



Vito Construction

Vito_Construction_Final_Design

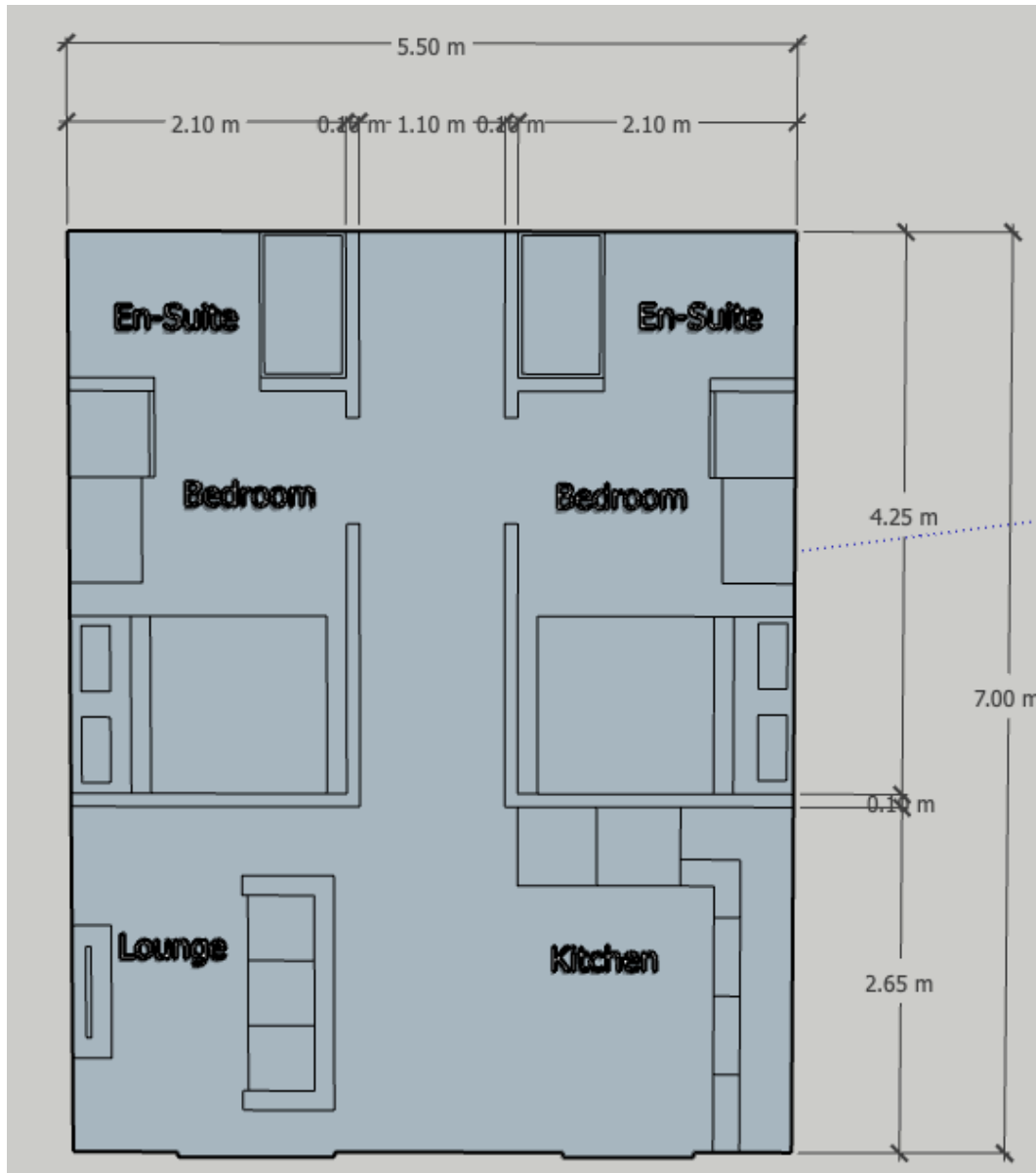
By Nathan Daniel

P144299

Integrated Group Project:

Construction Cohorts: Project A

2019 / 2020

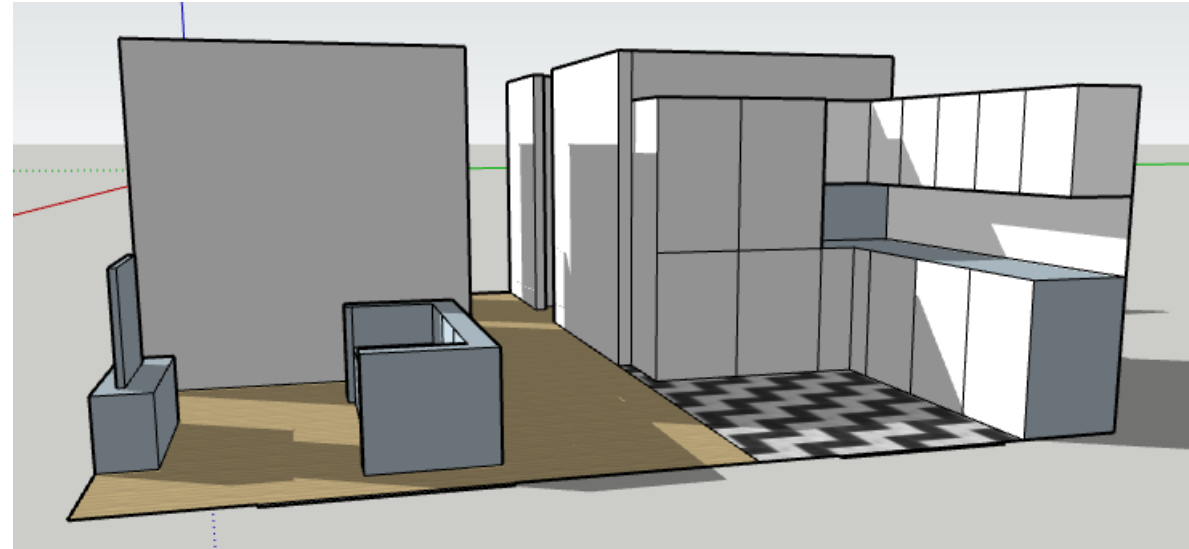
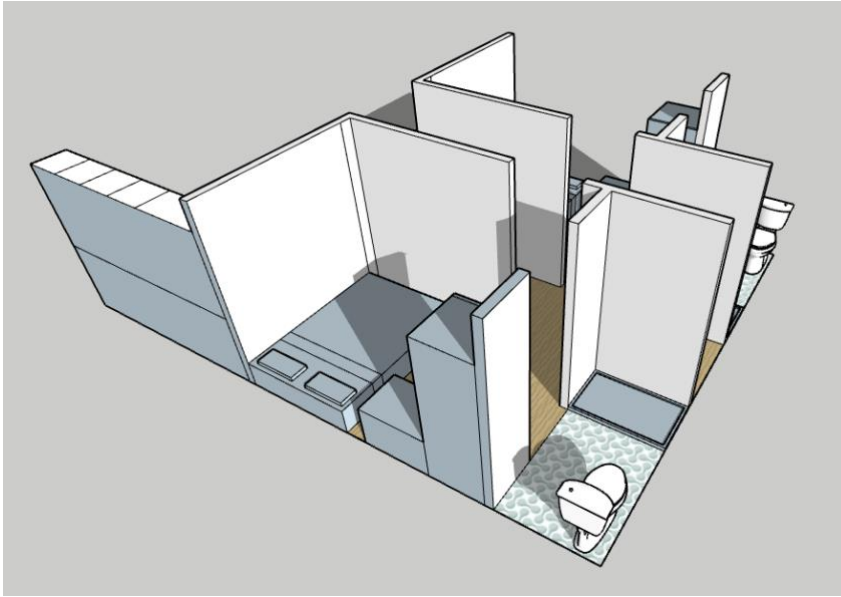


Individual Apartment Layout

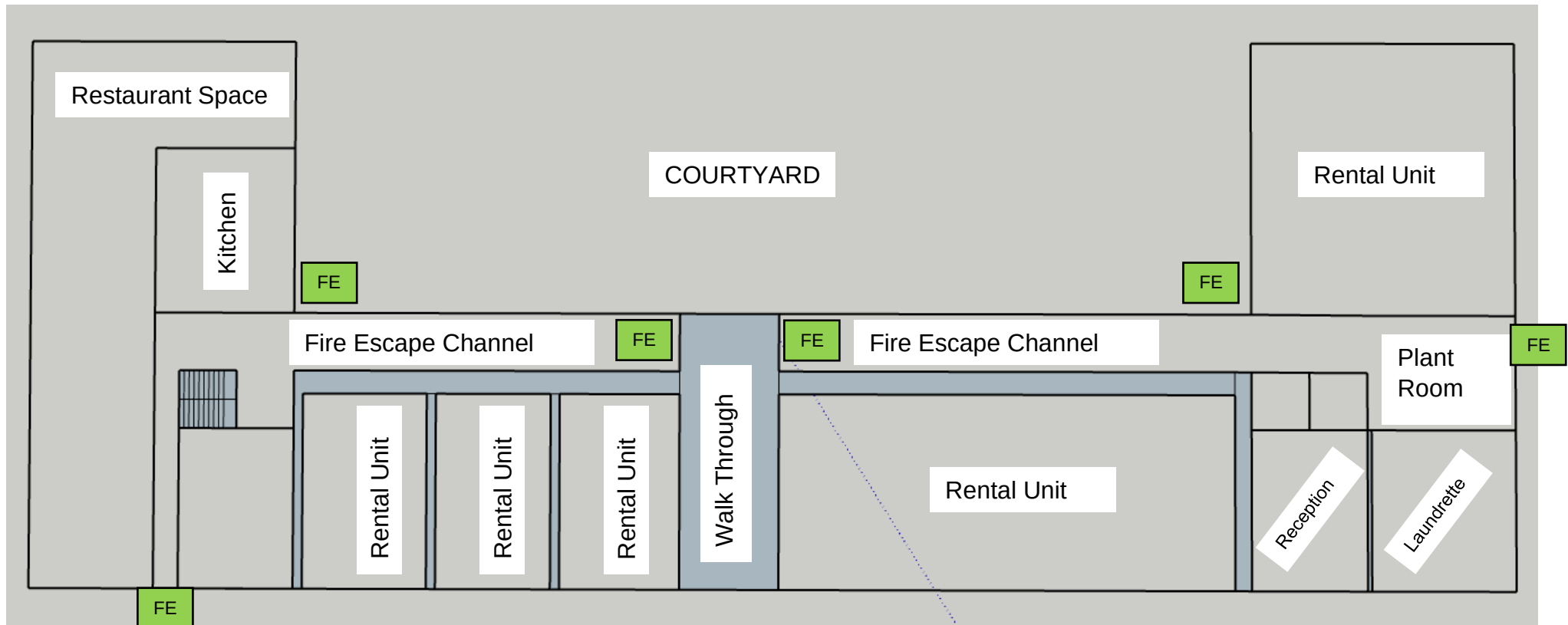
This design was utilised as it is design friendly for repetitive use in the use of Apartment/Student Living.

The design was worked around the use of pod type systems for the en-suite bathrooms and kitchens to enable more off-site construction to be used, in turn reducing build cost and the impacts on the local areas.

Title	Individual Apt Layout_001
Date	Feb_2020
Drawn By	ND
Scale	N T S



Title	APT_3D Model
Date	Feb_2020
Drawn By	ND
Scale	N T S



GF Layout

The ground floor is designed primarily around a number of fire exit locations and enabling the building to have a high volume of commercial space to increase the rental yield.

A compartmentalised fire channel has been designed, where all fire escapes from upper floors lead down to which lead to 3 fire exits on each end of the building.



DENOTES FIRE EXIT

Title	GF_Layout_001
Date	Feb_2020
Drawn By	ND
Scale	N T S



Upper Floor(s)

The upper floors are identically stacked. Each of which contain 41 individual apartments.

The corridors have windows at each end to allow natural light to flood in, but due to the size of the building, doors and segregation has to be introduced to ensure fire regulations are met by compartmenting sections of each floor.

Title	Upper Floors Layout 001
Date	Feb 2020
Drawn By	ND
Scale	N T S



Elevation Facing the Waterfront

A U Shape building seemed best fit to enable more apartments to have a view of the water and docks, whilst ensuring there was plenty of natural light entering the building.

The ground floor accommodates a walk-through from King's Road to the water side and also the buildings leisure facilities of restaurant and al-fresco dining areas at the waterside.

Title	Elevation_001
Date	Feb_2020
Drawn By	ND
Scale	N T S



Title	Elevation_002
Date	Feb_2020
Drawn By	ND
Scale	N T S



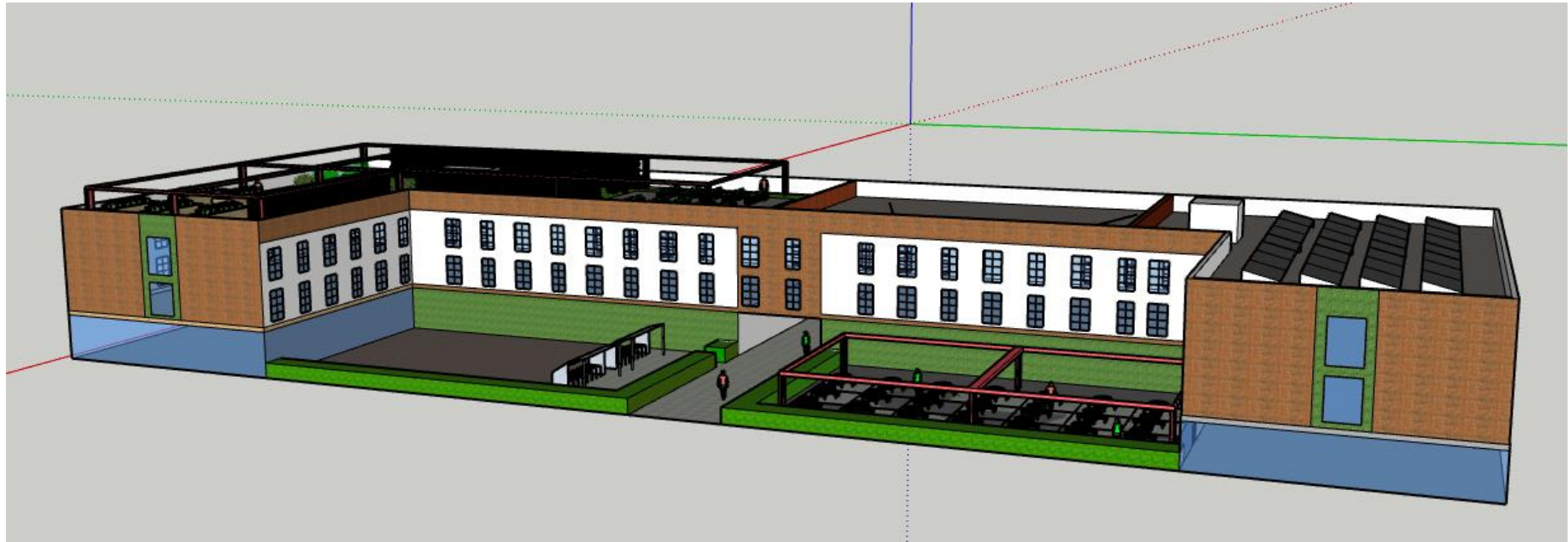
Elevational Treatments

Due to the sensitivity of the envisaged look on SA1 Area, it was important to ensure the elevational treatments were carefully considered upon the design of the building.

Curtain walling is the primary cladding for the ground floor to allow light to flood through and the views across the dock to be fully appreciated, in addition to this green walling has been used to soften the look and create a feature to the leisure spaces.

To divide the curtain walling and the upper storeys, a stone band is looking to be utilised to create a smooth transition in -o the brick and render finish. Due to the industrial heritage of the site it was important to keep this in mind with the design by utilising the same style brick as the local J-Shed Building and tall industrial styled windows.

Title	Elevation_003
Date	Feb_2020
Drawn By	ND
Scale	N T S

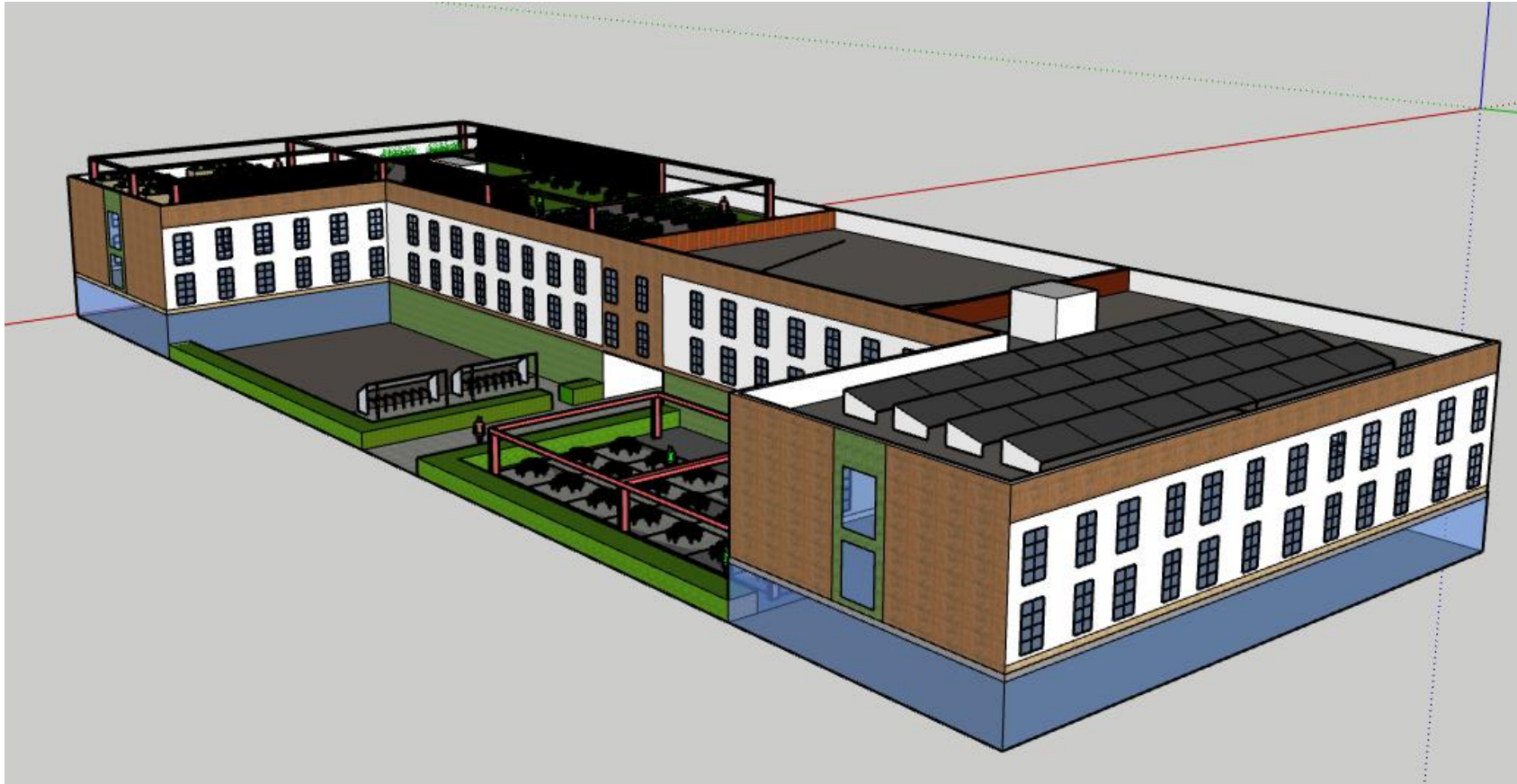


Ground Floor Courtyard

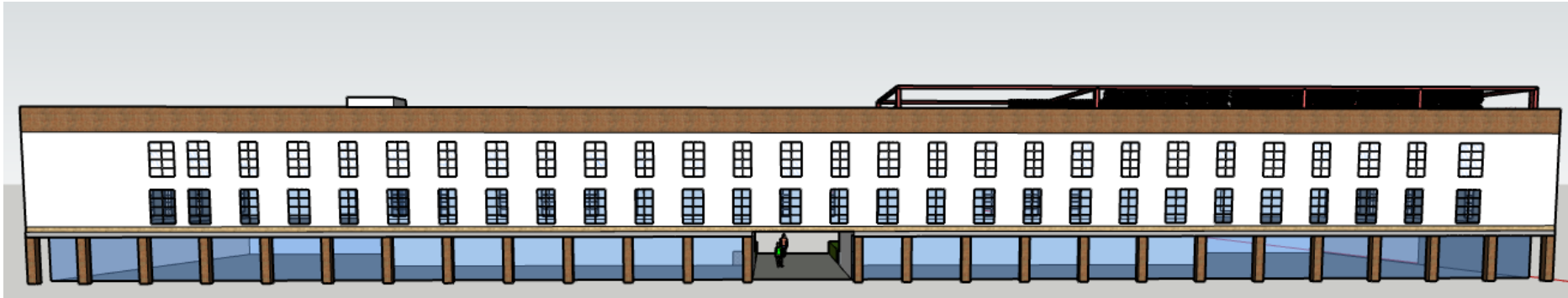
The area known and indicated as the courtyard as previously mentioned allows al fresco dining and encourages a connection between the UWTSD SA1 Waterfront Campus, the accommodation, leisure facilities and the waterfront itself.

The Courtyard includes outdoor seating for the restaurant facility available for rental, and space for students who reside in the complex to relax and spend time studying outdoors along with cycle storage facilities

Title	Elevation_004
Date	Feb_2020
Drawn By	ND
Scale	N T S



Title	Elevation_005
Date	Feb_2020
Drawn By	ND
Scale	N T S



Elevational Treatments

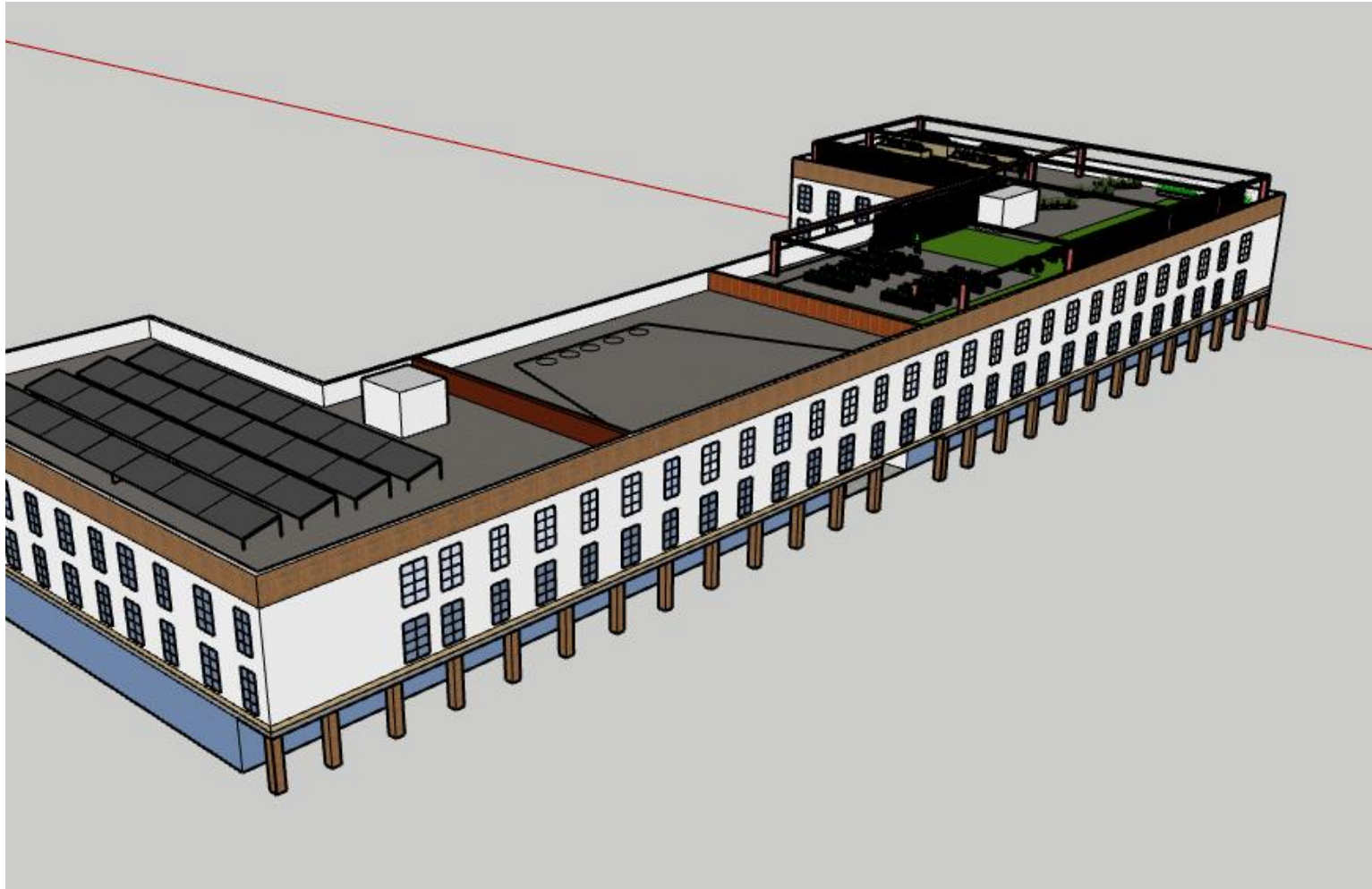
The South Elevation off Kings Road, SA1, has a softer combination of finished, a simple brick clad pillars give character to the building with curtain walling to the commercial spaces within.

As the rest of the building a stone band is used to separate the ground floor from the remaining storeys which will be finished in a white smooth finish render with industrial style windows.

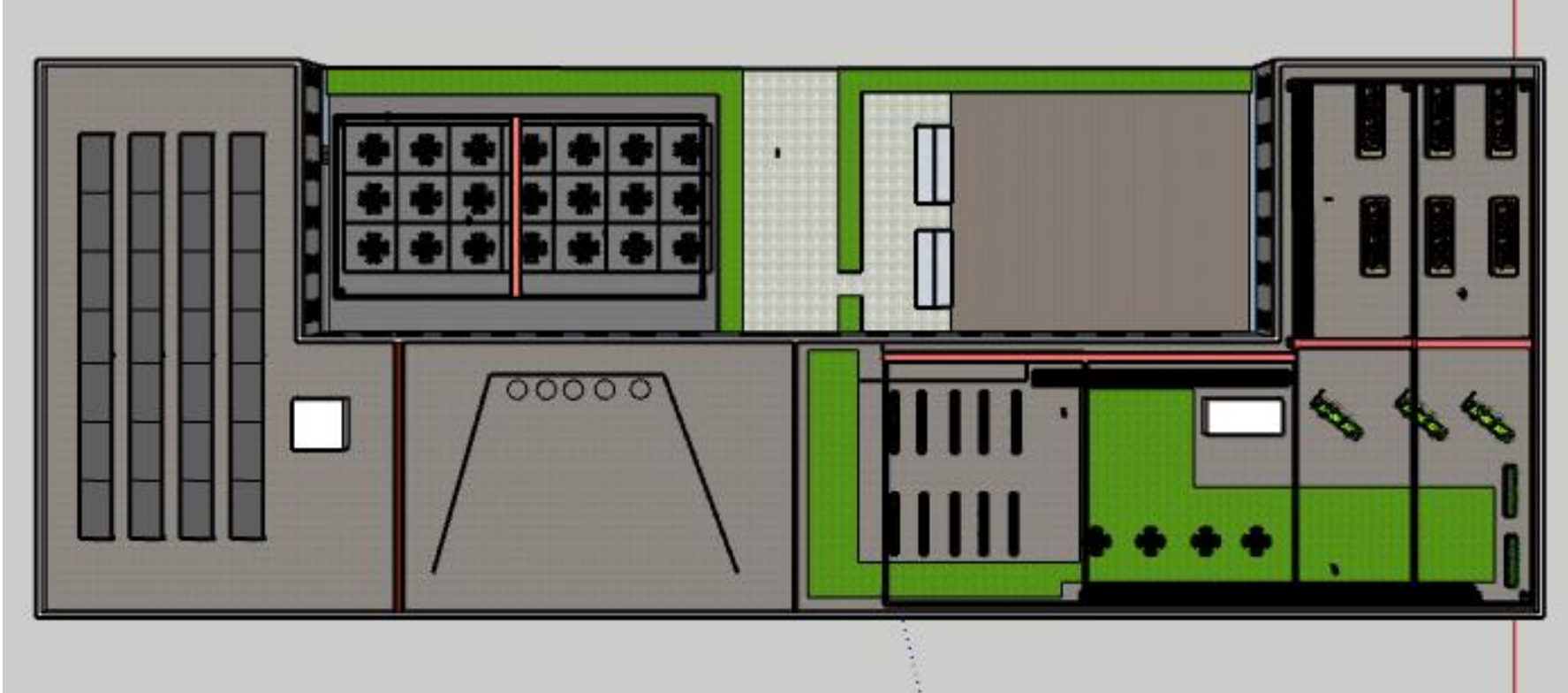
Title	Elevation_006
Date	Feb_2020
Drawn By	ND
Scale	N T S



Title	Elevation_007
Date	Feb_2020
Drawn By	ND
Scale	N T S



Title	Elevation_008
Date	Feb_2020
Drawn By	ND
Scale	N T S



Roof Plan

The roof has been designed not only to be a cover but to be a space that can be utilised in ways which make the building eco-friendlier and allow families who reside in the complex places to relax and keep busy.

This space is separated in to 3 sections, on the left of the above view are the Solar Panels which will assist in providing electricity to the building.

The centre will be designed as a drainage system to harvest rainwater which will be stored and recycled for use within the wastewater systems.

Finally, a garden space, allowing residents to spend time outdoors growing their own produce whilst creating a space where people can socialise together with the views across the SA1 Area.

Title	Roof_Plan_001
Date	Feb_2020
Drawn By	ND
Scale	N T S



Site Location

The above Site Location Drawing shows how the building will be orientated in amongst others within the SA1 area.

The land here at C4 SA1, seemed the most fitting for the student accommodation building due to its proximity to the university but for also introducing new commercial and leisure facilities for students and local residents to both enjoy whilst making the most of the local area.

Title	SITE_LOCATION
Date	Feb 2020
Drawn By	ND
Scale	N T S

Group Project - Vito Construction

Design Dimensions

Overall Building	Quant	Unit
Perimeter	278	M
Building Height	9	M
Façade Area	2502	M2
Total Area	2502	M2

GROSS Internal Floor Areas

GF Area	2042	M2
1st Floor Area	2042	M2
2nd Floor Area	2042	M2
Total GIF	6126	M2

NET/Usable Internal Floor Areas

GF Area - Commercial Space	1675.2	M2
1st Floor Area - Living Space	1578.5	M2
2nd Floor Area - Living Space	1578.5	M2
Service Spaces & Corridors	1293.8	M2

Apartments	Quant	Unit	
Total Number of Apartments	82	NR	41 Per Floor
Perimeter	25	M	
individual Apartment Floor Area	38.5	M2	

Design Aspects

The design of this new facility for UWTSD Student accommodation was designed to maximise the potential of the land at C4 SA1, but importantly fire safety was also a key factor.

As mentioned above, the ground floor is almost entirely made up of spaces for commercial use, these will be constructed to a shell and fit out will be completed by the tenants of each block. The Ground Floor will also house a reception area for the student accommodation above with facilities management, receptionist, lift and stair access to the upper floors and also direct access to a laundrette facility. The ground floor has a fire escape channel/corridor which runs the whole length of the building. As we can see on GF_Layout_001 above each end of the building has 3 fire escapes to allow quick escape from the building within an emergency.

The upper floors both share a replicated design of the apartment as shown in *Individual Apt Layout_001*. This has been utilised for ease of build and cost saving purposes by allowing Pod construction and more offsite manufacturing to be undertaken which will assist in the development due to the constraints of the land and having little storage space for materials. Each floor will have 41 Apartments each giving a total number of apartments of 82. To ensure the safety of the residents who will be houses here, the upper floors sprinkler systems will be installed in-to all corridors and individual apartments along with heat sensors in kitchen areas of the apartments and within the kitchen spaces of the ground floor restaurant. In addition to these protection measures fire alarm systems will be mains fed with generator back up in the plant room and battery back-up if required. Finally, due to the scale of the building fire compartmentalisation was introduced on each floor of the building in the form of introducing fire doors within the corridors to reduce the spread of fire if it occurs. The residential floors have been designed to allow the maximum natural light in-to the building as possible, and to maximise the buildings attraction by having the apartments facing the waterfront.

In addition to this it was felt that the roof space should have a purpose for more than protecting against the elements therefore it was decided to continue with the same floor make up on the roof and utilise this space for Solar PV Panels which will assist in providing energy for direct use within the building, in the centre will be rain water harvesting systems which will feed through in to storage tanks within the substructure which will feed the toilet systems within the whole building. This allowing the building to be as self-sufficient on energy usage as possible whilst having as little impact on the environment as possible. The roof space will also house a community garden area which allows for students and those with families to study and/or grow their own supplies in the forms of fruit and vegetables. This space can be versatile and used as an escape for the residents during the warm summer months to enjoy the local surroundings at the waterfront with views to the hills.

Construction Materials & Methods

Due to the ground make up in the SA1 Area, the land dictates a concrete piled foundation in-to a stable ground stratum. Sitting on the piles will be a reinforced concrete floor slab.

To allow for large open spaces within the commercial facilities on the ground floor a steel frame structure will be used for the shell of the building. As the design was required to feel large and bright open spaces, the decision was made to clad the majority of the ground floor in a glazed curtain walling system. Due to the exposure levels of the development being of a very severe grade, the materials used on the building are going to need to be tried and tested to ensure that the building can withstand. Therefore the curtain walling must be of a unitised system, as there is a large area of curtain walling considerations must be had in to the performance of the glazing to ensure that as well as providing a secure barrier to protect against water penetration, they must provide good thermal insulation, fire, smoke and acoustic separation to ensure that the building is as environmentally friendly as possible.

The upper floors will be formed using pre-cast concrete, this option of steel frame with precast concrete was decided upon due to the reduced impact this has on the local area. By being developed off site they can be shipped to site when required and installed immediately. The pre-cast floors will be finished with insulation and a screed to increase the thermal insulation properties of the building.

Each storey from underside of precast floor to finished floor level will be of 3m in height, within this space a void of 400mm will be introduced to house all service channels and a suspended ceiling beneath allowing a 2.6m space in all public areas of the building.

The upper floors will be clad in a traditional masonry construction, with a mixture of elevational treatments introduced to blend in with the current SA1 aesthetics, but also reflect the history of the docklands in doing so. Between the curtain walling and render finished a Cotswold stone band will be introduced to ease the transition between the storeys. Majority of the building will be clad in a white render with tall Anthracite Grey Windows to give an industrial feel to the finished building. It is important that due to the severe exposure levels to the weather and saltwater spray from the sea, that the glazing and frames are designed to withstand such penetration and corrosion. To ease the visual impact of the scale of the building the render will be split by the introduction of brickwork band around the public roof space and green walling. The idea of introducing brick and render has come from the other buildings around the sa1 area, a brick similar to that used on the J Shed building will be used.

The residential floors of the development will be segregated with timber stud walling filled with insulation to create a sound and thermal barrier. Party Walls between apartments will be finished with 15mm Fireline Plasterboard. At the areas of fire compartmentalisation, the timber stud wall will be replaced with blockwork to ensure the fire compartmentalisation runs the whole width of the building.

The apartment design allows for more use of off-site construction methods. The intention is to utilise pod like construction for bathrooms and kitchens of each apartment and these can be lifted in to position prior to each floor being fitted. This reducing the risk of damage, and health and safety concerns from manual handling items into the building. It would be beneficial to also utilise the crane and put other materials in-to the upper floors such as plasterboards and doors, this reducing damage from manual handling but also from incorrect storage and theft, which in return reduce the cost of damage and waste.