DEVELOPMENT OF STUDENT ACCOMMODATION BLOCK FOR UWTSD

BY VITO CONSTRUCTION

AIMS OF VITO

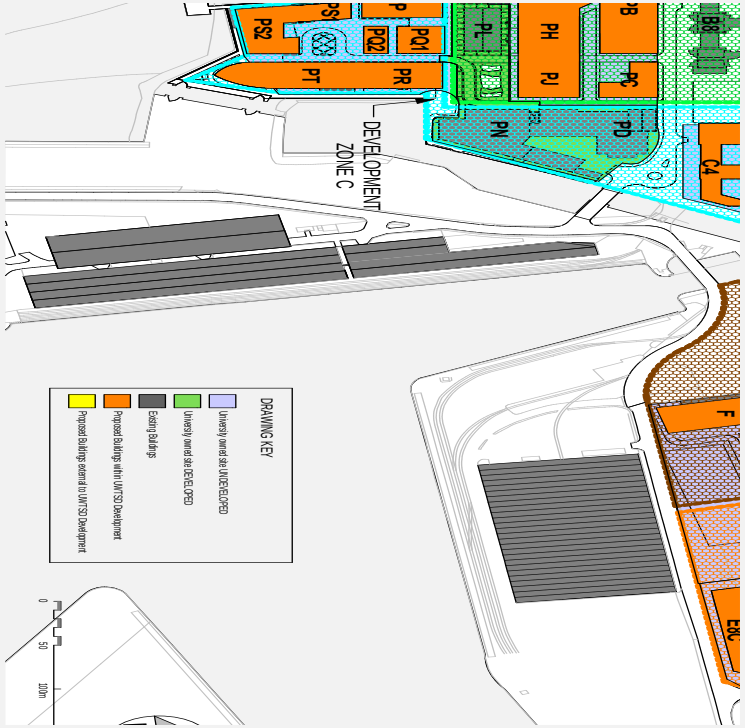
- Our Company VITO Construction LTD main aims for this project are as follows:
  - Meeting needs of overseas students.
- Being sustainable with every project we do maximizing use for materials and labour.
  - Maximizing rental income, keeping in mind each room will have En-suite.
  - Ensuring enough space for deliveries and users.
  - Putting top security measures in place.
- Doing as many tests on the earth ground, we work on to ensure we have the right amount of results to notify us of any disruption which may arise to the residents and businesses nearby.
- Make use of the land which we will be building on to ensure maximum usage without wasting- We at Vito Construction take great pride in our land and resources.

OBJECTIVES OF VITO

- Our Company VITO Construction LTD main objectives for this project are as follows:
- To finish an overseas residential accommodation with extras to fit their taste and requirements near the university.
- To be sustainable with equipment and materials which are used.
- Looking into health and safety substantially and ensuring all risk assessments are put into place, along with fire drills and hazards within the building.
- Keeping the residents happy with the development and causing minimum disruptions to the local area.

THE SITE

- The location for this build will be taken on plot C4
- Main benefit of this chosen site is the fact that it is walking distance to the SA1 campus across the road.
- The practically of this site meets all needs, cost effective and additionally a mini car park on site, for shop workers, receptionist and customers.
- The site has a size of 45m x 100m. This allows plenty of room to maximize space efficiently and within budget.
- Due to the fact each room will have En-suite, rental income will need to be slightly higher than other halls, this is purely due to the fact it is a newly built resident and the capital invested will need to be gained back at a quicker rate.

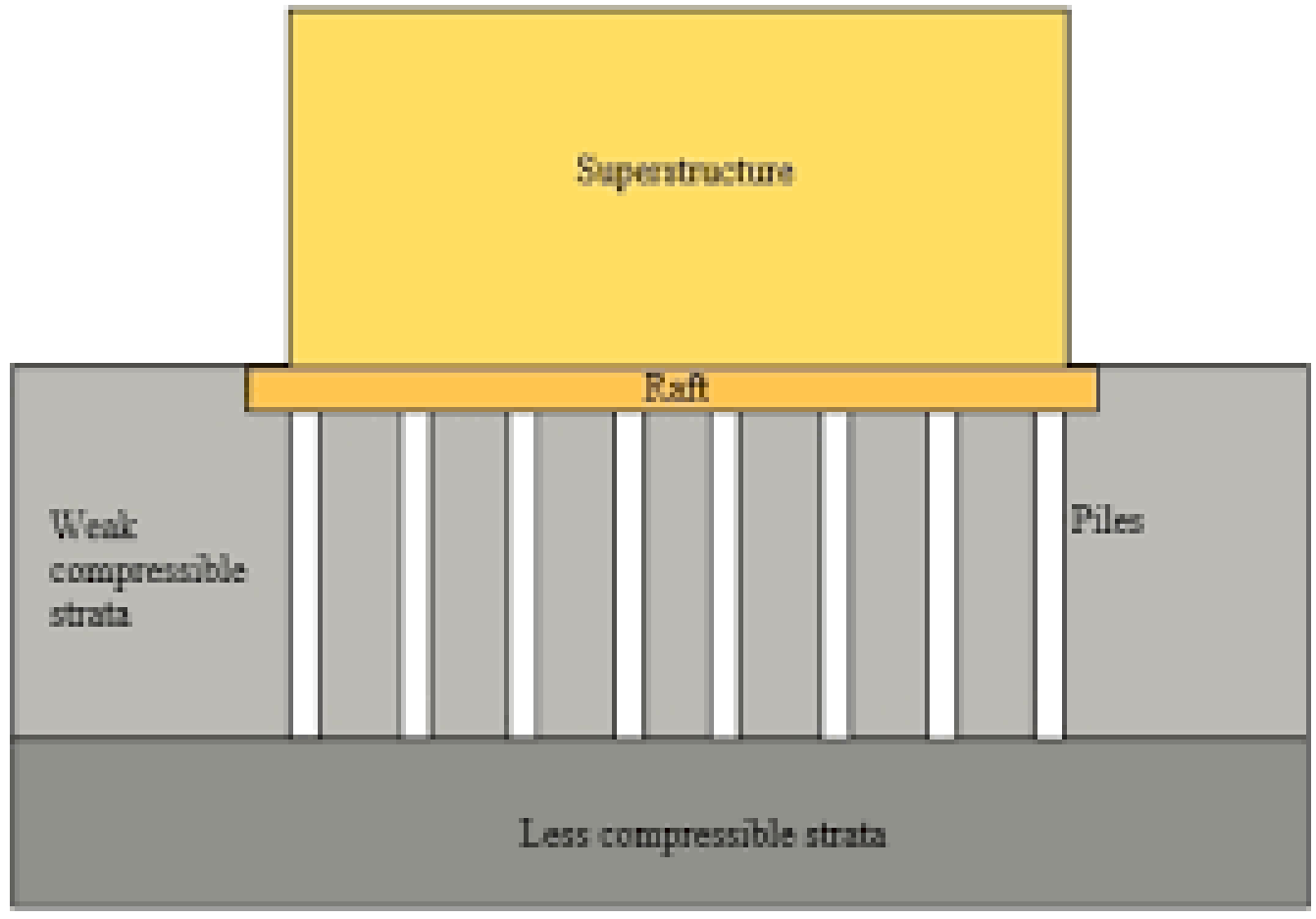


CONSTRAINTS AND CONCERNS

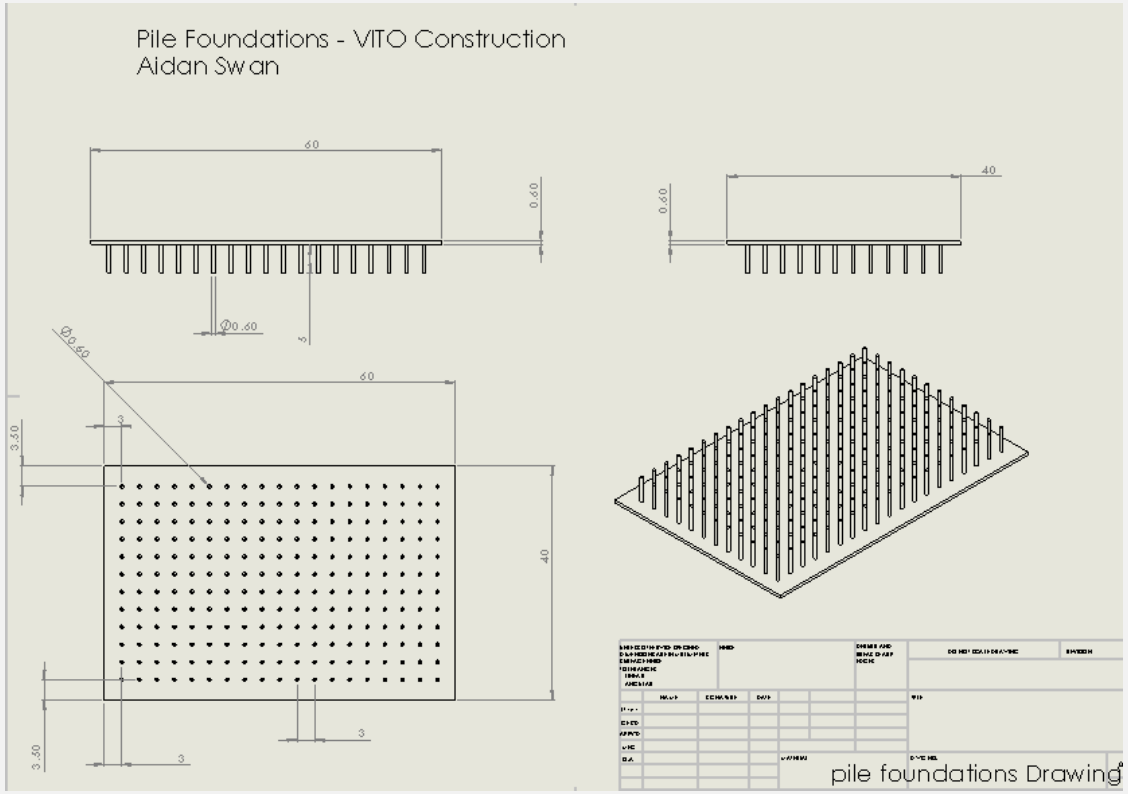
- Pilling Vibration can cause damage to underground earth and dock wall, if not done properly and thoroughly. To prevent this Vibration monitoring system will be used to keep it to a minimum.
- Underground soil may not be suitable for us to build due to being near a seafront with huge volume of water underground.
- Soil parameters and whether they meet requirements after doing testing's in lab.
- Doing comprehensive findings of the ground and tackling each section as a dedicated team.

PROPOSED FOUNDATIONS

- The pile foundation is a very deep foundation. These piles are made from reinforced steel and concrete. The Main advantages of a pile foundation are high load capacities and corrosion resistance which is why we chose them for this project because of the sites proximity to the waters edge.



PROPOSED FOUNDATIONS



FOUNDATION BRIEF

1. The construction process begins with a hollow stemmed auger being screwed into the ground by the piling rig with minimal vibration and using a constant penetration rate. Upon reaching the design depth, the concrete is pumped through the hollow stem of the auger whilst it is slowly extracted. During the controlled extraction, the auger is rotated so as to remove the ground material.

2. concrete being pumped into the ground is maintained throughout the placement as this prevents the hole from collapse

3. Extracted material brought to the surface is removed and the shaft is left full of concrete into which steel reinforced bars will be placed.
4. Continuous flight auger piles are used for places with unstable soil conditions and high level of ground water table. These piles can be terminated in clays, granular soils, in soft rock or can be taken to hard load bearing strata this is the main reason we chose these piles as the site location in on the waters edge.

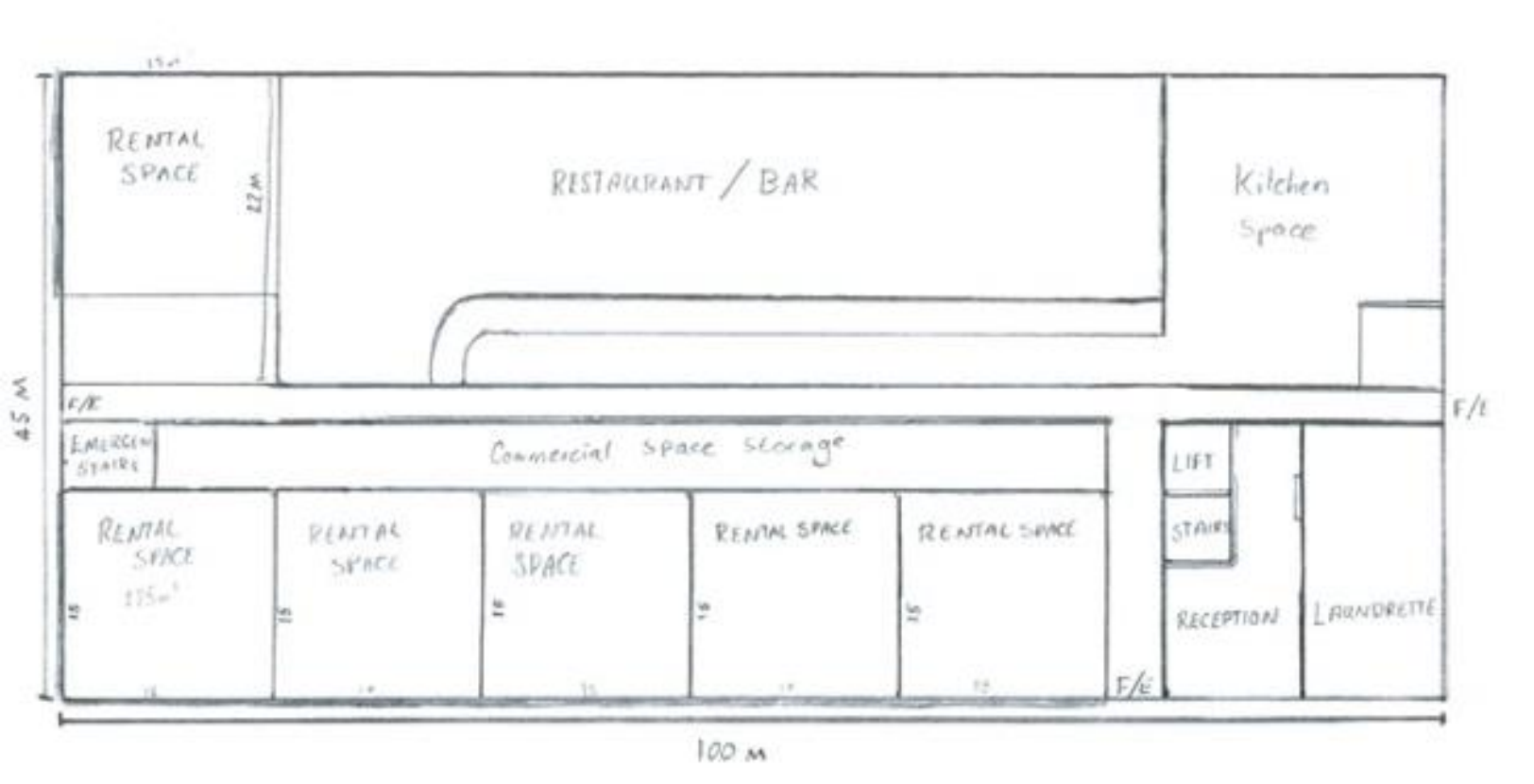
FOUNDATION BRIEF

- Advantages
- The construction of these piles is without significant vibration or excessive noise being produced.
- The installation of CFA piles is quick compared to other piles.
- This pile does not require temporary casing in unstable soils which is perfect for our project.
- Since rigs used are very powerful, it saves lot of time of foundation construction.
- The process is economical with cost and tiem.
- They are suitable for a wide range of challenging ground conditions.
- Piling rigs can be adapted to operate in conditions with low headroom and confined space.

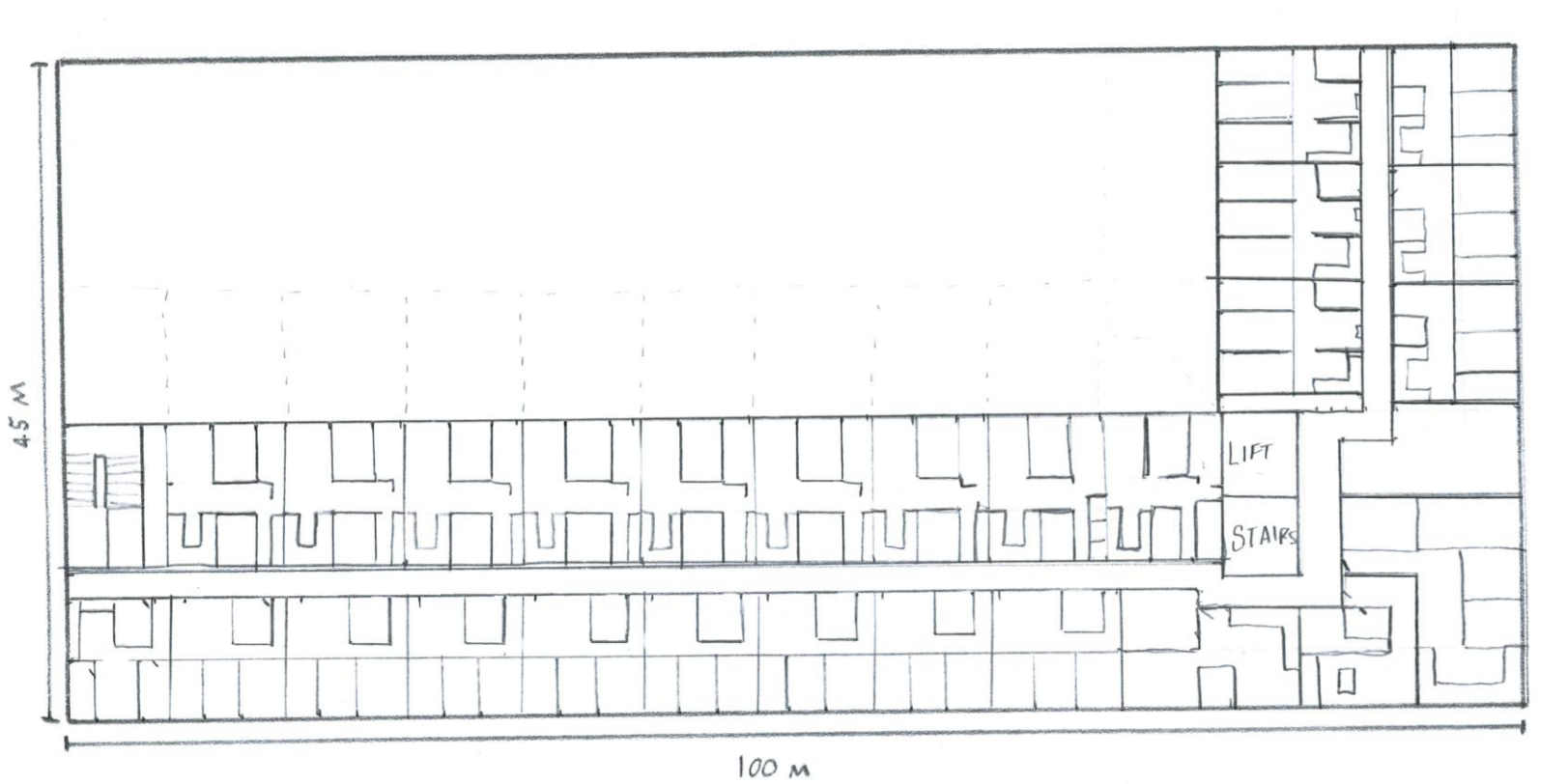
FOUNDATION ESTIMATE

Excavation							
	Labour Rate (£/m2)	Plant Rate (£/m2)	Material Rate (£/m2)	Total Rate (£/m2)	Total to be Excavated (m2)	Total Cost (£)	Max depth not exceeding 1.00m
	0.47	0.67	-	1.14	4500	4504	
Disposal of Excavated Material	Labour Rate (£/m3)	Plant Rate (£/m3)	material Rate (£/m3)	total Rate (£/m3)	Total to be Excavated (m3)	Total Cost (£)	Disposal of Inert waste off-site, using lorries, Incl. landfill tax
	1.37	14.51	16.59	32.47	2250	64,148	
							Total costs adjusted for inflation and Welsh regional variation
Foundations	Labour Rate (£/m3)	Plant Rate (£/m3)	Material Rate (£/m3)	Total Rate (£/m3)	Total Volume (m3)	Total Cost (£)	
	16.93	-	97.65	114.58	2250	226,365	Plain in-situ ready mixed designated concrete; C7.5-40mm aggregate
Piles	Labour Rate (£/m3)	Plant Rate (£/m3)	Material Rate (£/m3)	Total Rate (£)	Total Piles (Nr.)	Total Cost(£)	
Provision of Plant	-	-	-	16,300 per 100 piles 20m long			Total number of piles unknown at this time
600mm dia. Piles;reinforced; 20m long	-	-	-	1430			Rates for delays (Rig standing time, £438.34 per hour
deduct for reduction in pile length	-	-	-	472.20 per pile (31.48 per m)			

PROPOSED LAYOUT – GROUND FLOOR



PROPOSED LAYOUT – FIRST FLOOR



LAYOUT BRIEF

- The Layout of this project has been carefully considered to maximise the space, but not producing an overpowering build.

GROUND FLOOR

- RECEPTION SPACE
- LAUNDRETTE SERVICES
- PLANT AND SERVICE ROOMS
- FIRE ESCAPE CHANNELS
- RENTABLE COMMERCIAL SPACE
- LARGE WATERFRONT RESTAURANT AND BAR WITH KITCHEN

UPPER FLOORS

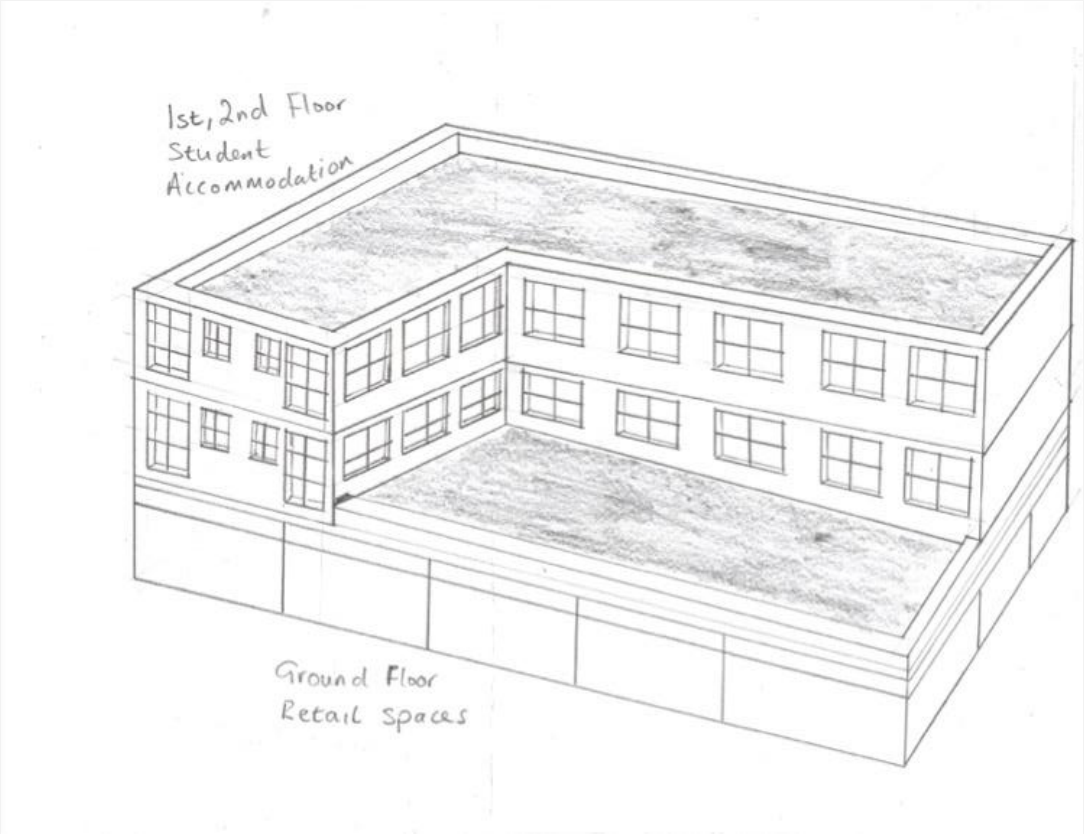
-ALL UPPER FLOORS WILL BE IN AN L-SHAPED DESIGN

- 28 APARTMENTS PER FLOOR

- FIRST FLOOR COMMUNAL GARDEN SPACE FOR FAMILY FLATS

- APPROPRIATE ESCAPE ROUTES

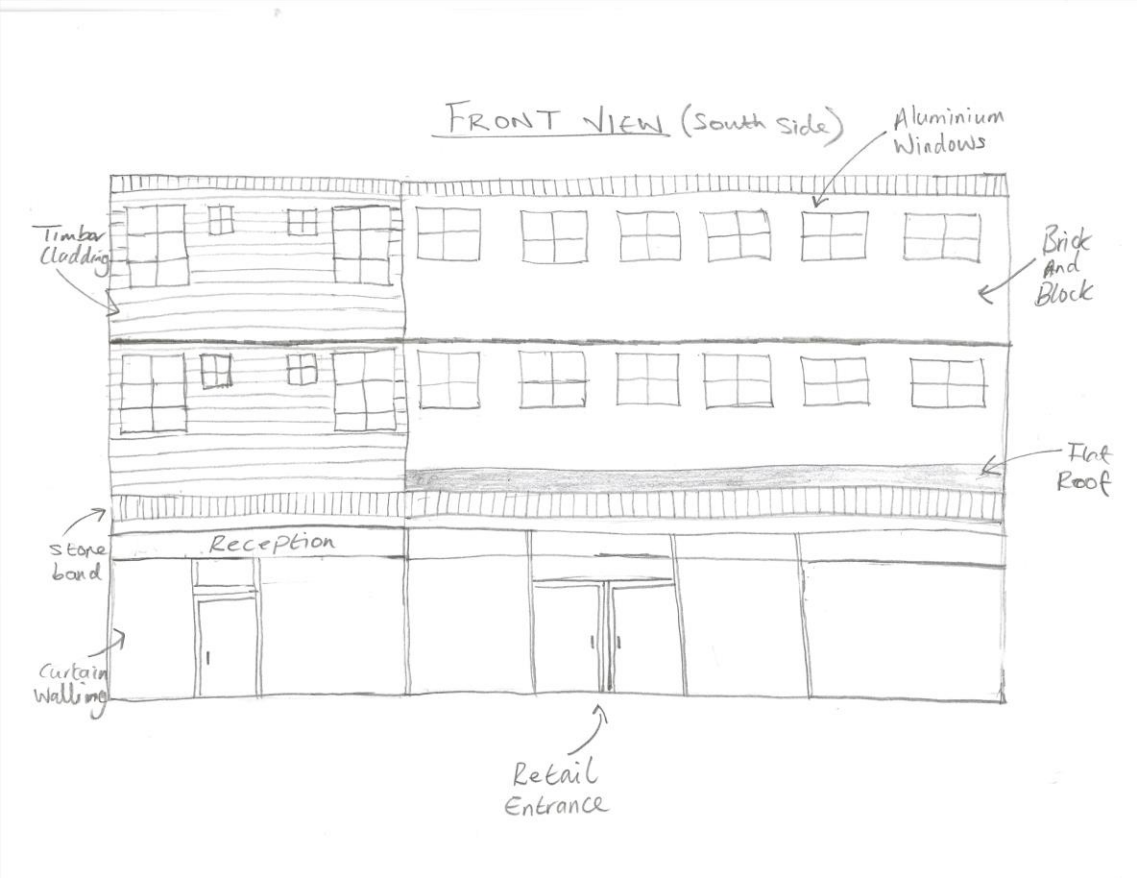
PROPOSED ELEVATIONS



Initial ground floor plan will be a rectangular design which facilitate more commercial space to maximise the rental return.

The upper floor plans will be L shaped and will accommodated up to 84 flats ensuring maximum usage of the spaces.

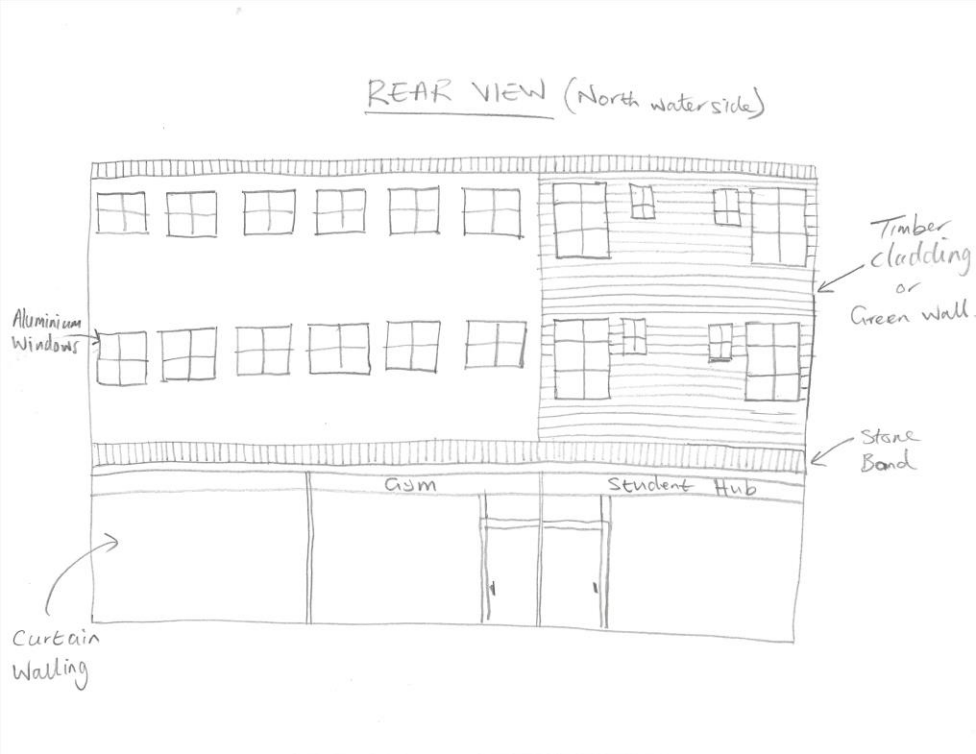
PROPOSED ELEVATIONS



Front Elevation (east)

The entrance to the university reception and commercial spaces will be located approximately 80 degrees east of the proposed site.

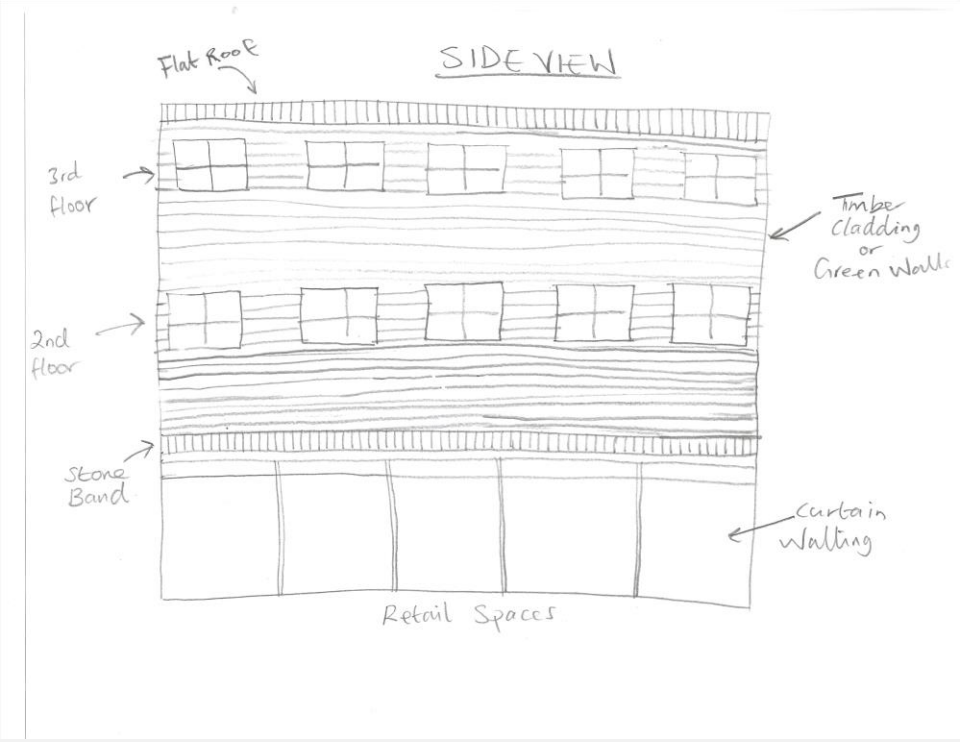
PROPOSED ELEVATIONS



Side Elevation (north)

A quarter of the car parking spaces will be located north of the building perimeter.

PROPOSED ELEVATIONS



<u>Rear Elevation (west)</u>

The rear of the building will face the main road. The car park will be located at the rear of the building and partly located at the north side of the building.

ELEVATIONS

Side Elevation (south)

Initially timber cladding was going to be used on the south side of the building.

Other alternatives have been suggested such brick block render and decorative green walling due to the weather in this area.

Other suggestions

- Communal garden at the front roof top
- Aluminium window frames dues to weather in the area
- Use of curtain walling for the ground floor spaces

BUILDING MATERIALS

- Ground Floor Steel Frame with Precast concrete Floor
- Options for Upper Accommodation;
- Traditional
- Timberframe
- Lightweight Steel Frame
- Pre-Cast Concrete
- Comparisons
- Finishes – Brick, Block & Render, and Decorative Green Walling in Areas

ENVIRONMENTAL ASPECTS

- To Ensure our build is in fitting with Sustainable and Environmental Aspects the following will be incorporated.
- Green walling and Communal Garden on the 1st Floor.
- Incorporation of Solar PV Panels on the Parapet Roof.
- Looking in to solutions to harvest rainwater for re-use within the building.

BUILD ESTIMATE

Item	Quantity		Rate	Total
Substructure & Commercial Space	4,500	M2	£850	£3,825,000
Family Apartment	6	NR	£50,000	£3,120,00
Regular Apartment	78	NR	£40,000	£300,000
				£7,245,000

ESTIMATE OF INCOME

TYPE	NR	RATE (MONTHLY)	TOTAL (MONTHLY)	TOTAL (ANNUAL)
2 BED FAMILY APARTMENT	6	£500	£3,000	£36,000
2 BED REGULAR APARTMENT	78	£480	£37,440	£449,280
				£485,280

TYPE	Area (SqM)	RATE (£/SqM)	TOTAL (MONTHLY)	TOTAL (ANNUAL)
COMMERCIAL SPACE	2,600	£22	£57,000	£686,400
				£1,171,680