Design, Engineer, Construct! Level 2:
Unit 2 - Developing a sustainable construction

2.2 The candidate will produce technical support collateral for a project.

Unit	Incomplete (U)	Secure (C)	Exceptional (A)	Comments:
2.1.1				
2.1.2				
2.1.3				
2.1.4				
2.1.5				
2.1.6				

Name:

Date:

Deadline for Submission:

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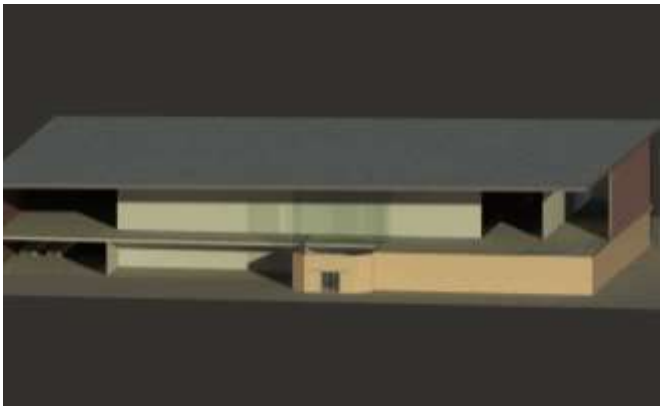
2.2 The candidate will produce technical support collateral for a project.

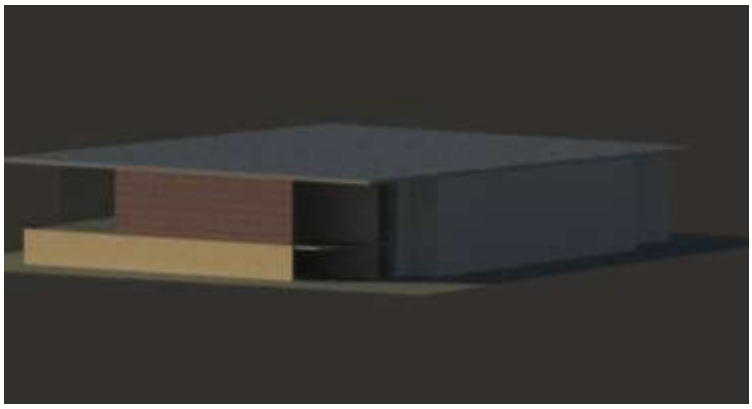
2.2.1 Prepare 3D representations of outline information .

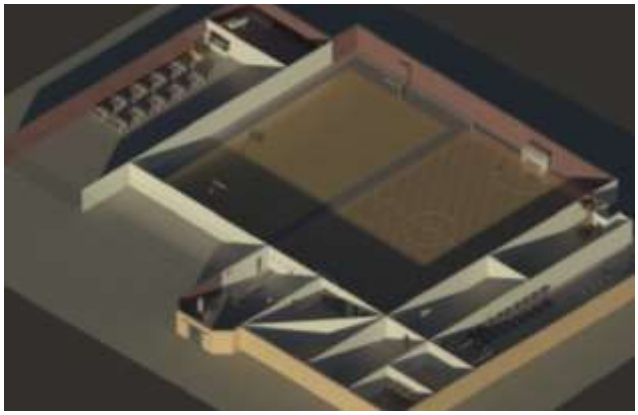
1. Produce a series of rendered images that showcase your final idea:



An image representing the south side of the building which will be my main side where customers will be able to enter and exit the building.

This image is showing the south east façade of my site, this is where the Gym is located which has a curved outer glass wall, it's also the back of my sport facilities.





The image to the left clearly represents the interior, this shows a birds eye view of the furniture and where I've placed them, I'm quite impressed with the spacing of them along with what type of furniture I've used that fits in with the surrounding colour scheme.

Unique Selling Points (USP) of your building:

I offer multiple facilities which benefit the end user such as a Gym which can be pretty much used 24/7 offering a unique opportunity for customers to use this site, I also think that the sustainable side of the program helps sell the building as not only would my building support some policies but it'd also save money.

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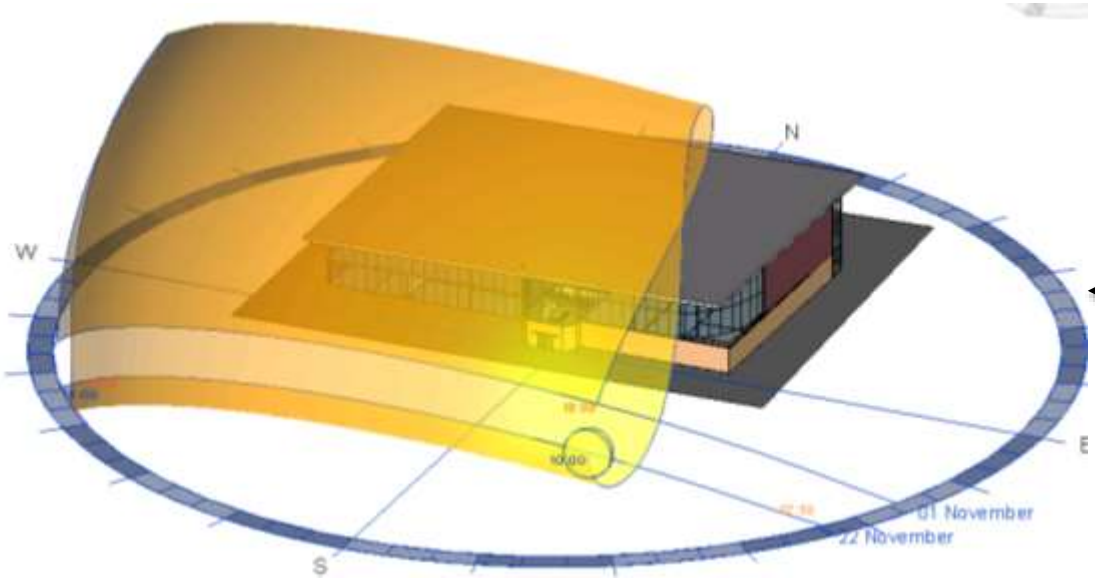
2.2 The candidate will produce technical support collateral for a project.

2.2.2 utilise the 3D environment to test the design in virtual locations

1. Place your building in its location and conduct a solar study that includes suitable images:



A image showing a solar study of my building, this is where the sun will shine on my building and as we can see it's from the south side, I have placed many windows from this side as the building will naturally heat up from the sun allowing me to save heat energy costs, it also provides a saving in lighting energy as well

What is different and interesting about your idea:

What is different is the interior design to most sports centres as my courts are located in the interior than the exterior like most sports centres, I have an interesting design for all rooms as they all differ in size and shapes.

2.2.3 use quantitative methods to establish the energy requirements, and a lighting strategy

1. Describe each of these types of lighting and include images:

Often **task lighting** refers to increasing illuminance to better accomplish a specific activity. However, the illuminance level is not the only factor governing visibility. Contrast is also important, and a poorly positioned **light** source may cause contrast reduction, resulting in loss of visibility.

Atmospheric lighting lights up the room and gives it a positive mood, it creates an atmosphere of a theme. It also helps with the look and theme of a room.

An **emergency light** is a battery-backed **lighting** device that switches on automatically when a building experiences a power outage. **Emergency lights** are standard in new commercial and high occupancy residential buildings, such as college dormitories.

Wayfinding lighting is lighting which can be used to guide people towards a place of interest, this can be done in the form of patterns for example the photo the right.

How can you reduce the cost of lighting your building?

I could use multiple exterior glazing's in order for natural light to enter the building, meaning that I won't have to use energy in order to light the interior allowing me to save energy costs for that particular area.

Natural light is light that comes from the sun. It is contrasted with artificial light, which comes from light bulbs, fires and other man-made fixtures used in homes. **Natural lighting** helps save energy costs for the desired area as **Natural lights** don't consume energy.

Lighting or illumination is the deliberate use of light to achieve a practical or **aesthetic** effect. Lighting includes the use of both artificial light sources like lamps and light fixtures, as well as natural illumination by capturing daylight.

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2.2.3 use quantitative methods to establish the energy requirements, and a lighting strategy

1. Populate this table with the type of lighting (see previous page) for each rooms/ spaces and the benefits and draw backs to this:

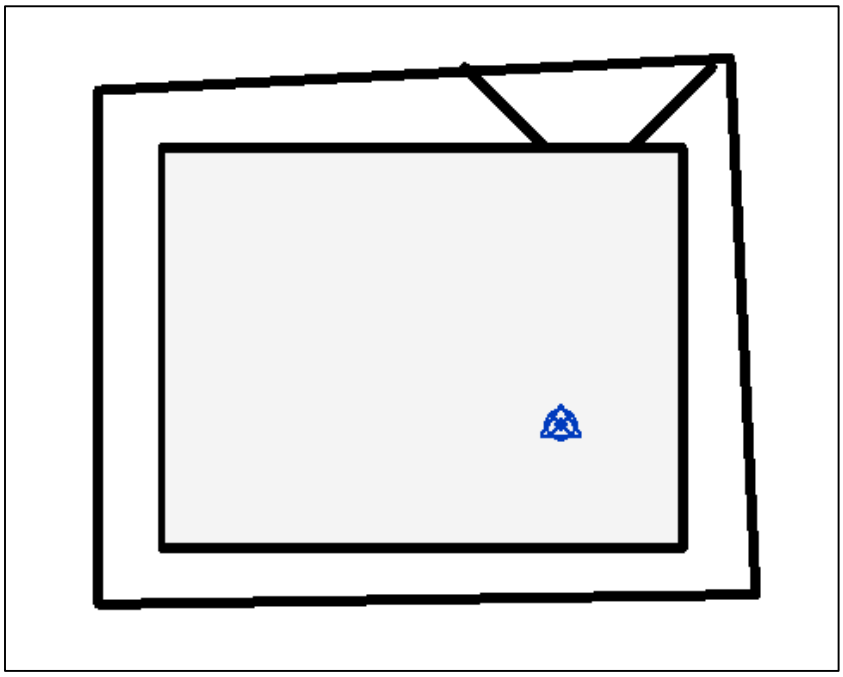
Room/ Space	Type of Lighting used	Positives/ negatives
Reception	Task Lighting / Natural	Energy efficient saving lights however there is task lighting making it neutralise out.
Gym	Task lighting/ Atmospherical / Emergency / Natural	Energy efficient lighting from the sun however emergency lights downgrade the attractiveness of the room but it's for safety reasons.
Sports hall	Task lighting / Way finding / Emergency / Atmospherical	There's little natural light in the sports hall meaning that I'll have to rely on artificial lighting which is not energy efficient, however the hall will be well lit.
Toilets	Task Lighting	Not much can be done light wise for the toilets as I have to consider privacy so only task lighting will be used.
Cafe	Task lighting / Natural / Emergency	A positive is the positioning of the lights as they will overhang each table, however emergency lighting will ruin the vibe to the facility.
Kitchen	Task lighting (Main) / Natural / Emergency / Wayfinding	Kitchen will have well organised task lighting which will fit well with the tasks but natural light will be low meaning more energy will have to be used.
Changing rooms	Task lighting	Only task lighting will be used but this will be motion censored lights to save energy costs.
Hallway	Way finding lighting / Natural / Atmospherical	Hallway will be well lit with natural light at the south side of the building but art night lighting will be used.

How is brightness measured?

The brightness of a light emitting diode (or anything else) is measured by luminous flux, which is the impact of the light on an eye, adjusted for different wavelengths. Luminous flux is measured by lumens, which corresponds to candelas of light, or luminous intensity, emitted over a solid angle.

2.4 prepare detailed, scaled drawings that can form the basis of a planning application

1. Insert a site plan here (Scale 1:12500)



Site plan detailing the site as a whole, as you can see the site isn't as eye catching as you would fine, this is due to the roof covering the whole interior and exterior meaning that there is just a square.

What is a TPO?

Thermoplastic, allowing the white membrane to remain exposed throughout the life of the roof. Polyolefin (TPO) is a single-ply reflective roofing membrane made from polypropylene and ethylene-propylene rubber polymerized together. It is typically installed in a fully adhered or mechanically attached system

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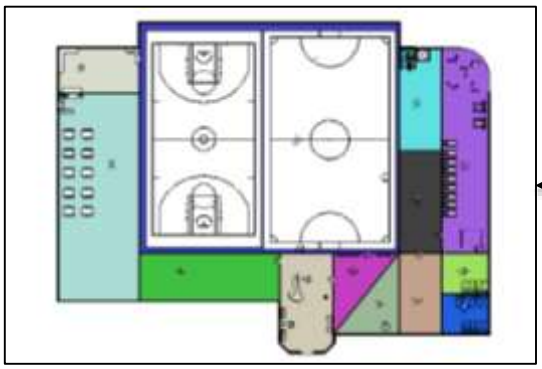
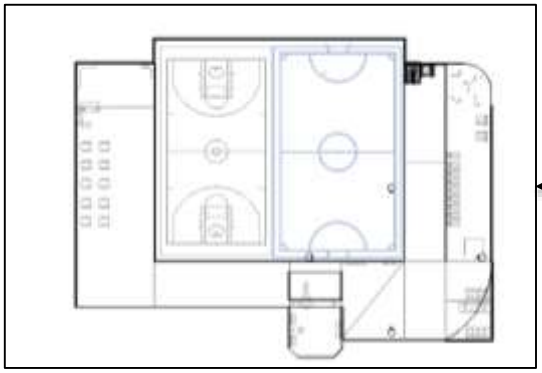
2.4 prepare detailed, scaled drawings that can form the basis of a planning application

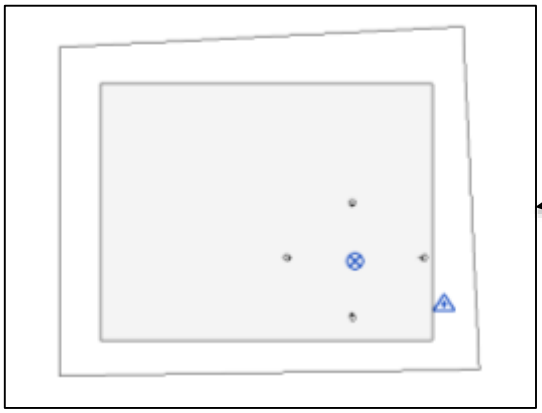
1. Insert floor plans here (Scale 1:100)



A floor plan showing the ground floor complex of my building with a colour scheme representing the different rooms in the facility.



My second floor which is unfinished therefore meaning no colour scheme has been added to the non existent rooms as of this moment.



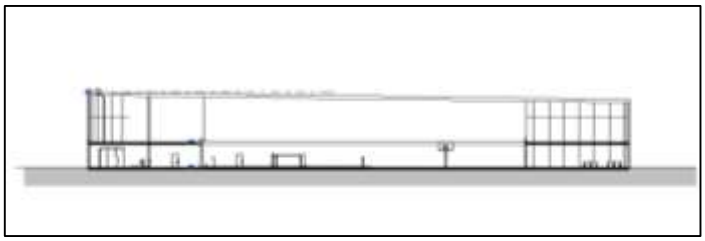
This is the site plan of my project, as you can see it's just a square with land covering it, this is the roof as it spreads across the whole building

How big in reality is 50mm on a plan with a scale of 1:100?

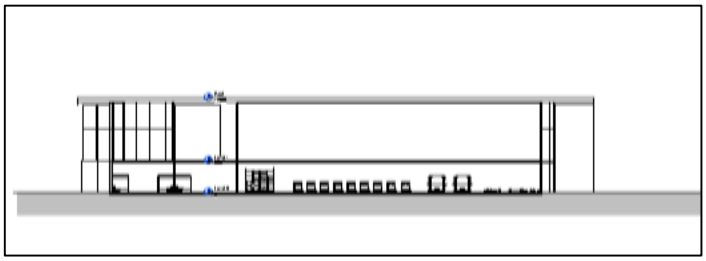
5500mm which results in 5.5m (metres)

2.4 prepare detailed, scaled drawings that can form the basis of a planning application

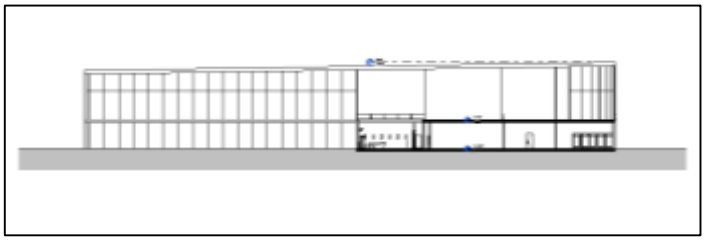
1. Insert Elevation views here (Scale 1:100)



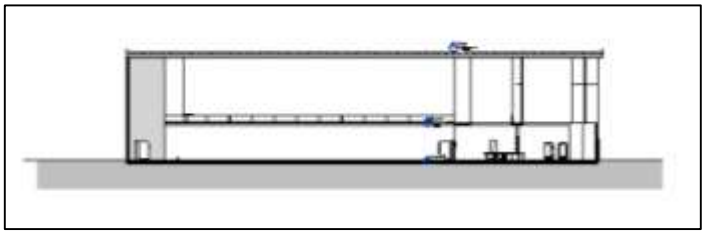
North Elevation



East Elevation



South Elevation



East Elevation

In what format are drawings usually submitted?

They're submitted in a PNG format as most hand drawn photos are transferred onto a computer through a scanner.

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2.5 describe the project in writing to form the basis of a planning application

Use the below link and summarise the 8 point process for applying for planning permission:

1. If you wish, you can appoint an agent to apply for planning permission on your behalf. For example, you may prefer your architect, solicitor or builder to take care of it. You don't actually need to own land to apply for planning permission for it. This means you can apply for permission before deciding whether or not to buy a piece of land.

2. Applicants are encouraged to apply online via the Planning Portal. Completing a form online ensures you are prompted to answer only questions relevant for your application. The completed form is sent online via the Planning Portal directly to the local planning authority or building control body for processing. Alternatively, you can download the standard planning application forms in paper format either from the Planning Portal or the relevant local planning authority website and send them in the post.

3. It is often a good idea to meet a planning officer for an informal discussion before you submit an application. Pre-application advice is encouraged as it can:

- **Verify the list of local requirements each planning authority can require, read more about local and national requirements**
- **Reduce the likelihood of submitting invalid applications**
- **Help you understand how planning policies and other requirements affect your proposals.**

4. You must decide on the type of application for your works. There are three types of building regulations approval:

Full plans This is the most detailed option. Decisions are usually made within five weeks. If your building work meets standards, you will receive a completion certificate within eight weeks of completion of the building work.

Building notice A building notice is used for smaller projects. You can begin your alterations two days after your notice has been submitted to your building control body. Unlike full plans, you do not receive formal approval.

Regularisation This is retrospective approval and is used for work that has already been carried out but without consent. You can only apply to your local authority building control for regularisation.

5. If you're applying online, once you have submitted your application it will automatically be received by the relevant local planning authority. The local planning authority will not be able to process your application unless the mandatory supporting documentation has been provided. You can also attach any other relevant documentation which you think will help the local authority determine the application. There are two levels of mandatory documents, national and local. If you're applying online, the service will tell you what mandatory documentation you need to provide and allows you to attach the relevant documents.

6. As a minimum, you must provide the following documents for your planning application to be valid:

- **The standard application form**
- **Most planning applications require two plans to be submitted as supporting documents:**
- **Location plan – which shows the site area and its surrounding context. This can be purchased online from one of the Planning Portal's accredited suppliers either as part of the application process, or separately, and then attached to the application.**
- **Site Plan (sometimes known as a block plan) – which shows the proposed development in detail and can be purchased from one of the Portal's three accredited suppliers.**
- **An ownership certificate A, B, C or D must be completed stating the ownership of the property.**

7. In addition to the national list, your local planning authority may produce a list which details any specific documentation that is required to accompany the application. The requirements may vary according to the type of application, i.e. household, full, outline, etc. If you are applying online, this list is available from the supporting documents screen.

8. In most cases there will be a fee. However, for some consents, e.g. listed building and planning permission for relevant demolition in a conservation area, no fee is required.

What type of planning permission do you require for your building?

- **I must apply for the correct consent otherwise my building application will be terminated a full plan, building plan and a regulation plan must be taken into account which can range form TPO orders and safety acts.**

2.6 produce a financial model of the budget that aggregates the elemental costs of the project

Use the Spons Price Book to produce a more accurate and up to date total cost of your building based on m2.

	Building Description/Type	SPONS RATES £/m² Basic	SPONS RATES £/m² Premium	Project Rate £/m²	Location Factor %	Adjusted Project Rate £/m2	m2 Floor area	£ Cost	Notes
	Gym	1800	2100	2108	-12	1848	450	831600	
	Café	1360	1650	1360	-12	1196.8	300	359040	
	Reception	990	1250	1250	-12	1100	200	220000	
	Staff room	1775	2250	1775	-12	1562	100	156200	
	Basketball court (indoor)	2500	2750	2750	-12	2420	500	1210000	
	Football court (indoor)	2500	2750	2500	-12	2200	500	1100000	
	Kitchen	2050	2600	2050	-12	1804	100	180400	
	Changing rooms	1025	1275	1025	-12	902	100	90200	
	Toilets	920	1050	920	-12	809.6	70	56672	
						Total:		4204112	

There wasn't much to improve on the total cost as the prices were similar to the ones I was given.

What type of planning permission do you require for your building?

I must apply for the correct consent otherwise my building application will be terminated a full plan, building plan and a regulation plan must be taken into account which can range form TPO orders and safety acts.