness as you are trapped in the same room or house with these infections and contaminated air, having a fresh flow of fresh air, can moderate temperature as well as replenishing the air, replacing that moist, dank air with new fresh cool air. We recommend each house of the new build has an AC unit installed to help with regulating heat and moderating air quality. We

recommend going with d-air which are an amazing company which create custom heating and cooling units for both inside and outside and it comes with a 3-year warranty. A typical air conditioner costs around 10p-20p per hour to run depending on how much its been used and how powerful it is, according to research by U-switch. The average person uses their air con for about four hours 18 minutes during the day and four hours 48 minutes at night. That's around £1.25 a day which compared to other suppliers with some costing £3.20 - £3.70 a day. On average, the air conditioner installation cost for a small home is between £1,750 – £3,000. For a double bedroom, you're looking at an average air conditioner installation cost of £2,250 – £3,000. The main factors affecting the cost of your air conditioner installation are the size of the house, and how many places you want that AC unit to be able to reach.

https://www.d-air-conditioning.co.uk/home-airconditioning/?sqn=134038&gclid=EAIaIQobChMI1LHPxcX89gIVCztCh1rxwhyEAAYASABEgII1PD_BwE

Figure 2 shows the entry points of cold air through gaps and where warm air escapes through attics and chimneys

Figure 2 -



The next viable plan of long term sustainable work would be the use of solar panels, which would not be my first pick as they are costly, or simply some people don't like the looks of them on top of their houses. To be able to live freely off of the solar panels without having to pay for electricity, or even get a pay back investment on the solar panels may take a 12-26 years, with factors effecting it like, the size of the panels, the size of your house/roof, how much sunlight your roof is exposed to. All these factors add up to create the ROI (return on investment) which is basically the data you have telling you how long it will take to get a

return on the investment, the investment being solar panels means ROI is very slow paced. Having a good ROI in the community will help the economic sector for the area greatly, as people are selling unused power back to the national grid, having more money to spend locally. They transfer solar energy or uv light and transfer it into the mains where it can be distributed across your household. To buy the best KW system (6KW), it cost around £8000-£10000 and will cover around 29 square metres of your roof, these systems most found on larger estates or commercial buildings.

The website below give great information on how much each system will cost as well as comparisons between systems, recommendations, labour costs for installation and much more.

https://www.greenmatch.co.uk/blog/2014/08/what-is-the-installation-cost-for-solar-panels

Home scale wind turbines are a last option as they are great for the environment and great at creating power, home scale turbines are generally under 100 kilowatts and cost about £3000-£8000 per kw of capacity. Whereas a large house would need a 100 or over kw turbine which comes with a heavy price of £50,000-£80,000. The wind turbine is a very sustainable and renewable source of energy, which will reduce your carbon footprint from the point of installation. They help to reduce energy bills, once it is paid for wind power comes free and even a small rooftop turbine can significantly reduce electricity bills over the long term. Another viable option to becoming more and more sustainable as we keep building is having small generators built into the river/stream which in tern will make them spin (the heavier the rainfall the more energy being created) and as they spin it creates an energy current which can be sent strait to the houses next to it. Again this is a good and very sustainable way of living, having an endless flow of energy, the only thing that could stop it is if the stream were to dry up which is out of the question. The ' **i-2000G 48v Hydropower or Wind Power Generator'** would be a great pick for this technique as it is small and will fit into the river with ease it has a max of 2200w, it is a direct drive permanent magnet generator

with a long service life, it has an aluminium housing and cover for





optimum cooling and high strength.

Link straight to retailers -

https://www.ebay.co.uk/itm/163836946981?var=0&mkevt=1&mkcid=1&mkrid=710-53481-19255-

<u>0&campid=5338749401&toolid=20006&_trkparms=ispr%3D1&amdata=enc%3A1nyAKbX8G</u> <u>Ska0KzqmbkwTQQ49&customid=GB_11700_163836946981.133782272865~15869194933</u> <u>56-g_EAIaIQobChMIweaApdj89gIVH4BQBh3EuA42EAQYAyABEgLRSPD_BwE</u>

Another simple and easy way of becoming more eco-friendly is to build near bus stops where it is easy accessible for people to get there, have bike racks and lockers set up for people to encourage them to either cycle to work or college, it may even inspire them to walk, if we continue like this you will see more and more people being and becoming more eco-friendly. By not using gasoline powered passenger vehicles we can massively reduce the carbon footprint in the area as a whole. We want people using these necessities like public transport as to stop / lower the amount of singular cars and motorbikes driving around opposed to people using all this gas and electricity to power the cars when 50+ people could fit on one bus. e.g. Taking the local bus currently emits more co2, greenhouse gasses, perhaps because the vehicles travel at lower speeds and pull over more often. But taking a local bus emits a little over half the greenhouse gases of a single occupancy car journey as a passenger car carrying one person emits 89 pounds of CO2 per 100 passenger miles, while a full bus emits only 14 pounds. It also helps to remove congestion from the roads, having more traffic blocking and holding up traffic creates even more greenhouse gasses as people need to change gears, slow down, speed up which in end uses lots of fuel that didn't need using, if people were to make the change to bikes or walking we would see a big change in the guality of the air, there would be less noise pollution and it would increase peoples wellbeing and decreases the amount of greenhouse gasses being emitted.

3. Task 1.3 Induction plan

Assessment number	8711-033
Assessment title	Employer-Set Project

Candidate name	<first name=""> <surname></surname></first>
City & Guilds candidate No.	ABC1234

Provider name	<provider name=""></provider>
City & Guilds provider No.	999999a

Task(s)	Task 1.3
Evidence title / description	Creating an induction plan around your site.
Date submitted by	DD/MM/YYYY

I have been assigned to create and explain the site induction plan in this we will be reviewing all site rules and procedures, what to do if there is an emergency and how to properly protect yourself in doing so, we will also talk through consequences of racist and sexual remarks towards other employees and staff. Through this project we are going to undertake a lot of challenging tasks and so we need to be re-taught or just refresh the minds of the rules and regulations. site inductions are an important aspect of health and safety in the working environment, they can help familiarize new starters with the management arrangements, hazards and rules on the project.

The 5 most simple rules of the trade are the easiest to follow and save the most time and the most lives:

• Never start work without an induction

As each site has its unique hazards and work operations, no two sites are exactly the same. the induction is important it can tell you where to sign in, where to go, what to do and what to avoid.

• Where correct and appropriate PPE at all times

Wearing correct PPE can and has saved lives across the world. Your PPE is the last line of defence and should protect you through your working life, it can't if you don't wear it though.

• Keep a tidy site

Having a clean, upstanding, respectable work environment can help to avoid hazards such as slips, trips and falls, according to HSE around 30% of accidence in the workplace for 2016-2019 happened because of it.

• Follow safety signs and procedures

If a sign is asking you to wear a hard hat, put it on, protect your life.

• Report defects and near misses

As accidence occur in the workplace every day its important to avoid injury as it can save time, money and self value, if a falling hammer only just missed you, you should report it as a near miss, so a safety net can be put in place so that in future tools and materials can fall but can be catched.

Having these rules in place help to put in procedures to stop injuries happening e.g. safety nets, barriers, guards for power tools to vibration reduction technology. With each new procedure coming into play the less dangerous the workplace will become, and the less dangerous a workplace is the better people can work and build relations with one another. When health and safety procedures are not followed, injuries and illnesses are more likely to take place and occur which ,in turn, reduces the amount of time employees are able to work on site, therefore lessening the productivity and profitability of your entire workforce which indirectly has big impacts on the construction business.

when working from high all employees and workers should follow part b of the government regulations which is 'working at hight regulation 2005'. The purpose of The Work at Height Regulations 2005 is to prevent death and injury caused by a fall

from height. If you are an employer or you control work at height (for example facilities managers or building owners who may contract others to work at height) the Regulations apply to you.

If you experience any near misses or injuries or witness and malicious and violent acts towards another person or worker, it should be reported strait to HSE who are the leading legislation in the UK for health and safety, they provide guidance, news, templates, tools and much more.

we need to put out and gain a better knowledge of the types of sexual harassment in the workplace hostile and unhealthy work environments can help employees spot and pick out incidence that have happened at work like any sexual remarks and it creates this unsafe environment for all workers then, your not working as a team. if there was a supporting work group out there it can help for those who may have had to experience this a chance to speak out and do something.

The same goes for any racist and racial remakes to any person whilst on working hours. if any racial remarks are made directly towards another person it will/should be take straight to the head manager on site who can deal with the problem accordingly. if we didn't have this system people might be getting abused during working hour for their skin colour or chosen sex.

lastly i want to talk about some of the best safety tactics are preventative ones. Lift heavy items safely by bending at the knees instead of the hips or back. Remaining close to an item when picking it up and moving it will protect your back and prevent painful injuries. if the load is clearly to heavy for yourself call another employees/worker to help lift and move the load.

4. Task 1.4 Presentation

Employer-Set Project - Observation Record (Task 1.4 Presentation)

8711-30 T Level Technical Qualification in Onsite Construction

8711-033 Employer-Set Project (Summer 2022)

Candidate name	<first name=""> <surname></surname></first>
City & Guilds candidate No.	ABC1234
Date	DD/MM/YYYY

Provider name	<provider name=""></provider>
City & Guilds Provider No.	999999a

Record observation notes below to inform external marking. Notes must be detailed, accurate and differentiating. They should identify areas of strength and weakness to distinguish different levels of performance quality for each of the prompts below.

Structure/detail
The presentation is structured and follows a logical approach most of the time in response to the task because of effective planning.
Techniques

The presentation lacks structure and does not always follow a logical approach due of ineffective planning.

Terminology

Terminology used may have inaccuracies and content provided may include grammatical inconsistencies and therefore not clear to the targeted audience.

Theories and concepts

Theories and concepts relating to the core knowledge and core skills conveyed through the presentation - These may not always be accurate or be directly linked to the brief requirements.

Communication

Communication of concepts and theories is sometimes effective. The delivery of technical information may lack accuracy and clarity for the audience.

Tutor questions to candidate	Candidate responses
Do you think what you have presented today will have an impacted on the zero- carbon targets?	Solar panels will help long time investment and selling it back to the grid and make you money. It will save how much energy is being used.
What considerations did you have to make regarding resources and materials?	Locally sourced reduce our carbon footprint.
How did you find the costs element to the task?	Compared price online.

Any other aspects

This didn't feel like a presentation, communication was not great. I suggested to the candidate that it would have been better to communicate with the audience (not sitting down with their back to the audience).

Tutor signature

<u>X</u>	DD/MM/YYYY
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If completing electronically, double click next to the 'X' to add an electronic signature once the record is **finalised**.

Date

Task 1.4 Presentation (slide deck)

Assessment number	8711-033
(eg 1234-033)	
Assessment title	Employ er-Set Project
Candidate name	<first name=""> <surname></surname></first>
City & Guilds candidate No.	ABC1234
Provider name	<provider name=""></provider>
City & Guilds provider No.	999999a
Task(s)	Task 1.4 Presentation
Evidence title / description	PowerPoint slides
Date submitted by candidate	DD/MM/YYYY

long forth development scheme

during this presentation I will display and convey my finding to you -

keyways of reducing carbon emission and carbon footprints

what technology's can or should be used

any main implications of any changes to building regulations

typical cost of housing unit without and with environmentally friendly technology's implicated into the house



main objective

- our main goal/aim is to produce this beautifully designed modern hamlet which can be mostly zero carbon housing which can be affordable.
- we want to be able to have a full housing estate full of people which are happy and not creating so much pollution.
- try to eradicate and exterminate any and all carbon emotions that may be produced from the hamlet.
- we want to reach carbon neutrality which is a state of net-zero carbon dioxide emissions. This can be achieved by balancing emissions of carbon dioxide with its removal often through carbon offsetting or by eliminating emissions from society.

saving money with SUDS

- SUDS are a great investment for the future to save money, SUDS are great ways of draining water after long period's of rain or flooding from a nearby river which can lead to flooding of roads and blockage of traffic.
- SUDS or sustainable urban drainage systems work by mimicking natural urban drainage systems, SUDS aim is to reduce surface water floods, improve water quality and enhances the amenity and biodiversity value of the environment,.
- SUDS can achieve this by lowering flood rates in the local area and by increasing water storage capacity and reducing the transport of pollution to the water environment.

two main types of SUDS

 permeable paving or older pathways are a great way of reducing surface cracked pathing which absorbs the water in turn reducing surface water overall, we see it most places we go we just don't realize, found in most places such as some sidewalks, cemetery's and much more, if you see pathing with grass growing through that is classed as permeable as water can pass through it.

• green roofs, we can encourage the installation of green roofs and greener gardens by involving more green spaces water as the water can seep into the old like parks and botanical gardens which in itself helps improve air quality and peoples well being. If we incorporate these into the project we can encourage and inspire residences to have them installed on any type of roof that is flat maybe its a shed or a garage, every little and big helps. Green roofs have many benefits to the world and the community, all green roofs improve quality of life and air, they help with the management of storm water after heavy rainfall or a storm, in local areas it can have economic benefits such as an increased R- value for your house or garage. Which means less heat is escaping through the roof as there is that extra layer of insulation or protection.

solar panels



• The next visible plan of long -term sustainable work would be the use of solar panels, which would not be my first pick as they are costly, or simply some people don't like the looks of them on top of their houses. To be able to live freely off of the solar panels without having to pay for electricity, or even get a pay back investment on the solar panels may take a 12 -26 years, with factors effecting it like, the size of the panels, the size of your house/roof, how much sunlight your roof is exposed to. All these factors add up to create the ROI (return on investment) which is basically the data you have telling you how long it will take to get a return on the investment, the investment being solar panels means ROI is very slow paced. Having a good ROI in the community will help the economic sector for the area greatly, as people are selling unused power back to the national grid, having more money to spend locally. They transfer solar energy or UV light and transfer it into the mains where it can be distributed across your household. To buy the best KW system (6KW), it cost around £8000-£10000 and will cover around 29 square metres of your roof, these systems most found on larger estates or commercial buildings.

8711-033 Employer-Set Project – summer 2022 E grade exemplar (v1.0)

new sustainable technology's



- each technique or technology has its unique way of saving money or saving emery. on the topic of solar panels, the solar boiler accounts for 33.33% of energy usage in the house where as a normal house with a normal boiler accounts for 63% of the energy usage inside of a house, including heating the whole house through radiators and heating any hot water being used.
- if a solar hot water boiler is installed into each home during the build on average each house hold will save 50%-80% solar water heating systems cost more to purchase and install than conventional water heating systems. however, a solar water heater can usually save you money in the long run. the amount of money you save depends on-
- amount of hot water you use
- your geographic location
 and solar resource
- your systems performance
- available financing and incentives

https://www.energy.gov/energysaver/estimatingcostand-energy-efficiency-solar-water-heater

direct link to where you can find all calculations for working out energy savings and predictions for future.

5. Task 2.1 Collaborative problem-solving

Assessment number	8711-033
(eg 1234-033)	
Assessment title	Employer-Set Project
Candidate name	<first name=""> <surname></surname></first>
City & Guilds candidate No.	ABC1234
Provider name	<provider name=""></provider>
City & Guilds provider No.	999999a

Task(s)	Task 2.1
Evidence title / description	Email
Date submitted by candidate	DD/MM/YYYY

As of today, I am writing to you to suggest and put forward just some of the ideas we have discussed throughout our meeting today. Me and two other colleges discussed and agreed on some new techniques you can consider in the plan of the new build.

In our meeting we talked about many new technologies and techniques to that may be included into the build to evaluate and reduce the impact caused by surface water and sewage discharge.

The first and most effective technique is to build a concreate drainage catch basin. Installation can cost £2000-£5000 GBP that price includes all connections and complete installation. You won't find these catch basins on any residential property newer than 1960. On residential property, it will be used to separate contaminates in the sewer systems. To make it safer to the local community we thought of the idea of placing small wooden or metal barrier just as a warning or block to not go into the basin.

The second idea we agreed on was the planting of vegetation around the riverbed and bank, we think this will have many great advantages like reduction of water logging in soil, less chance of a flood or mudslide, looking at the bigger picture it creates more wildlife habitats which can bring in more species making the area more diverse, and it also provides fresher purer air for the community. It is not that costly as the riverbank will need a bit of landscaping for the planters to then plant each tree or bush and each tree or bush costing £20-£25.

The last technique we thought would help the area massively is swales creating small river passages in green lands can help drain any water that is flooded in the area recently by running the water in a direction it keeps a continuous flow of water downstream wherever it may lead therefore producing a never-ending drainage system. They are hard to block/stop the water running out of the community also making them good as problems rarely occur with swales.

As ever thanks for taking the time to read about our findings and I hope you take them into consideration.

Yours sincerely,

<first name>

Employer-Set Project - Observation Record (Task 2.1 Collaborative)

8711-30 T Level Technical Qualification in Onsite Construction

8711-033 Employer-Set Project (Summer 2022)

Candidate name	<first name=""> <surname></surname></first>
City & Guilds candidate No.	ABC1234
Date	DD/MM/YYYY

Provider name	<provider name=""></provider>
City & Guilds Provider No.	999999a

Record observation notes below to inform external marking. Notes must be detailed, accurate and differentiating. They should identify areas of strength and weakness to distinguish different levels of performance quality for each of the prompts below.

Communication skills

Communication skills were not always appropriate and would speak over others or levels of engagement with others was low again impacting on progress of the task

Collaboration/contribution

Communication skills were not always appropriate and would speak over others or levels of engagement with others was low again impacting on progress of the task

Methods to solve the problem

Evidence content lacks structure, flow and is limited in how it meets the issues raised in the task. It is not clear that the proposed methods will address the issue.

Any other aspects

Answered well when put on the spot from another member of the team.

No written discussion notes taken.

Tutor signature	Date
X	DD/MM/YYYY

If completing electronically, double click next to the 'X' to add an electronic signature once the record is **finalised**.

6. Task 2.2 Self Evaluation

Assessment number (eq 1234-033)	8711-033
Assessment title	Employer-Set Project

Candidate name	<first name=""> <surname></surname></first>
City & Guilds candidate No.	ABC1234

Provider name	<provider name=""></provider>
City & Guilds provider No.	999999a

Task(s)	Task 2.2
Evidence title / description	Self evaluation
Date submitted by	DD/MM/YYYY

Self reflection

<u>1.1</u>

I think I completed the research task to a good standard and to a good level of knowledge where I could still use the information but not get overwhelmed by it. I learnt that the natural water cycle can be altered and changed producing larger volumes of runoff and higher peak flows, it also stops rain from infiltrating the ground and replenishing the ground in doing so. I also talked and acknowledged how much flood defences were as knowing how much they are and having them installed is a great advantage and can help people be safe during floods and help keep the loved ones and belongings safe.

<u>1.2</u>

The repot of 1.2 was quite easy to complete the hardest bit was understanding and reading the brief on what we had to do and knowing what to search for what information is suitable to be used.

I feel like I could have written more in the report if I had the time and effort.

In doing the report I learnt the average outcost of a house on a daily basis including ac units and boiler units whether it be solar boilers or conventional boiler and how much they cost to run. I have also learnt about surface retention and surface water and different techniques and technologies that can be used to stop or slow the rate of absorption into the soil. green roof are being used more often to again reduce water retention in different roofs, having a green roof allow for purer air in the community and increased roof water retention.

<u>1.3</u>

1.3 was enjoyable as we were asked to create a site brief of a toolbox talk where in it we would have to talk about appropriate PPE, timings and where to be, to report near misses where to report them, how to safely work at hight and much more. all throughout 1.3 I have learnt a lot about site rules and regulations and what appropriate PPE should be worn at certain points and places in a work site for example hard hats are required when working in areas where there is a potential for injury to head from falling objects maybe off of scaffolding maybe off a roof it's there to protect you. in addition, hard hats designed to reduce electrical shock they are required to be worn when working near exposed electrical conductors that may contact your head.

<u>1.4</u>

1.4 was one of the hardest parts of the whole employer project as we had to create a good presentation that is presentable to the class we then had to stand up and present our ideas and convey them to the audience. during the creating and making of the presentation I have learnt lots of new things I would not have known before like how much sonar panels cost for each system as well as how long it takes to get a ROI which is a long time 12-26 years to get a payback or return on the solar panels and the energy it produces.

<u>2.1</u>

2.1 was one of the easier parts to get through as we were just talking in a group about ways of improving surface water after flooding, ways to potentially use the water and ways to get rid of it. I had to do it a second time as well, overall, it was hard to get the conversation started and to get it going but once there is something to talk about you can go on a tangent I admit I could have formulated my sentences better, but doing it on the spot can get to you sometimes and my mind just went blank.



Get in touch

City & Guilds Technicals Quality Team

We are here to answer any queries you may have regarding your T Level Technical Qualification delivery.

Should you require assistance, please contact us using the details below:

T: 0300 303 53 52 (Monday - Friday | 08:30 - 17:00 GMT)

E: technicals.quality@cityandguilds.com

W: cityandguilds.com/tlevels

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