PORTFOLIO
ARCHITECTURE

BTAR2016 DESIGN STUDIO III

Y2S1 2020/21

REX TAI

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I'M REX TAI

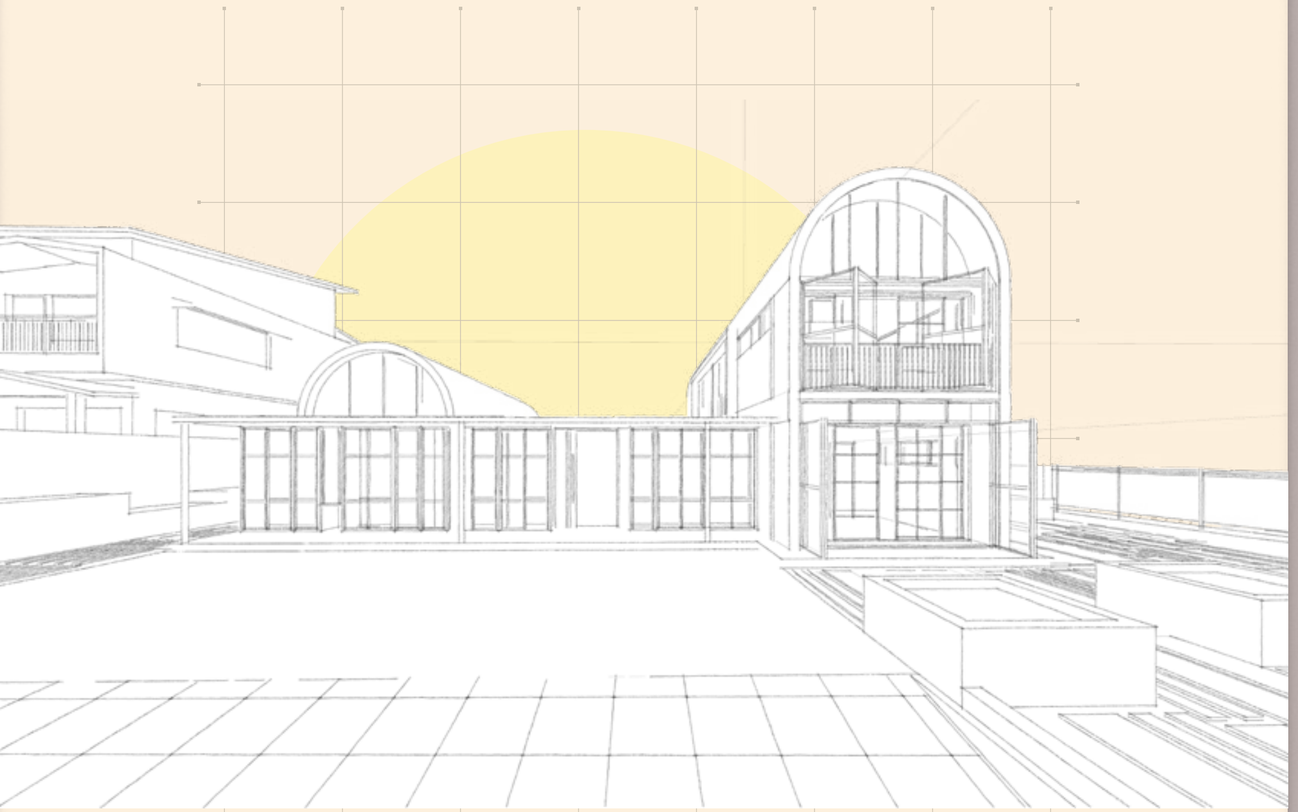
Hi, My name is Rex and now you are reading my portfolio ! This portfolio is mainly all about my degree in Architecture Design Studio of year 2 first semester's work.

Since the pandemic, this semester is completed in my home without going to the campus nor enjoying the typical studio life. It was all good during the semester as my time was easier to manage, since I do not need to waste time on travelling back and forth between the campus and my house.

The bad thing is that there were minimum physical interaction between me and my course mates, speacially to our tutors. Everything is communicated between screens of our computers. Even though its tough, but with the coorportation between the students and my tutors, things went smooth.

Last but not least, thanks to the tutors being very helpful and patient throughout these tough times. Thank you Cikgu Fadzil , Mr Cheah , Ar Julius and Pn. Maisarah.

16/9/2020



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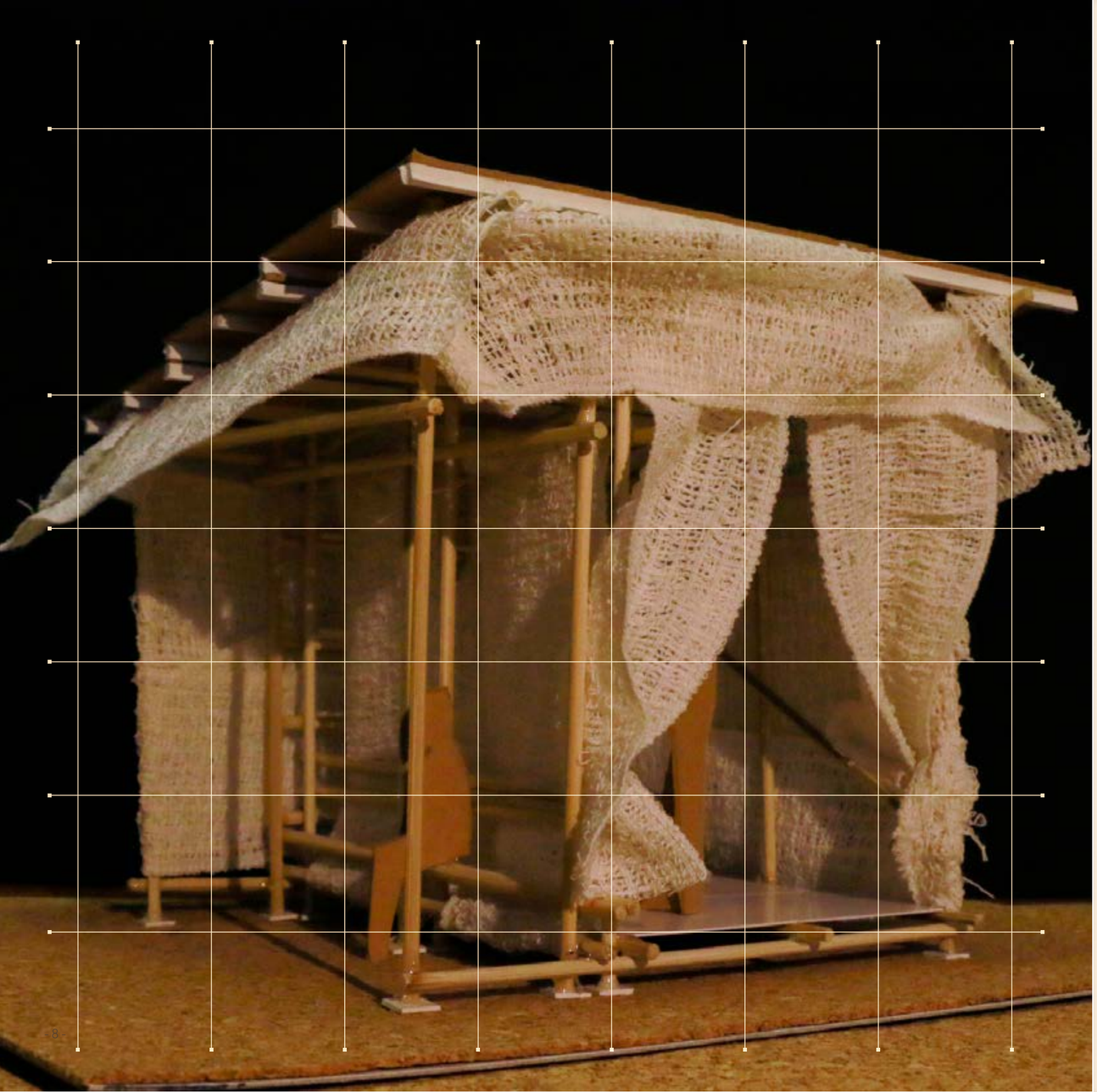
PROJECT 1

EMERGENCY POP UP KIOSK :
THE CONTRACTOR'S VEIL

Emergency means something dangerous or serious, such as an accident, that happens suddenly or unexpectedly and needs fast action in order to avoid harmful results.

The construction industry has one of the highest death rate according to occupational accident statistics by September until December 2019 from Malaysia Department of Occupational Safety and Health.

The Design Objective of the emergency pop up kiosk is to provide quicker medical services during a very serious construction site accidents . The kiosk is to provide quicker medical services during a very serious construction site accidents. The kiosk could increase the survival rate and buys more time for the ambulance to arrive.

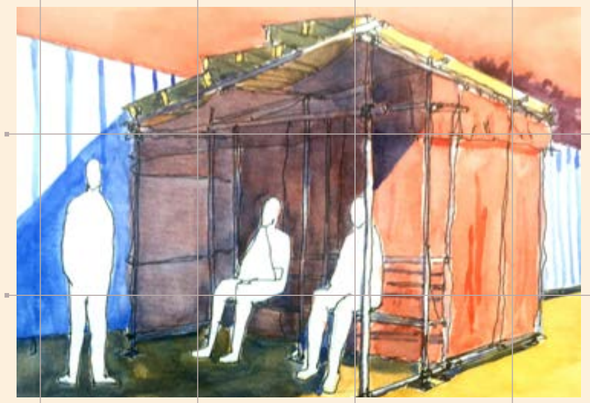


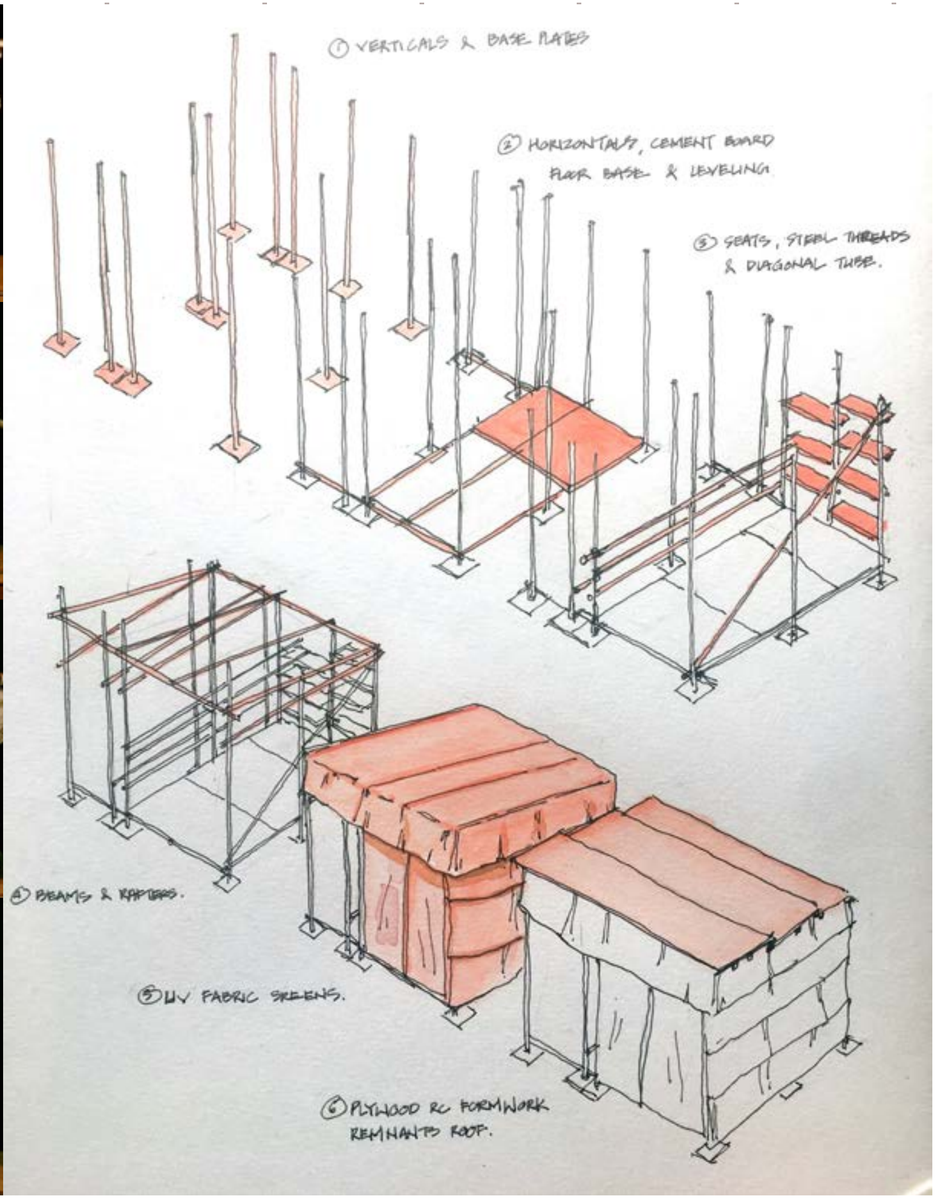
The main idea of the kiosk is made up of on-site materials from scratch. Thus, the main structure of the kiosk is erected by scaffold tubes. A typical safety net wraps around the kiosk like a veil, providing privacy and sun shading.

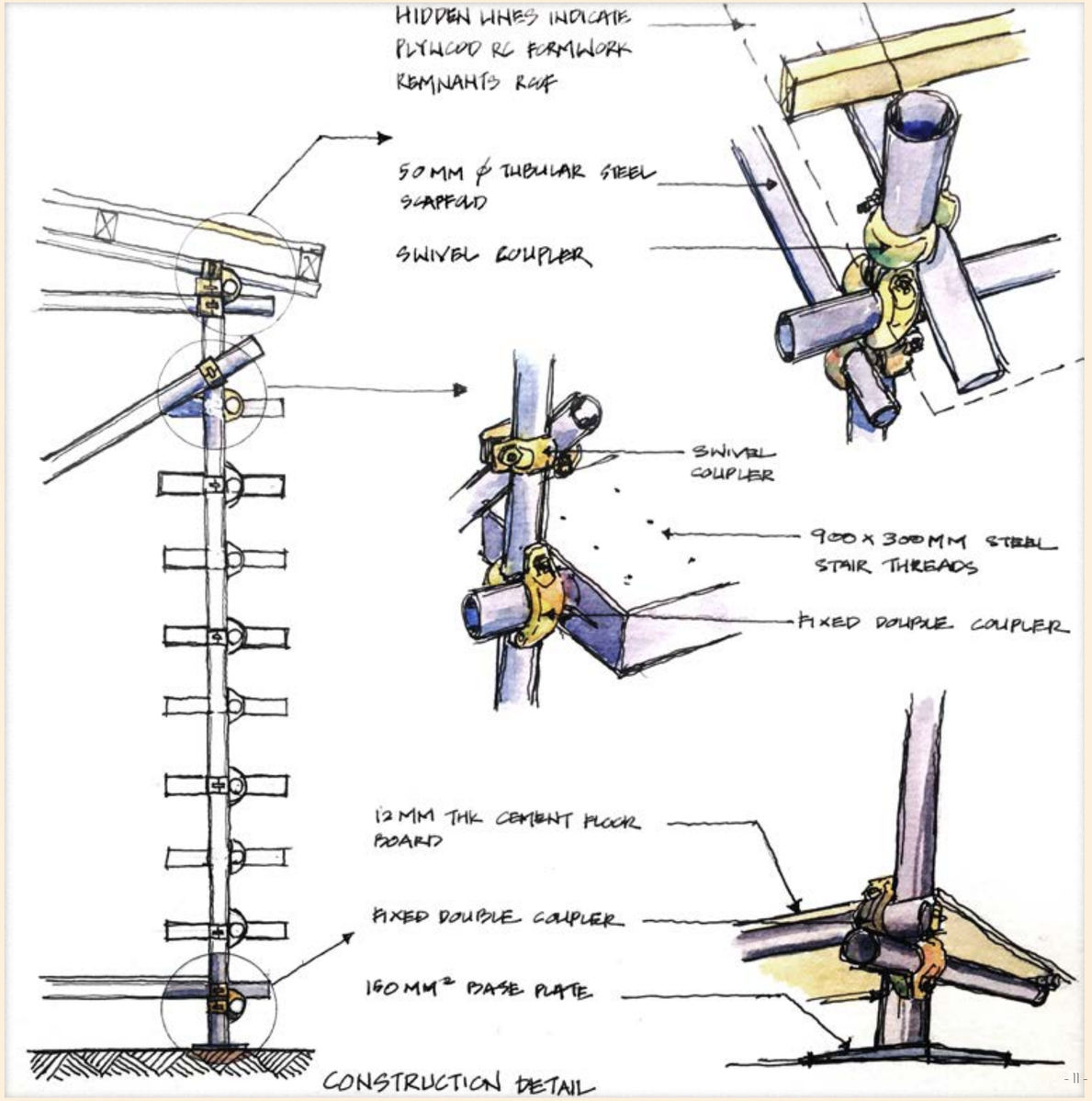
These materials are sturdy, low cost , common , easy to install, which fulfils the basic requirements

LEFT v : SIDE PERSPECTIVE OF THE KIOSK

RIGHT > : INTERIOR OF THE KIOSK




① VERTICALS & BASE PLATES
② HORIZONTALS, CEMENT BOARD FLOOR BASE & LEVELING
③ SEATS, STEEL THREADS & DIAGONAL TUBE.
④ BEAMS & RAFTERS.
⑤ UV FABRIC SCREENS.
⑥ PLYWOOD RC FORMWORK REMNANTS ROOF.


HIDDEN LINES INDICATE PLYWOOD RC FORMWORK REMNANTS ROOF
50 MM ϕ TUBULAR STEEL SCAFFOLD
SWIVEL COUPLER
SWIVEL COUPLER
900 x 300 MM STEEL STAIR THREADS
FIXED DOUBLE COUPLER
12 MM THK CEMENT FLOOR BOARD
FIXED DOUBLE COUPLER
160 MM² BASE PLATE
CONSTRUCTION DETAIL

PROJECT 2A

PRECEDENT STUDY :
THE TELEGRAPH POLE HOUSE

LOCATION	- Langkawi Island
COORDINATES	- 6.286186, 99.737602
YEAR COMPLETED	- 2009
AREA	- 580.6 sqm
ARCHITECTS	- WHBC Architects
CLIENTS	- Bob Gabriel & Angela Gabriel

It all started in year 2005, the british couple Bob and Angela Gabriel was searching for a peaceful place to enjoy the rest of thier retirement years. Langkawi island was thier idyll option. The current site was introduced by a land agent and the couple loved it very much.

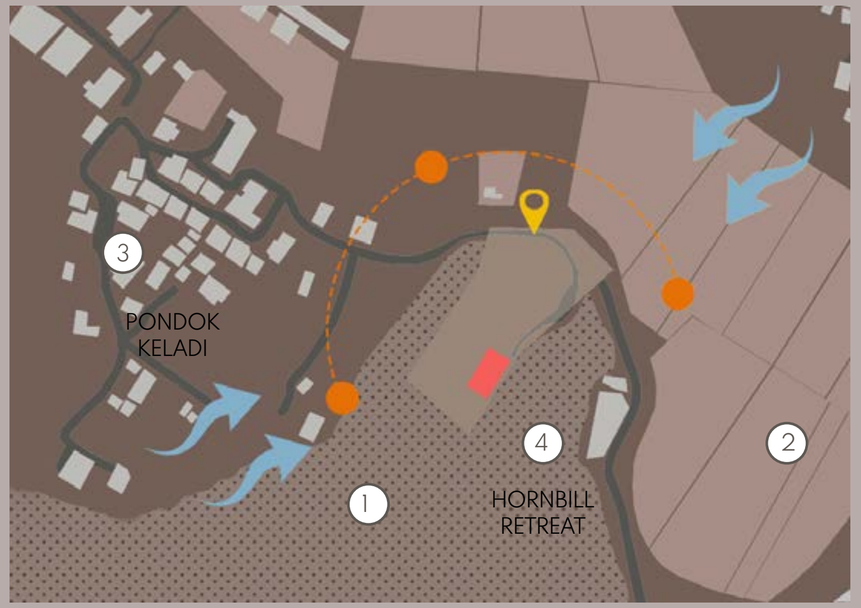
CLIENTS' BRIEF
- a form of Sarawak long house
- avoid from cutting down trees

ARCHITECTS PROPOSALS
- one room wide dwelling
- rooms raised on stilts
- ground floor open to breeze
- huge overhang
- wide verandahs on long elevations
- timber stairs with steel rods with lockable gate

CLIENTS AND ARCHITECTS APPROVALS
- building mainly from reclaimed timber materials
- uphill entrance road to minimise deforestation

KEY PLAN
SCALE NTS

LOCATION PLAN
SCALE NTS



SUN PATH

WIND DIRECTION

MAIN ACCESS ROAD

SITE ENTRANCE

SITE PLAN

SITE CONTEXT


1.

FOREST AREA


2.

PADDY FIELDS


3.

MALAY VILLAGE


4.

HOMESTAYS

SITE DATA : LANGKAWI ISLAND

SUN PATH	TEMPERATURE	WIND SPEED	RELATIVE HUMIDITY & PRECIPITATION
SUNRISE DURATION • WITHIN 0700 TO 0730	AVERAGE HIGH TEMPERATURE • 30°C to 33°C • HIGHEST : 37°C	APRIL TO NOVEMBER • LIGHT BREEZE • ≈ 4 KNOTS (7.41km/h)	RAINY SEASON (≥15 DAYS / MONTH) • APRIL TO NOVEMBER • AVG. PPT. : 190mm - 360mm • HUMIDITY: 81% - 85%
SUNSET DURATION • WITHIN 1900 TO 1940	AVERAGE LOW TEMPERATURE • 24°C to 25°C • LOWEST : 19°C	DECEMBER TO MARCH • MODERATE BREEZE • ≈ 5-6 KNOTS (9.0 -11.0 km/h)	DRY SEASON (≤10DAYS / MONTH) • DECEMBER TO MARCH • AVG. PPT. : 57mm - 105mm • HUMIDITY: 70% - 76%

S.W.O.T ANALYSIS

STRENGTH

- HIGH GROUNDS
- LUSH GREENS

WEAKNESS

- ACCESS ISSUES

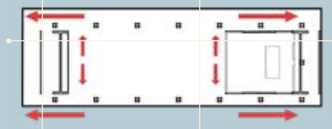
OPPORTUNTIY

- EXCELLENT SCENERY
- PEACEFUL ENVIRONMENT

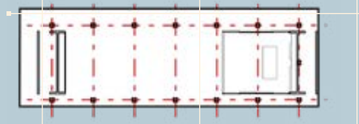
THREAT

-PESTS & WILD ANIMALS
-POSSIBLE LANDSLIDES

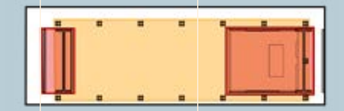
SITE CONTEXT



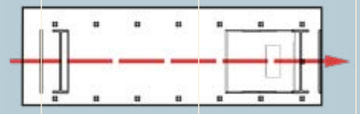
LINEAR



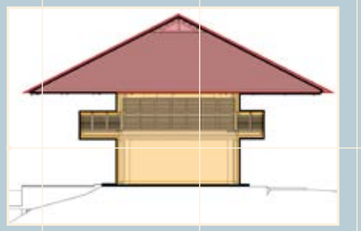
GRID



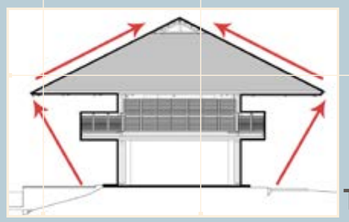
SPACE WITHIN A SPACE



AXIS, SYMMETRY, DATUM



HIERARCHY



TRANSFORMATION

DESIGN PROS

FULFILS VERNACULAR DESIGN

FULLY UTILISED USED MATERIALS

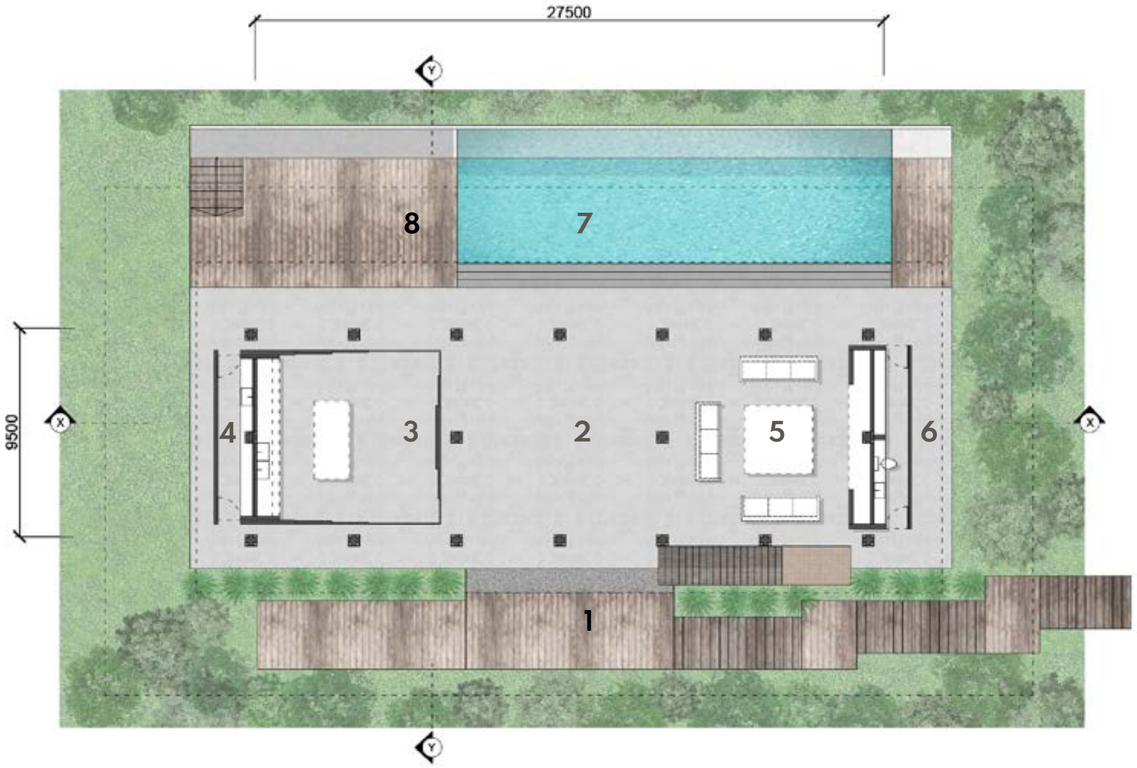
PEACE AND SERENITY ACHIEVED

DESIGN CONS

PESTS

HIGHER FIRE OUTBREAK RISKS

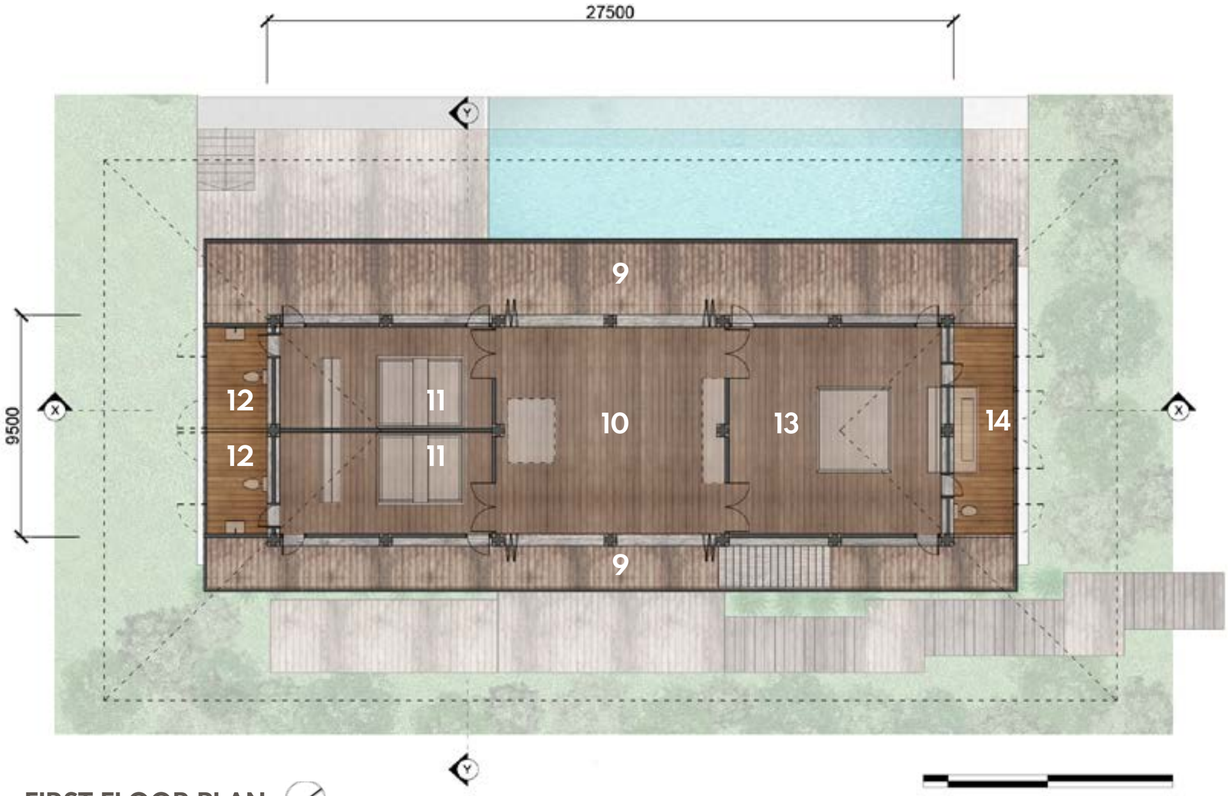
NO WORKING SPACE



GROUND FLOOR PLAN

LEGEND

1. TERRACE
2. DINING
3. KITCHEN
4. STORAGE / LAUNDRY
5. LIVING
6. GUEST BATH ROOM
7. POOL
8. DECK



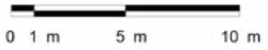
FIRST FLOOR PLAN

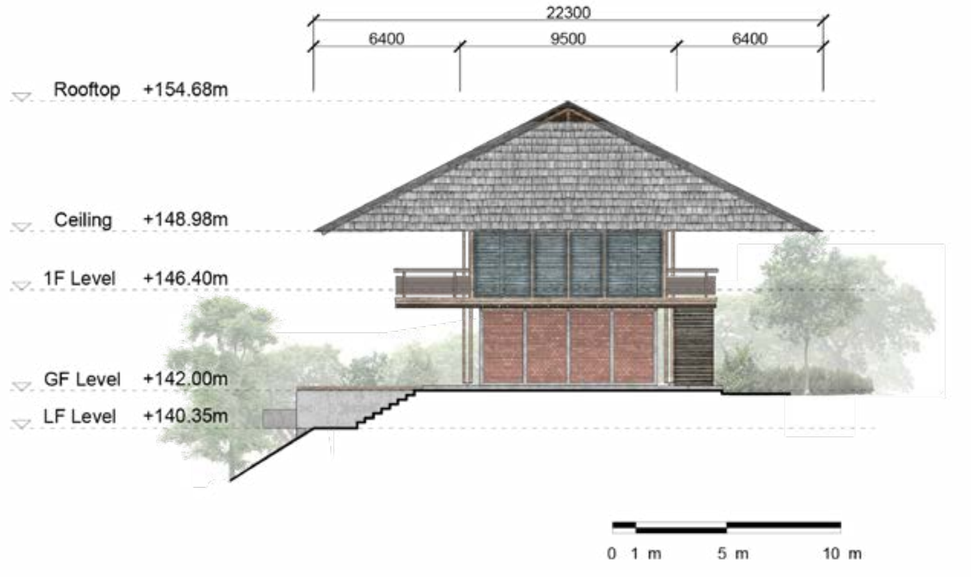
LEGEND

9.VERANDAH
10. LOUNGE
11. BEDROOM
12. BATHROOM
13. MASTER BEDROOM
14. MASTER BATHROOM

LEGEND

2. DINING
3. KITCHEN
4. STORAGE / LAUNDRY
5. LIVING
6. GUEST BATH ROOM
10. LOUNGE
11. BEDROOM
12. BATHROOM
13. MASTER BEDROOM
14. MASTER BATHROOM





CONSTRUCTION MATERIALS

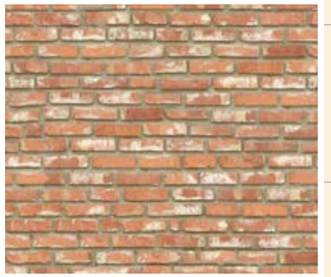
- RUSTIC MATERIALS

The telegraph pole house is mainly built by reclaimed timber with a raw patina grey texture, expressing rustic aesthetics.

USED TIMBER TELEGRAPH POLE

USED BELIAN WOOD SHINGLES

STEEL RODS

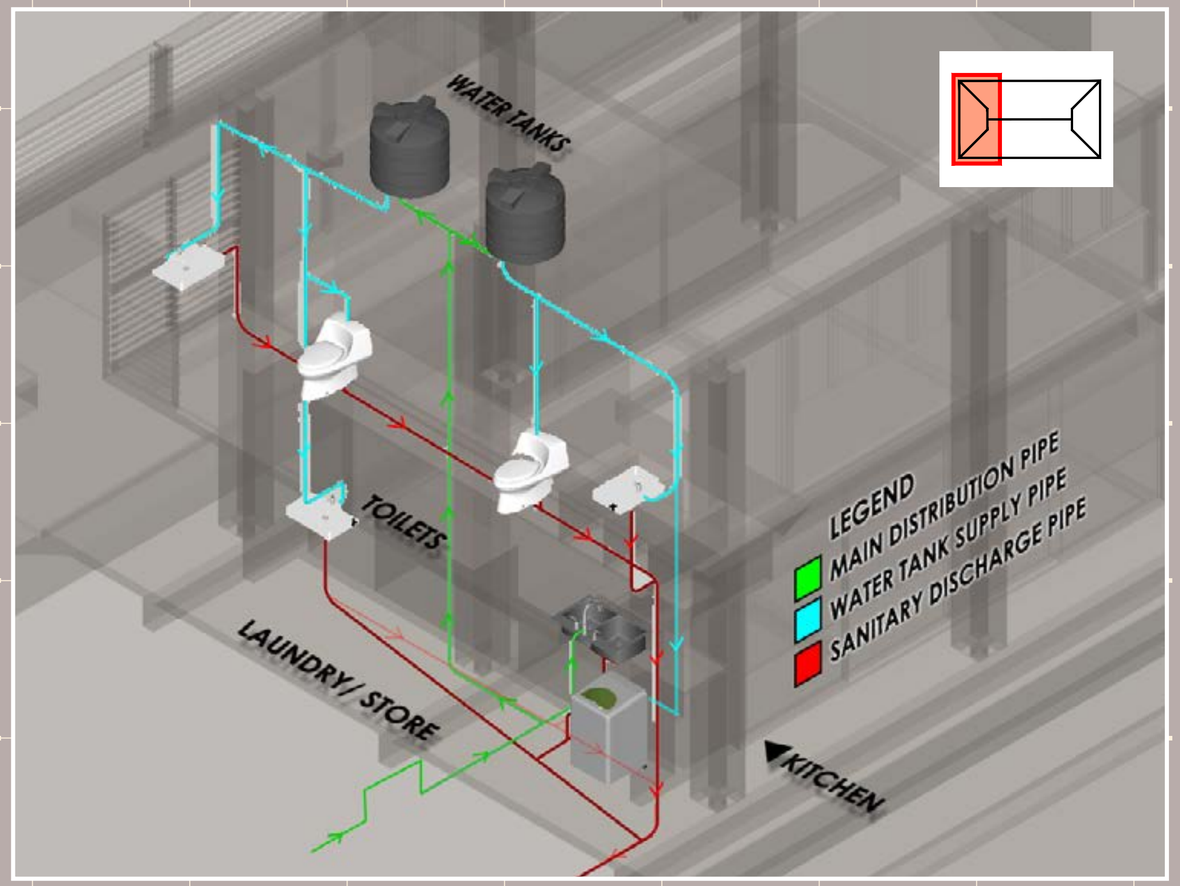


EXPOSED CLAY BRICKS

SMOOTH CONCRETE FINISH

GLASS WITH ALUMINUM FRAMING

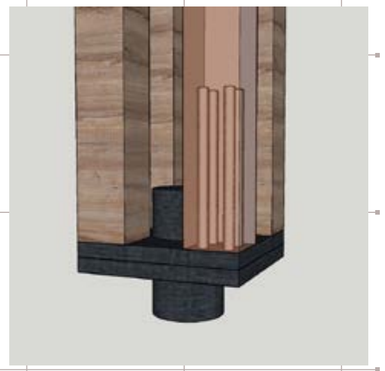
SERVICES DIAGRAM



CONSTRUCTION DETAILS

SCARF JOINT CONNECTION

CONNECTION OF COLUMNS WITH BEAMS



CONNECTION OF BASE PLATE WITH TIMBER COLUMNS

PASSIVE DESIGN FEATURES

SECTIONAL PERSPECTIVE
SCALE NTS

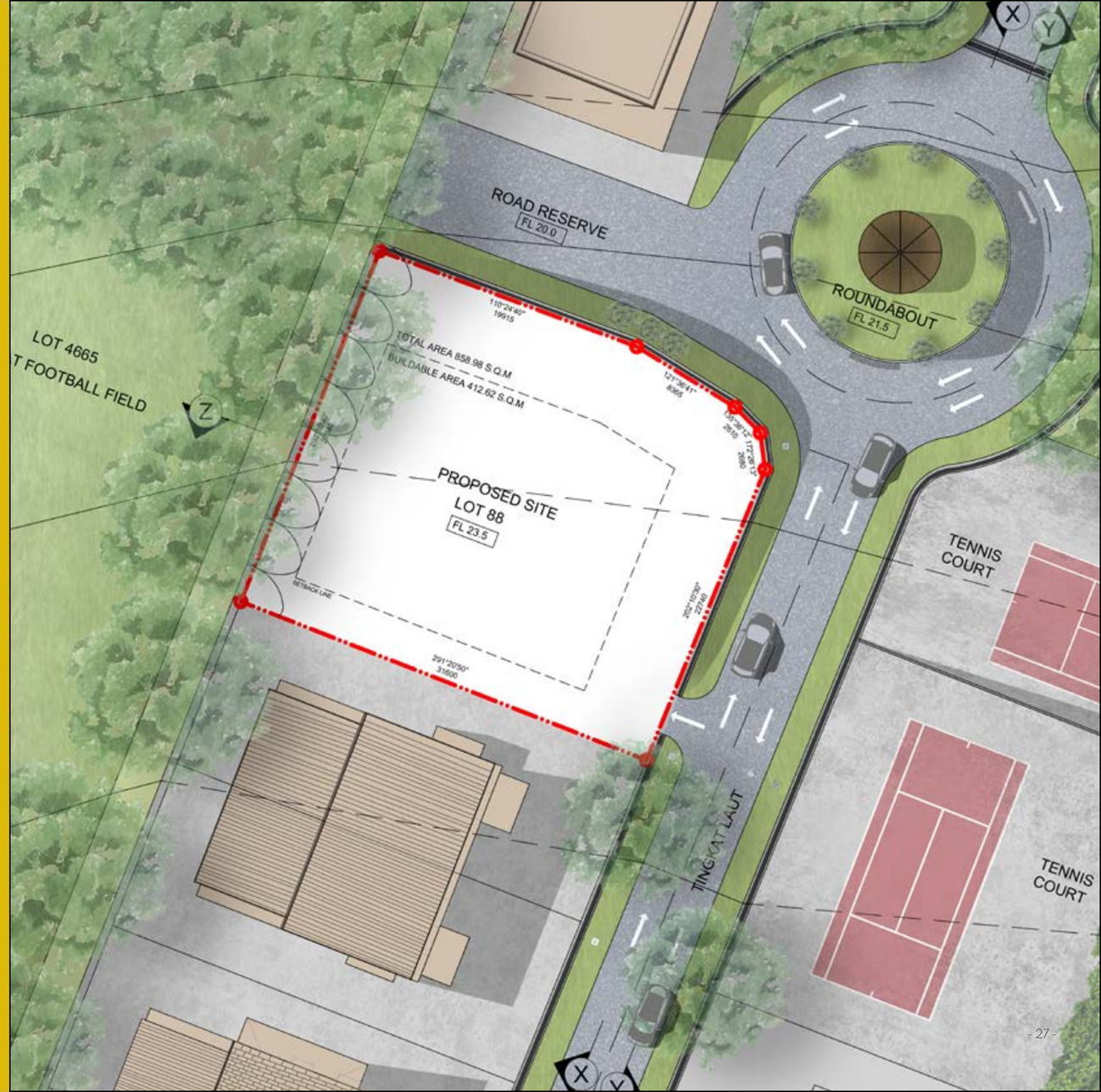
PROJECT 2B

SITE ANALYSIS :
LOT 88, JALAN TINGKAT LAUT, TANJUNG TOKONG, 11200 TANJUNG BUNGAH, PULAU PINANG

Lot 88, Jalan Tingkat Laut, Tanjung Tokong, 11200 Tanjung Bungah, Pulau Pinang is our chosen site for the new norm habitat proposal. It is an empty lot with 859.07Sqm in a residential neighbourhood. It is also located near to a few famous landmarks.

Penang, the macro site, is one of the most developed and urbanized states. It's the first British settlement in Southeast Asia and shaped by British colonialism. In 1770s, Francis Light visited Penang and established trade relations in Malay Peninsula. During 19th century, Pulau Pinang become tin-exporting harbour and evolved into leading financial center. Besides, Penang was invaded by Japanese during World War II. Over the years, Penang gain independence in 1957 and become Malaysia state in 1963.

Tanjung Bungah is transcribed from 'flower cape' due to several promontories jut out to the sea along the cape. It's located at northern coast of Penang Island. 6.5Km northwest from city centre. It was originally a quiet fishing village and became beach destination in 1950. During 1960s and 1970s, Royal Australian force servicemen resided here. In 1980, mushrooming of high rises residential due to development of george town. Home to significant expatriate population. It was hard hit by Indian ocean tsunami in 2004. In 2010, it was occupied by 5.7% Foreigners.



KEY PLAN
SCALE NTS

LOCATION PLAN
SCALE NTS

SITE PHOTOS

HISTORICAL TIMELINE

Housing in penang have been elvoving since 18th century. It started off with atap dwellings. However, the influence of foereign Architecture have grant the development of architectural styles, materials and construction techniques used throughout the centuries.

1786 ATAP DWELLING

Houses are built with attap roof and walls, on stilts in the early colonial days

1790 BRICK BUILDINGS

Indian architectural style and building materials such as clay bricks was adapted

1800 SUFFOLK HOUSE

“First great house” in penang constructed during british colonial. Combination of georgian and indian styles of architecture.

1840 SHOPHOUSES

Blooming of agricultural sector resulted in the import of chinese, western architecture style

1930 ART DECO SHOPHOUSES

Wealthy businessmen returning from overseas schooling popularized art deco style architecture and materials such as glass and steel

1950 MODERN SHOPHOUSES

Ntroduction of new building technology such as reinforced concrete enabling corner buildings and balconies to be curved

1970 TERRACE HOUSE

As penang started urbanised, modern house such as the terrace house and detached house was introduced

1970 DETACHED HOUSE

Similar to bungalow, the modern detached house stands alone. Its is a single family home

1970 SEMI-DETACHED HOUSE

New form of housing which shares one common wall was introduced.

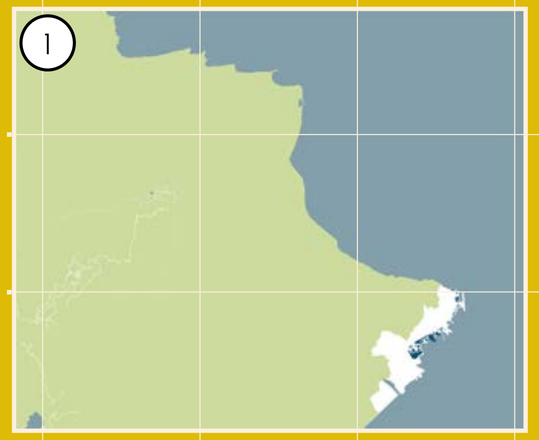
1980 MID RISE HOUSING

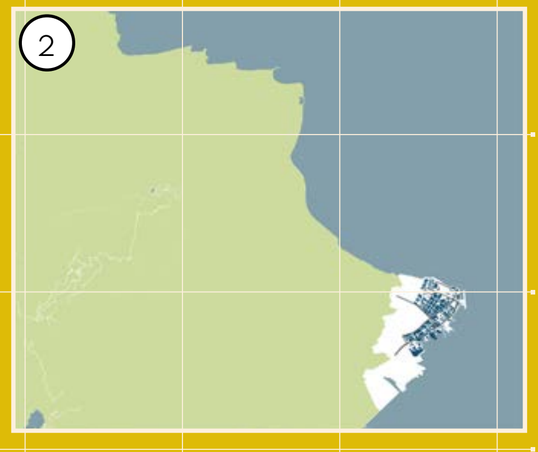
Housing with 5 to 12 floors are designed to protect low-scale neighbourhoods

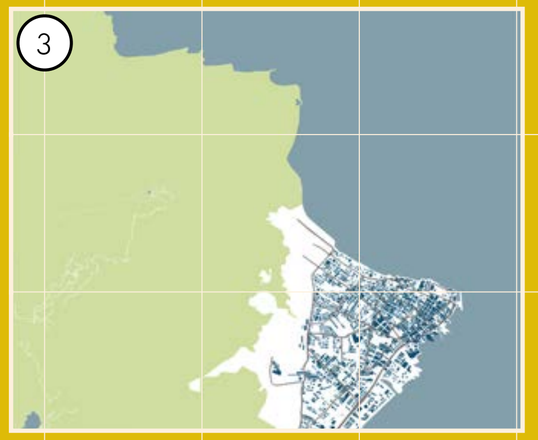
1980 RESIDENTIAL SKYCRAPPERS

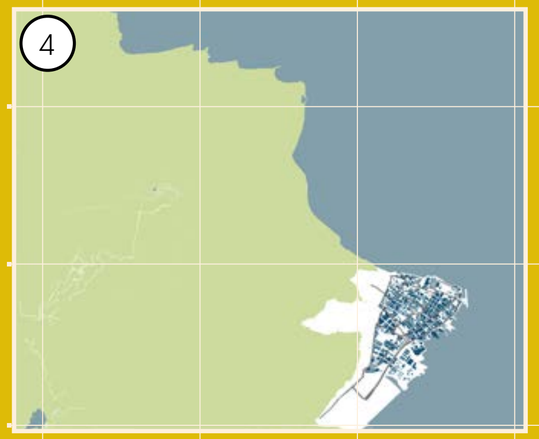
The application of new technology also leading to development of high rise housing such as flats, apartment and condominium

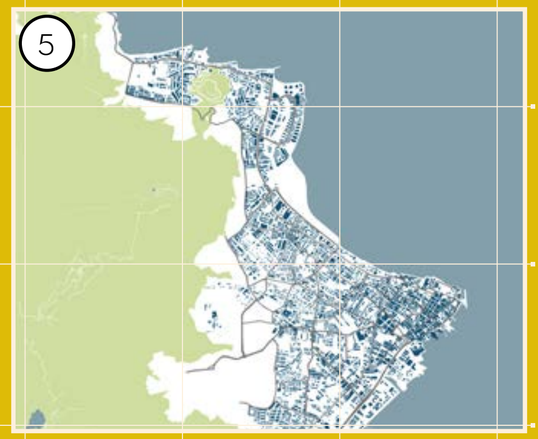
MORPHOLOGY

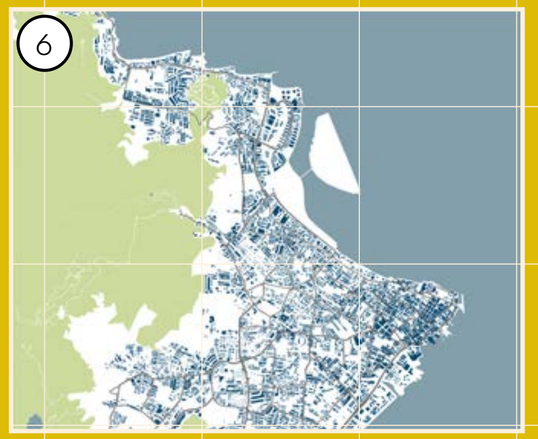












1 **EARLY 18th CENTURY**
Nearly 107 square miles of forest were cleared to establish george town. However, mountainous topography limit the urban expansion.

2 **LATE 18th CENTURY**
Free port for trading activities.
Undeveloped land was divided for urban construction which laid out in an Inconsistent manner.

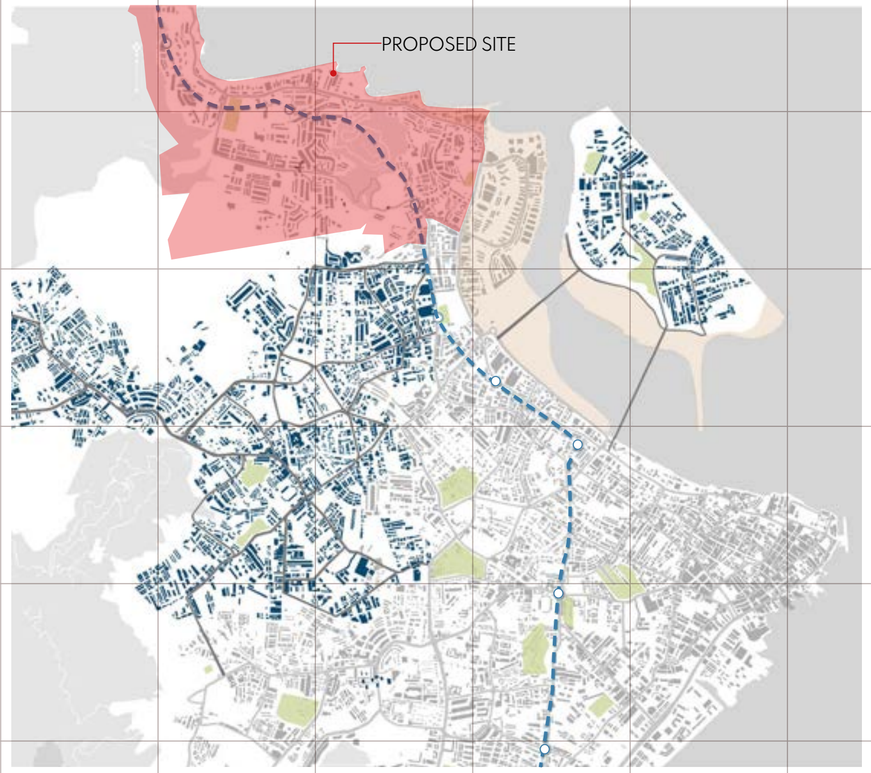
3 **EARLY 19th CENTURY**
Population growth and urban area
Development on the flat lands. Land subdivision and building construction started in Penang.

4 **LATE 19th CENTURY**
Development of village into a city with different cultural types buildings.

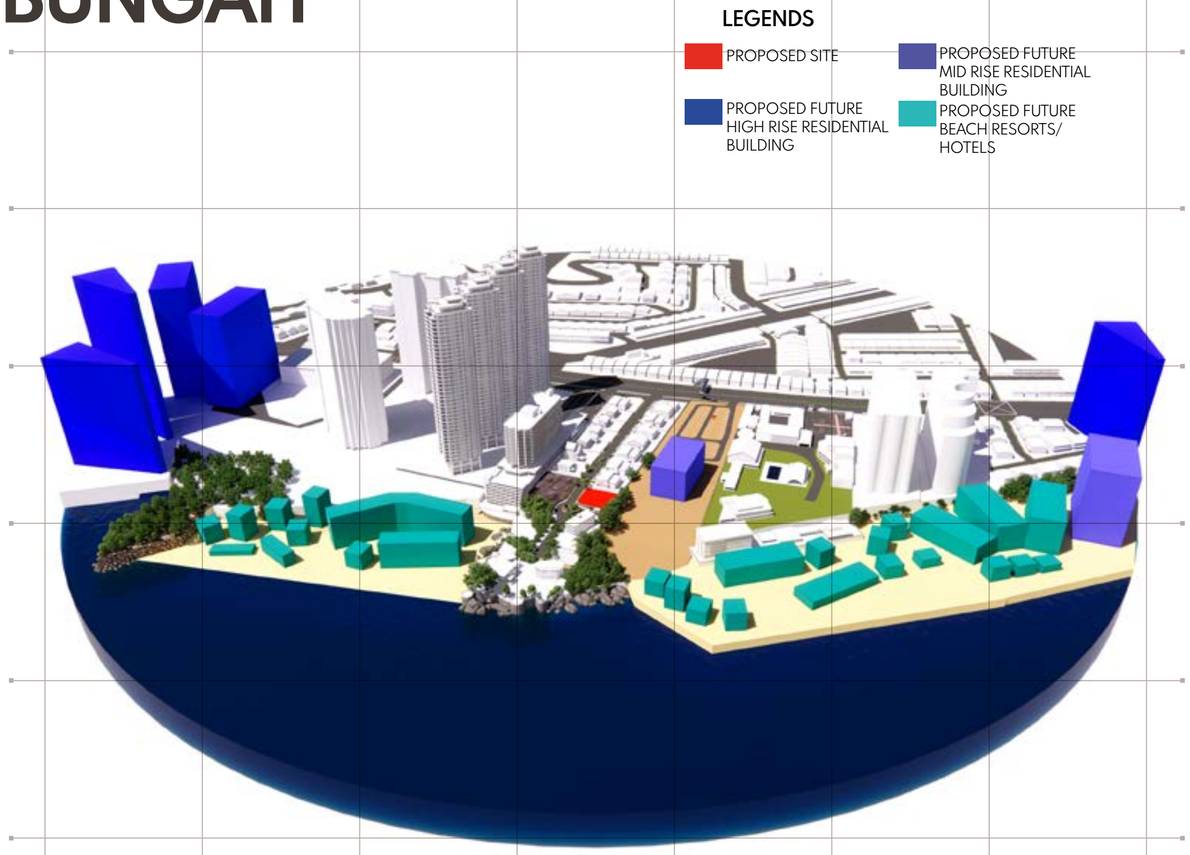
5 **20th CENTURY**
Development of suburbans area caused most lands to urbanized.

6 **21th CENTURY (PRESENT)**
Development of new urban spaces and some tall buildings were continue to construct.

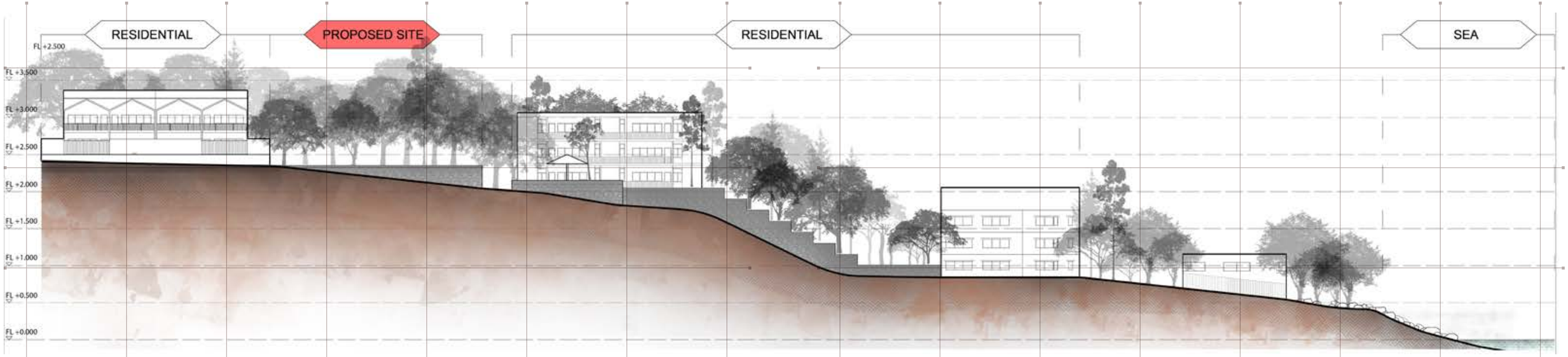
FUTURE DEVELOPMENT OF TANJUNG BUNGAH



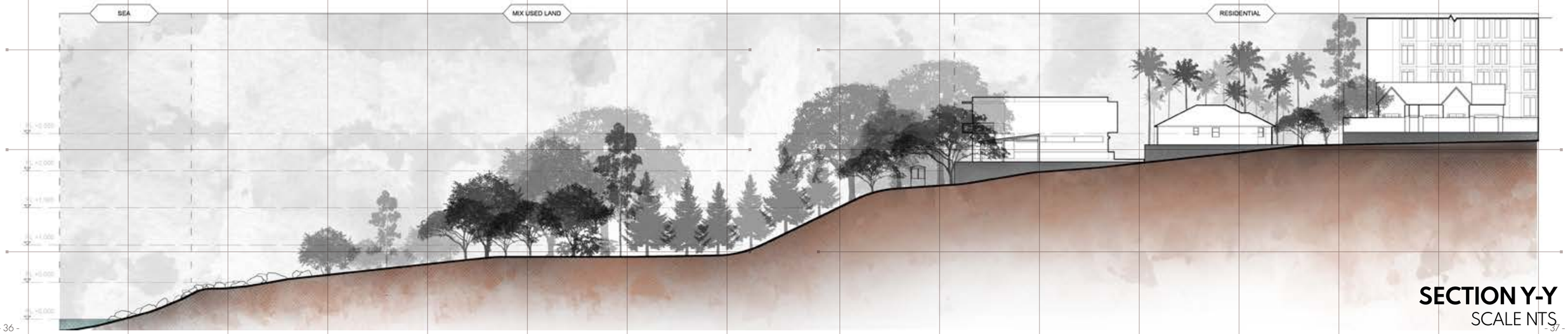
According to speculation, penang will develop in the future. From the map, we can assume most land will continue to develop for residential and commercial. Railway transit will be built to increase the interaction between people and to improve the tourism industry. This will highly affect the development of tanjung bungah hereafter.



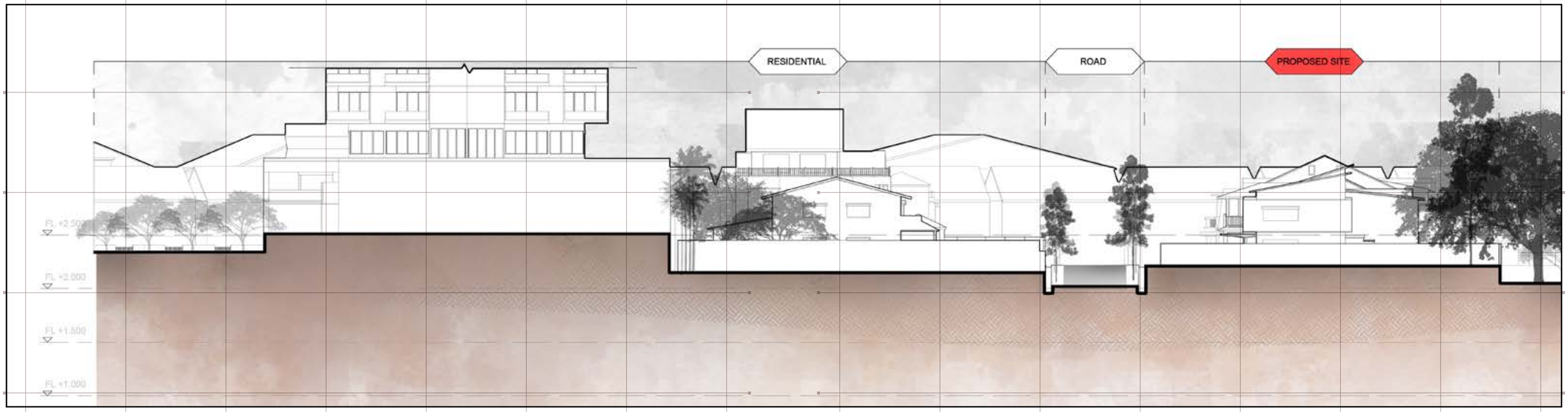
Based on our thesis on penang, tanjung bungah will also be further developed in the future. Due to its strategic location, establishment of high rise residentials and mid rise residentials will be constructed. Besides, there will be blooming of resorts and hotels by the seaside.



SECTION X-X
SCALE NTS



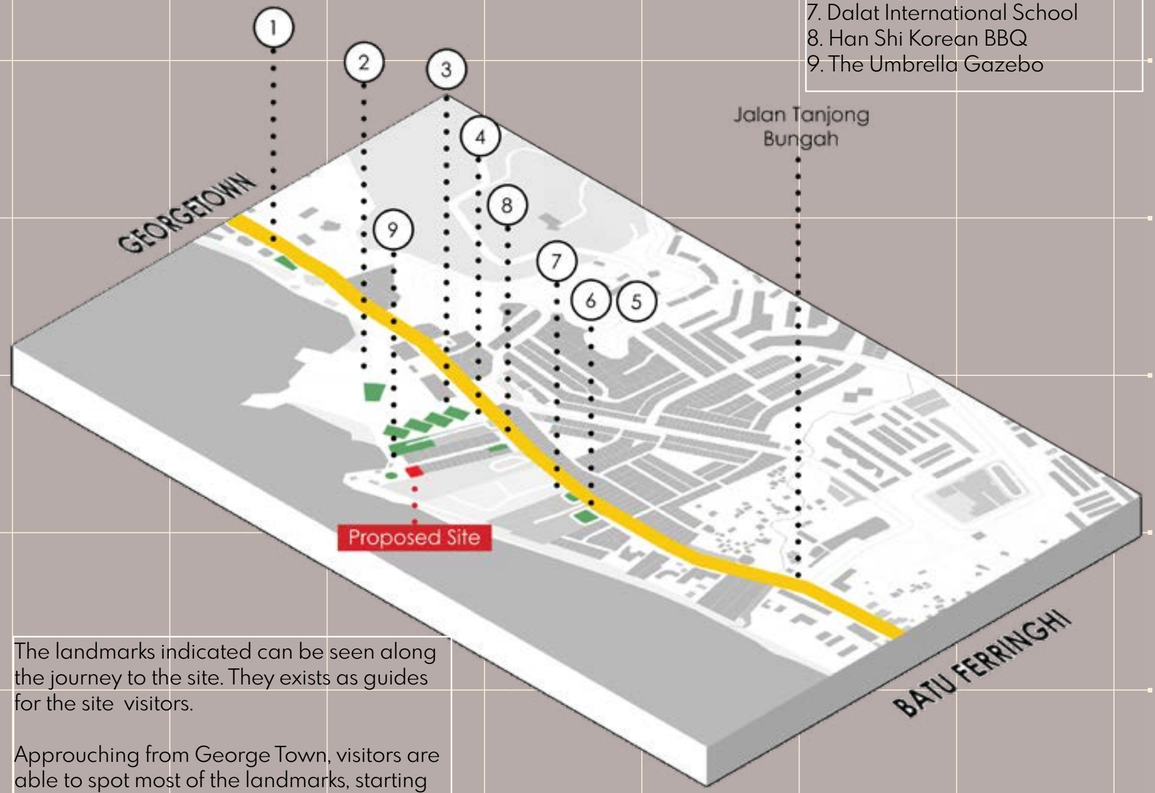
SECTION Y-Y
SCALE NTS



SECTION Z-Z
SCALE NTS

LANDMARKS

LEGEND
1. Penang Swimming Club
2. One Tanjong
3. The Cove
4. Capthorne Orchid Hotel
5. Campaign for a Lane Statue
6. Flamingo Hotel
7. Dalat International School
8. Han Shi Korean BBQ
9. The Umbrella Gazebo



The landmarks indicated can be seen along the journey to the site. They exists as guides for the site visitors.

Approuching from George Town, visitors are able to spot most of the landmarks, starting from Penang Swimming Club to Han Shi Korean BBQ.

However, approuching from Batu Ferringhi, they will spot from the Flamingo Hotel, without passing by the landmarks at the east side

1. Penang Swimming Club

2. One Tanjong

3. The Cove

4. Copthorne Orchid Hotel

5. Campaign For A Lane Statue

6. Flamingo Hotel

7. Dalat International School

8. Han Shi Korean BBQ

9. The Umbrella Gazebo

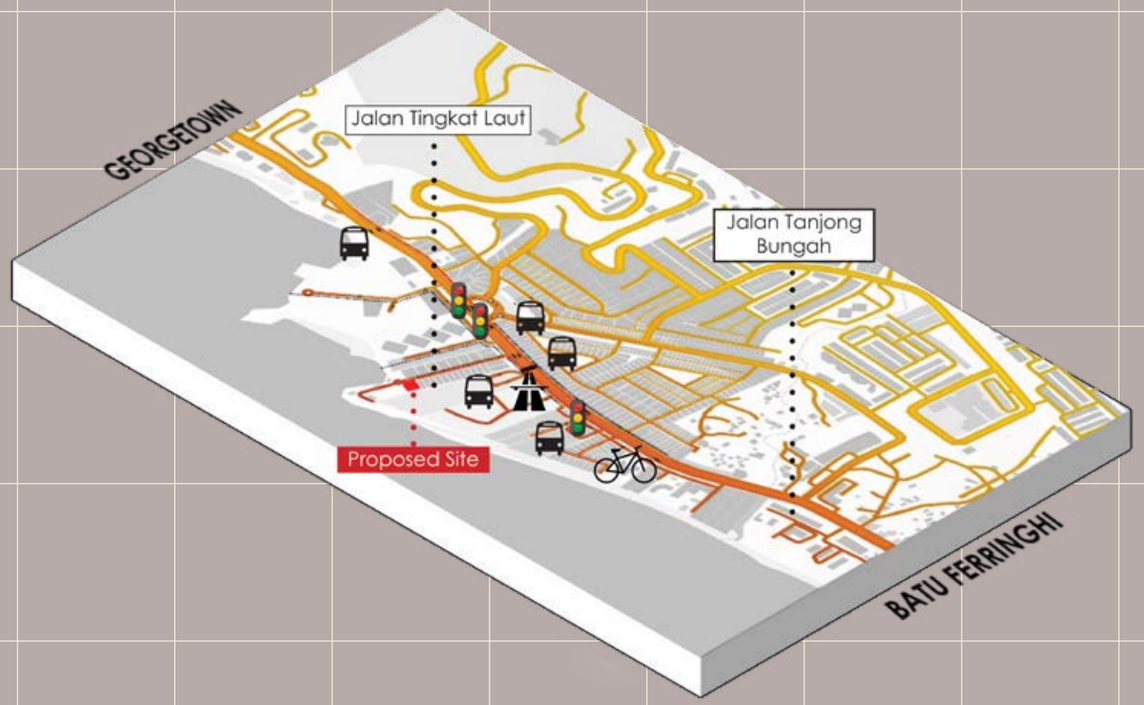
ZONINGS

LEGEND

- Residential
- Commercial & Shop Houses
- Uncultivate Land
- Instituitional
- Recreational
- Vegetaion
- Water Body

The south area of tanjung bungah is mostly covered with residential buildings. Meanwhile along the coastline ,there are mostly public buildings such as commercial hotels, shops, instituitional ,and public sport buildings. There are also luxurious apartments which facing the sea views

CIRCULATION



LEGEND

Bus Stop

Traffic Lights

Overhead Bridge

Bicycle Lane

TRAFFIC CONDITIONS

SMOOTH SLOW

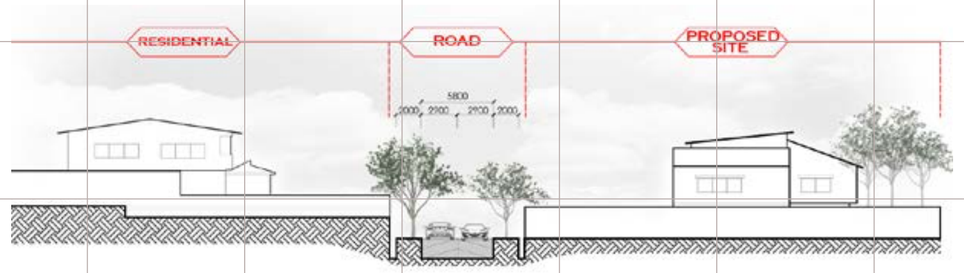
SMOOTH

The smoothest traffic is mostly on weekends in the morning where majority of the people are on leave. It is also the most suitable time to access in to our site at jalan tingkat laut.

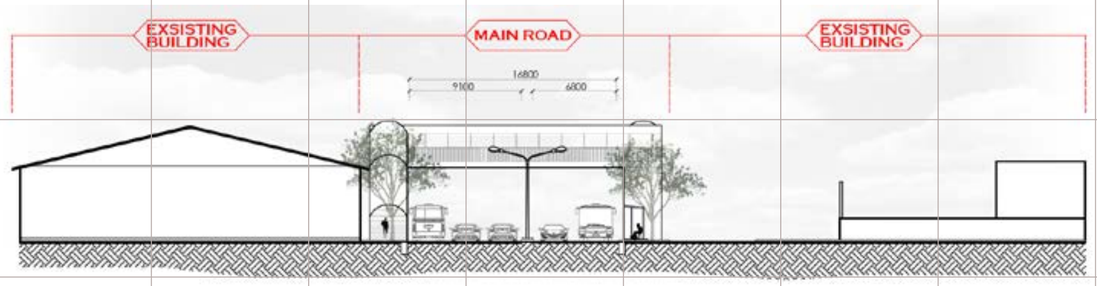
SLOW

On weekdays between 8am-3pm, there will be a slow traffic jalan tanjung bungah heading southeast direction due to schooling hours. On tuesday nights and friday afternoon, traffic will also be an issue due to consumers heading for a meal.

TYPICAL ROAD SECTIONS



ROAD SECTION AT JALAN TINGKAT LAUT
SCALE NTS



ROAD SECTION AT JALAN TANJONG BUNGAH
SCALE NTS

CIRCULATION PROBLEMS

ILLEGAL PARKING

People that owns more car than the parking space provided tends to park their car on pedestrian walkway. This causes the pedestrian to walk on the road

DUAL CARRIAGEWAY

Two direction of traffie separated by a divider. This requires the car coming from the east to make a U-turn in order for it to enter the site since its blocked.

FACILITIES & AMMENITIES

LEGEND

- Shop Rows
- Car Wash Service
- Laundry Service
- Petrol Station
- Pet Shop
- Neighbourhood Park
- Kindergarten
- Bus Depot
- Market & Food Complex
- School
- Civil Defence Unit Office
- Veterinarian (2.6km)

There are a number of amenities around the area within the 2 km radius. The number of amenities provided enchance the residences' around Tanjong Bungah life style. Hence, the ammenities determines the value of the proposed site.

- DRAINAGE FLOW
- WATER FLOW DIRECTION

DRAINAGE FLOW INFLUENCE ON PLUMBING

Drainage to be designed at the sides with lowest slope following the drainage flow to protect the building from water run-off.

- PROPOSED PRECAST SEPTIC TANK (1250 GALLONS)
- UNSYSTEMATIC TRASH
- 240 LITRES OF TRASH BIN

WASTE MANAGEMENT ON/OFF SITE

Unsystematic trash management becomes eyesore. Trash bin and proposed individual precast septic tank located nearby the ingress of site for easy maintenance.

- 40MM TO 110MM O.D. SPIROLITE HDPE WATER SUPPLY PIPE
- WATER SUPPLY FLOW DIRECTION

HDPE WATER SUPPLY PIPE

WATER SUPPLY DISTRIBUTION TO SITE

Water tank is located next to the water distribution area due to the high gravity pressure

- SERVICE DROP
- UTILITIES POLES
- ELECTRICAL ROUTE

TNB SUBSTATION

ELECTRICAL SUPPLY TO SITE

Distribution box, satellite dish and tv antenna to be installed near the utility poles for optimum connection and electricity.

- LAMP POST

LAMP POST

EXTERIOR LIGHT INFLUENCE ON SECURITY

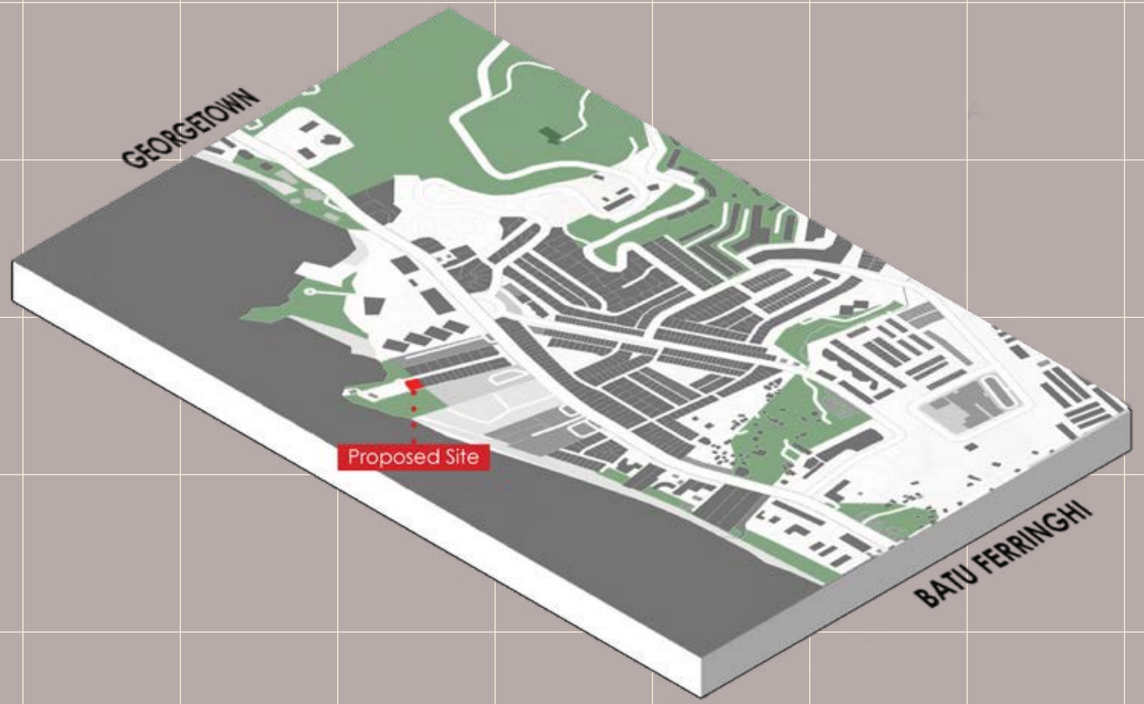
Car porch to be located near exterior light source. Installation of led lamp post provides a safe path to access the site during night time

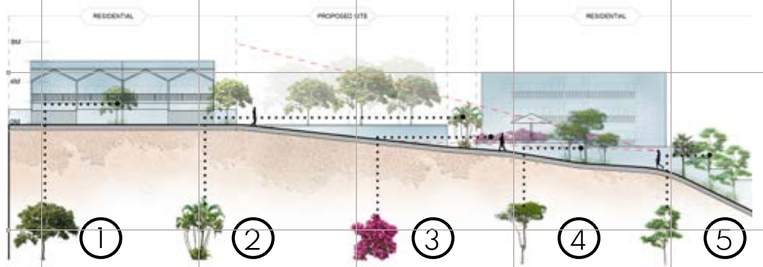
- SUN DIRECTION
- WIND DIRECTION
- GREY WATER TANK (300- 680 LITRES)
- RAINWATER HARVESTING TANK (650 LITRES)

FUTURE HOUSING INSTALLATION POSSIBILITY

Installation of solar panel (facing south), wind turbine (nacella face direct to sea breeze), grey water system (placed more hiddenly) and RWHT as active design strategy.

VEGETATION





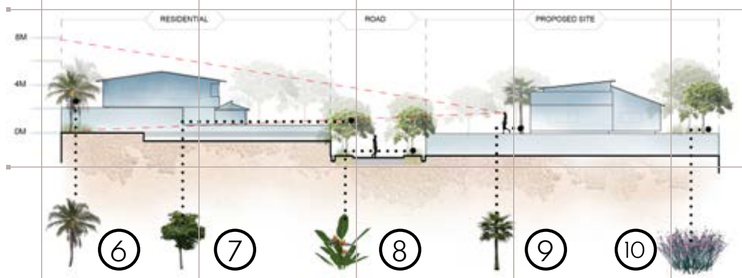
1.FRAXINUS EXCELSIOR
- MEDIUM-SIZED DECIDUOUS TREE
-MAXIMUM THUNK CAN UP TO 2M

2.ANTIGONON LEPTOPUS
-FAST-GROWING CLIMBING VINE
-MAXIMUM LENGTH UP TO 7M

3. BOUGAINVILLEA GLABRA
-AN EVERGREEN, CLIMBING SHRUB
-MAXIMUM WIDTH UP TO 6M

4.PTEROCARPUS INDICUS
-LARGE SIZE TREE
-MAXIMUM 2 M DIAMETER

5.ALSTONIA ANGUSTILOBA
-THE BARK IS GREYISH
-MAXIMUM DIAMETER 1M



6.COCONUT PALM
-THE TRUNK OFTEN CURVES AND FEATHER-LIKE FROND LEAVES
-MAXIMUM LENGTH UP TO 0.2M

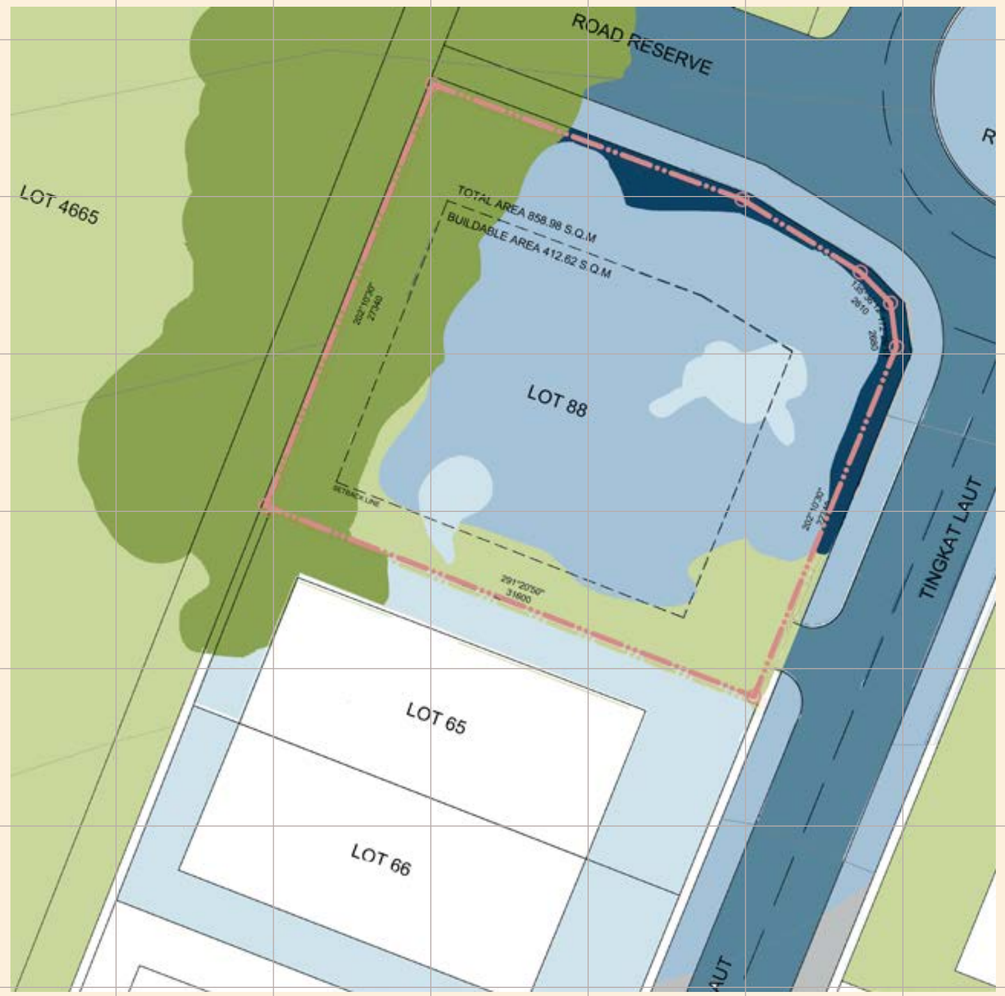
7. ANGSANA TREE
-LARGE DECIDUOUS TREE
-MAXIMUM THUNK UP TO 2M DIAMETER

8. HELICONIA PSITTACORUM
-THE BLOSSOM ARE SMALL
-MAXIMUM WIDTH UP TO 0.9M

9. CHINESE WINMILL PALM
-EVERGREEN PLANT
-MAXIMUM LENGTH UP TO 0.25M

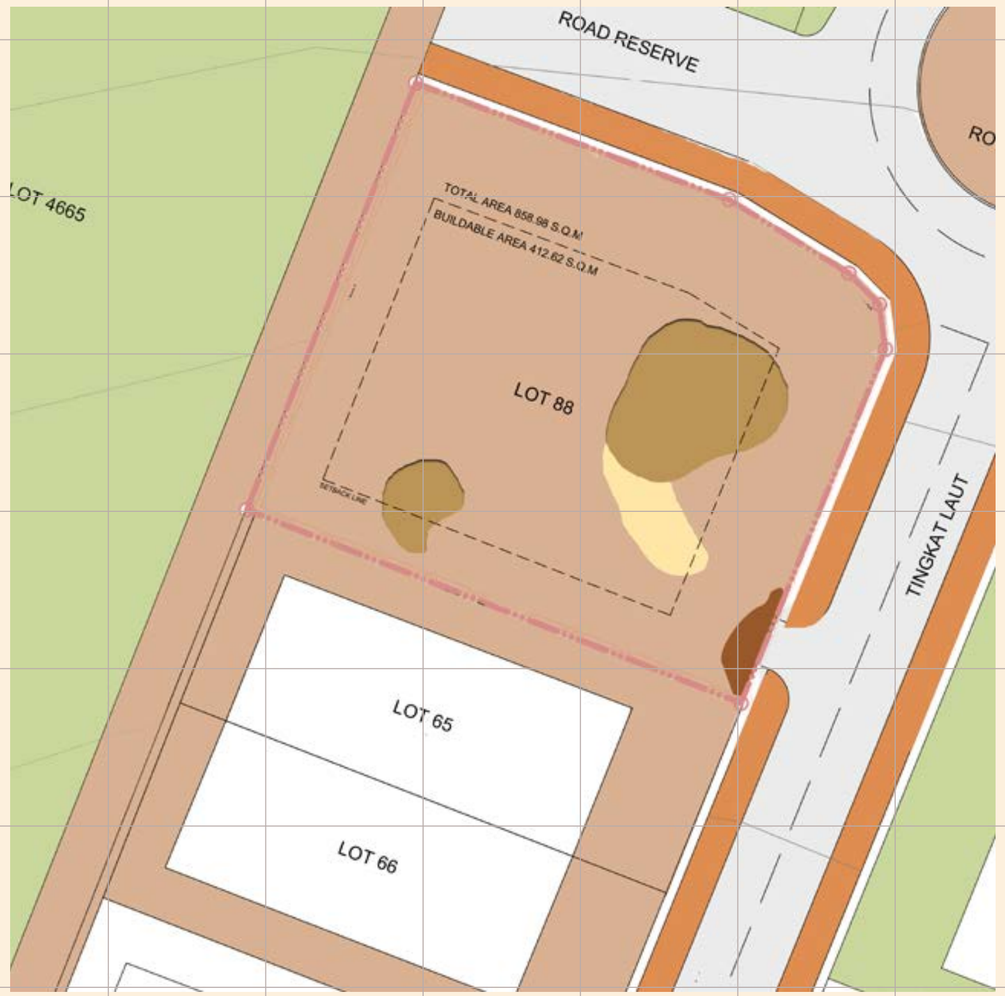
10.ANTIGONON LEPTOPUS
-FAST-GROWING CLIMBING VINE
-MAXIMUM LENGTH UP TO 7M

GROUND COVER



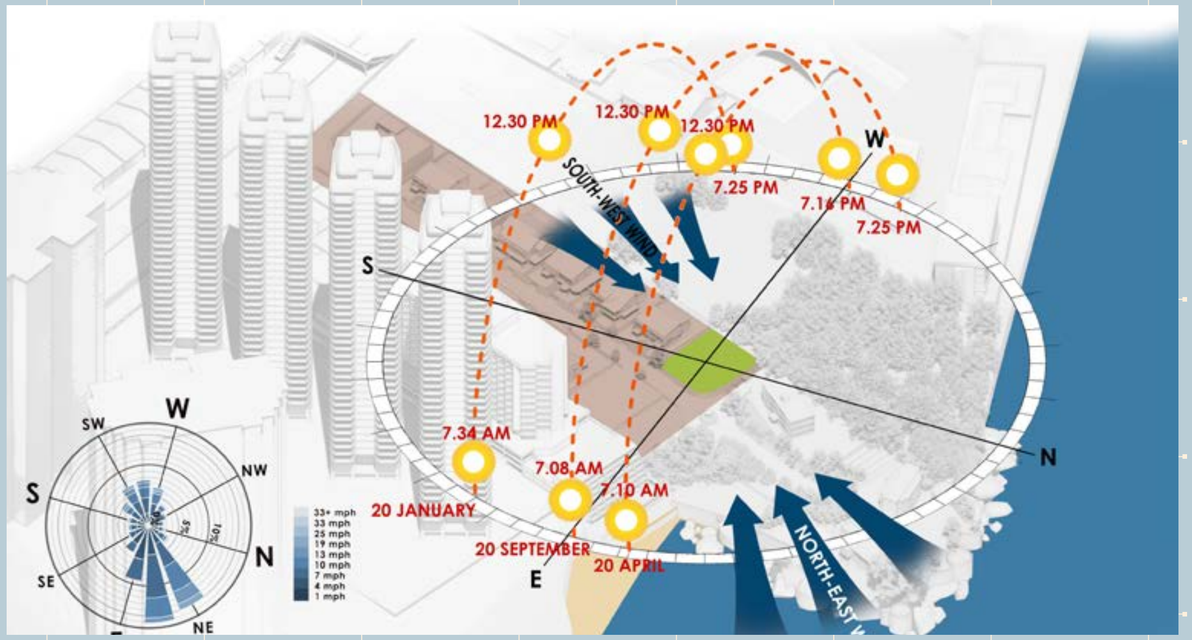
GREEN TURF | FALLEN LEAVES | TALL GRASS | DRY GRASS | SANDY SOIL | TARMAC FLOOR

SOIL TYPE

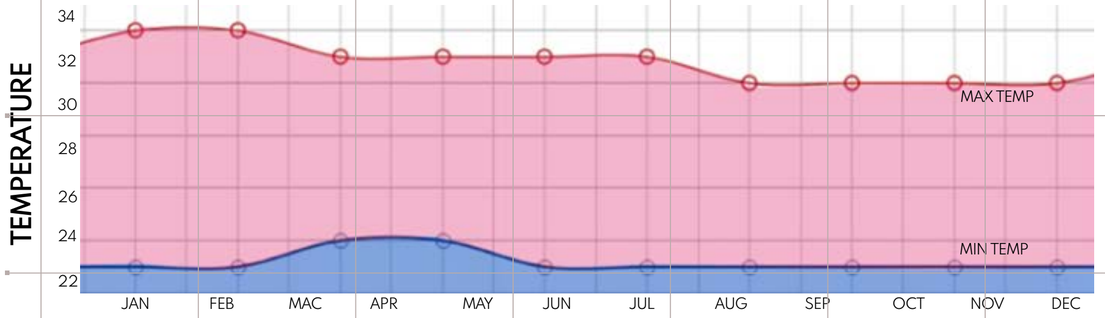


HARD SOIL WITH AGGREGATES | CLAY SOIL AND PEBBLES | MEDIUM LOAM SOIL WITH PEBBLES | HARD DRY SOIL | SAND AND AGGREGATES

MICRO CLIMATE ANALYSIS

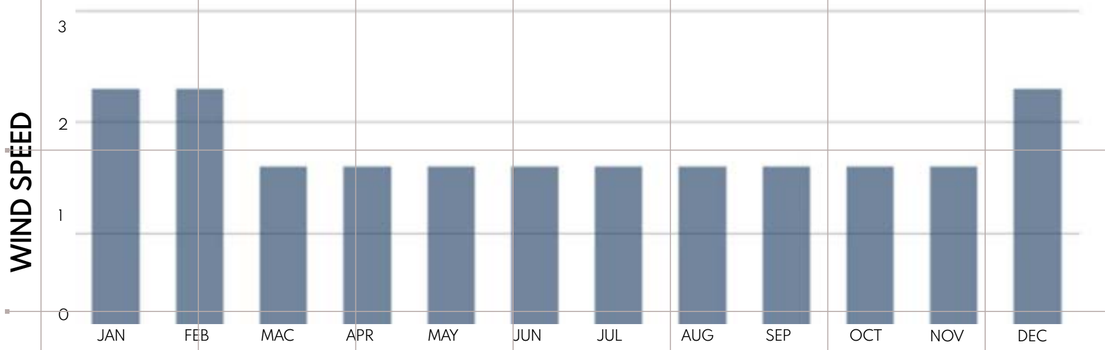


AVERAGE MAXIMUM AND MININUM TEMPERATURE



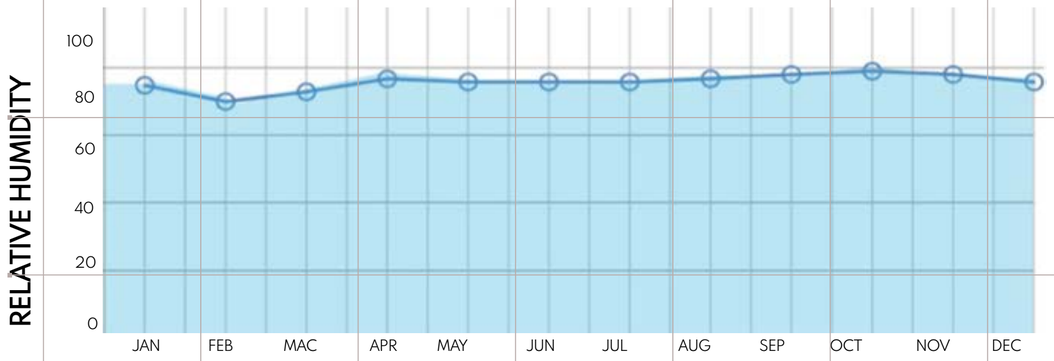
The warmest months at tanjung bungah is from january to march and the coldest month is between august to october.

AVERAGE WIND SPEED (M/S)



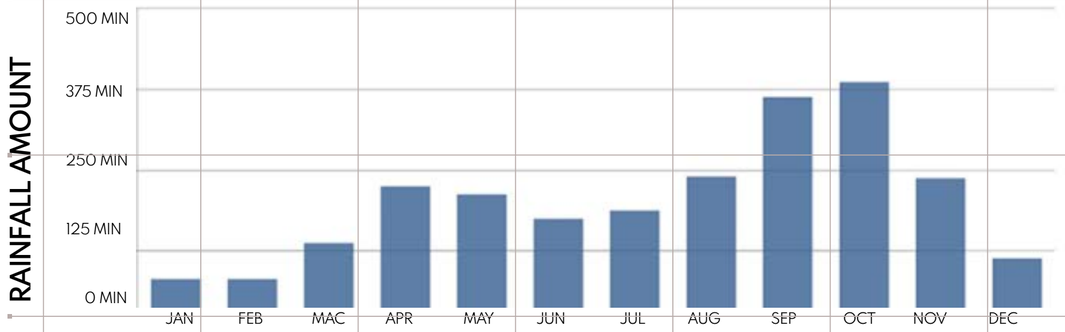
The wind speed is highest during january, february & december, while the wind speed from march tillnovember remain at around 1.25 Meter per second.

AVERAGE HUMIDITY



The humidity in tanjung bungah is relatively high where the percentage of humidity is between 70% to 80%. It means the site is considered moisture area.

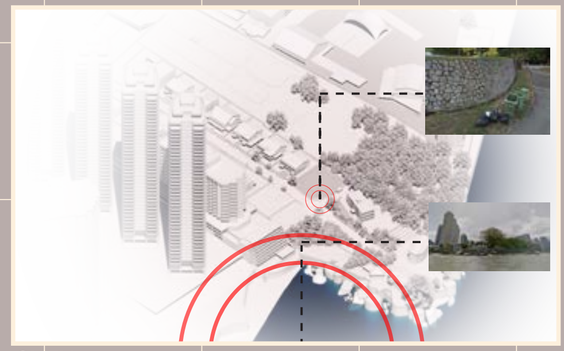
AVERAGE RAINFALL AMOUNT



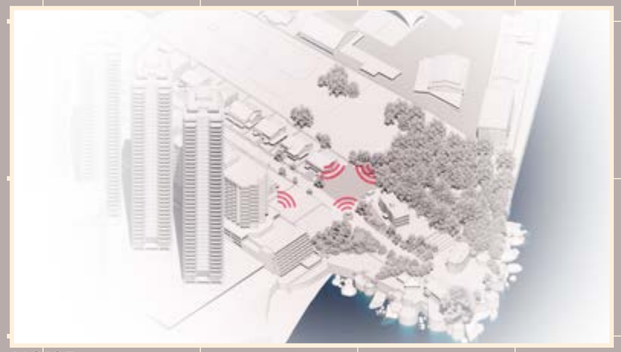
Tanjung bungah has highest rainfall amount during september till october and and the temperature around the surrounding will become lower.

SENSORY

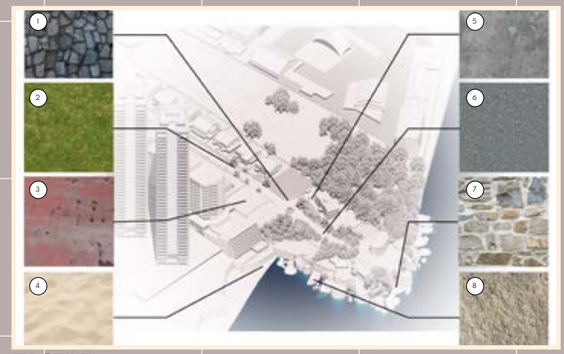
FEEL
- Peaceful environment. Suitable for the retired.
- Close to nature. Adjacent to the coastline and lush greeneries behind the site.
- Multicultural residential area.



SMELL
- Piled up garbage creates a bad stench when standing near to it
- Occasional sea-smell carried by the sea breeze



NOISE
- Constant bird chirping noises from the nearby greeneries **(54db)**
- Noise from the residents chatting in the gazebo **(60db)**
- Noise from the air conditioning compressor at the nearby hotel **(58db)**
- Traffic noise during peak hours **(71db)**



TACTILE

1.Gravel - rocky and rough texture

2.Grass - soft texture

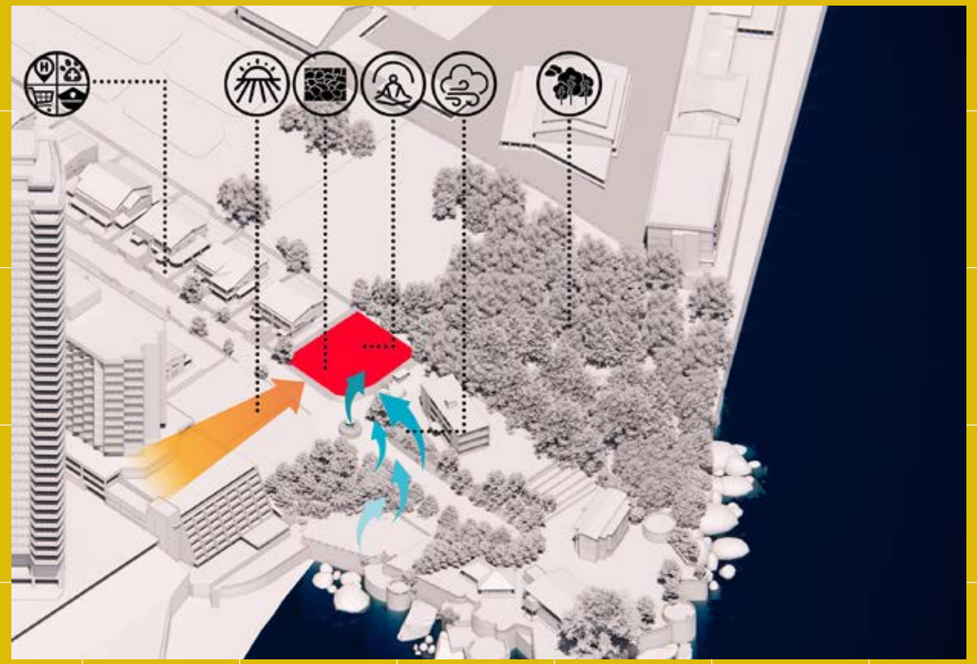
3.Cracked Concrete Floor - rough with cracks

4.Sand - soft and loose

5.Imprint concrete - hard and solid

6.Asphalt - hard andrough

7&8.Stone - solid and rough texture



STRENGTH

TALL TREES
Trees behind the site act as a buffer zone between the site and grass field.

FLAT LAND WITH RETAINING WALLS
The flat and leveled site provides a strong passive outline for the site.

PEACEFUL ENVIRONMENT
Relatively quiet environment which provides a comfortable condition to rest

EASY ACCESS TO ESSENTIAL
Hospital, restaurants, clinics, vet and market are not far from the site.

WINDY AREA
Site has land breeze and sea breeze. Can be used as air ventilation

FACING MORNING SUN
Natural sunlight is able to reach the site and warm it up in the early morning.

WEAKNESS

HIGH HUMIDITY
Trees behind and nearing the seaside cause the environment to be humid.

POORLY MAINTAINED FACILITIES
The gazebo, tennis court and guard house have not been taken care of and deteriorate.

POOR SECURITY
Guard house is abandoned and no security patrol around the area.

NOISE FROM THE NEARBY M&E GENERATOR
Constant generator buzz from the hotel can be heard at certain times.

OPPORTUNITY

POTENTIAL VIEWING POINT
elevated plan can become point for viewing due to high and non-obscured plan.

POTENTIAL LEVELED GROUND
the flat and elevated land can be divided into different levels

THREAT

HAZARDOUS ELECTRIC CABLE
Electric cables that are very low on the ground around the site might pose a serious problem to the owner's pet and the area's electric supply.

LACK OF DRAINAGE
The flat site has no drainage which may cause water to become stagnant on the site.

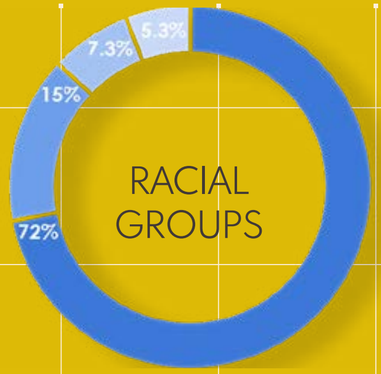
PENANG

LOCAL DEMOGRAPHICS

Tanjung Bungah is home to 17117 Residents, comprising of 72% Chinese, 15 % Malays, 7.3% Indians & 5.7% foreigners. There are Australian & Korean Foreigners attracted by education & working oppurtunities here. For the gender ratio, females slightly outnumber males by 1%. The young mostly make up 42.4% of the population while the population while the elderly and adults make up 30.2 % & 27.4% of the local population respectively.

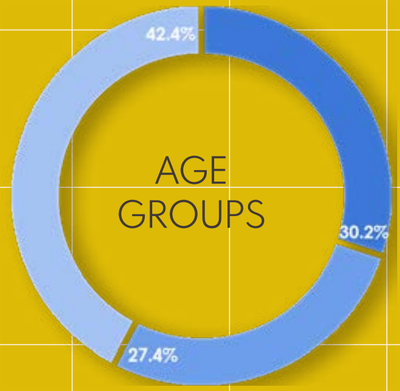
Most of the population works in the services or manufacturing industry, while only a small percentage work in the agriculture & construction industry.-both domestic and international that visited tanjung bungah in the year 2019 has increased from 1,571,044 to 1,708,945.The accommodation rate over there shows that 70% is made up of domestic guests while only 30 % is from foreigners.In 2019 , most of the population in penang are employed , only 2% are unemployed.

RACIAL GROUPS



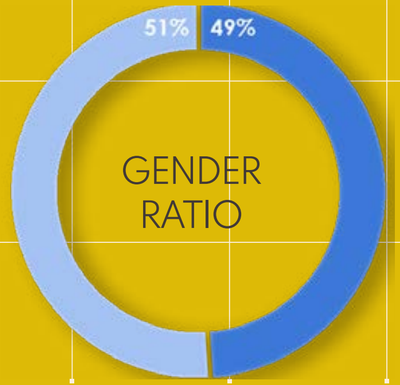
- Chinese
- Malay
- Indian
- Others

AGE GROUPS



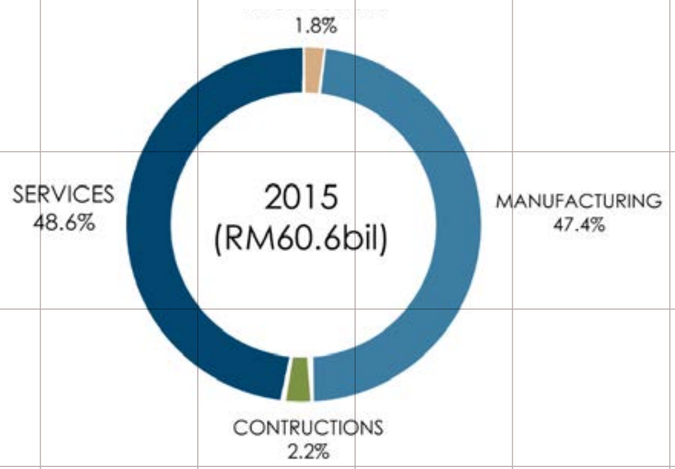
- 40 - 59 years old
- 20 - 39 years old
- below 19 years old

GENDER RATIO

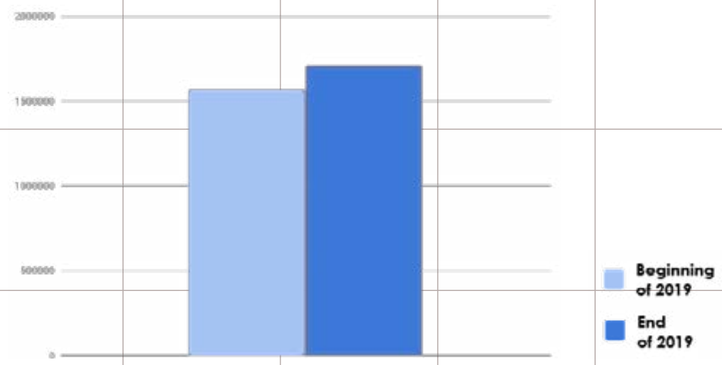


- Male
- Female

SOCIO ECONOMIC



INTERNATIONAL & DOMESTIC TOURISM



RELIGIOUS ACTIVITIES

Tanjung Bungah Floating Mosque
4 minutes/ 2km from site

Sri Maha Mariamman Temple
5 minutes/ 1km from site

Geok San Soo Buddhist Temple
5 minutes/1.3km from site

Surau Tanjung Bungah
7 minutes/ 2.5km from site

WEEKEND ACTIVITIES

Watersport activity Pantai tanjung bungah
2 minutes/550m from site

Kelab Renang Pulau Pinang
(4 minutes/ 2.7 km from site)

Tanjung Bungah Tuesday Night Market
(5 minutes from site-1.3km)

Casa Permai Central Park (pet-friendly park)
2.6km/ 7 minutes from site

EVENTS AND CELEBRATION

Community Services
at Pantai Tanjung Bungah
(2 minutes from site-550m)

CNY at night market
(5 minutes /1.3km from site)

Independence day feast
at Dewan MBPP
(4 minutes from site-1.2km)

Hari Raya Celebration
at Dewan MBPP
(4 minutes/1.2km from site)

LOCAL BEHAVIOURIAL ASPECT

Each house may be provided with a waste disposal dustbin but ignorant people still leave garbage on the grounds.

Overall cleanliness of pantai tanjung bungah has been well maintained by the local community & authority.

AUTHORITY REQUIREMENTS & UBBL

PERANCANGAN BANDAR DAN DESA PULAU PINANG REQUIREMENTS

From jabatan perancangan bandar dan desa, the plot ratio is 1:1. this site is just can be built-up with residential unit only. normally can be up to 5 levels but 2-storey house can be built for this area. the maximum height of level is fixed at 4.5m. the set back from road is 20 feets (6096mm) while from side and road is 10 feets (3048mm).

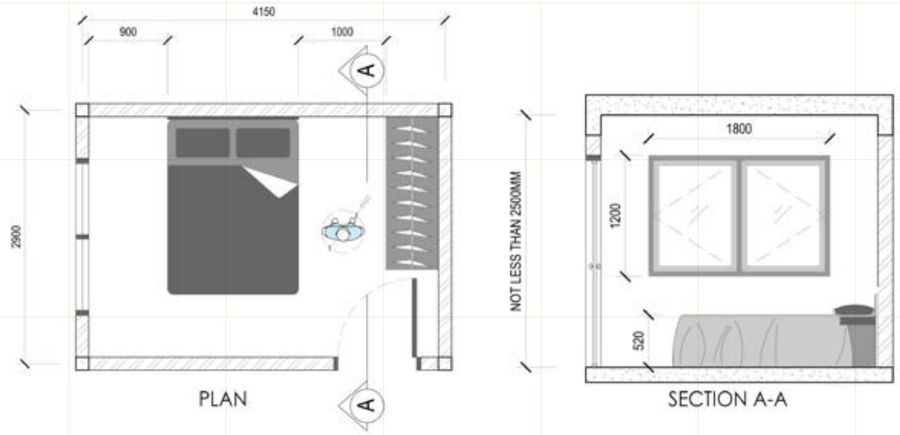
ROOM REQUIREMENTS

BUILDING BY-LAW 42

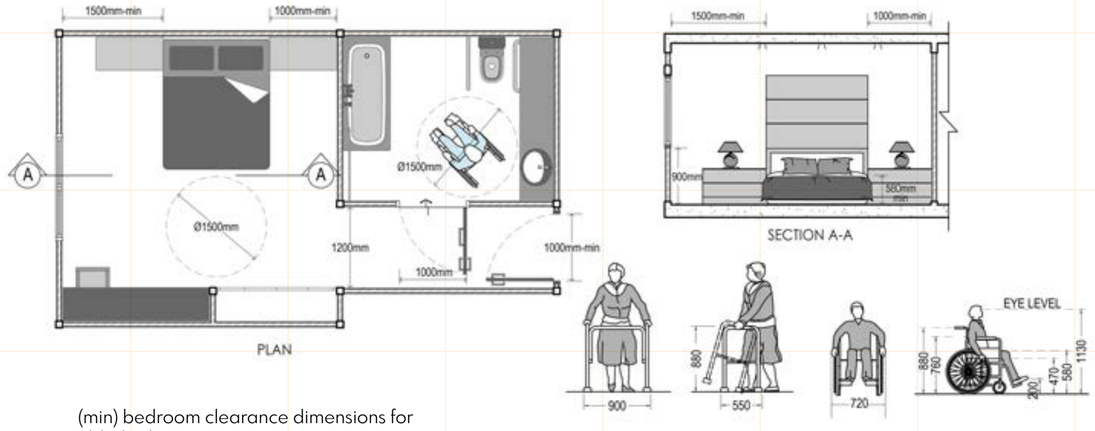
- the area of the first habitable room in a residential building shall be not less than 11sqm, second room not less than 9.3sqm and other not less than 6.5sq m in area

- the width of every habitable room in a residential building shall not be less than 2m

- the area and width of a kitchen in a residential building shall be not less than 4.5sqm and 1.5m
respectively



ELDERLY ROOM LAYOUT



(min) bedroom clearance dimensions for elderly,oku user.

STAIRCASE REQUIREMENTS
Building by-law 106

Building by-law 107
Handrails
- 1 handrail shall be provided except staircase ≤4 risers
- intermediate handrail shall provide when staircase which exceed 2225mm in width
- shall ≤100mm from the finished wall

Building by-law 108
Maximum flight
- landing ≥ 1.8m in depth
- landing's vertical intervals ≤ 4.25m
- risers ≤ 16 between each landing

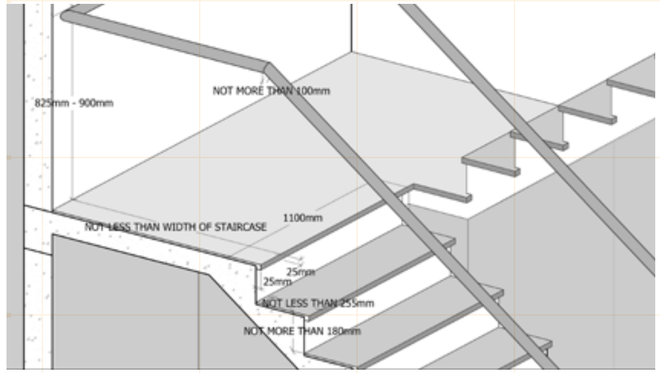
FIRE REQUIREMENTS
half hour and one hour door (topic 163)
- single door 900mm width x 2100 height
- double door 1800mm x 2100mm
- for solid hardwood as material, must not less than 37mm laminated with adhesive conforming
- for plywood as material, must make sure all edge finished with a solid edge strip full width of the door

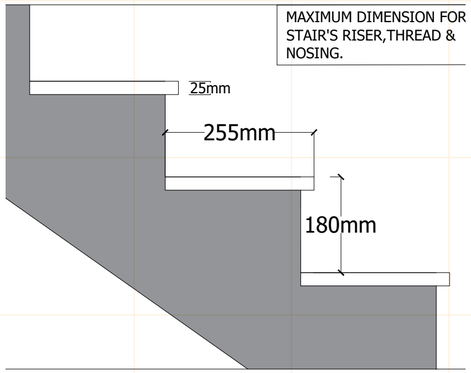
Fire hydrant distance
- not more than 90 metre from fire brigade access.

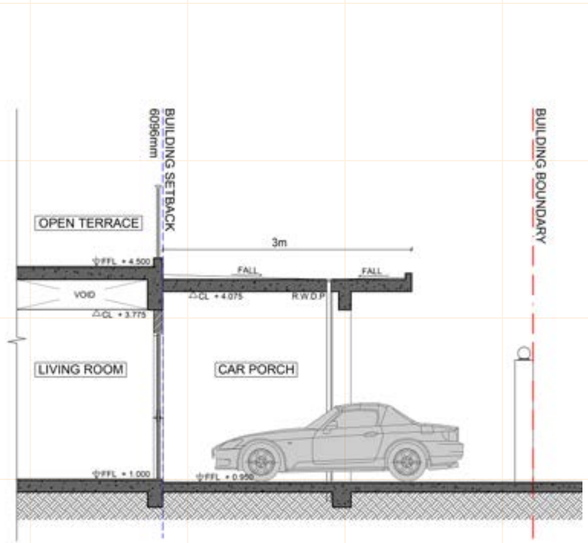
Staircase (topic 168 & 194)
- a single staircase maybe permitted in any building the topmost floor of which does not exceed 12 metres in height.

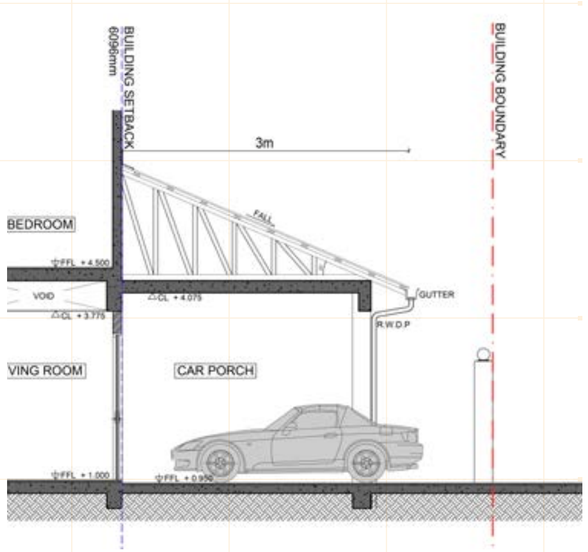
CARPARK PROVISION GUIDELINE
size of carpark = 2.5m x 5m for 90°, 45°, 30°
= 2.5m x 6m for parallel parking

Car porch guideline
- car porch not allowed to exceed 6m from the building line.
- gutter and downpipe should be provide at the eave of pitch roof









SEPTIC TANK REQUIREMENTS

- based on the requirements given, this dimension of the septic tank is for handling sewerage system which cover 6 person in the residential house.

- it is using 100mm diameter of the sewarage pipe for draining 1410 litres sewerage water in and out.

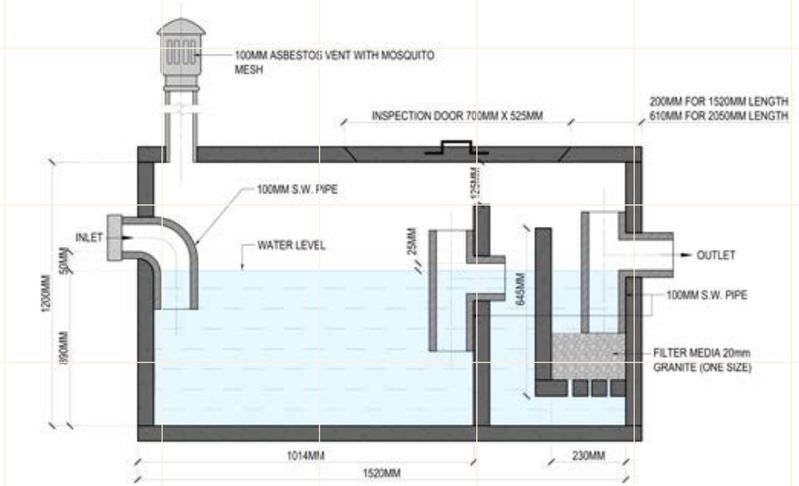
- it also consists of granite which are 20mm each act as filter to filter the sewarage before draining out the sewerage to the nearest manhole.

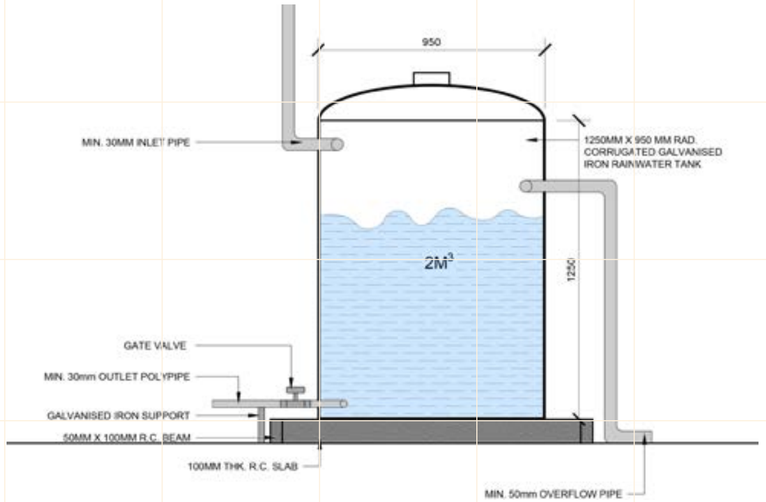
RAINWATER HARVESTING TANK REQUIREMENTS

- rainwater tank chosen is 2m3 in volume with 1250mm x 950mm radius.
- rainwater tank can is 200 gallon and can store up to 900 litres rainwater.

- rainwater tank shall be sit on 75-100mm of compacted crusher dust or concrete pad.

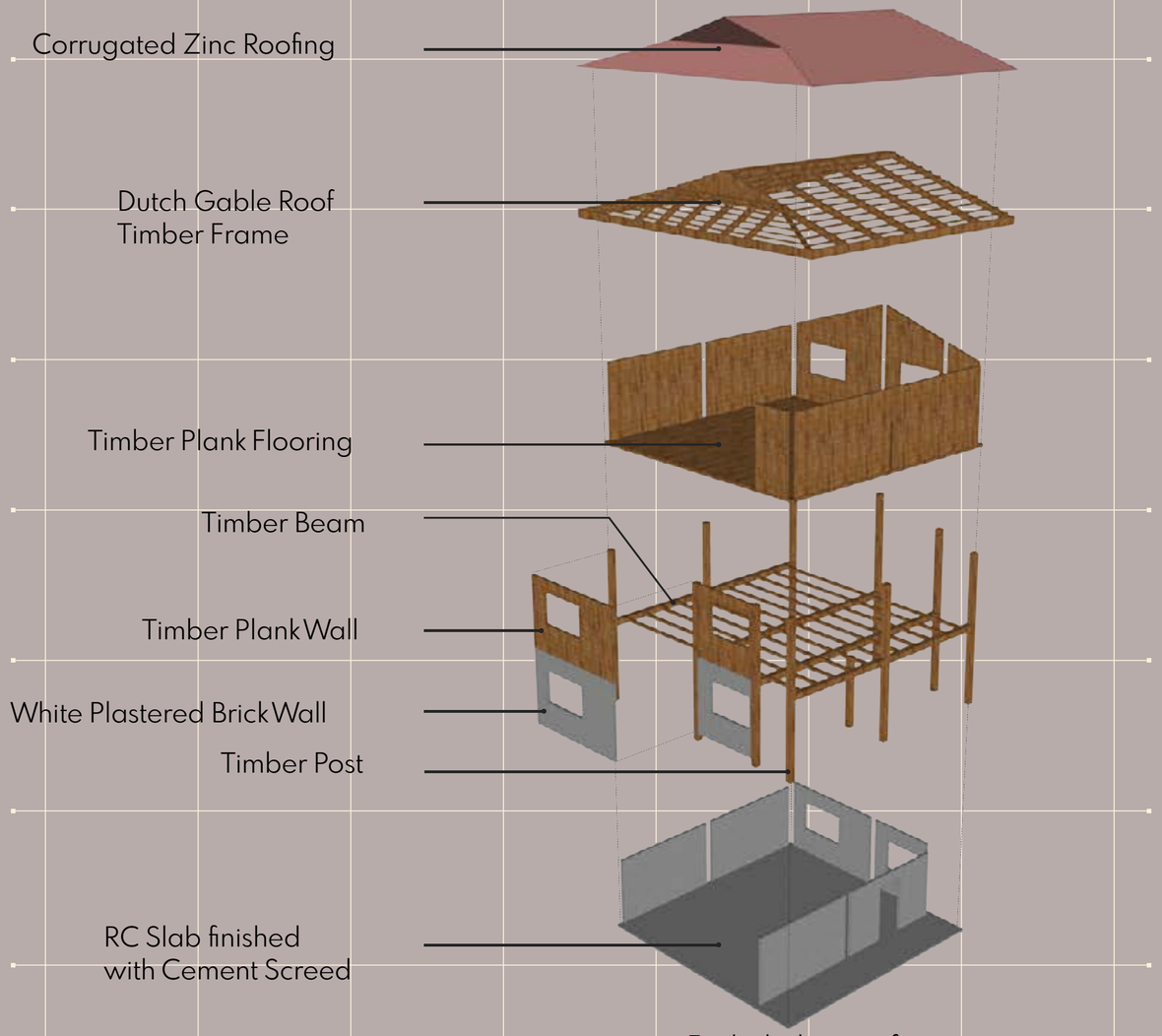
- overflow must be piped away from base to prevent undermining





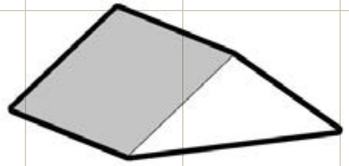
LOCAL HOUSING STUDIES

Vernacular architecture is influenced by local climate & materials. Research is done by looking & studying traditional & modern houses found in Tanjung Bungah. We are able to extract construction methodology , roof & form typologies that will give us inspiration for our design project. We also done pet design research to fullfill the design brief.

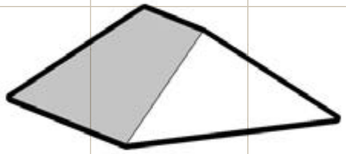


Exploded view of
Hybrid Timber & Concrete structure

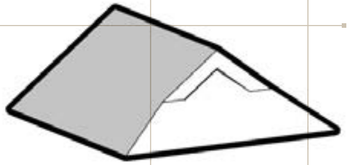
ROOF & FORM TYPOLOGY FOR DESIGN INSPIRATION



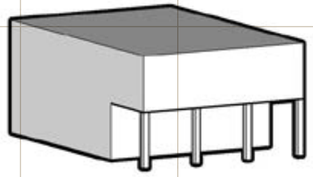
GABLE ROOF



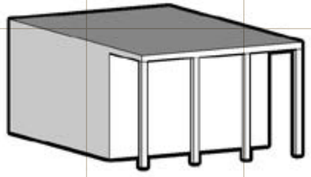
HIP ROOF



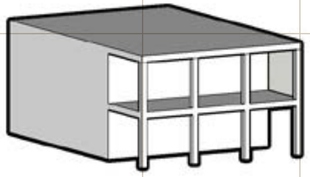
DUTCH GABLE ROOF



FRONT VERANDAH

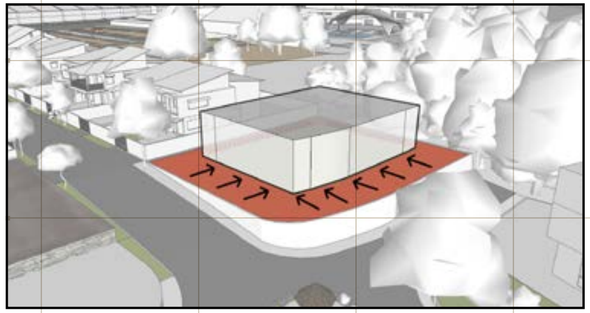


DOUBLE VOULME VERANDAH

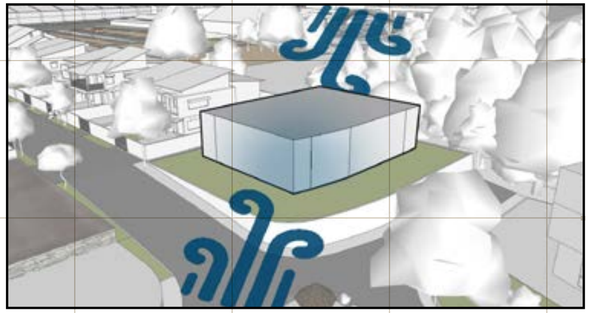


BALCONY ABOVE VERANDAH

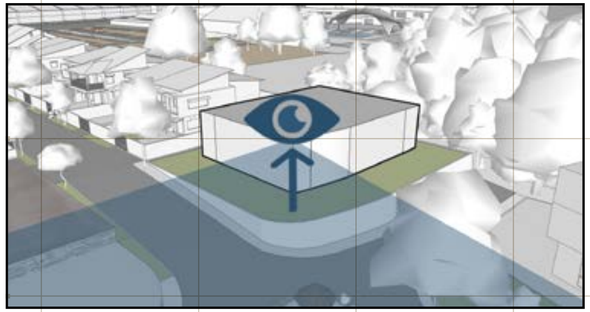
SITE RESPONSE



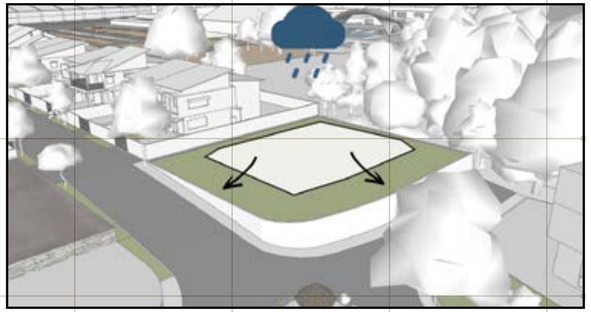
Utilize sufficient space within set back



Welcoming Breeze around site



Utilize existing landscapes



Draining of rain water

PET DESIGN RESEARCH

DOG (vary by size)
minimum floor area - 0.9m2

CAT
Minimum Floor Area - 1.7m2
Enclosure (800 X 800 X 750)

HAMSTER
Enclosure (750 X400 X 400)

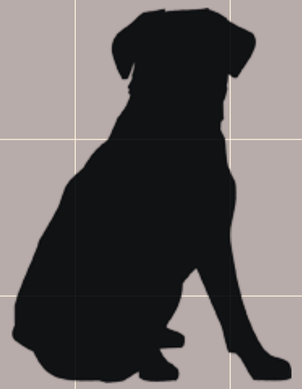
BIRD
Cage width double wing span
Tall cage for long tails

FISH
Tank 7-12 times the length of fish

TORTOISE
37 litres of water per inch

POULTRY
minimum enclosure 0.3m2
floor area 0.7m2 to 1m2

RABBIT
minimum floor area - 2.5m2



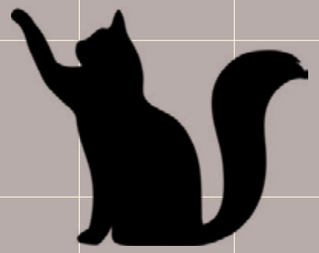
CHARACTER OF PETS

CURIOUS

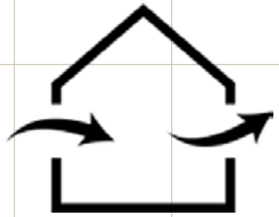
PLAYFUL

FRIENDLY

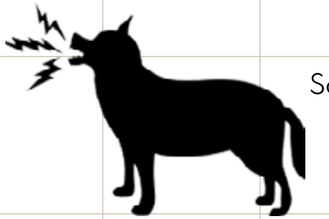
ADVENTUROUS



FACTORS TO CONSIDER



Natural Light &
Ventilation



Sound Insulation

Pet scale
furnitures

Animals only see
certain colours

Damage by
Animal claws

Hot pavements
hurt animal paws

PROJECT 2C

DESIGN PROPOSAL :
THE ‘SEA LEVEL VAULT’ HOUSE

The site itself located at the north end of the Penang island , where is a coastal area of a stone throw’s away from the sea view. At the end of Jalan Tanjung Bungah, lies distinctive barrel vaults aligning along with the rows of houses. The facade of the house covered with industrial metarials from heavy materials such as concrete , clay bricks to steel and aluminum frames. The font yard gives an welcoming approach for the owners to enter the site.

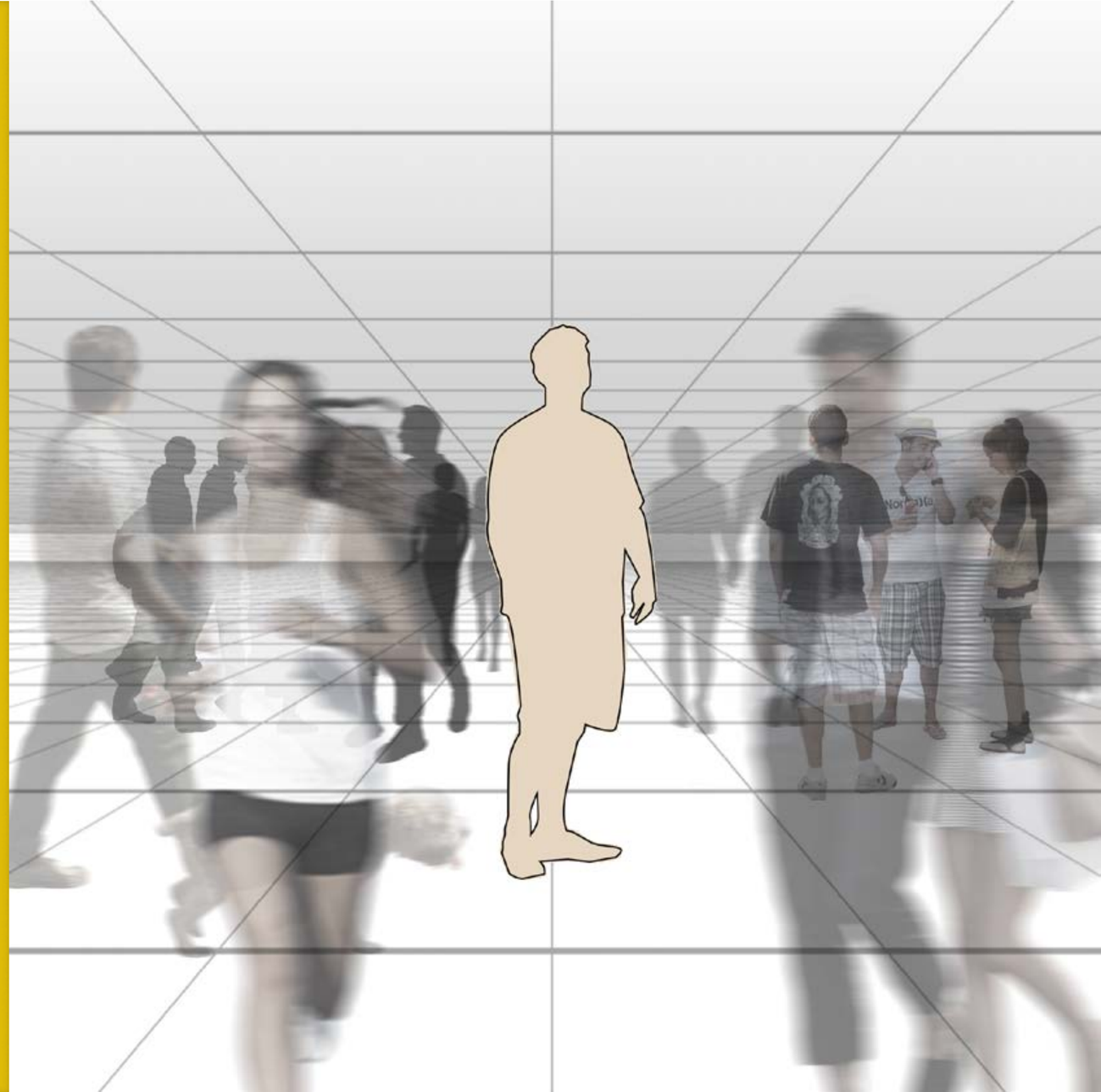
The chosen client is a Chinese family called the Heng Family. They are a family of 5 with a pair of parents, 2 sons and a youngest daughter of 20 years old . They own pets of 2 dogs and a cat.

They usually carries online business activities such as selling car parts online as a family business. During free time, they are mostly together such as lounging at the living area watching TV shows or having meals together on the dining table.

DESIGN CONCEPT

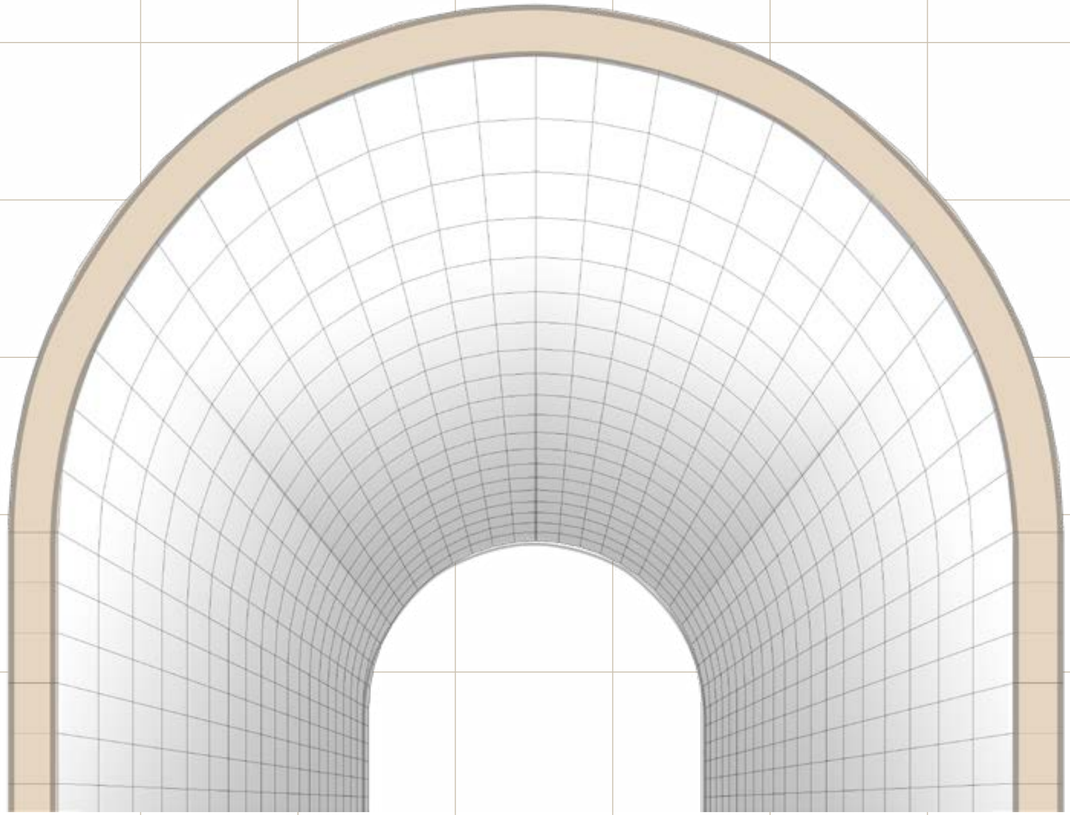
An inspiration comes from a different point of view since stepping into Architecture.

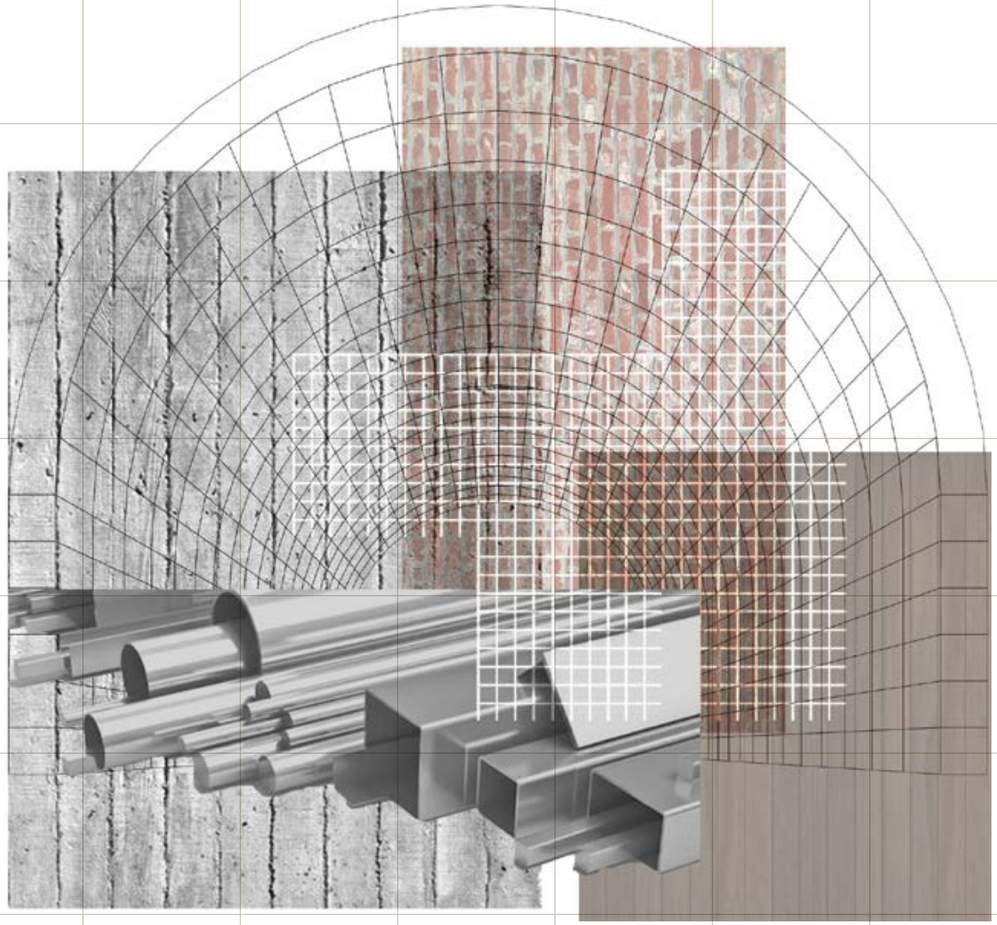
We tend to look at different perspectives compared to normal people . One of the common perspective is looking upwards on overhead planes or structure above. Hence the thought of sharing the perspective with the occupants emerges.



DESIGN IDEA 1

To express the concept, an idea of having ceiling as a feature to be at the main spaces of the house. Hence, a barrel vault shape roof from foreign influences came across, highlighting the profile of the house through exterior and interior. Foreign influences are happened as well at the site's location, Penang ; Where mix of influences are seen.



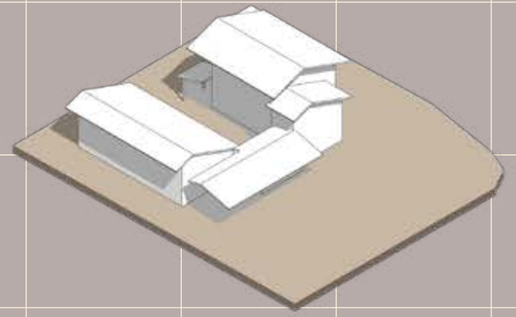


DESIGN IDEA 2

The client prefered Industrial Style Design. Hence an idea of playing with materials in terms of weight balancing, balancing out the lightness and heaviness amoung the building materials.

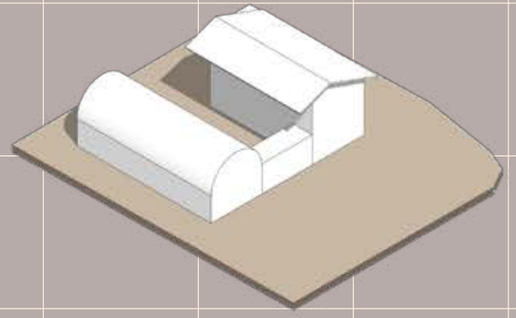
The main structural materials are heavy such as masonries and concrete. To balance it out, lighter materials such as metals, glass and meshes are played around
We tend to look at different persp

FORM DEVELOPMENT



Initial Massing Form

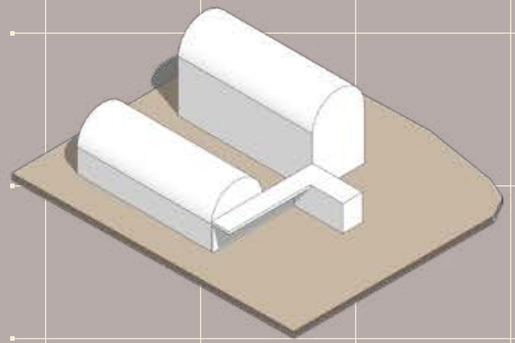
Initially splitting private and public into 2 different massing, connected by a store room to solve clients' business issue.
Planned to play along with the use of materials.



First Development

Started to 'carve' a vault form at the main space which is the living quarters.

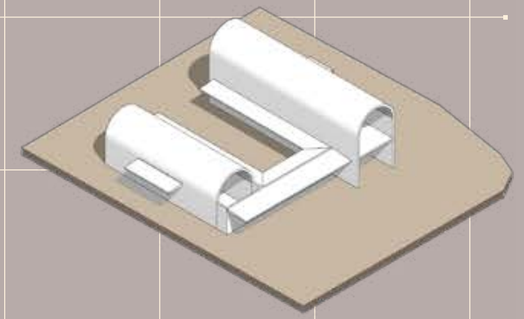
The barrel vault shape expresses the concept and cleanliness in form, reflects the spacial volume under the roof.



Uniforming the Language

The other part of the building is 'carved' simliarly to the main space, uniforming the language of the massings.

The storage is aligned in the same linear direction as well.



Current Design

Simple modifications and more carving to achieve a higher level of cleanliness.

The storage space is converted into an open storage, instead as a room itself

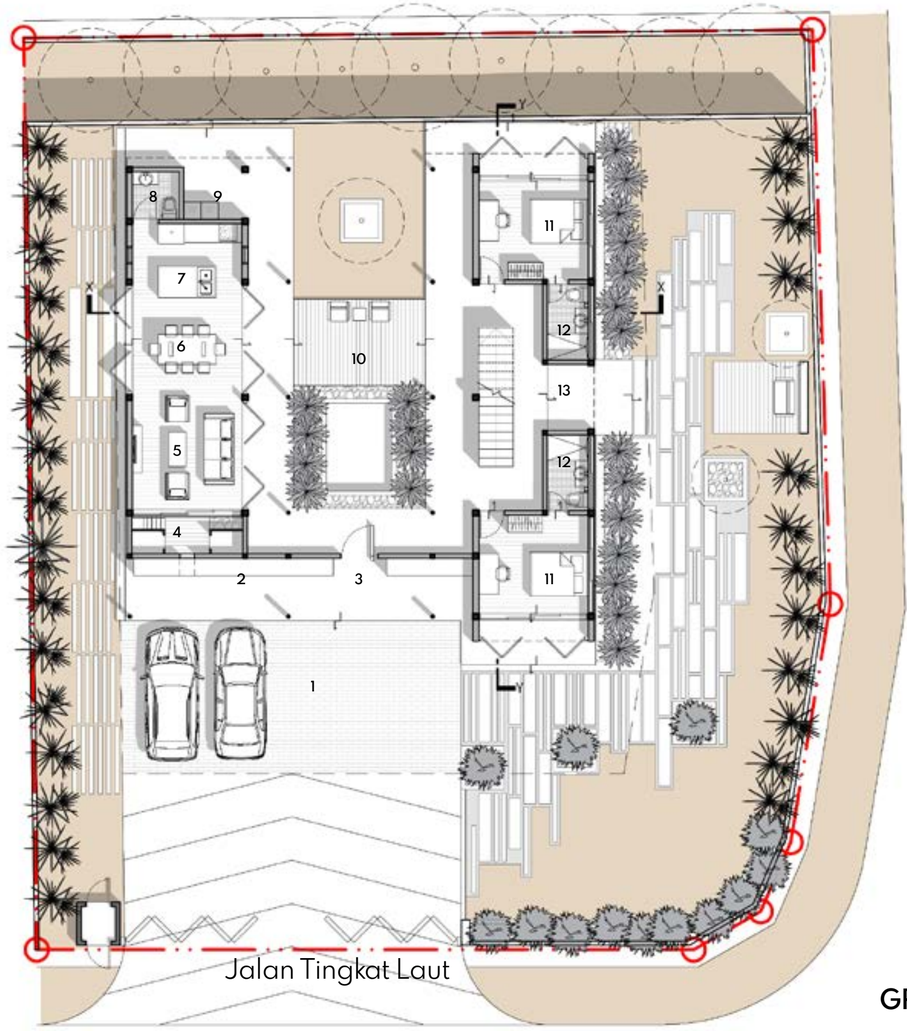
LOT 88, JALAN TINGKAT LAUT, TANJUNG BUNGAH , 11200 PULAU PENANG

The entrance of site started from Jalan Tanjung Bungah turning into Jalan Tingkat Laut. Along Jalan Tingkat Laut, there are 2 rows of semi detached houses and bungalows built. At the end of the road, lies the proposed site and one of it's neighbourhood landmark, wich is the gazebo at the roundabout. After the round about there are private properties built close to the coast.

LOCATION PLAN
scale NTS

SITE PLAN
scale 1 : 400

0 5 10 15 20 m

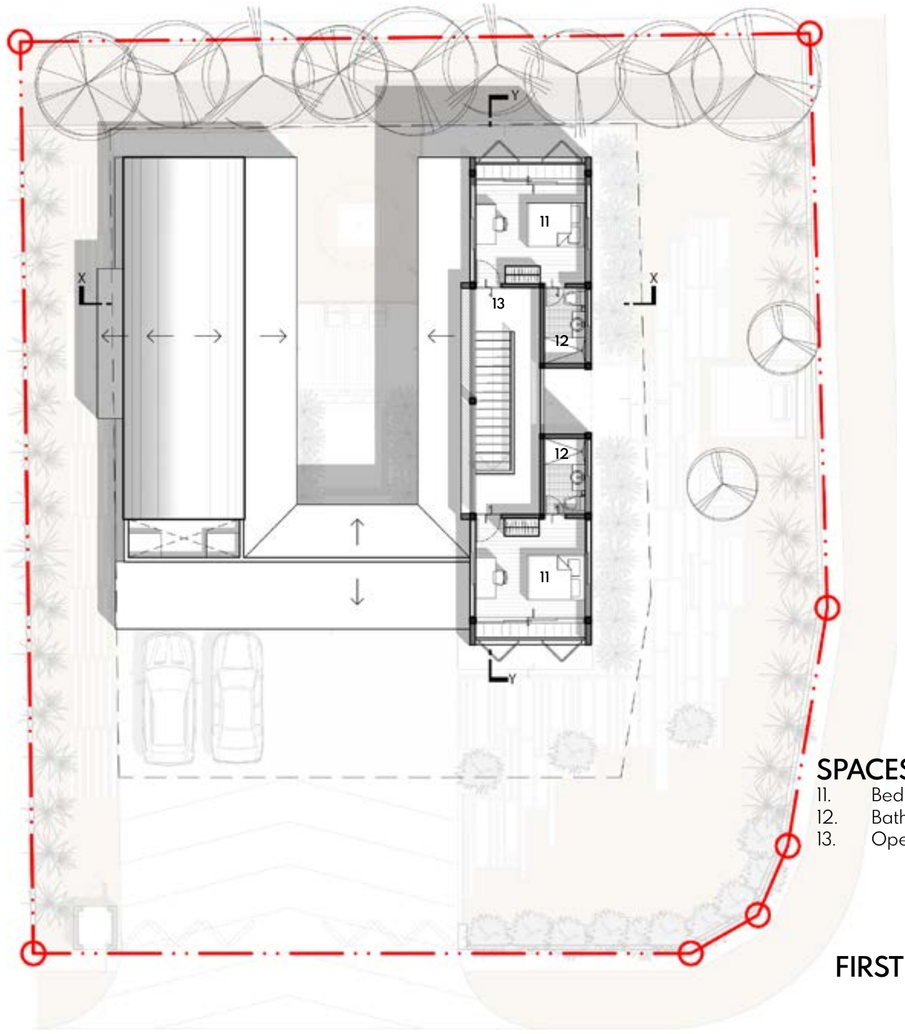


SPACES

1. Car Park Area
2. Storage Display Area
3. Entrvvvmance
4. Pets Area
5. Living Area
6. DIning Area
7. Kitchen
8. Powder Room
9. Laundry Area
10. Outdoor Lounge
11. Bedroom
12. Bathroom
13. Open Corridor

GROUND FLOOR PLAN
scale 1 : 150

0 5 10 m



SPACES

11. Bedroom
12. Bathroom
13. Open Corridor

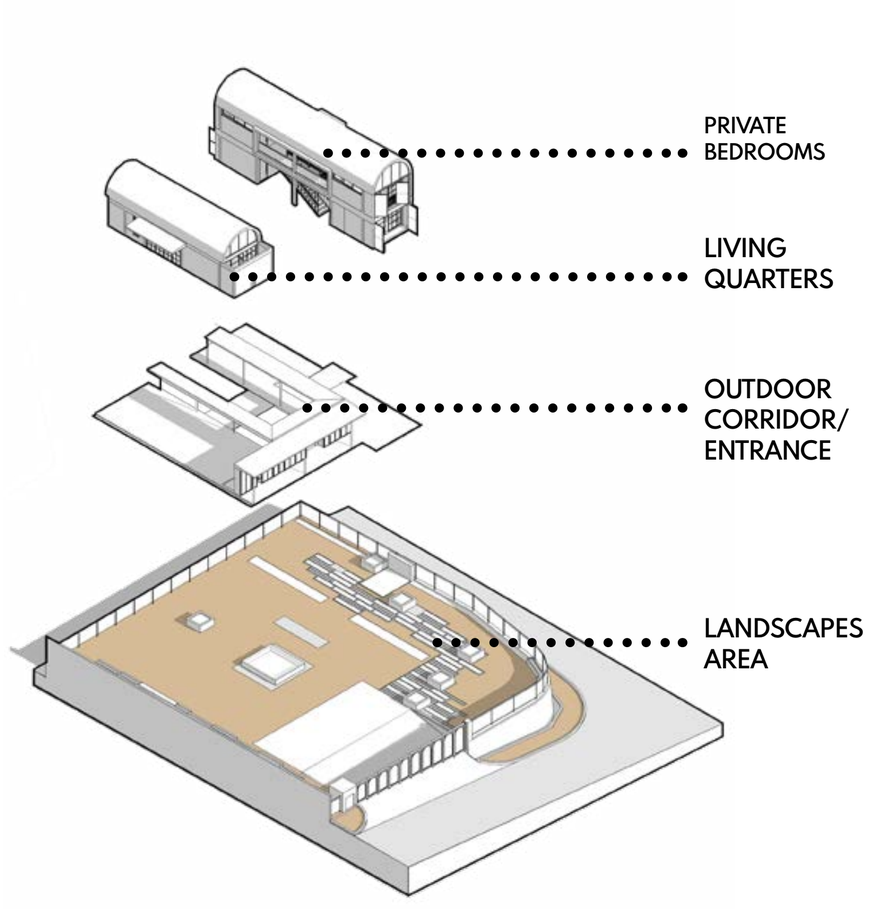
FIRST FLOOR PLAN

scale 1 : 150

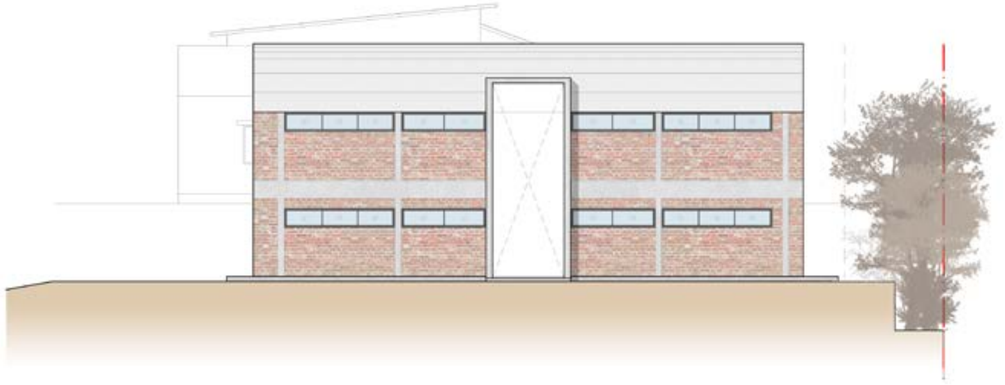
0 5 10 m

ZONING MASSINGS

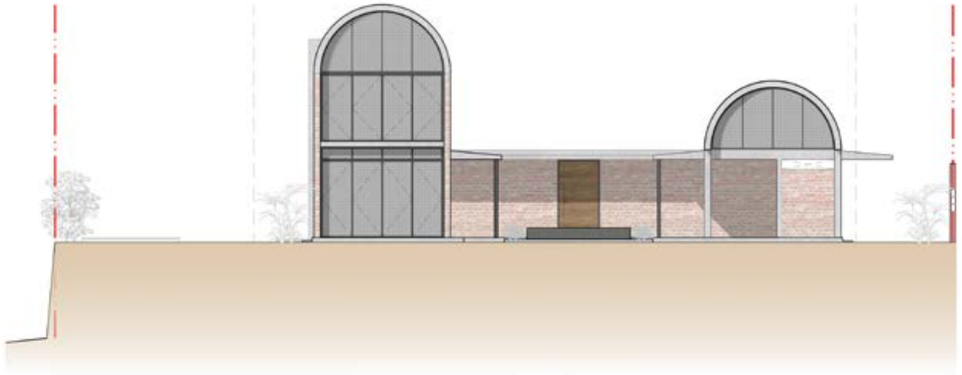
A blow up diagram briefly explains the importance and privacy heirarchy. As shown in this diagram below, the most private part of the building is the bed rooms block and following on with the living quarters



FRONT ELEVATION
scale 1 : 150



LEFT ELEVATION
scale 1 : 150



REAR ELEVATION
scale 1 : 150

RIGHT ELEVATION
scale 1 : 150

OPEN PLANS

The main spaces, living , dining, kitchen and the pets space are connected in a linear order to enchance the connection between the clients and their pets

CLEAN FORM

The form of the buildings are developt as clean as possible. Subtracting unrelated elements, creating cleanliness to reflect serenity.

OPEN COURTYARD

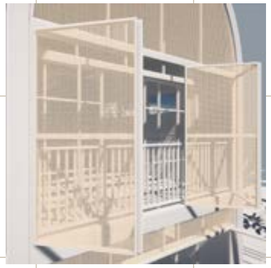
The courtyard act as an axis approuch and an outdoor lounging space, acting as 1 of the main spaces of the house

RESPECTING THE ORIENTATION

The building is aligned according to the neighbour buildings. The original orientation itself already response the environment such as sun paths and wind roses.

DISPLAY ENTRANCE

The entrance itself acting as an filtration, mainly filtered out the working “mood” . The entrance act as an open storage for the business stocks , displaying the client’s main business.

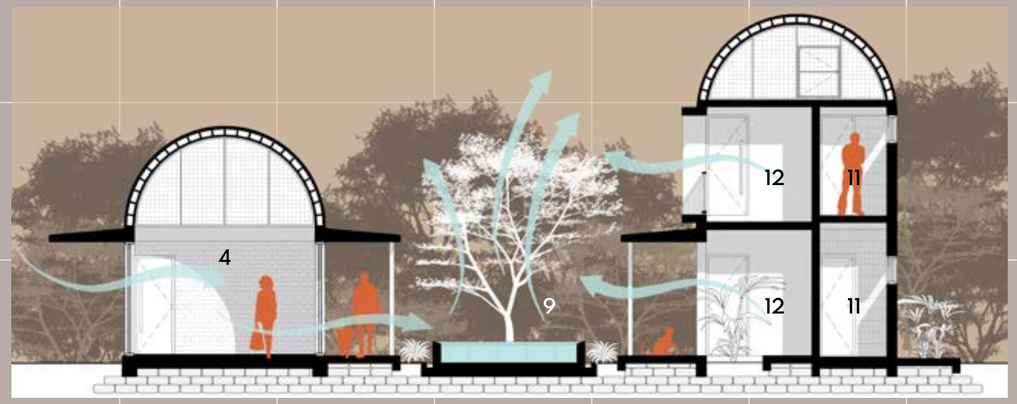


MESHES OPENING

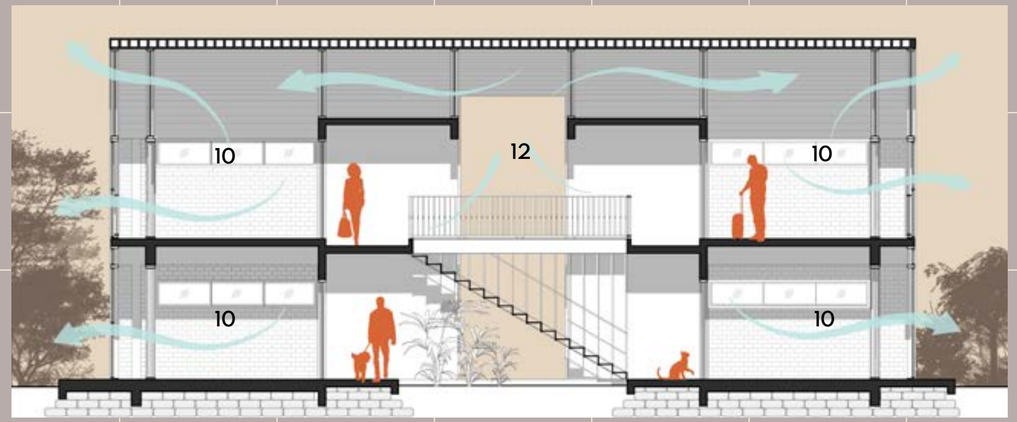
The facade at the ends of the vaults are mainly meshes. The meshes openings allows ventilation and lights while preventing intruders such as mosquitoes to small animals.

VENTILATIONS

A mix of ventilations methods are applied in this house.
The interior spaces applies cross ventilation. The cross ventilated air will rise out to the court yard or to the ends of the barrels as stack ventilation. Next, the water body act as cooling element for evaporative cooling.



SECTION X-X
scale 1 : 100



SECTION Y-Y
scale 1 : 100

0 1 2 5 m

SPACES

4. Living Area
9. Outdoor Lounge
11. Bathroom
10. Bedrooms
12. Open Corridor

FRONT ENTRANCE VIEW ALONG JALAN TINGKAT LAUT

A grand entrance welcomes the owners of the house to enjoy the internal spaces while allowing thier business stocks to be imported or exported conveniently with larger vehicles. The outdoor space provides sufficient parkings for the vehicles without congesting the traffic along the narrow width of Jalan Tingkat Laut.

^ An open courtyard behind the display wall creates a linear axis approuch. The water body enchances the approuch and provide a visual tranquility. The trees background compensates the courtyard as well.

> Another angle of the courtyard showing the relationship and connection between 2 buildings

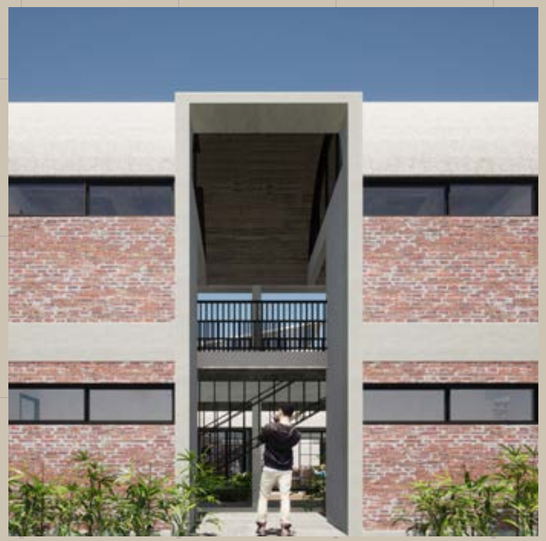
>> A night view of the living quarters from the kitchen area. The ceiling are flooded with accent lights to highlight the barrel vault's form profile and texture.

The barrel vault profile is shown along the bedrooms as well . The linear lines visually guides viewer into the landscapes, an aid as appreciation to site context

^ The open plan arrangement expressing the linearity and connection of the 3 main spaces of the living quarters; living, kitchen and dining area. The linearity is highlighted with the ceiling's concrete texture

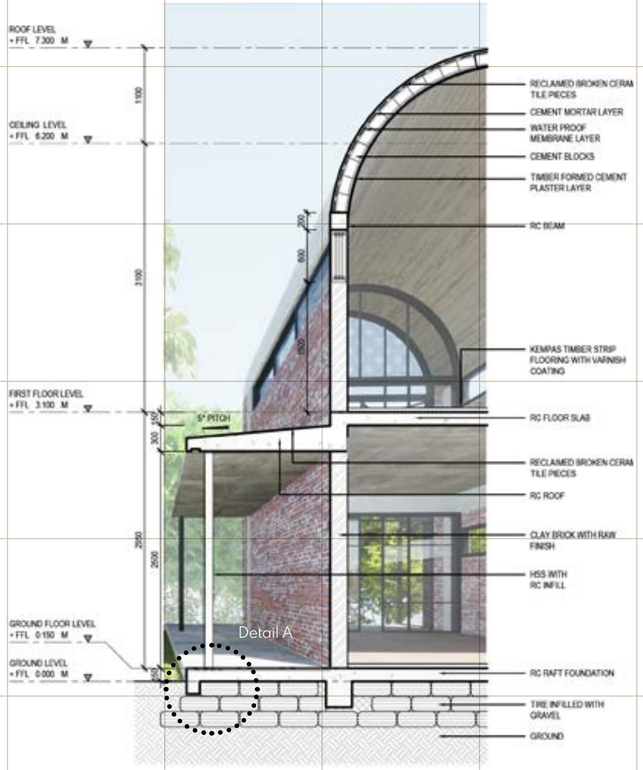
< Under the heavy materialed building, the balance of lightness is applied on the stairs which is mainly steel framed and meshed threads.

> Side view of the private bedrooms block. A huge opening welcomes views, sunlight and air as well as a connection between 2 different outdoor spaces

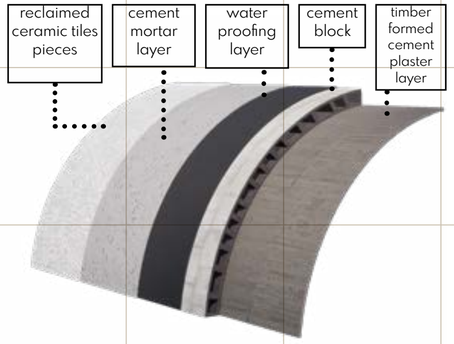


Theres an connection between the living area with the opened pets area. A glass sliding door controls the access and ventilation for the living space.

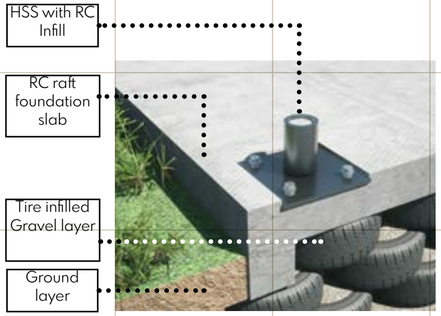
CONSTRUCTION DETAILS



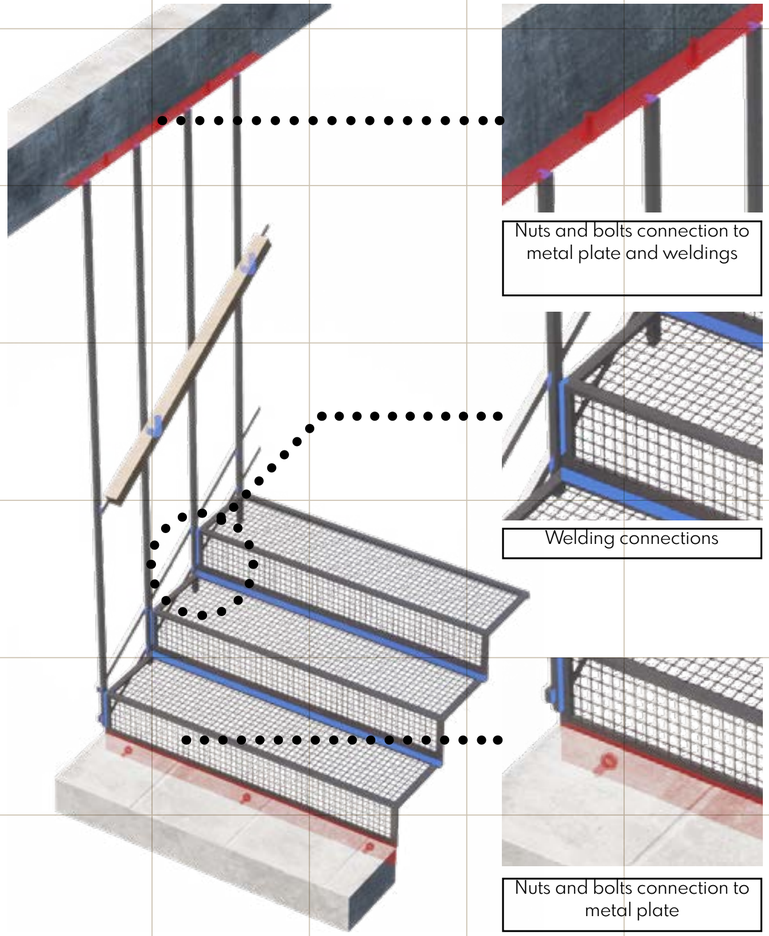
SECTIONAL DETAIL
scale 1 : 50



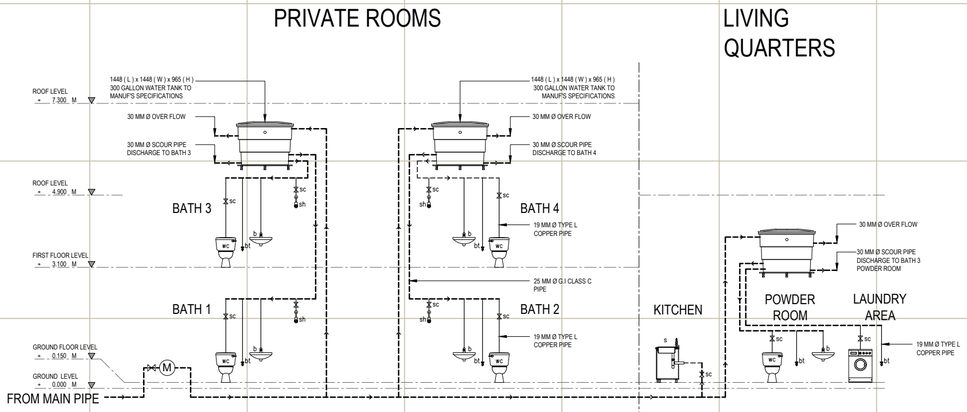
ROOF DETAIL DIAGRAM
scale NTS



DETAIL A DIAGRAM
scale NTS



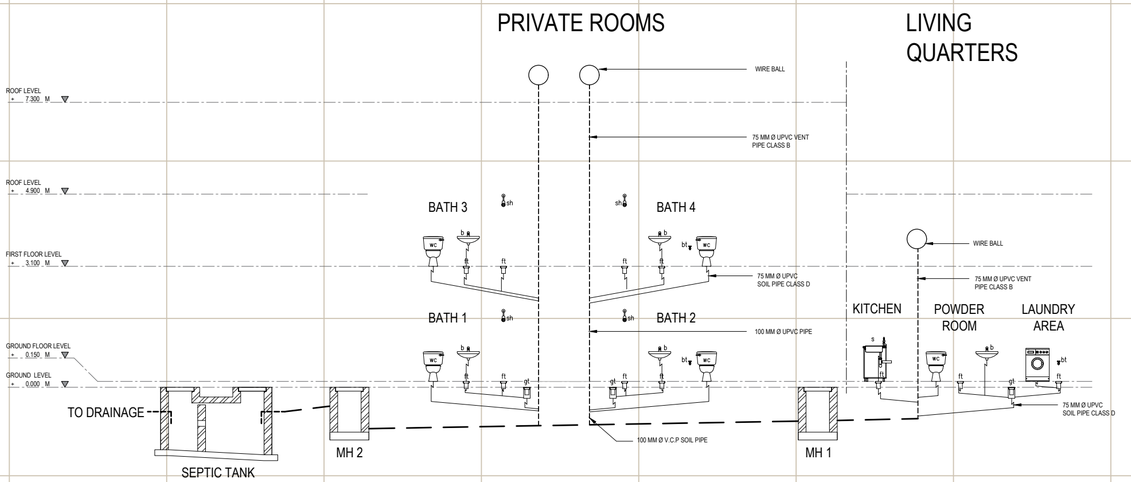
STAIRS DETAIL DIAGRAM
scale NTS



LEGEND

———	19 MM Ø TYPE L COPPER PIPE	⋈	STOP CLOCK	s	KITCHEN SINK
- - - - - -	25 MM Ø G.I CLASS C PIPE	bt	BIB TAP	b	WASH BASIN
Ⓜ	WATER METER	sh	SHOWER	WC	WATER CLOSET

WATER SUPPLY SCHEMATIC DIAGRAM
scale NTS



LEGEND

- - - - - -	75 mm Ø UPVC VENT PIPE CLASS B	ft	FLOOR TRAP	s	KITCHEN SINK
——— ———	100 mm Ø UPVC SOIL PIPE	gt	GULLY TRAP	b	WASH BASIN
———	75 mm Ø UPVC SOIL PIPE CLASS D	MH	MAN HOLE	WC	WATER CLOSET

SANITARY SCHEMATIC DIAGRAM
scale NTS

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