

ZONING

This scaled drawing is to show the allocated areas that have been allocated for construction and development.



Leisure Centre Building Area

This is the designated area of the site that will be allotted for the construction of the physical development. This is to include a swimming pool and diving area, indoor sports halls, gym suits and studios, as well as public leisure areas.



Landscaped Area

These portions of the site will facilitate outside recreational areas that will include a skatepark, seating and dining facilities, and bicycle docks.

As well as being the locations for the tree wind turbines.

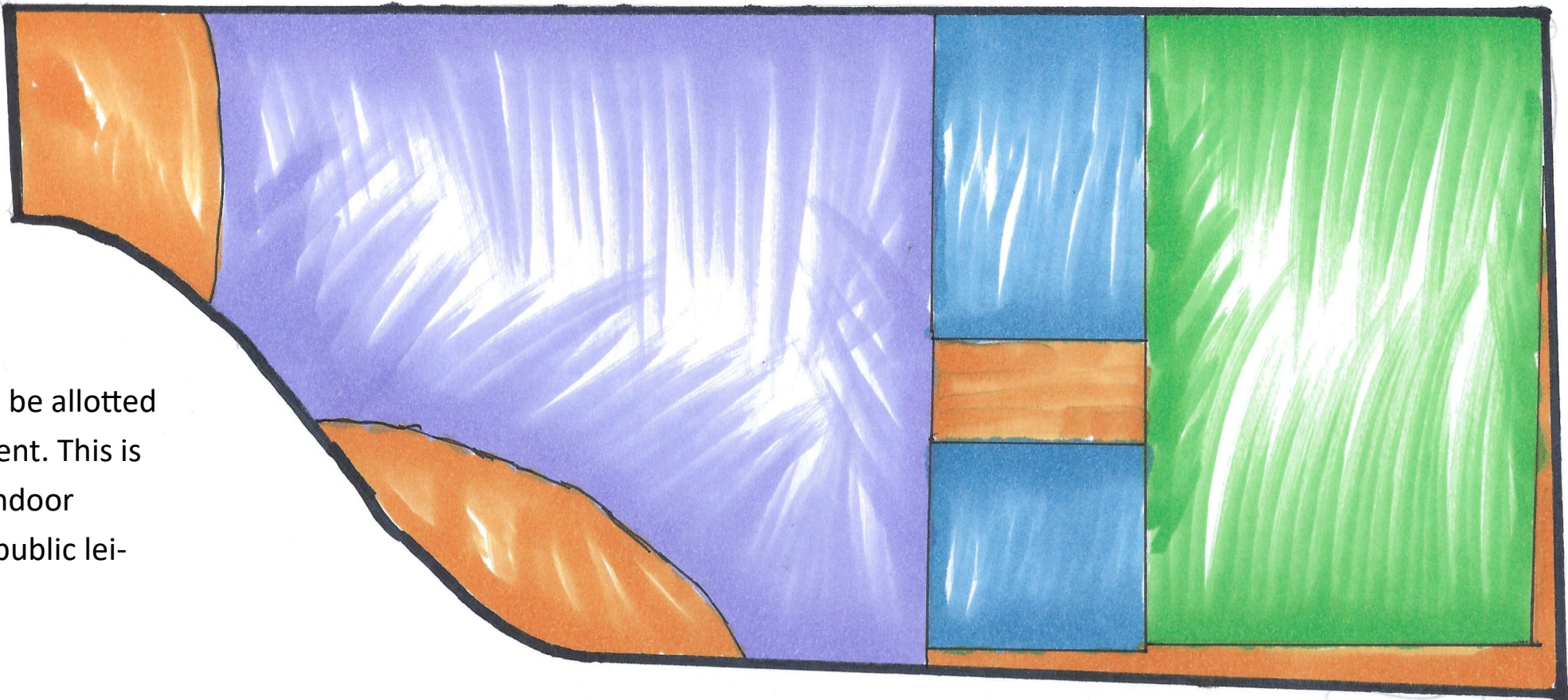


Football/Rugby Playing Field

The rugby pitch area has had to be reduced to realistically fit into the site while still being able to accommodate the other needs of the client.

Length—90m with 5m goal area and a 2m run off (total 104m)

Width—60m with 3m runoff at both sides (total 66m)



Tennis Courts

This area is to provide space for five outside tennis courts. These are to be fenced off individually and access to be facilitated from the outside.

Dimensions for each tennis court

Length—35m

Width—17m

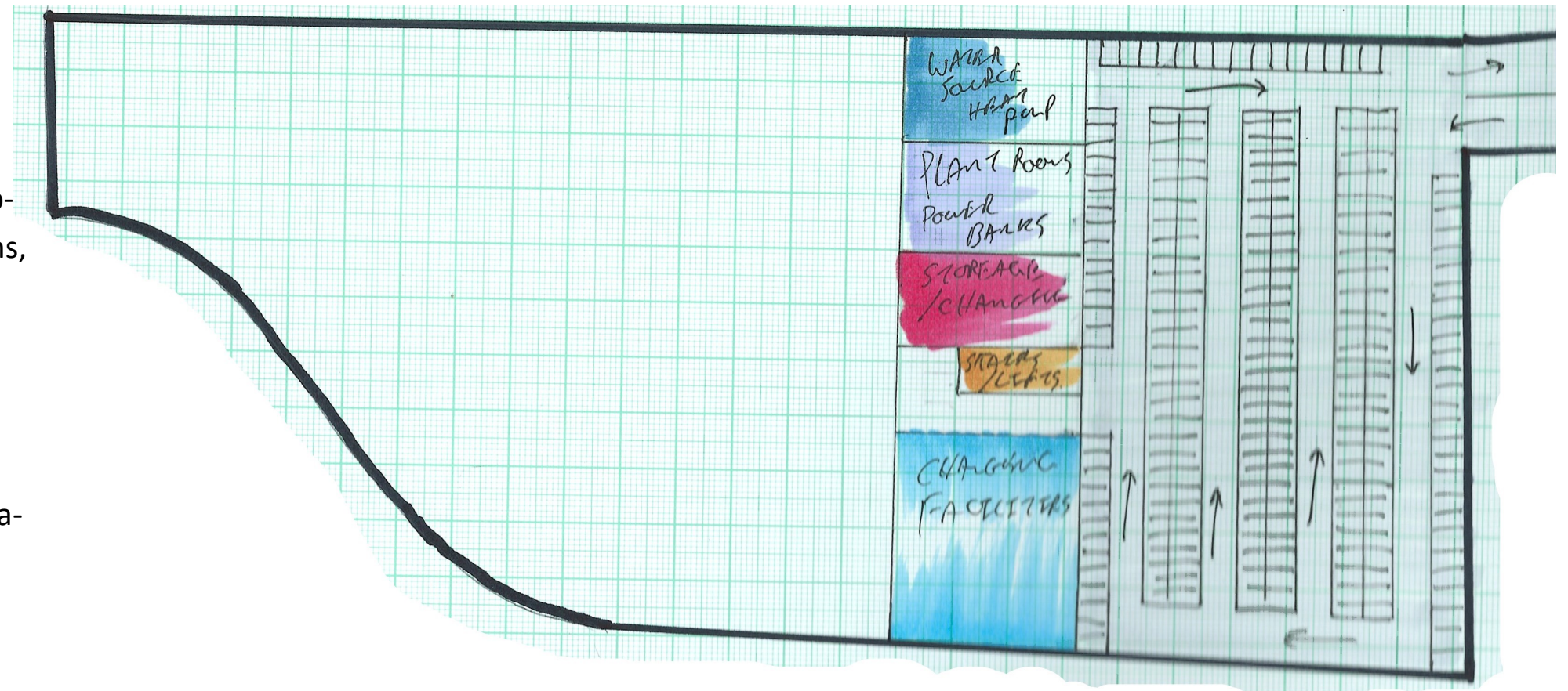
PLANS

Sub-level

To facilitate the site the parking will be located in the sub-structure of the site. This will also include the plant rooms, water source heat pump.

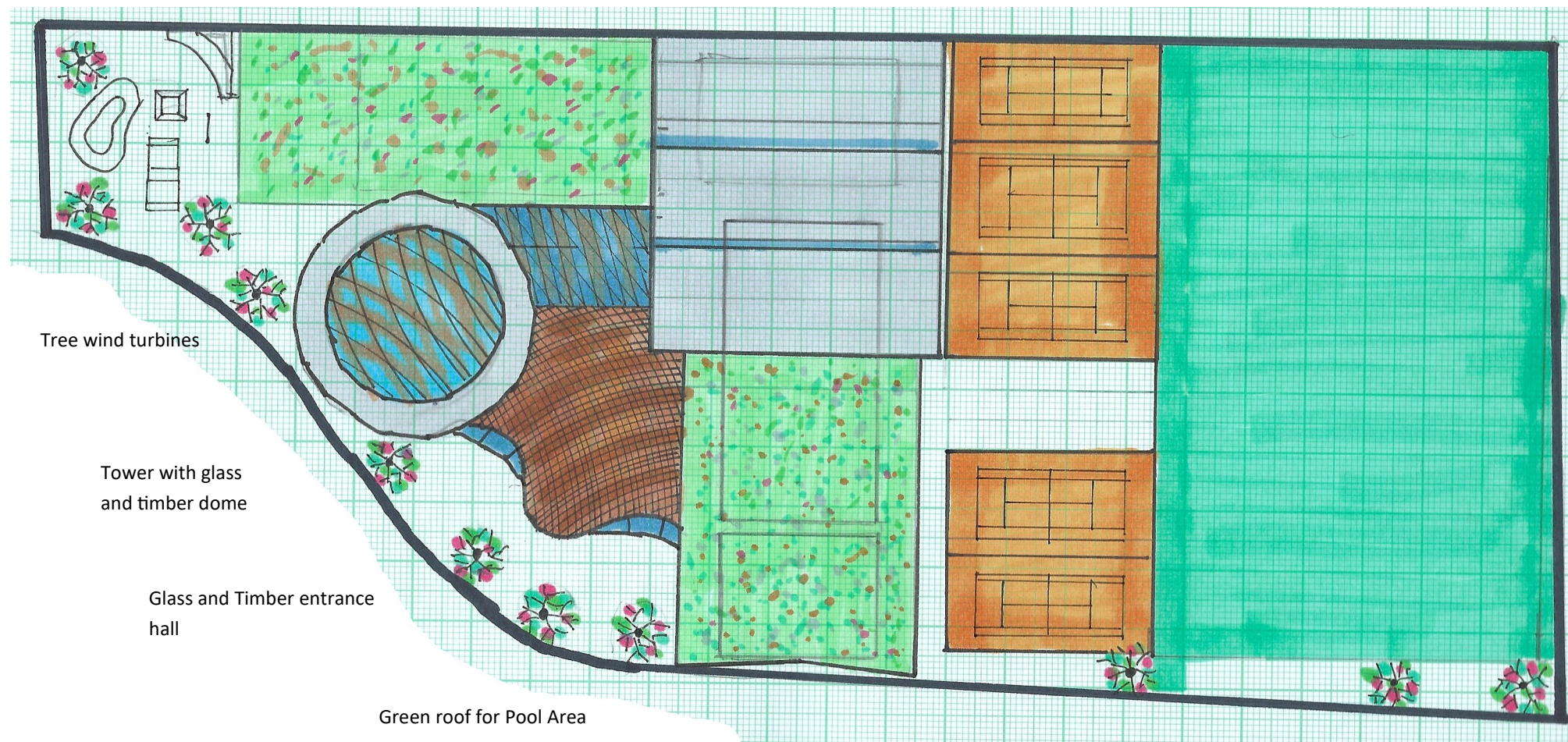
The changing facilities and storage rooms for the outside sports fields and tennis courts.

Access to and from the substructure will be provided by lifts and stairs. With access for vehicles to and from the facility will be from the north road.



Skate park area

Indoor sports courts



Ground level

This plan shows the layout of the site and different building types and dimensions for the site.

The Olympic swimming pool and diving pool to be located under a green roof structure.

With an indoor basket ball and indoor football courts to be located alongside the dock area.

A circular tower to be located next to the timber and glass entrance to the facility.

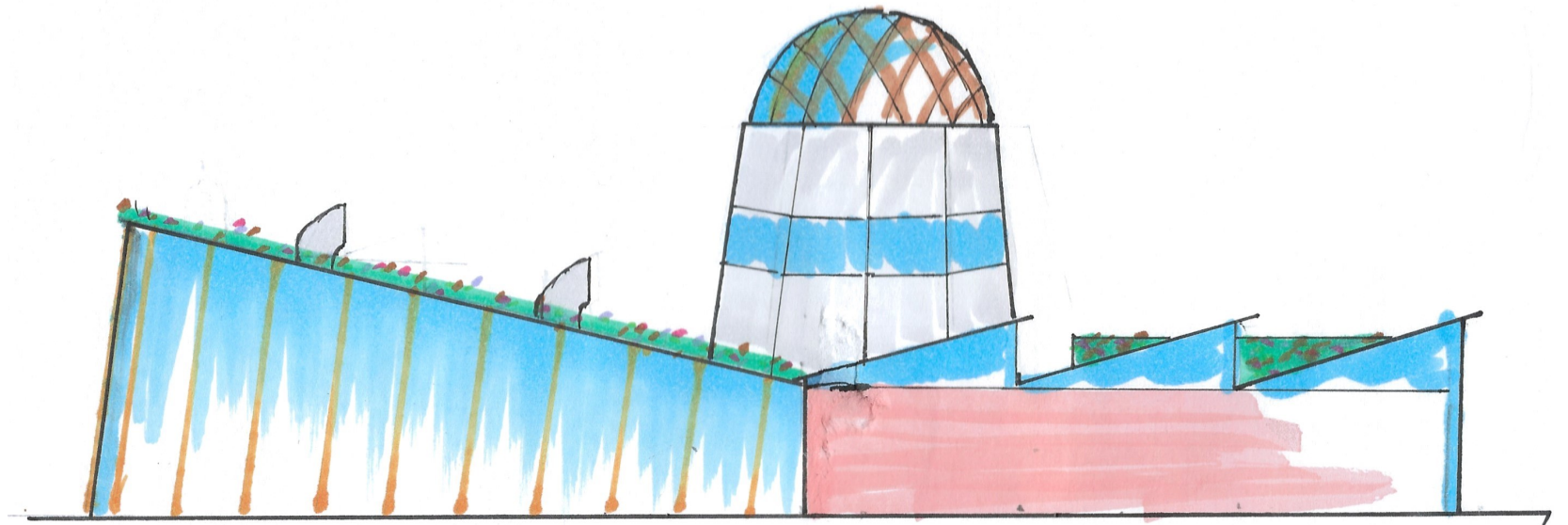
Skatepark to be implemented in the north west corner of the site, as well as there being wind turbine trees being spread out along the south perimeter of the site.

Elevations

East Elevation

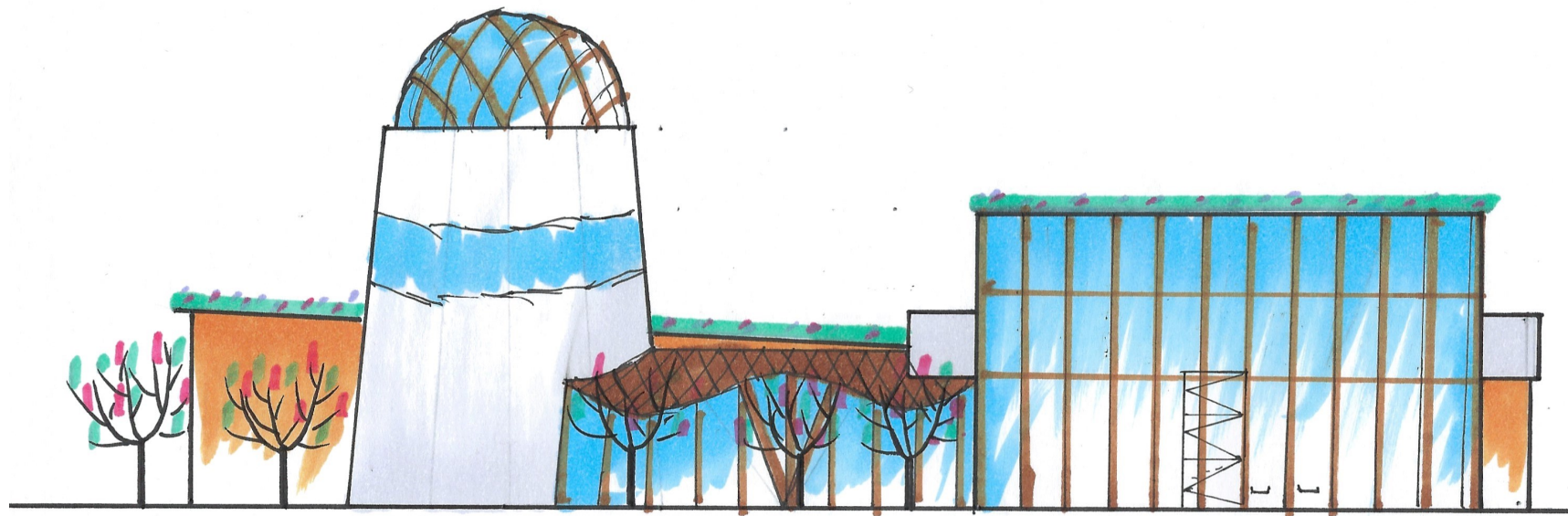
Shows glassed façade of pool area with glulam timber and a green roof that will be seeded with wild native flowers and plants that will help wildlife in the area. Leading to a red brick construction that will support an angled roof covered with solar tile that will mimic the appearance of Welsh slate tiles.

The angles of these constructions are to make the most of the sun's path throughout the year.



3D View

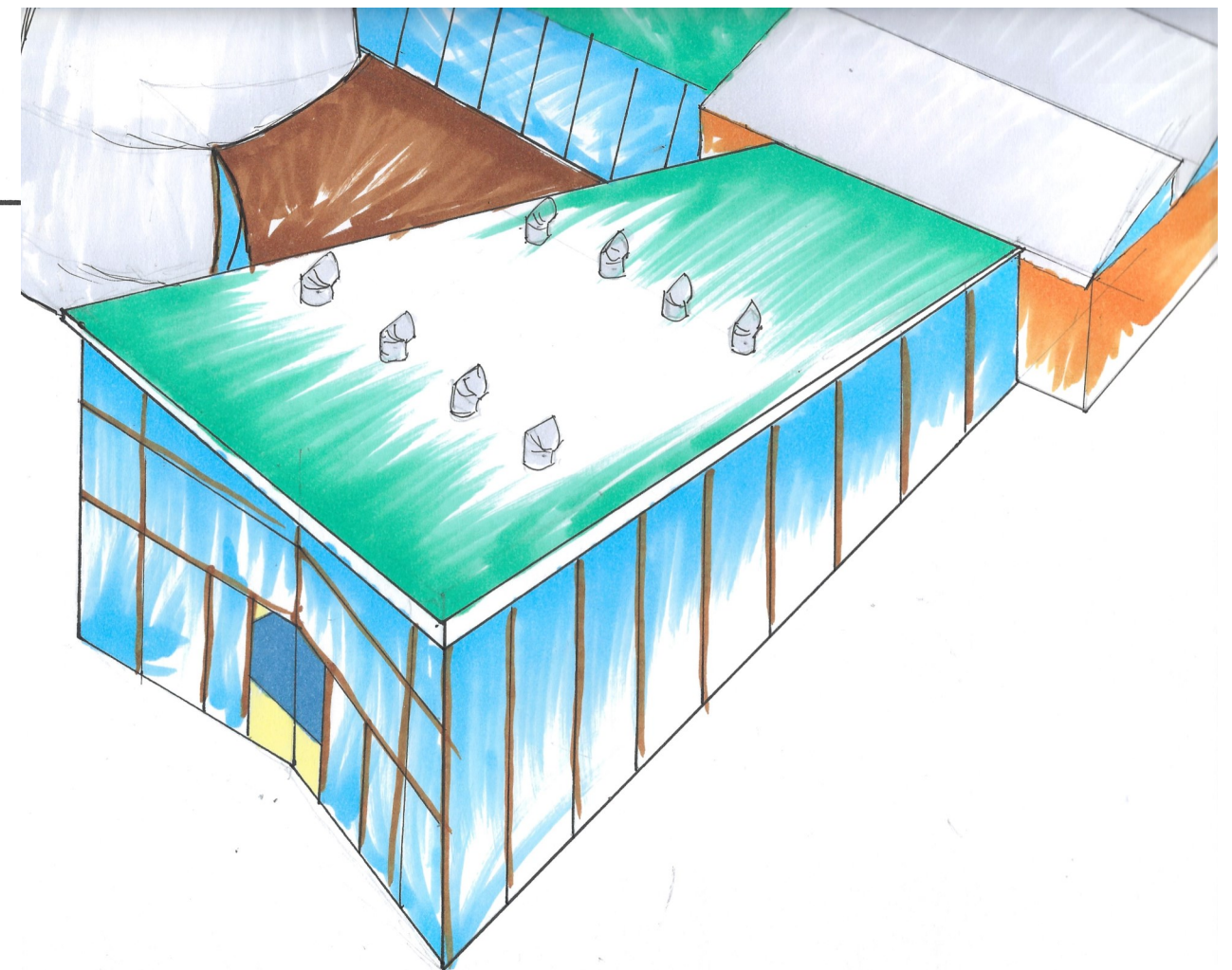
This view shows how the front of the curtain walling are angled in to encourage air flow that will facilitate natural air flow.



South Elevation

Demonstrates how the tower will form a focal point of the facility, while also connecting the two wings of the development. At the top of the tower will be a glassed and glulam timber dome construction that will provide fantastic views over the surrounding landscape.

The design is to consist of a large entrance area that is to be a welcoming approach not just for student and staff but to also be a welcoming front for the public as well.



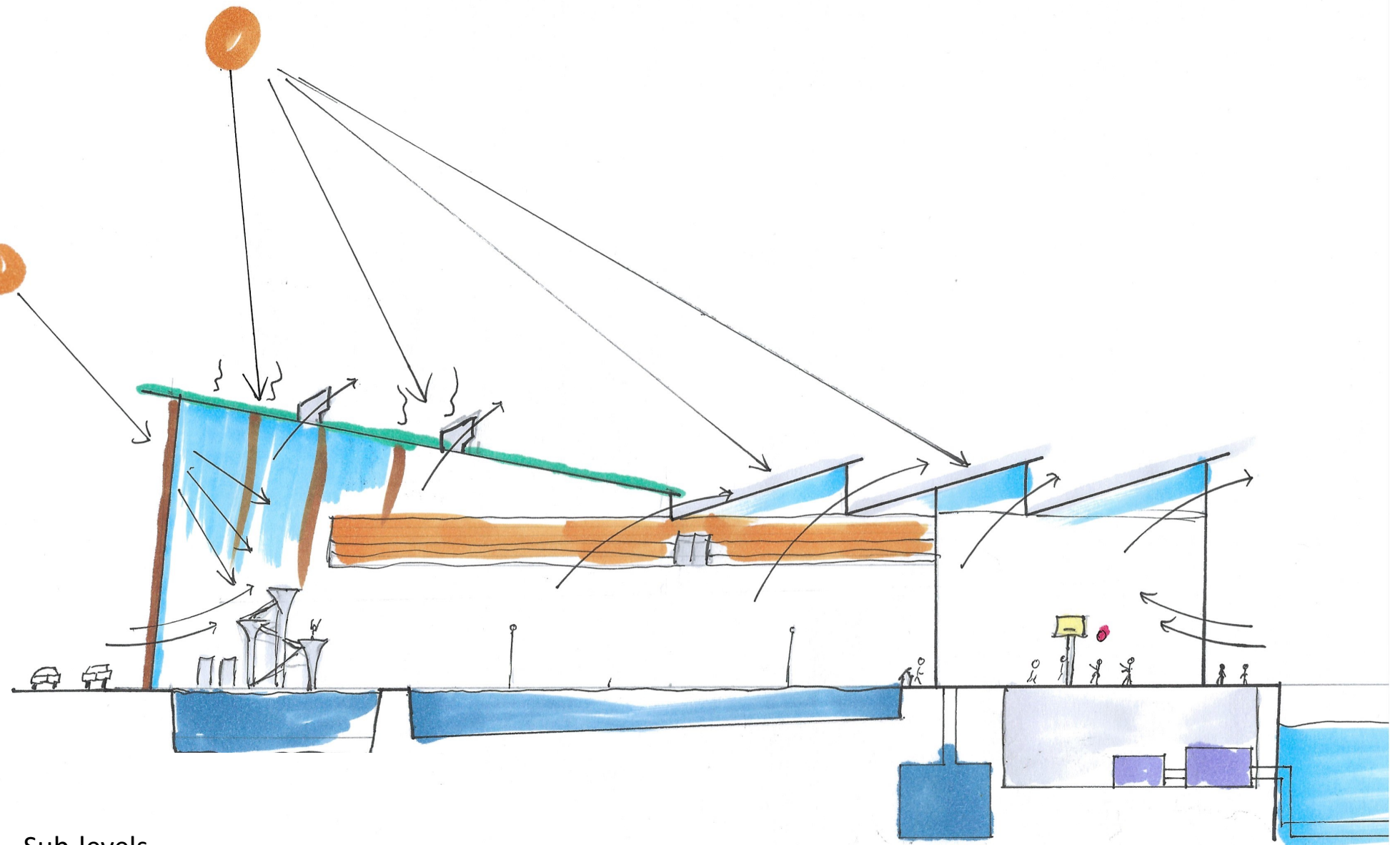
Internals

Cut Through of the swimming area

Showing the diving and swimming pool in the main body of the construction and the indoor courts to the north of the building.

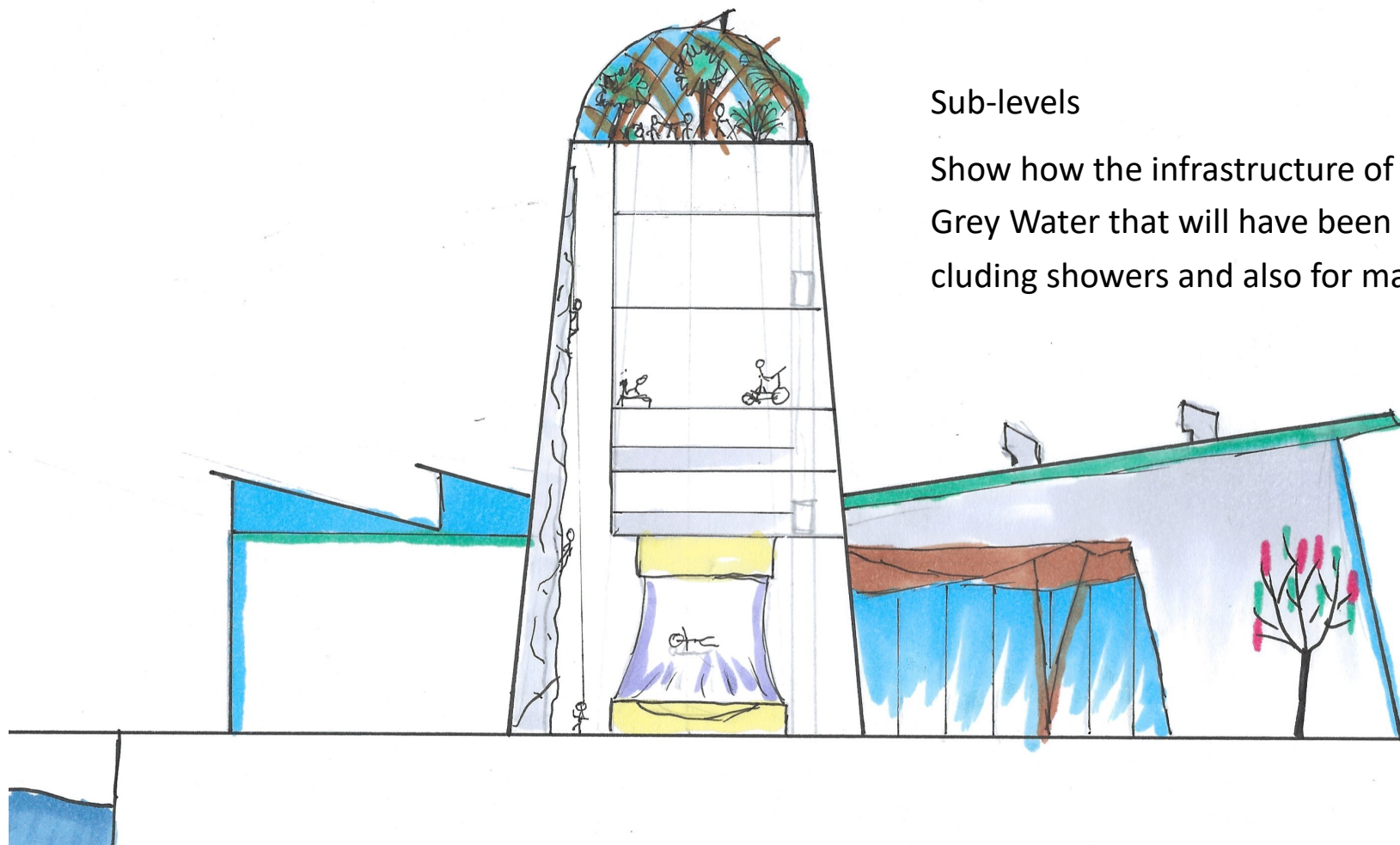
It demonstrates how the winter sun will transmit heat into the building using thermal glazing, whereas in the summer the excess heat from the sun will be absorbed by the dense green roof and also power the solar tiles.

Natural air ventilation is demonstrated in this diagram, with intake coming from the lower part of the façade and then passing through and then up out of the building through vent incorporated into the building.



Sub-levels

Show how the infrastructure of the facility will make use of the adjacent dock. As well as having storage for Grey Water that will have been harvested from rainwater, this can then be used for the sanitary facilities including showers and also for maintaining the water level of the pools.



Cut Through of Tower

The focal point of the leisure centre, this will house the more unique aspects of the facility that will make the proposed construction a destination for people all across Wales. These include a Faux rock climbing wall, indoor skydiving tunnel, and a class room on the top which will strive to protect vulnerable plant species from around the world. Also, in the body of the tower will be studios that can be leased and treatment rooms as well as a fully adaptable gym.

Services

Wind Tree by New World Wind

Installed Power per tree—10 800 W

Nominal Power 5868 W Power per Aero-
leaf— 300 W

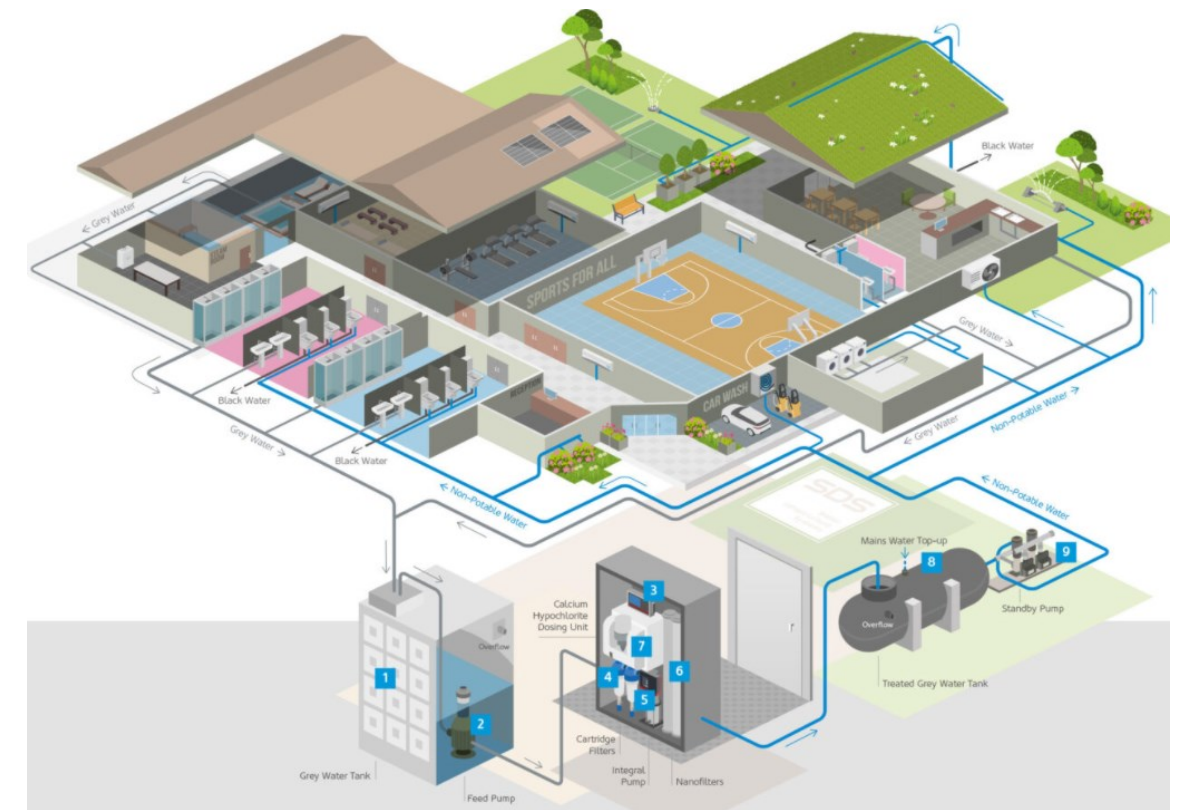
Number of leaves— 36

Total Height— 9.8m

Lowest point of first Leaf— 3.2m

Total Diameter— 8m

Provides an incorporated wind turbine that fits with the landscape, benches can be supplied around the turbine that can give access to USB charging ports as well as supplying charging points for electric bikes and scooters.



SDS Waterbank—Grey water on demand system

This system is a fully automated design that will deliver a consistent supply of treated water to meet the demands of the site.

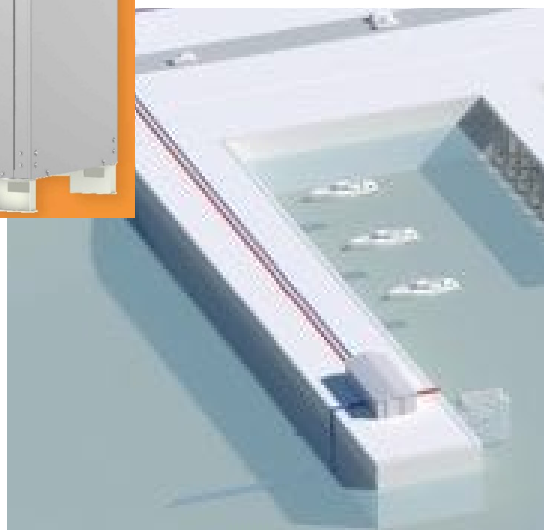
This system reduces the need for large capacity storage tanks, as it can process 1m³ per hour. This system also allows for the combination of grey water and rainwater recycling.

Water Source Heat Pump—Ecodan CRHV

This Type of unit can operate singularly or be part of a bank to create a system that is able to modulate and cascade units on and off that will allow it to meet the demands of the building.

Provides up to 65°C of water flow temperatures without the need of booster heaters.

Enabled to do heat recovery as well as passive cooling.



Plan View

Landscaped area

To include outdoor skatepark, benched area, charging points for bikes and scooters that area powered by the wind tree turbines.

Tower structure

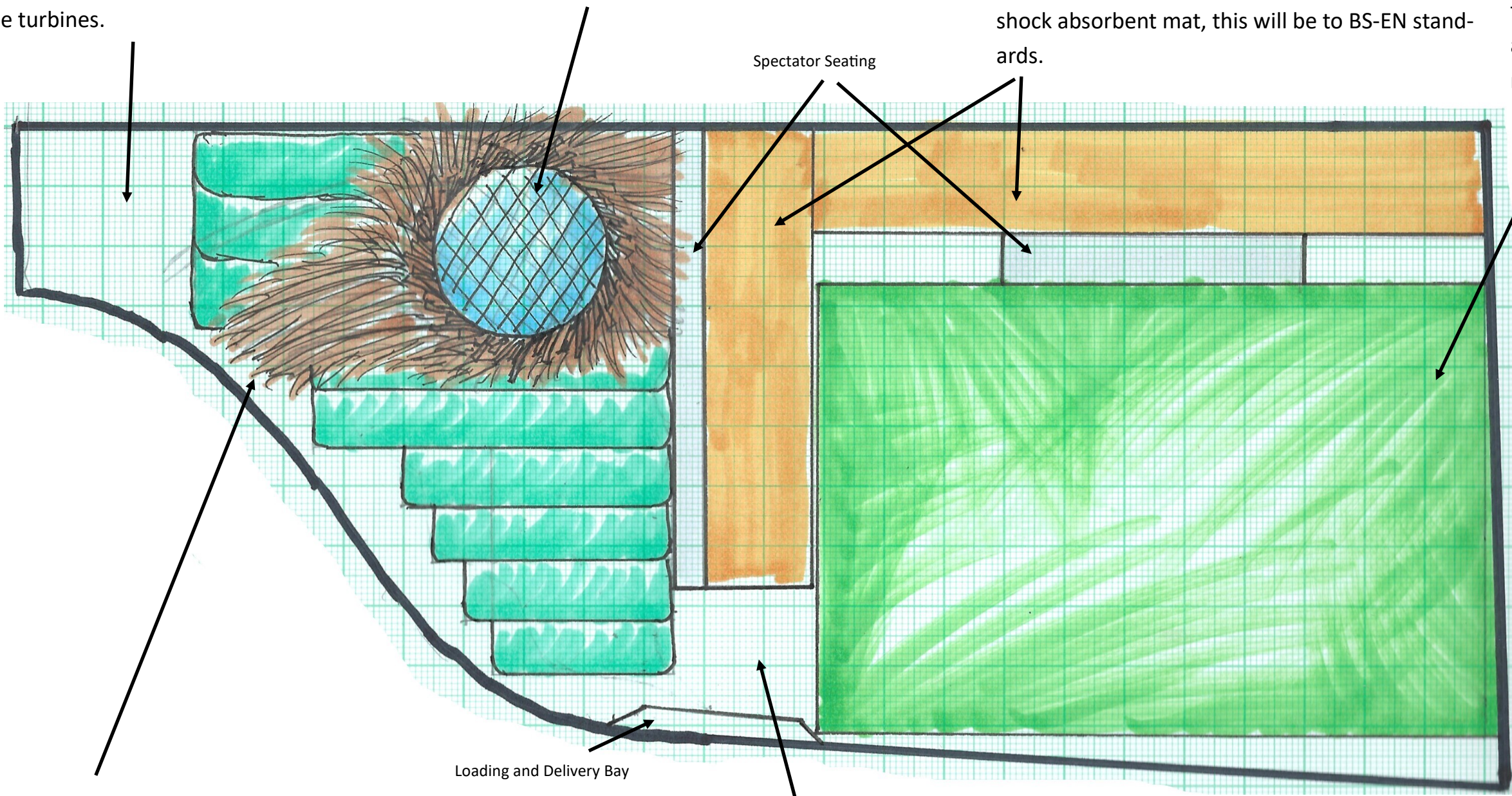
Moved to the north of the building so that it doesn't seem so imposing to the rest of the structure. The actual tower is 35m diameter at the base and 30m diameter at the top.

Tennis Courts

The tennis courts will be adjoined together and will be enclosed with a tall cross wire fencing that will restrict ball play leaving the assigned area. The courts playing surface will be synthetic 2G surface that is infilled with sand and sit on top of a shock absorbent mat, this will be to BS-EN standards.

Rugby/Football Fields

To be a Hybrid turfing system— 95% natural turf with 5% synthetic stitched in. this technique will allow longer playing times for the turf while also reducing the injury risk for players that are as a result of the 3G alternative.



Entrance

The foyer area and main entrance to the leisure complex is to be located through the glasses front of the third segment. It will provide access to the various facilities that are provided inside the complex.

Access

This is to the underground parking from playing fields and tennis courts. It will be established by two lifts and a service elevator as well as a large stairwell and rampart, this is to provide access for deliveries as well as storage for the relevant sports equipment that is required. This part of the design is flexible and could be moved closer to the road to be facilitated by a loading bay, to make deliveries easy when required and reduce traffic in the subterranean car park.

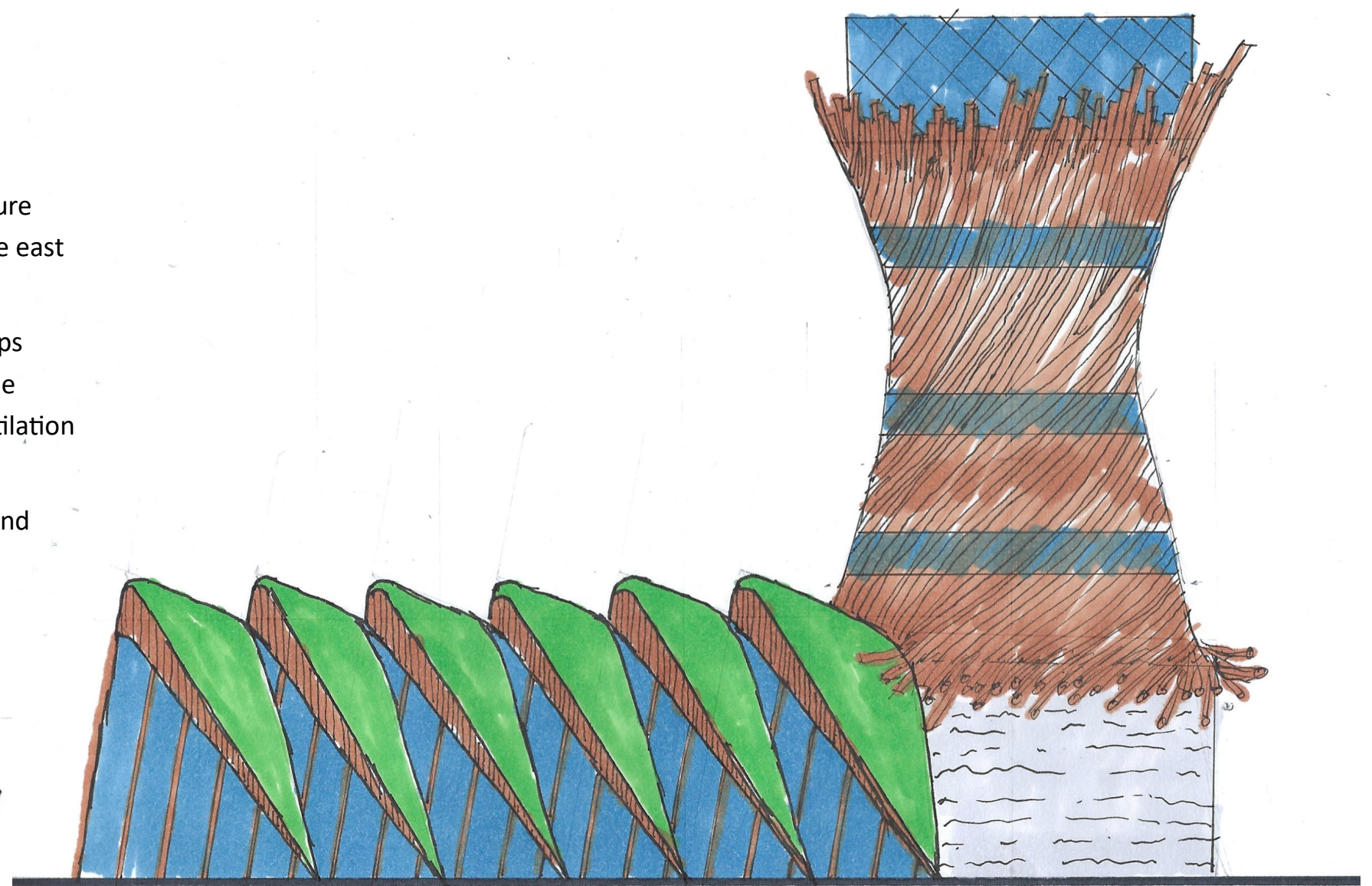
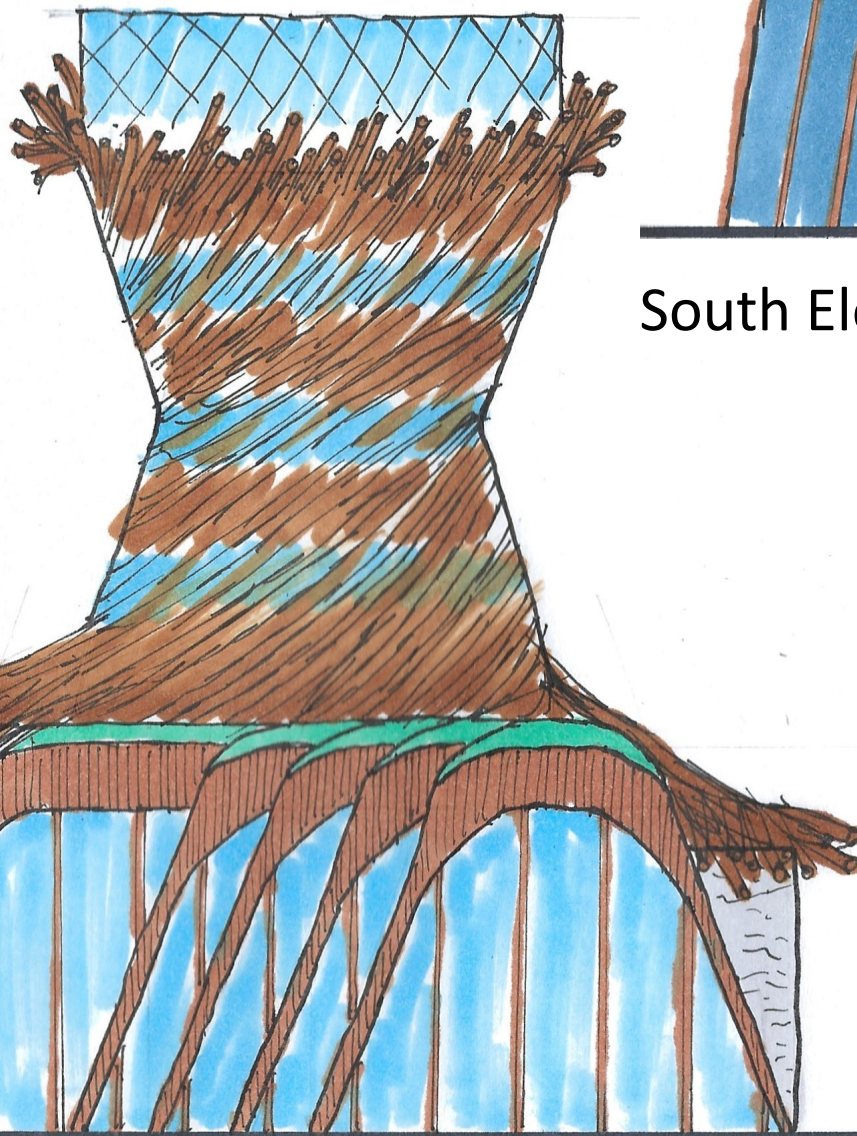
Elevations

East Elevations

This view shows the side of the structure where the main complex of the leisure centre will be housing the swimming and diving pool area. The glassing on the east and south of the building will make use of solar gain in the mornings and day.

The wave build-up of the roof structure will provide a chimney effect that helps with natural ventilation, reducing the need for mechanical venting system. The slatted wood on the up side of the roof will camouflage the vents for the ventilation system.

The green roof system is in place to provide insulation in the winter months and provide a natural habitat in an area lacking of green spaces.



South Elevations

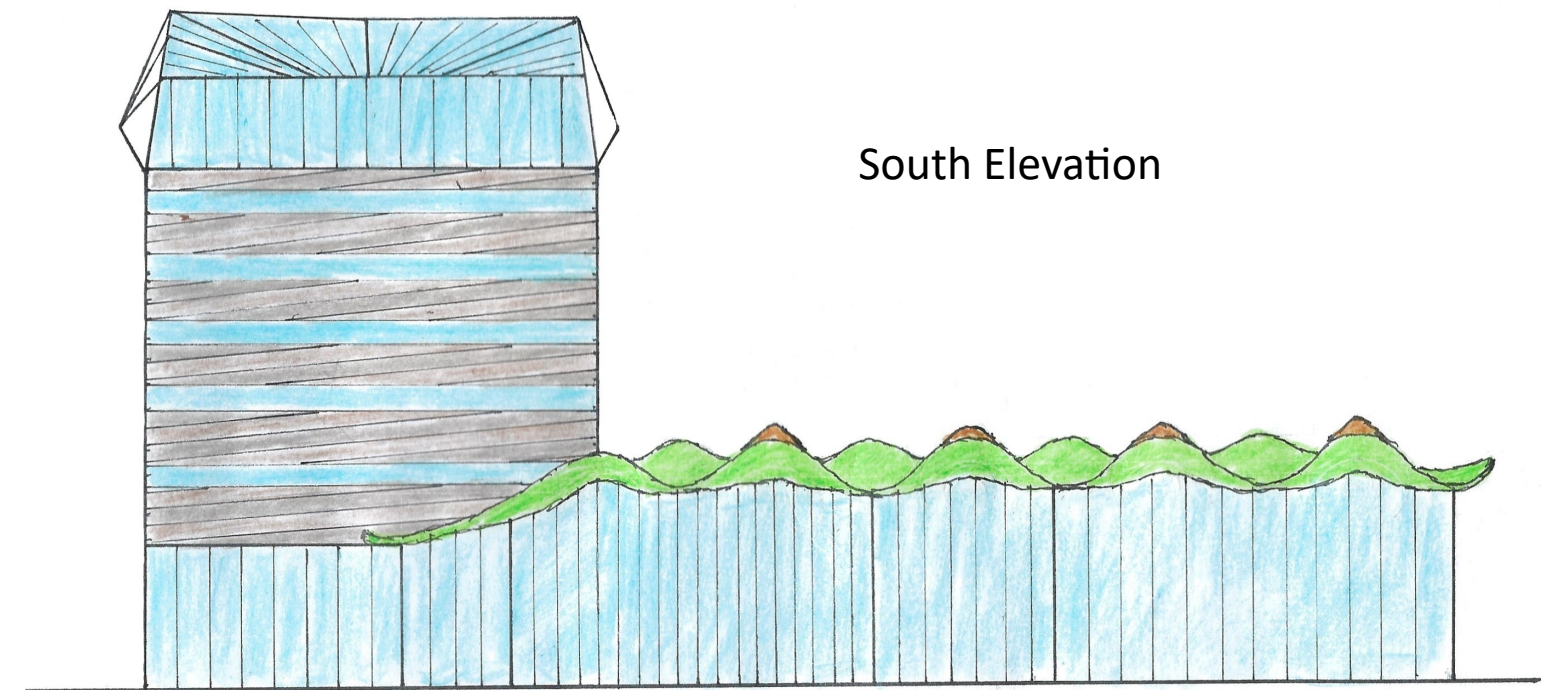
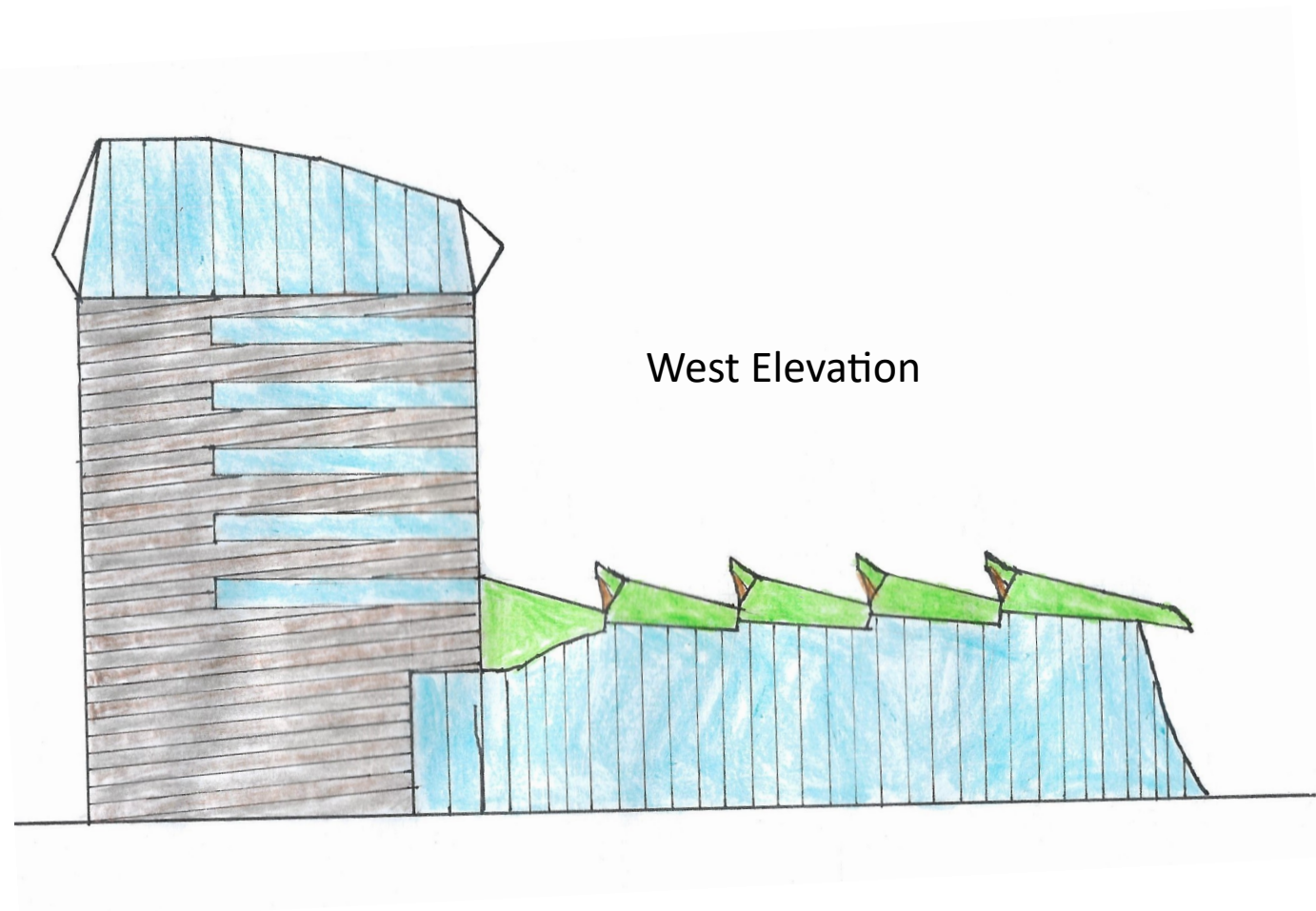
This depiction shows how the sides of the construction will be sloped inwards, coming up to a flat roof that slopes backwards.

The tower structure will intergrade into the main body of the structure by using larch wood cladding. It is designed to represent a tree like structure growing out of the green foliage of the roof that represents a wild meadow. The 'roots' of the tower will also flow down and provide a cover over the entrance area to the foyer and entrance to the building.

The tower will house an indoor skydive tunnel to be located on the ground floor, as well as a large climbing wall that will scale the whole height of the building on the north side. These two facilities will be unique to Wales and will aim to make the proposed facility and destination for many people.

The tower will also house dance and gym studios and weights and fitness suits. The glass house at the top of the building will house a café and bar as well as housing rare plants and trees that can double as a research facility for the university.

Elevations

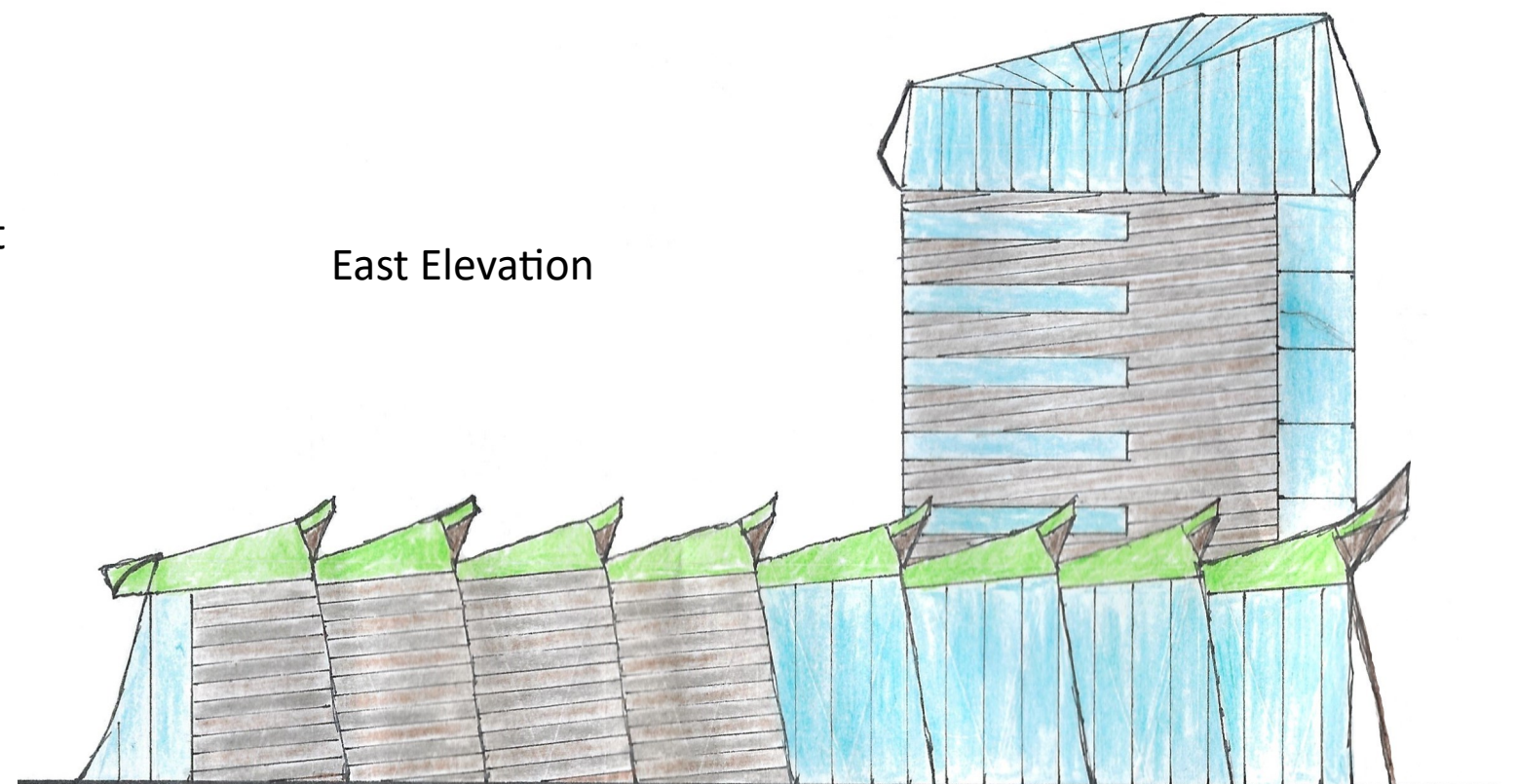


The completed elevation designs show the potential façade that has been designed to offer a project that meets the needs and desires of the client.

The main part of the building is to be covered with a wave form roof that is teared, this will allow for a striking and unique look as well as enabling the possibility of natural ventilation.

Demonstrates the tower complex that is part of the construction that will enable the ability to provide more facilities to the students and public alike.

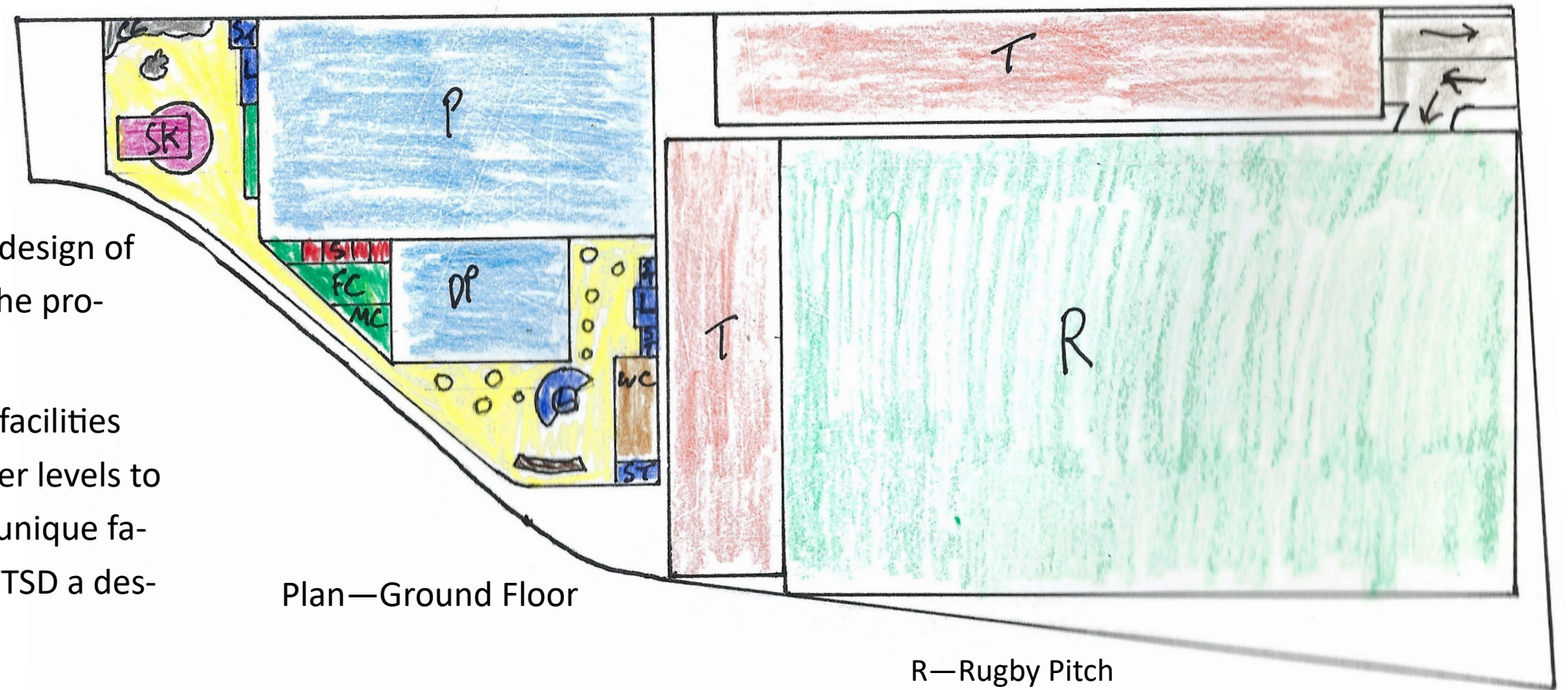
This structure will be a focal point for the area and bring in focus to the local community by delivering a striking and interesting structure.



Plans

These plan layouts shows how the substructure design of the building relates to the ground floor plan of the proposed site design.

Locating the carpark, plant rooms and changing facilities that will service the structure allows for the upper levels to be more open and enable the ability to provide unique facility that will make the structure and intern UWTSD a destination complex for the country.



Plan—Ground Floor



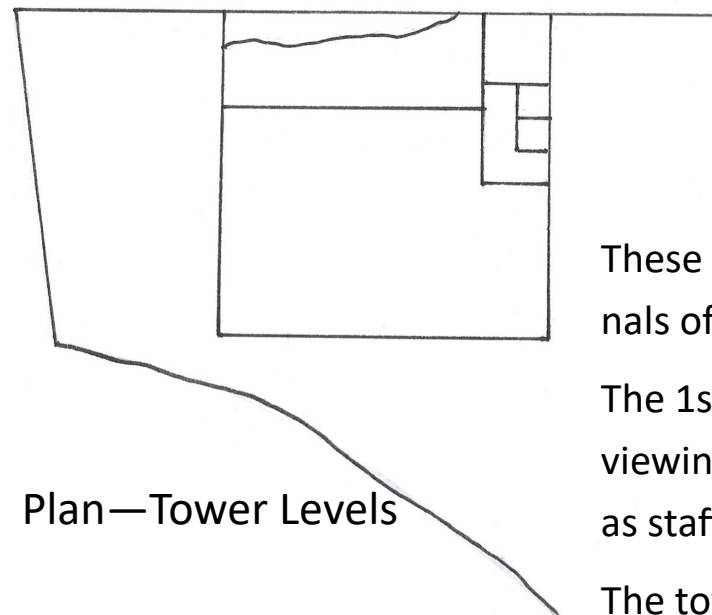
Plan—Sublevel

- R—Rugby Pitch
- T—Tennis Court
- P—Olympic Swimming Pool
- DP—Diving Pool
- L—Lifts
- WC—Water Closet
- ST—Stair Case
- CL—Climbing Wall
- FC—Female Changing
- MC—Male Changing
- S—Stores
- SK—Sky Diving Turbine
- PR—Plant Room
- HC—Home Changing room
- AC—Away Changing room
- WTC—Women Tennis Changing room
- MTC—Male Tennis Changing room
- FA—First Aid Room
- WPC—Women Pool Changing room
- MPC—Male Pool Changing room
- DC—Disabled Changing room

Plans



Plan—1st Floor



Plan—Tower Levels

These drawings show the layout of the interiors of the structure on the upper floors.

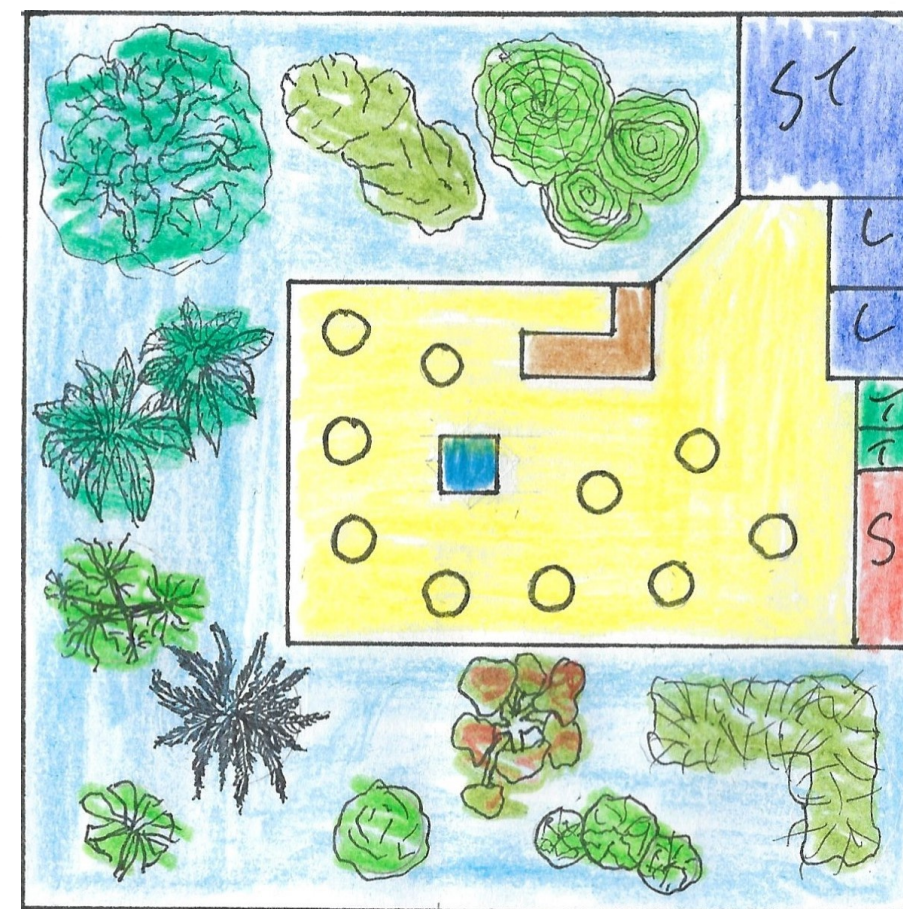
The 1st and 2nd floors will give access to viewing platforms for the pool areas, as well as staff and admin areas for the complex.

The tower floors will be identically replicated with the ability for internal walls to be moved and inserted to match the needs of the client.

The glass room on the top of the tower will function as an unique environmental glass room.



Plan—2nd Floor

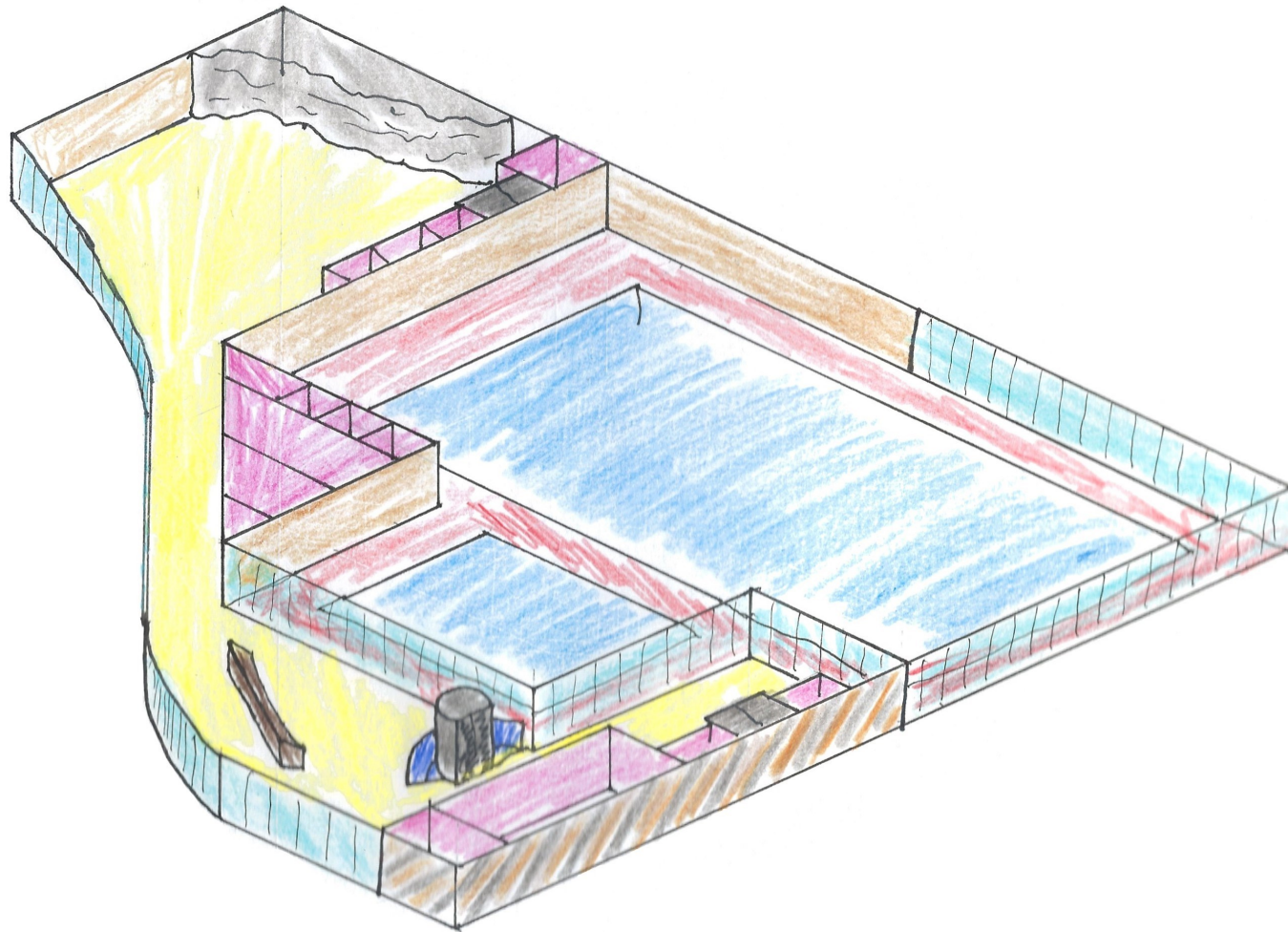


Plan—Tower Roof

- FDC—Female Dry Changing
- MDC—Male Dry Changing
- VG—Viewing Gallery
- SP—Spin Room
- GY—Weights Gym
- T—Toilets
- ST—Stairwell
- OF—Managers office
- MR—Meeting room
- L—Lifts
- S—Store room
- ST—Staff room
- CL—Climbing Wall
- SK—Sky Diving Turbine

Sections

Ground Floor

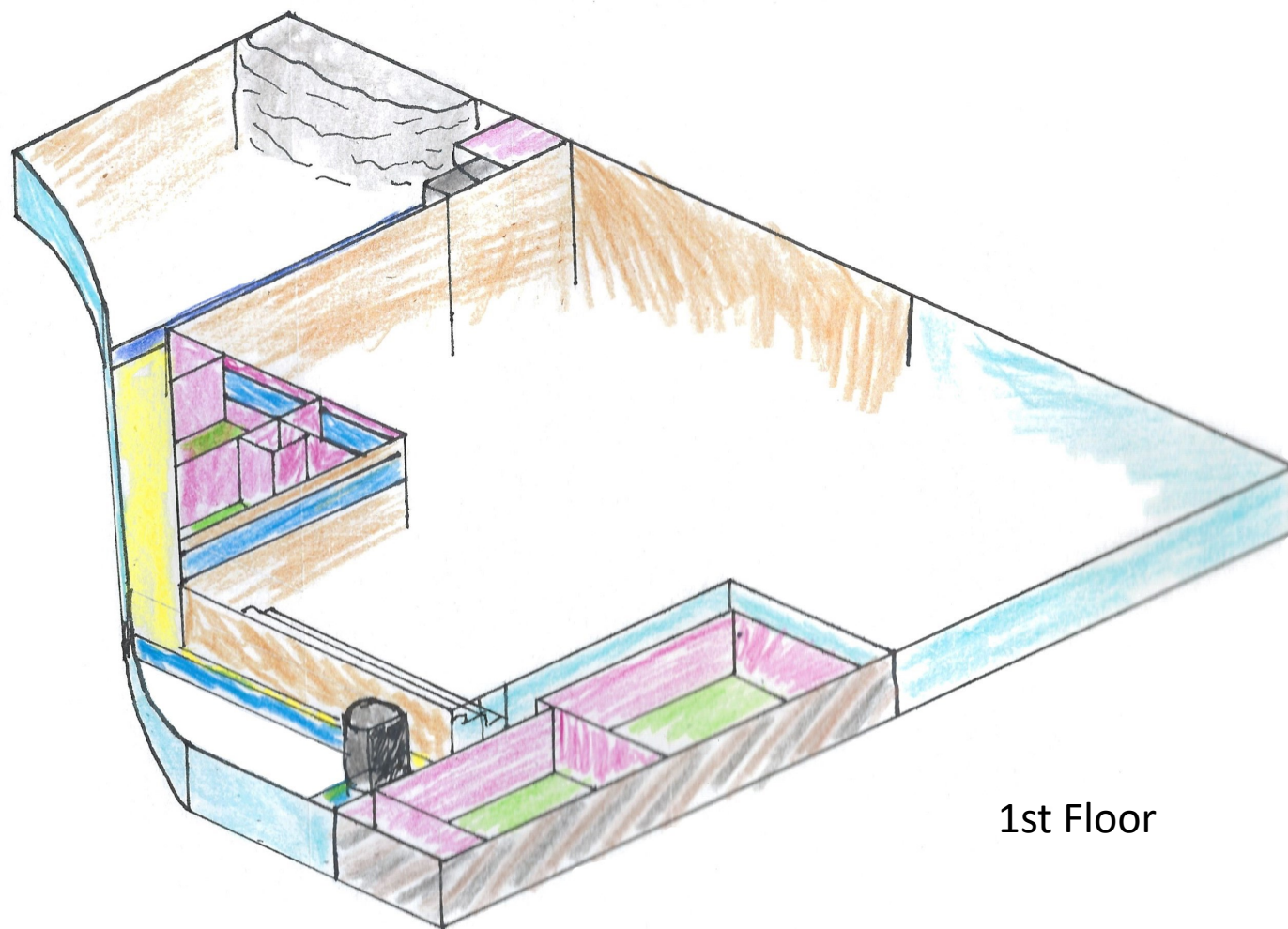


These 3D sections of the levels of the main buildings shows how the building will work and access will be obtained throughout the structure.

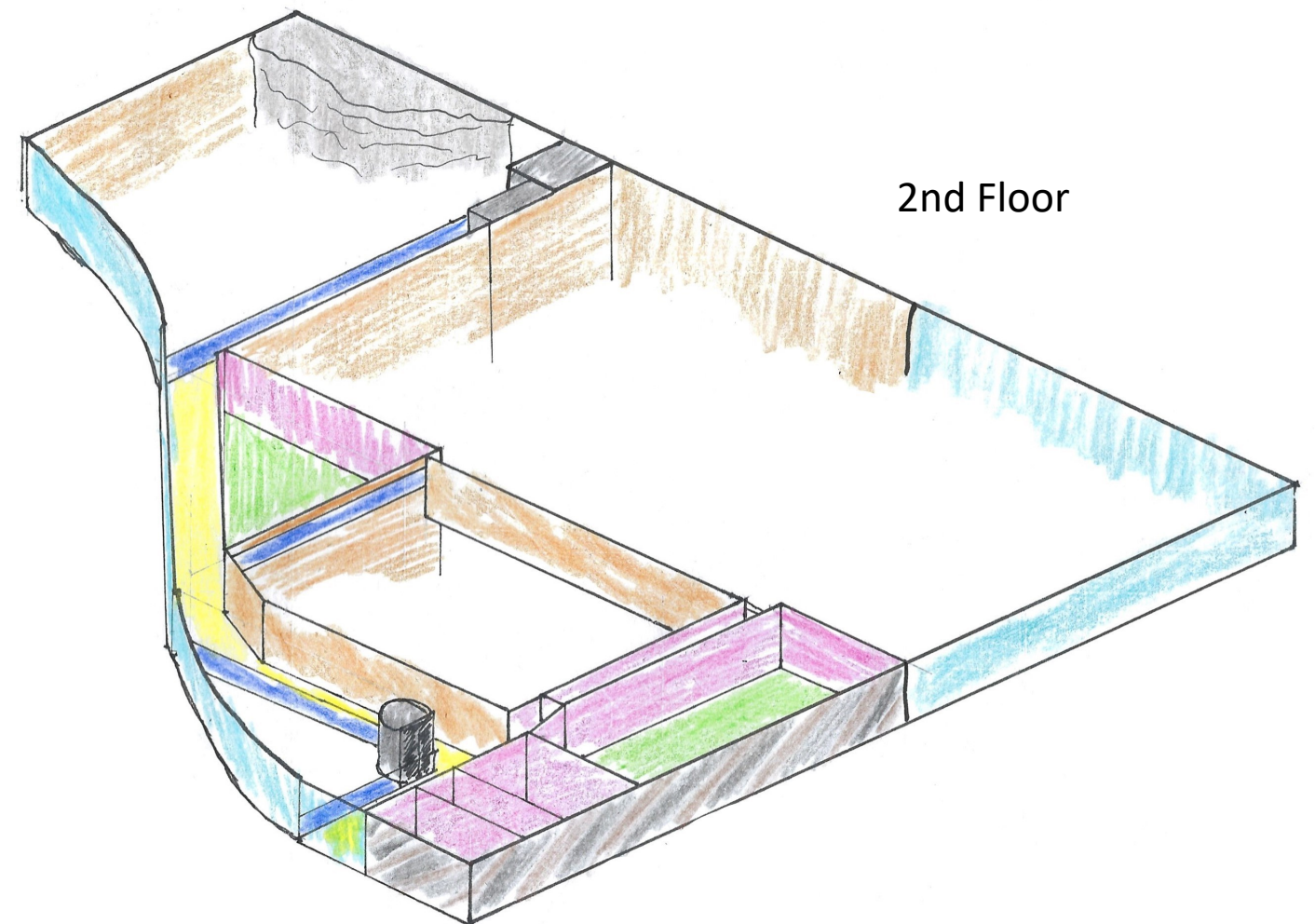
On the ground floor it shows the spacing given for the rooms, reception and social areas. As well as how curtain walling will enable viewing from the social area for the pool facility.

How the viewing galleries will be on both floors for the diving facility with the gallery for the swimming pool being located on the 2nd floor allowing for better views of the far lanes.

1st Floor



2nd Floor

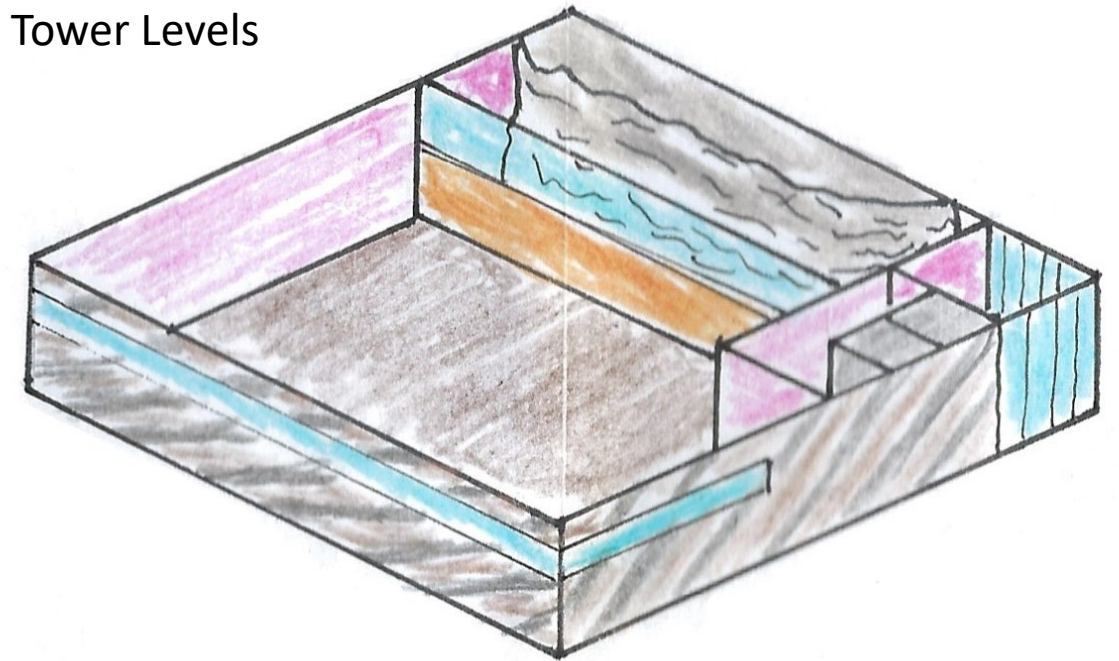


Sections

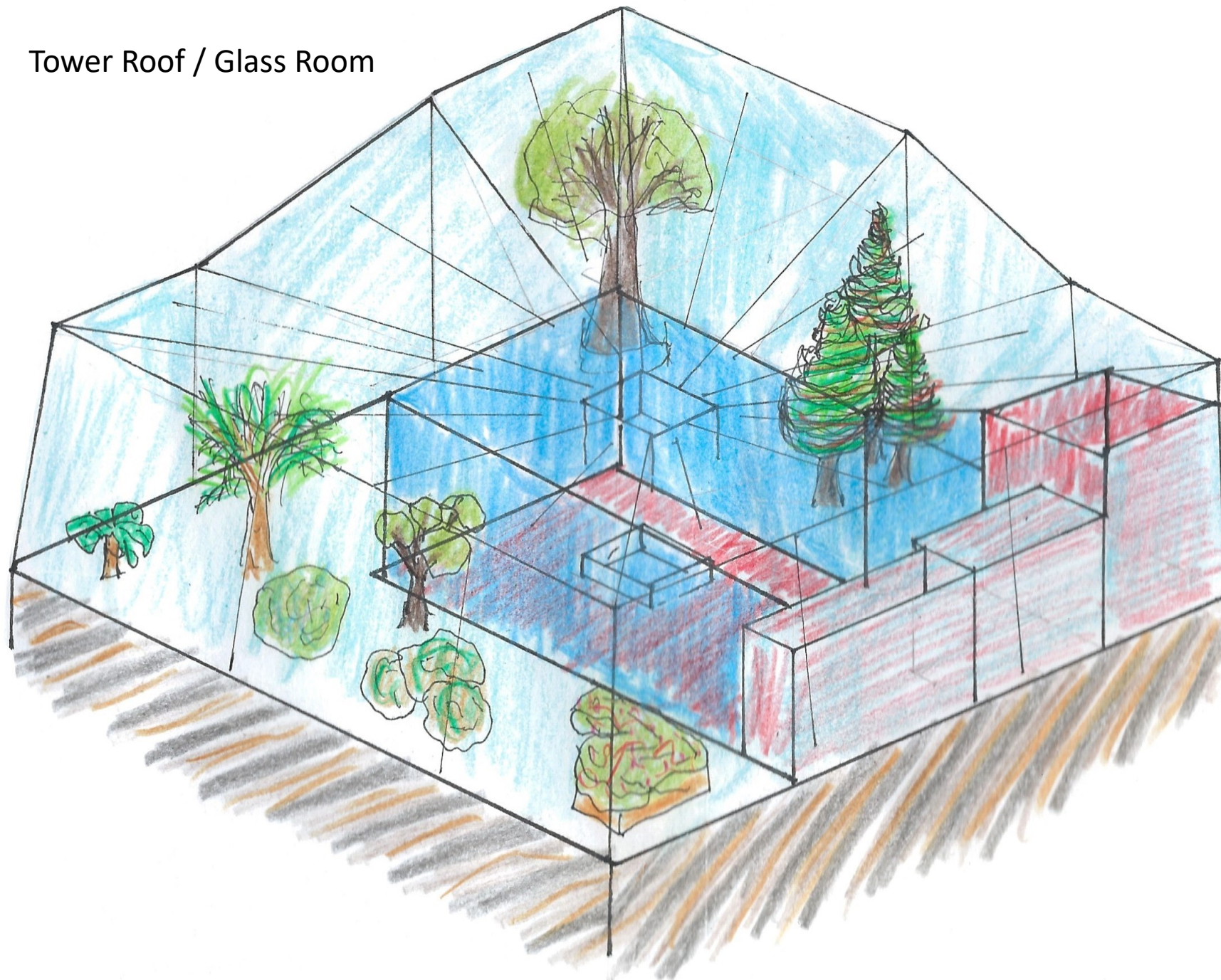
The layout for the tower levels will be replicated throughout the structure. They will be serviced by both lifts and stairs.

This will allow for choices to be made further into the design phase for the client to confirm the usage required for each floor. It will also give the client the advantage of changing the layout of the area later on in the buildings life. Making the area flexible to the clients requirements, whether that is social or academic.

Tower Levels



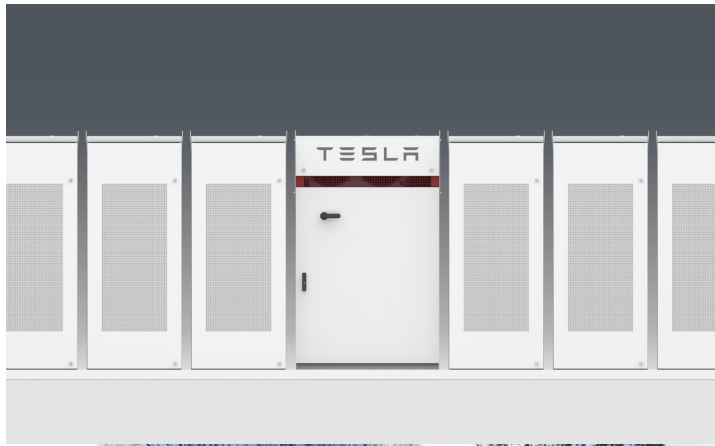
Tower Roof / Glass Room



The glass room is designed to be a focal point not just for the building but also for the surrounding community. Around the perimeter of the roof will be glass curtain walling that will use solar gains to provide a habitable atmosphere for rare and endangered plants from all over the world.

Tinted glass wall in the inside of the room will provide a habitable social area that can be enjoyed by students and the public.

The roof will be angled in allowing the harvesting of rainwater that will then be funnelled into the centre of the roof creating a water feature that will supply and distribute water to the vegetation in the Greenhouse.



Tesla or GB-Sol
Imatation slate
solar roof tiles

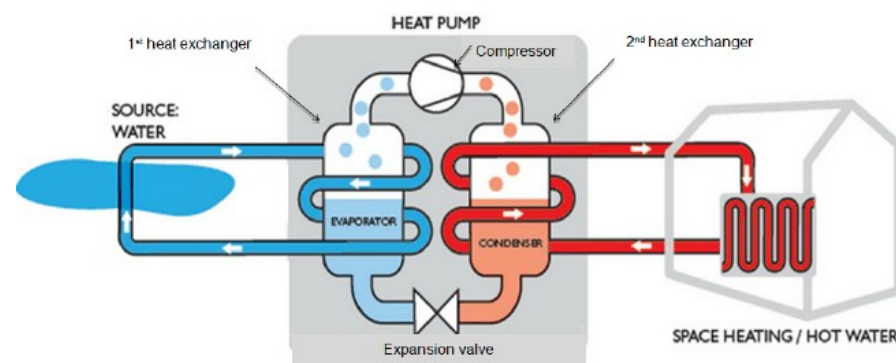
The surplus
electricity can be
stored in a power
bank that can be
supplied by Tesla.

Sustainable services



Water source heat pump to be located in the dock adjacent to the site

Mitsubishi Electric has launched a new range of Ecodan renewable heating systems.



How our Ecodan heat pumps work for you commercially

Perfect for use in a variety of applications, our commercial heating products are easy to design, quick to install, simple to maintain and efficient to run.

To demonstrate how our systems work and to show how easily they can be applied to suit many commercial applications, we've used a large school as an example.

This illustration depicts 3 different commercial Ecodan options:

- 1 Ecodan CAHV Air Source Heat Pump Monobloc System
- 2 Ecodan CRHV Water Source Heat Pump Monobloc System
- 3 Ecodan CRHV Ground Source Heat Pump Monobloc System



Integrated wind turbines

Utilise the benefits of being on the coast with high wind levels.

Bladeless turbines that are harmless to birds

And be a art statement as well as functional

The Liam F1 turbine is able to work from winds hitting it from 60degrees off its axis.

This would make it ideal for a roof top structure

Design

