ISSUES FOOD SAFETY AND FOOD SECURITY IN MALAYSIA

1.Food Safety?

- Refer to the assurance that Food is not cause HARM to consumer when it is prepared or eaten, according to its intended use

2.Food Security?

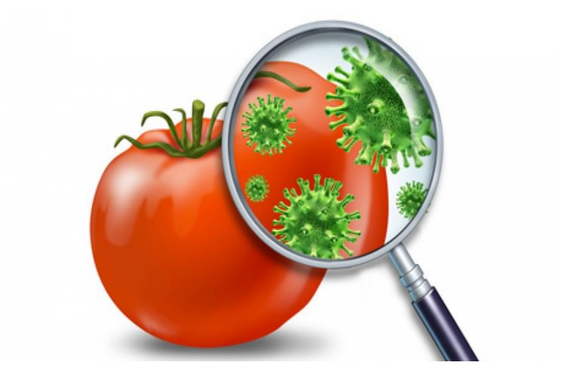
- Defined as the availability of food and one's access to it. A household is considered food secure when its occupants do not live in hunger or fear of starvation.

3. Less of Space for Agriculture activity?

- Lack of space to implement agricultural activities has caused the country to import vegetables from outside the country to cater for the increasing demand of food, especially in urban areas which its population dramatically increase and the shortage of agriculture land. Malaysia's Balance Of Trades in vegetable trade are deficit and this is particularly very alarming.

ISSUANCE OF IMPORT PERMIT FOR VIETNAM'S CHILLI SUSPENDED WITH IMMEDIATE EFFECT

PUTRAJAYA, Sept 14 : The Department of Agriculture has temporarily suspended the issuance of import permits of chilli from Vietnam effective today, until further notice.



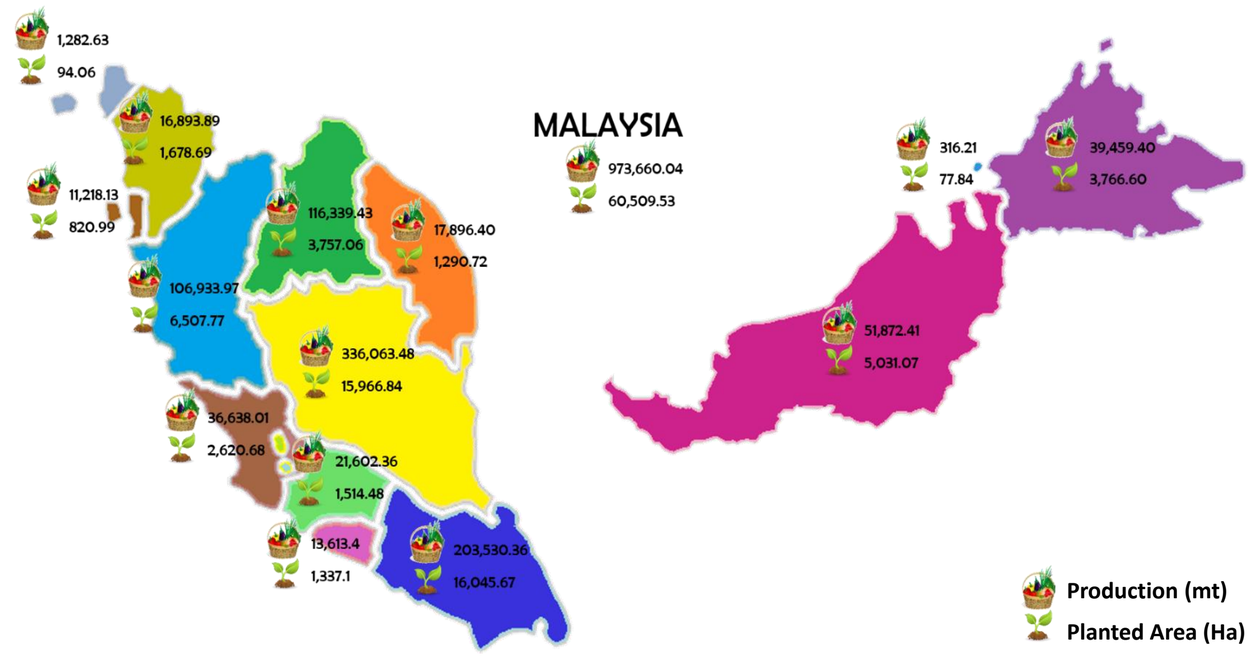
MALAYSIA ?

1. Lack of clean food sources, especially vegetables because it is exposed to source chemicals from pesticides such as *carbamate, triazole, oranophosphate, synthetic pyrethroid*
2. Still importing vegetables from outside countries

Why Malaysia Import Vegetables?

sources by : *FEDERAL AGRICULTURE MARKETING AUTHORITY*

- **Consumer demand ↑**
- **Urbanization**
- **Inadequate land area for Agriculture**
- **Climate change**
- **Labour Cost ↑**
- **Production Cost ↑**
- **Pest and Disease**
- **Limited supply from Cameron Highland**



Production and Planted Area of Vegetables in Malaysia for 2017

Malaysia Population (Q3 2018)

sources by : DEPARTMENT OF STATISTICS MALAYSA

32.5 million people

World = 7 billion people (UN)

Malaysia Trade Data for Vegetables 2017

sources by : *JABATAN PERTANIAN MALAYSIA*

Exsport (tonne) : RM 1,529,910,000.00

Import (tonne) : RM 5,052,650,000.00

Balance Of Trade : RM - 3,522,740,000.00

Cabbage *(Brassica oleraceae)*

2015 – 277,202.2
2016 – 101,258.4
2017 – 77,342.2

Chili *(Capsicum annuum)*

2015 – 47,015.1
2016 – 43,738.1
2017 – 27,358.4

Sawi *(Brassica juncea)*

2015 – 216,353.4
2016 – 224,126.2
2017 – 142,764.5

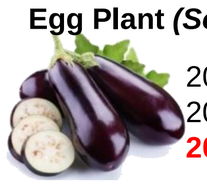
Cucumber *(Cucumis sativus)*

2015 – 100,816.9
2016 – 97,621.1
2017 – 88,492.0

Tomato *(Solanum lycopersicum)*

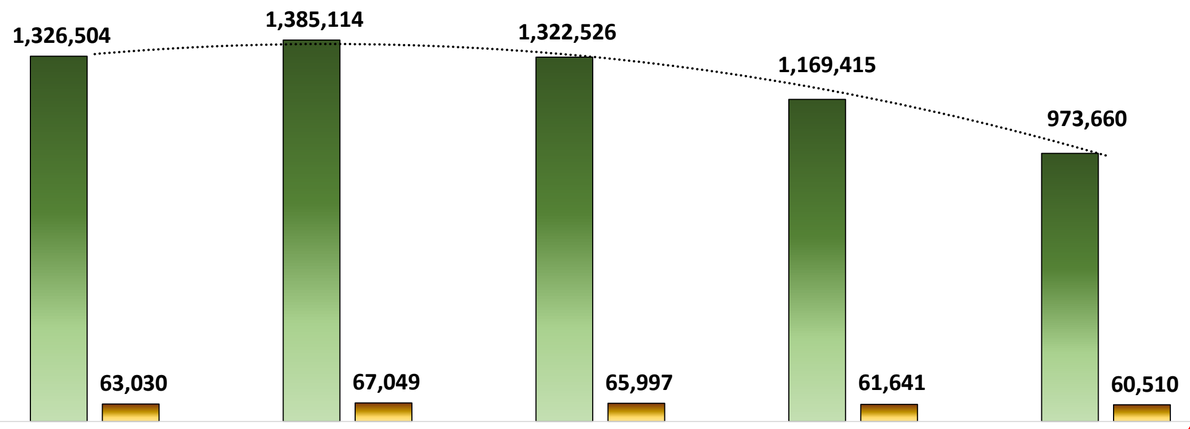
2015 – 165,176.6
2016 – 242,946.4
2017 – 188,185.3

Egg Plant *(Solanum melongena)*



2015 – 50,223.6
2016 – 45,557.3
2017 – 40,417.7

Production of Main Vegetables in Malaysia from 2015 to 2017



Production of Vegetables in Malaysia (2013 - 2017)

↓35 %

MALAYSIA NEW THREATS?

KUALA LUMPUR, May 25 — So why does Malaysia import vegetables and fruits it can easily grow? Land scarcity, the Goods and Services Tax (GST), as well as expensive labour and pesticides, Putrajaya said.

According to senior director Mohd Anis Yasin from the fresh produce division of the Federal Agricultural Marketing Authority (Fama), such factors minimised the production of local vegetables and fruits and drove up costs.

"We have no choice but to import food from around the globe because local food, especially fruits and vegetables, are not only not enough to meet the local market's demand but are becoming more expensive by the day," Mohd Anis told *Malay Mail Online* recently.

"This is simply because we don't have enough land in Malaysia and not to mention, the price for labour and pesticides have all shot up," he added.

Tahap keselamatan makanan negara terancam

MUHAMMAD AYMAN GHAFFA

03 Disember 2018 4:46 PM

Jamal Harizan(tengah) menunjukkan sebahagian racun makhluk perosak bernilai RM1.1 juta tidak berdaftar yang dirampas dalam serbuan di lima buah premis di daerah Kinta dan Pengkalan Hulu pada minggu lalu. Foto oleh RASHID MAHFOF

Rabu, 27 Jun 2018 Ms.15 ISU

Kerajaan cari rumusan kurang import benih sayuran

Kementerian bincang dengan MARDI, jabatan berkaitan: Salahuddin

[FOTO AHMAD IRHAM MOHD NOOR/BH]

Salahuddin (tiga dari kanan) meninjau tanaman sawi *ketika Lawatan Kerja Projek Usahawantani Bukit Damar, Sepang. Yang turut hadir Jamal Harizan dan pengusaha projek pertanian berkelompok.*

Oleh Zanariah Abd Mutalib
zanariah_mutalib@nstp.com.my

Sepang

Kementerian Pertanian dan Industri Asas Tani sedang merumus strategi untuk mengurangkan kebergantungan negara terhadap import benih sayuran yang mencecah 90 peratus ketika ini.

Menterinya, Salahuddin Ayub, berkata pihaknya akan berbincang dengan Institut Penyelidikan dan Kemajuan Pertanian Malaysia (MARDI) dan jabatan berkaitan dalam usaha memastikan petani tempatan mendapat benih dengan harga yang lebih murah tetapi berkualiti tinggi.

Beliau berkata, antara faktor yang menyumbang kepada penggunaan benih import adalah teknologi pertanian negara pengeluar terutama penghasilan benih hibrid, yang tidak dihasilkan di negara ini.

"Kita banyak mengimport benih sayuran dan hanya 10 peratus sahaja benih tempatan seperti timun, kacang panjang dan kacang buncis, yang bukan jenis hibrid.

"Kita perlu berunding dengan MARDI untuk memastikan teknologi pengeluaran benih dapat diguna pakai di negara ini. Ia mungkin bukan untuk jangka masa terdekat, tetapi kita perlu mula memikirkan industri benih ini," katanya.

Beliau berkata demikian kepada media selepas mengadakan lawatan ke Projek Usahawantani Bukit Damar di sini, semalam.

Yang turut hadir, Ketua Pengarah Jabatan Pertanian, Datuk Jamal Harizan Yang Razali.

Lihat insentif tambahan

Selain itu, Salahuddin berkata, kementerian juga akan melihat beberapa insentif tambahan yang boleh diberikan kepada petani termasuk latihan berkaitan teknologi baharu pertanian yang mampu meningkatkan pengeluaran sayur dan pendapatan petani.

"Kita sering memperkatakan mengenai (teknologi) Taiwan, Jepun dan Thailand. Jadi, saya akan pastikan modul latihan untuk petani kita sentiasa dikemas kini mengikut perkembangan semasa," katanya.

Berhubung cadangan untuk menguranggkan subsidi pesawah, Salahuddin berkata, itu adalah pandangan yang dikemukakan Majlis Penasihat Kerajaan melalui dialog bersama Lembaga Pertubuhan Peladang (LPP), namun ia bukan bertujuan untuk menghapuskan subsidi untuk golongan pesawah.

"Cadangan itu mengenai bagaimana subsidi boleh digunakan sepenuhnya untuk meningkatkan pendapatan isi rumah pesawah kerana kita dapati peruntukan subsidi besar tetapi pendapatan isi rumah tidak banyak berubah. Jadi, kita mesti pelbagaikan (penggunaan subsidi)," katanya.

Pada tahun lalu, pengeluaran sayuran tempatan mencecah 1.2 juta tan metrik, yang diusahakan 44,454 petani membabitkan tanah pertanian seluas 73,167 hektar.

FAMA akan import sayur-sayuran jika bekalan tempatan tidak cukup

2016-03-21T00:00:00+08:00

ALOR SETAR: Lembaga Pemasaran Pertanian Persekutuan (FAMA) akan mengimport sayur-sayuran sekiranya bekalan tempatan tidak cukup untuk menampung permintaan.

Pengerusinya Tan Sri Badruddin Amiruldin berkata setakat ini bekalan sayur-sayuran tempatan masih mencukupi walaupun fenomena El Nino melanda negara sejak Januari lepas.

"Setakat ini bekalan kita peroleh dari Cameron Highlands, Sabah dan Sarawak dan ia cukup untuk dipasarkan kepada pengguna di seluruh negara. Kita sentiasa memantau bekalan tersebut cukup bagi memastikan kestabilan harga," katanya ketika hadir pada majlis persaraan kakitangan FAMA Wilayah Utara, semalam.

Badruddin berkata terdapat sejumlah 12,140.56 hektar (30,000 ekar) ladang kontrak FAMA di seluruh negara yang diusahakan dengan pelbagai tanaman untuk dipasarkan di pasar tani.

Katanya FAMA turut bersedia dengan rancangan kecemasan bagi mengatasi masalah kekurangan bekalan berdasarkan pengalaman yang dilalui sebelum ini akibat bencana alam dan cuaca panas.

Sementara itu, beliau berkata FAMA akan menyiapkan sepuluh lagi MyFarm Outlet Kasih di seluruh negara hujung November ini dengan menyediakan pelbagai keperluan kepada rakyat pada harga yang berpatutan. — Bernama

Kategory Nasional

MUHAMAD ADLI SALIHIN B.SAMSUDIN (GS 48113)

A

SITE ANALYSIS AND INVENTORY

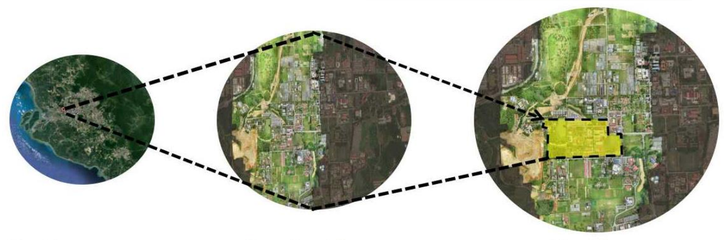
LOCATION KOMPLEKS JABATAN PERTANIAN SERDANG (KJPS)

- opened in 1920 with a total area of 622.27 ha.It is known as the **Federal Experimental Station (FES)** which focuses on the research of various types of crops other than Rubber and Palm Oil.
- Infrastructure facilities and staff quarters were developed in 1923 and the **Federal Experimental Station (FES)** office built in 1930, is still in use until now.
- In 1962 until 1971, the Agricultural College and MARDI were established. This has reduced the area of **Federal Experimental Station (FES)** to 210.93 ha. In 1971, the **Federal Experimental Station (FES)** became known as the Crop Production Center and the Agricultural School was named as the Institute of Agriculture.
- Now. this complex is rapidly developed in line with the nation's vision of turning agriculture into high technology, Good Agricutlture Practises **(GAP)** for producing safer crops and export-oriented crops.
- Strategicallylocation and close to Kuala Lumpur City which is about 20 kilometers away.
- This complex is focus on **HORTICULTURE** discipline such as **OLERICULTURE** (vegetables), **POMOLOGI** (fruits) and **FLORICULTURE** (flowers).

Site Plan

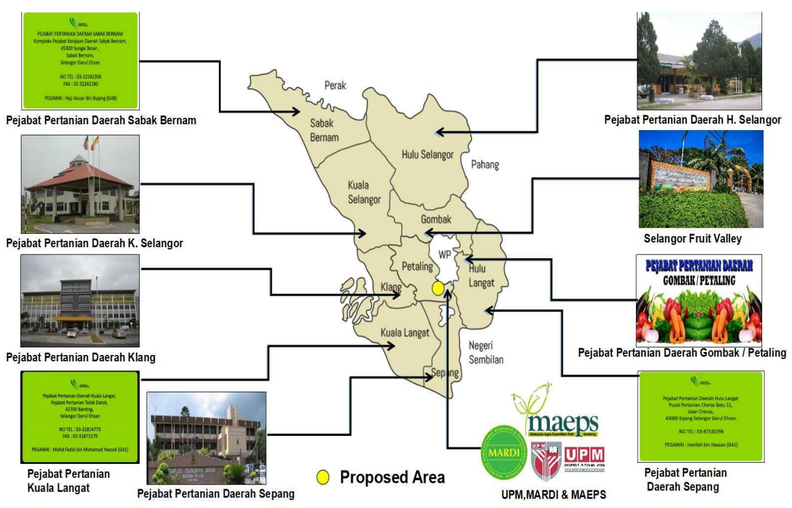
- The area **proposed area** is **25 ha**
- It includes several key offices, training centers, retention pond area, Jelutong Forest Reserved and staff residential quarters.
- It also has the main access to exit and entrance routes from the main road.
- This complex is focus on **HORTICULTURE** discipline such as **OLERICULTURE** (vegetables), **POMOLOGI** (fruits) and **FLORICULTURE** (flowers).

SELANGOR MAP



Key Plan Location Plan Site Plan

SITE CONTEXT



- **Kompleks Jabatan Pertanian Serdang (KJPS) (PROPOSED AREA)**

- The complex has also been recognized as a **Center of Excellence (COE)** in agriculture, specifically on **Horticulture Segments - Olericulture, Pomology and Floriculture**

- The location is in the urban area and neighbour with Kuala Lumpur, Putrajaya, Cyberjaya and Bangi.

- **University Putra Malaysia (UPM)**

- one of Malaysia's leading research universities.

- focus on agricultural sciences and its related fields

- **Malaysia Agro Exposition Park Serdang (MAEPS)**

- The largest exhibition agro park in Malaysia and Asia.

- **9 Stations at Pejabat Pertanian**

- supported

-Managed by Jabatan Pertanian Negeri Selangor.

- **Malaysian Agricultural Research and Development Institute (MARDI)**

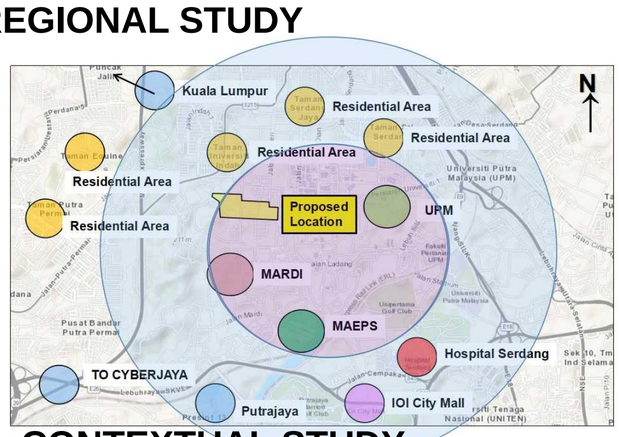
- Government Agencies under Ministry of Agriculture and Agro-based Industry.

-R & D for agriculture fields

- **Selangor Fruits Valley**

- Agrotourism destination in Selangor.

REGIONAL STUDY

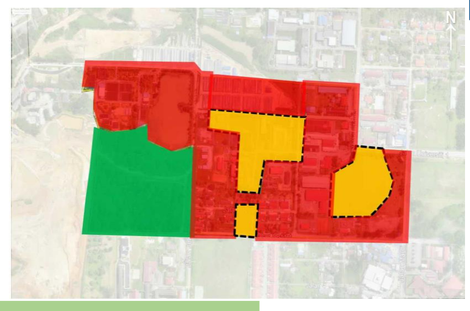


1.5 - 3 kilometres

3 - 5 kilometres

5 - 20 kilometres

CONTEXTUAL STUDY

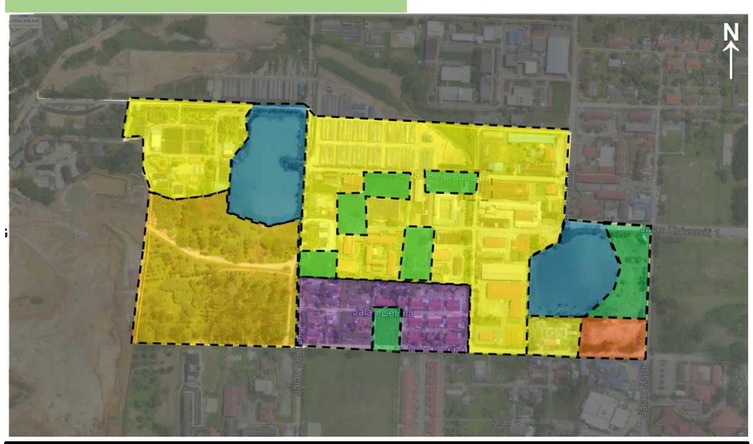


ACTIVE AREA -Of fices, Training Centre, Quarters.

JELUTONG AREA - Pokok Jelutong ***(Dyera costulata)*** supervision by Forestry Department. Act as Forest Reserve under the Malaysian Forestry Act. The **oldest** of Jelutong collections . Can proposed as **Edu Trail.**

PASSIVE AREA - Abandoned Building and Pond

LANDUSE



administrative,management office & training centre. Active areas here.

Residential area for workers working in a complex area.

2 catchment ponds. It flows from the hills and another serves as a catchment pond from a complex area drainage system.

Green Spaces

Active every Friday because of Pasar Tani. Parking Area for religion activities and also Complex activities.

Forest Reserve & collection of Pokok Jelutuong, *Dyera costulata* . This area collaboration between Department of Agriculture and Department of Forestry, Malaysia.

SWOT ANALYSIS

Strengths

- **Kompleks Jabatan Pertanian Serdang (KJPS)** suitable places for Food Production and Agriculture Supporting System in Urban area.
- The complex surrounded by **Research agencies** and **residential areas** and easy acces to **Kuala Lumpur, Cyberjaya and Putrajaya.** Good for Marketing Networking / Access.
- Potential hub for productionof vegetables, fruits and flowers and practicing **GAP** to assist the country in term of **FOOD SECURITY** and **FOOD SAFETY.**

Threats

- Lack of adequate facilities for public .
- Existing open space is not fully utilized in this complex.
- The complex area is hot due to lack of surrounding tree planting.
- Lack of ideas and design that suit for urban farming concept.

Weaknesses

- Less of privacy - Quarters Staff Resident.
- Visitors are also subject to **safety rules** when they are in Government-owned premises
- **Unattractive arrangement, lack of planning** and lack of greenery and recreational area.
- **Scattered and unplanned placement patterns**

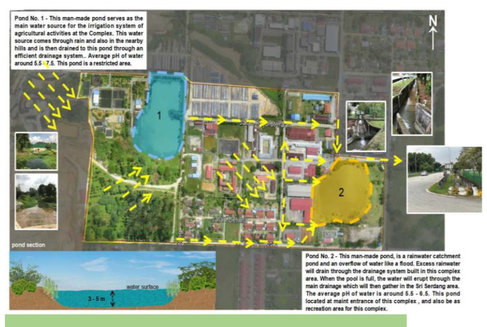
Oppoturnities

- This complex is CENTRE OF EXCELLENCE and agricultural reference centres.
- Its **strategic location** and within the **URBAN** area.
- The complex can be one of the centers to **supply consistent and safe food sources.**
- Good and efficient accesibility.
- Potential to boost Socio Economics

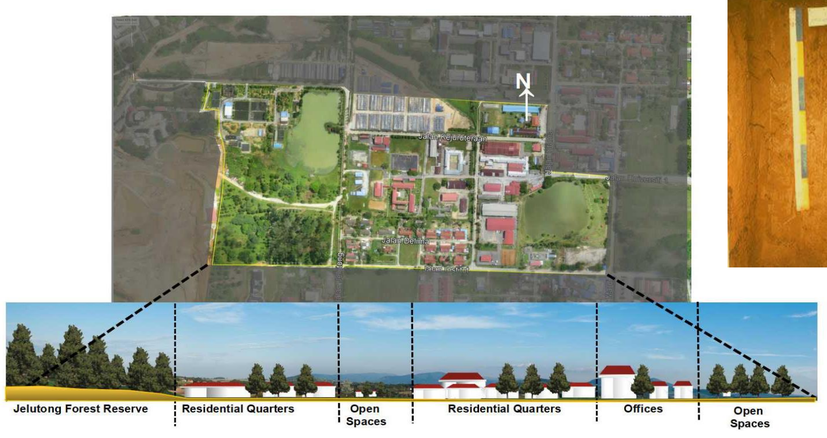
MICROCLIMATE

Temperature : 23 - 33 deg C
Ave.Temperature : 28deg.C
Wind Average : 3 - 8 km/h , Humidity : 85 - 90%

ACCESSIBILITY



HYDROLOGY



TERRAIN

SERDANG SERIES SOIL

Drainage and Permeability - The Serdang Series is a well drained soil to over 100 cm depth & good permeability.

Use and Vegetation - A large variety of crops are grown on these soils.

pH 5.5 - 6.5

IDEA AND DEVELOPMENT

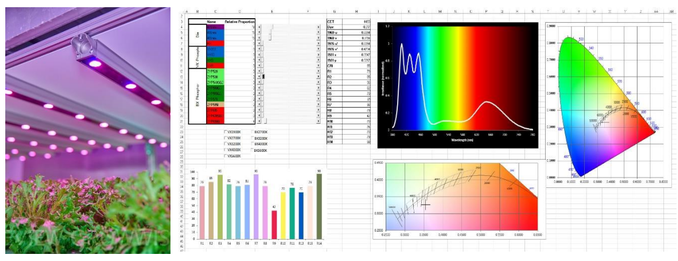
CONCEPT

REVITALIZATION KOMPLEKS JABATAN PERTANIAN SERDANG TO BECOME VEGETABLE FACTORY ECO CITY

- To design **Vegetable Factory Eco City** which conceptualized from **AGRITECHTURE** - **GREY to GREEN** which more to **INDOOR VERTICAL FARMING (IVF)** innovation production technique, at **URBAN** area.
- This design will help Malaysia to solve this issues by ensuring **adequate** food supply to Malaysia and it will also increase the country's income in the food production segment, by reducing the import of vegetables.
- This design also can help in overcoming the crisis of food supply **stability** especially vegetables crops in Malaysia and also improving the **quality** of the crop produced so it is safe to eat and export-oriented . Besides, it also helps to preserve the environment and connected to the convenience, enjoyment of the surrounding area and create more space for public engagement in order to become **SUSTAINABLE SMART CITY** holistically.
- **SUPERBLOCK** - New Model of mobility that restructures the typical urban road network Superblock, can be the solution to the main problem of urban mobility and improves availablity and quality of the public spaces


INDOOR VERTICAL FARMING (IVF)

- **Vertical Farming** - producing food in **vertically stacked layers**, such as in a skyscraper, used warehouse, or shipping container. Efficient use of space.
- The modern innovation ideas of vertical farming is use **indoor** farming techniques and controlled-environment agriculture (CEA) technology, where all environmental factors can be controlled.
- Can feed more people then regular farming can because they grow 75 times more food per square foot then a traditional farm.
- Use **NO PESTICIDES** and **NO FUNGICIDES** so the food produced are **HIGHT QUALITY** , **HEALTHIER** and **SAFER** also water consumption can be reduced. Plant fertilizing nutrients can be controlled so the food that is grown is **HIGHLY NUTRITIOUS**.
- **Preserve LAND**, **reduce CARBON** consumption and **conserve ENVIRONME**NT sustainably
- Various Modern Cultivation Techniques - **Nutrient Film Technique (NFT) , Hydrophonics , Aquaphonic**
- **SMART FARMING** and towards **Agriculture Industrial Revolution 4.0 (IR 4.0)** for **HIGH SCALE PRODUCTION**
- LED Light - support Chlorophyl Optimization for Photosynthesis Process and Support Spectrum Light

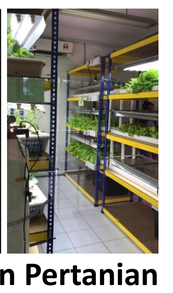













Vege Factory at Jabatan Pertanian

IVF at City Farm,Selangor

PRECEDENT STUDY

1.MALAYSIA

- Still new Technology and small scale capacity.
- More to Research and Development program which operated by Government Agencies, private company and community.
- The operations are not fully integrated in public areas and have no accessibility to the public also not compliment with agriculture support system facilities especially for product marketing.



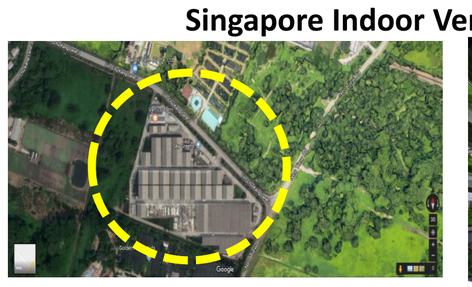
IVF at MARDI PLANT FACTORY

Outdoor / Community


2. SINGAPORE

- Big capacity and support by Government
- Production Program to support high demand Urban Population.
- Towards commercial production
- Technologies support by Giant company, PANASONIC - High Tech
- The operations are not fully integrated in public areas and have no accessibility to the public also not compliment with agriculture support system facilities especially for product marketing.

Singapore Indoor Vertical Farming


Panasonic Indoor Farming

Sky Green Located at Industrial Area

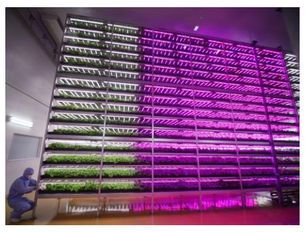
3. JAPAN

- Big capacity and among th biggest in the World
- Production Program to support Urban Population.
- Commercial Technology production by Big Conglomerate Company
- The operations are not fully integrated in public areas and have no accessibility to the public also not compliment with agriculture support system facilities. especially for product marketing.



Pasona O2,Tokyo Indoor and Underground Farming

Fujitsu Indoor Farming




MIRAI CO. with GE Japan developed World Largest Indoor Farming

DESIGN STRATEGY

REPLANNING and REDESIGN the area to become effective and productive landscape with set up **7 Main components** in this area as **Integrated Holistic Agro-Production System.**

- **VEGETABLE FACTORY**
  - LEAF VEGETABLE
  - FRUITS VEGETABLE
  - HERBS & SPICES
  - CULTIVATING
  - PROCESSING
  - PACKAGING
  - MARKETING
- **R & D CENTRE**
  - INNOVATION
  - QUALITY CONTROL
  - LABORATORY
- **ADMINISTRATION**
  - MANAGEMENT
  - OPERATION
  - TRAINING
- **ECO INFRASTRUCTURE**
  - RAINWATER HARVESTING
  - KINETIC ENERGY
  - SOLAR SYSTEM
  - MORE GREEN SPACES AND VEGETATIONS
- **COMMERCIAL CENTRE**
  - ENTREPRENEURSHIP FRESH PRODUCT OEM
  - DISPLAY
  - TRADING
- **PUBLIC PARK**
  - PLAZA GARDEN
  - JELUTONG ECO EDU PARK
  - GREEN CORRIDOR
- **RESIDENTIAL COMPLEX**
  - STAFF ACCOMODATION
  - GRENERY PARK
  - SPORT & RECREATIONAL FACILITIES

THE GOAL

- **Reducing** food imports activities, enhancing food quality and improving **FOOD SAFETY** and **FOOD SECURITY** in **MALAYSIA.**
- ↓ **SPACE** ↑ **PRODUCTION** ↑**QUALITY of Vegetables** & support **Industrial Revolution 4.0** that can attract more people **participation** in Innovative Agriculture Sector especially Young Generation.
- Enhancing the sustainability elements - well balanced, right smart components in place and prosper the entire Malaysians especially those living in urban areas can feel the excitement and friendly to user.

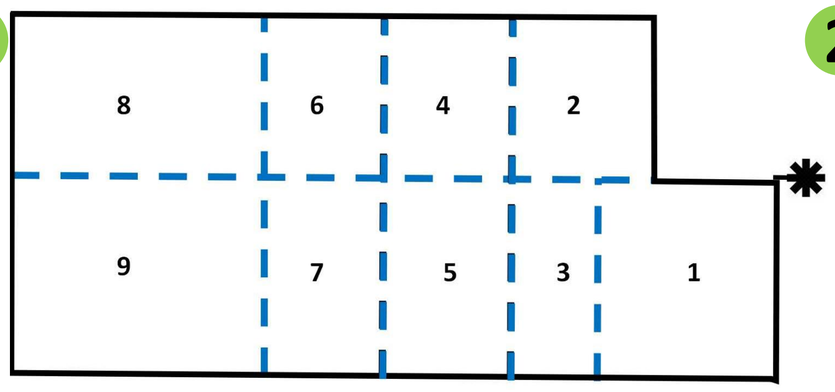
OBJECTIVES

- Providing **Efficient** and **Integrated** Urban Space
- Developing **Agriculture Supporting System**
- Produce **More Foods** On **Less Land**
- **Low Carbon City** and **Less Carbon Foot Print**
- From **Raw** To **Products**
- **Aesthetic** and **Functionality**
- **Energy Sustainability**
- **Create more productive spaces**
- **Agro-Education Centre**
- **Agrotourism Centre**

DESIGN PROCESS

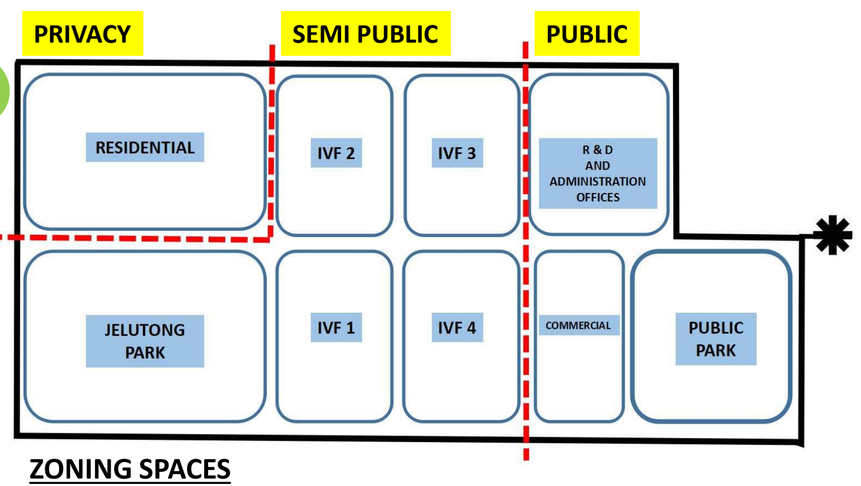
- NOT SYSTEMATIC
- NO PROPER ZONING
- UNORGANIZED & IMPROPER ARRANGEMENT

1



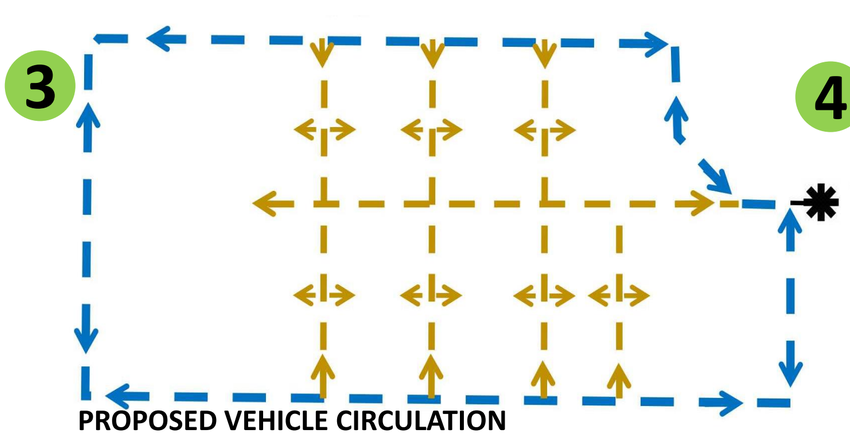
SUPERBLOCK AND CLUSTERIZATION INTO 9 SECTION TO ENHANCE THE MOBILITY, RESTRUCTURES AND IMPROVE THE QUALITY AND THE AVAILABILTITY OF SPACES.

2



ZONING SPACES

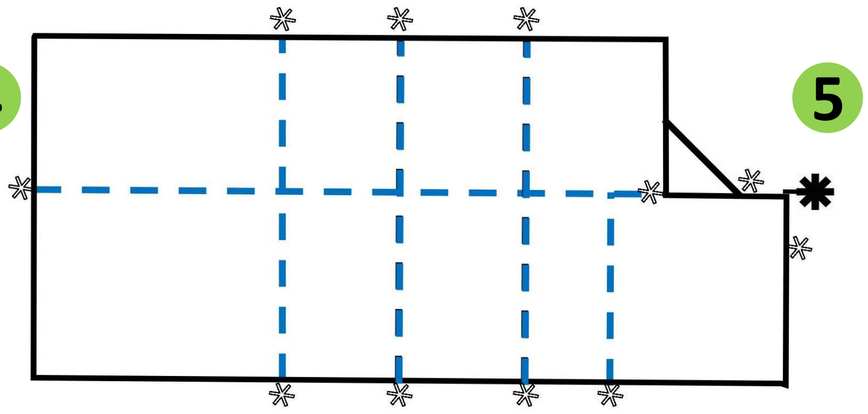
3



PROPOSED VEHICLE CIRCULATION

- 2- WAY SERVICE ROAD (TARMAC) FOR CAR, LORRY, MOTORBIKE
- 2- WAY SPINE ROAD (GRASS CRETE) FOR BUGGY, BICYCLE, PEDESTRIAN

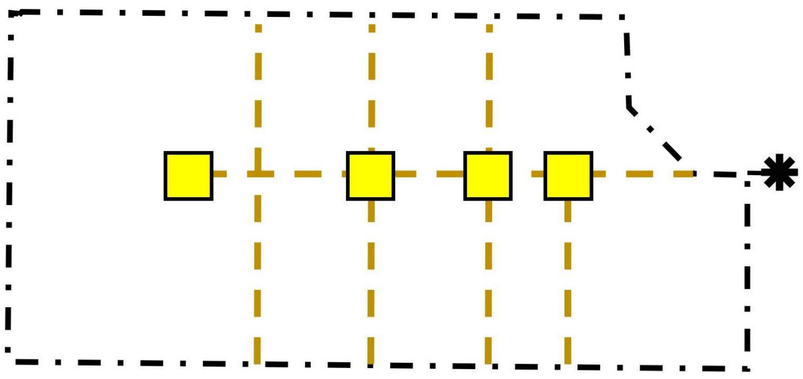
4



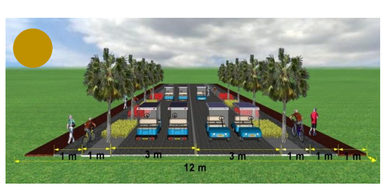
PROPOSED NEW ENTRANCE FOR ACCESSIBILITY

EFFECTIVES AND SYSTEMATICE ENTRANCE

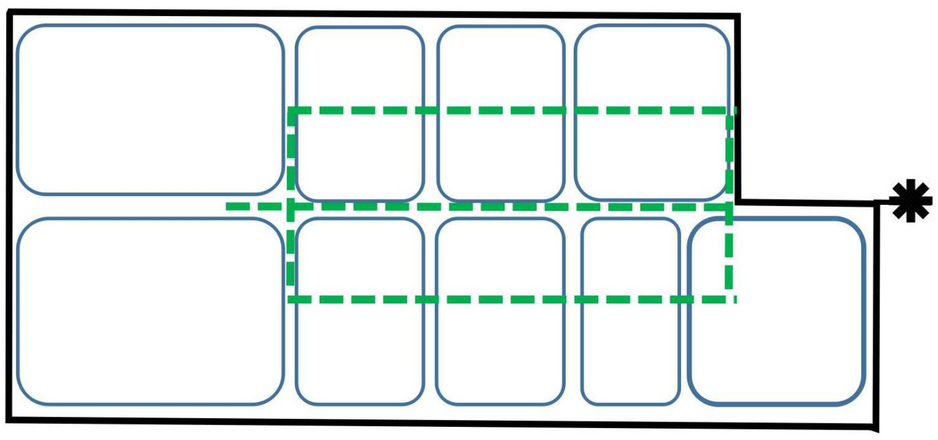
5



- PROPOSED PLAZA ALONG PEDESTERIAN
- LOCATED ALONG THE SPINE ROAD
- CONNECTION TO SIGNIFICANT BUILDING

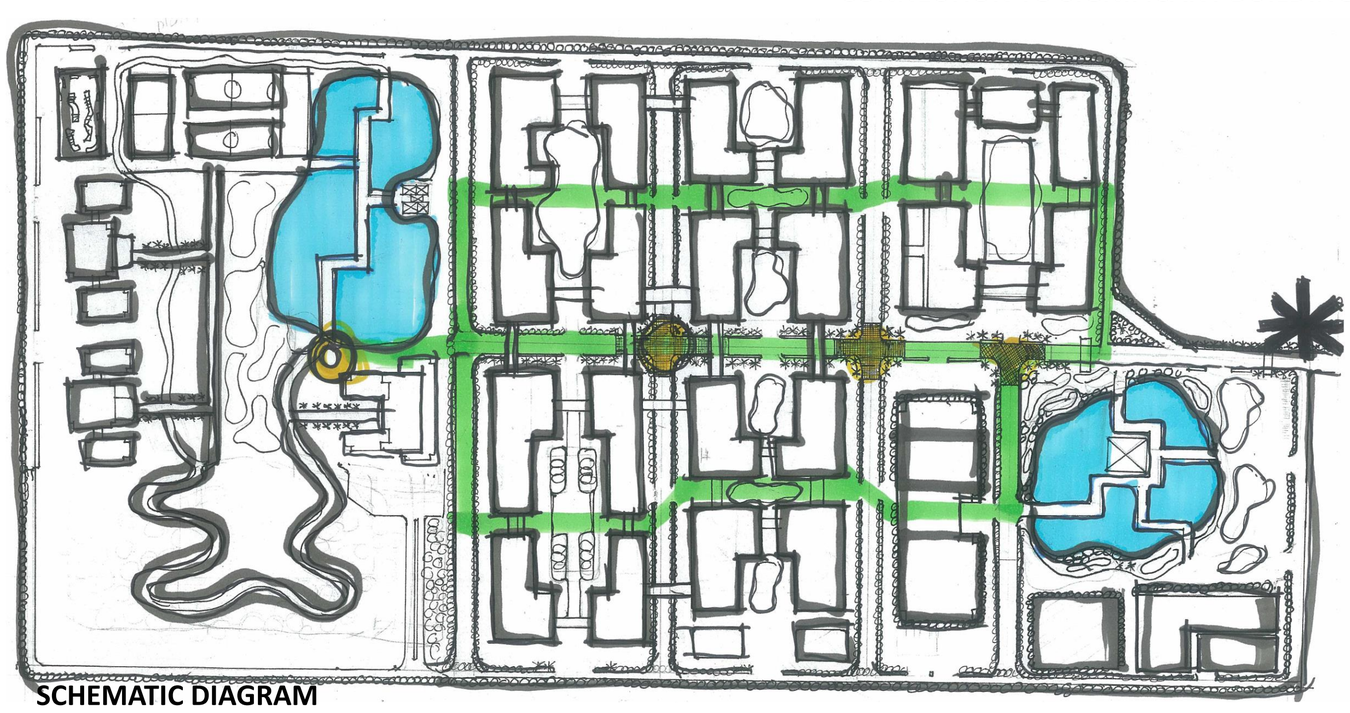


6



PROPOSED GREEN CORRIDOR

7



SCHEMATIC DIAGRAM

MUHAMAD ADLI SALIHIN B.SAMSUDIN (GS 48113)

C

PLANTING DETAIL

PLANT SELECTION

- The selection of a suitable shading vegetation species also plays an important role in ensuring that this project will help towards to the Low Carbon City. The **height of trees, canopy form, leaf area index, Sky view factor, Transmissivity and radiation filtration** are the six major factors are considered during the planting design phase **(Shahidan, Shariff and Jia Qi, 2016).**

- The benefit planting of trees in urban areas are it can **Cool the air**, **Filter urban pollution**, I**ncrease urban biodiversity**, **Improve physical and mental health** also can **Increase the property value.**

- Plants selection in this **URBAN** areas more considered based on its **characteristic** and **morphological features** that can provide an **Aesthetic** impact as well as can produce its unique **ethno-botany Functionality** such as **fragrance, medicinal, cultural, edible, ornamental, attract bird** and as well as for **industrial.** It also can helps **reduce the temperature** in this area by an **average of 1 - 2 deg. Celcius.**

- Besides being used for the beauty of the project area, this tree planting can also provide **education** to visitors and residents from **various generations** and can also increase the **awareness** in ensuring our **environmental sustainability.** This will make this project more to **PRODUCTIVE LANDSCAPE.**

- The using of **Serdang Palm** is to inspire the spirit of the **Serdang** area which is named after the palm tree.

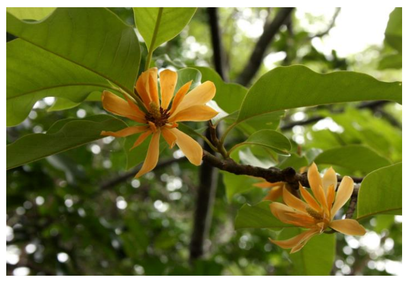
PLANTING SCHEDULE

Pometia pinnaa

Tamarindus indica

Mimosups elengi

Mesua ferrea



Michelia champaca

Fragraea fragrans

TREES

No.	Symbol	Botanical Name	Local Name	Family	Overall Height (m)	Clear Trunk Height (m)	Trunk Dia. (cm)	Planting Distance (m)	Qty. (nos)	Note
1		*Pometia pinnata*	Kasai	SAPINDACEAE	1.8 - 2.0	1.6-1.8	5 - 7	6 x 6	300	- Healthy, No Top Cutting
2		*Tamarindus indica*	Pokok Asam Jawa	FABACEAE	1.8 - 2.0	1.6-1.8	5 - 7	6 x 6	150	- Healthy, No Top Cutting
3		*Mimosups elengi*	Pokok Tanjung	SAPOTACEAE	1.8 - 2.0	1.6-1.8	5 - 7	6 x 6	200	- Healthy, No Top Cutting
4		*Fragraea fragrans*	Pokok Tembusu	GENTIANACEAE	1.8 - 2.0	1.6-1.8	5 - 7	6 x 6	100	- Healthy, No Top Cutting
5		*Mesua ferrea*	Penaga lilin	CALOPHYLLACEAE	1.8 - 2.0	1.6-1.8	5 - 7	8 x 8	100	- Healthy, No Top Cutting
6		*Michelia champaca*	Cempaka Kuning	MAGNOLIACEAE	1.8 - 2.0	1.6-1.8	5 - 7	6 x 6	100	- Healthy, No Top Cutting

PALM

No.	Symbol	Botanical Name	Local Name	Family	Overall Height (m)	Clear Trunk Height (m)	Planting Distance (m)	Qty. (nos)	Notes
1		*Livistona rotundifolia*	Serdang Palm	ARECACEAE	1.8 - 2.0	1.6-1.8	6 x 6	100	- Healthy

Livistona rotundifolia

SHRUBS

No.	Symbol	Botanical Name	Local Name	Family	Overall Height (m)	Planting Distance (m)	Qty. (nos)	Notes
1		*Ruellia brittoniana*	Purple Shower	ACANTHACEAE	0.4 - 0.6	0.3 x 0.3	10000	- Healthy,- Bushy
2		*Hibiscus rosa sinensis*	Bunga Raya	MALVACEAE	0.4 - 0.6	0.3 x 0.3	10000	- Healthy,- Bushy
3		*Murraya paniculata*	Kemuning	RUTACEAE	0.4 - 0.6	0.3 x 0.3	10000	- Healthy,- Bushy
4		*Cananga fruticosa*	Kenanga	ANNONACEAE	0.4 - 0.6	0.3 x 0.3	10000	- Healthy,- Bushy
5		*Ficus nitida* 'GOLD'	Ara	MORACEAE	0.4 - 0.6	0.3 x 0.3	10000	- Healthy,- Bushy
6		*Acalypha wilkesiana* 'RED'	Copper Red	EUPHORBIACEAE	0.4 - 0.6	0.3 x 0.3	10000	- Healthy,- Bushy
7		*Acalyphya javanica*	Java Green	EUPHORBIACEAE	0.4 - 0.6	0.3 x 0.3	10000	- Healthy,- Bushy
8		*Ixora coccinea* 'YELLOW'	Siantan	RUBIACEAE	0.4 - 0.6	0.3 x 0.3	5000	- Healthy,- Bushy

Ruellia brittoniana

Hibiscus rosa sinensis

Cananga fruticosa

Murraya paniculata

Ficus nitida 'GOLD'

Ixora coccinea 'Yellow'

Acalypha javanica

Acalypha wilkesiana 'RED'

TURF

No.	Symbol	Botanical Name	Local Name	Family	Quantity (m2)	Notes
1		*Axonopus compressus*	Carpet Grass	POACEAE		-Healthy -90% Purity
2		*Zoysia mattrella*	Philipine Grass	POACEAE		-Healthy -grasscrete

Axonopus compressus

Zoysia matrella

PERSPECTIVE VIEW
VEGETABLES FACTORY ECO CITY

SCALE 1 :1000

SECTION A-A

SECTION B-B

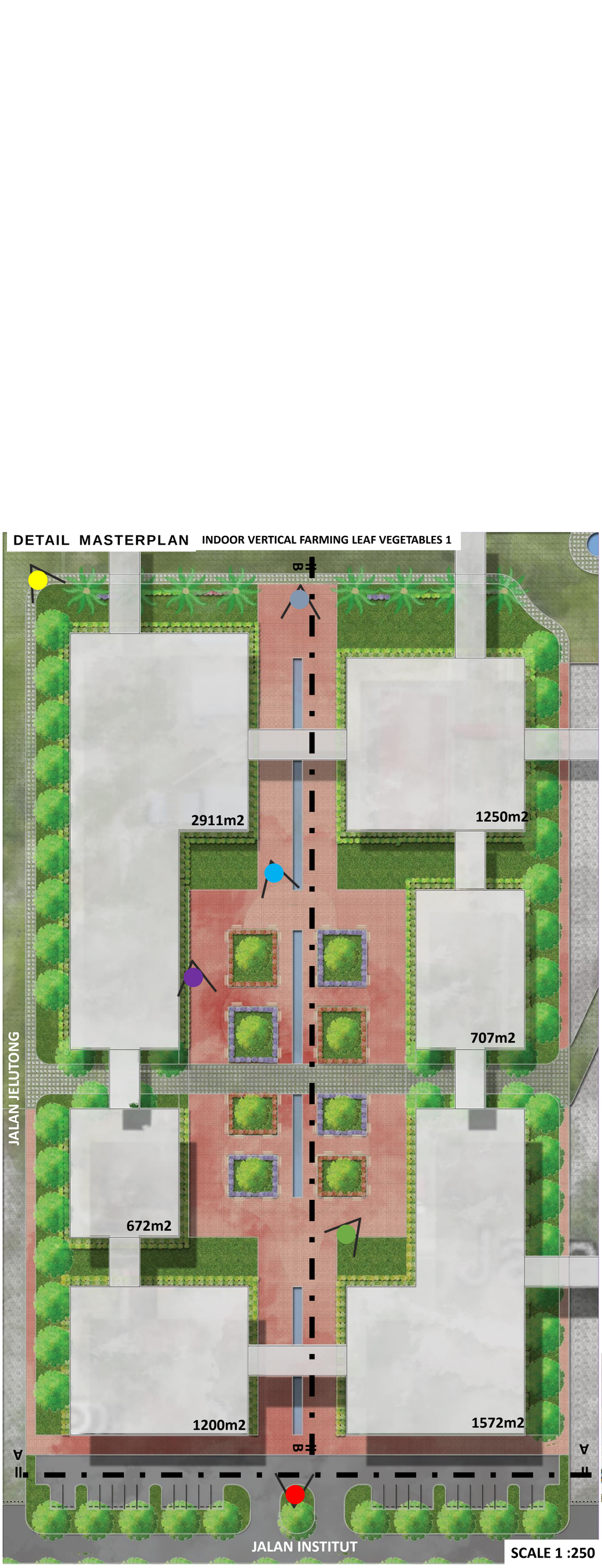
SECTION C-C

MUHAMAD ADLI SALIHIN B.SAMSUDIN (GS 48113)

D

DETAIL MASTERPLAN

INDOOR VERTICAL FARMING LEAF VEGETABLES 1



SCALE 1 :250

MASTERPLAN

-Total area for all the plant factory at this area is 8,312 m2 x 30m (H) = 249,360 m3.

-Able to produce vegetables (average) by MARDI Plant Factory:

24m x 9m x 6m = 1296 m3 , 1.2 – 1.5 mt./mth.
= 14.4 – 18 mt./year
= 20,000 nos plants

249,360 m3 = 230 – 280 mt. / mth.
= 2,760 – 3,360 mt./ year
= 3,848,148 nos plants

Selangor 2017 = Harvested Area = 2,555.64 ha
= Production = 36,638.01 mt

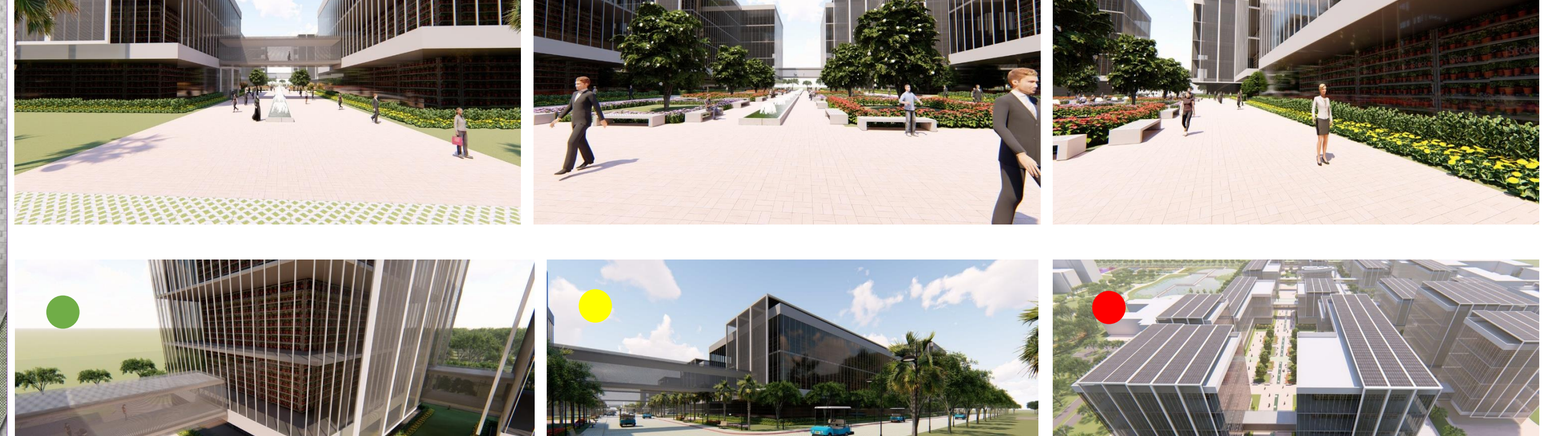
IVFLV1 = Harvested Area = 0.83 ha
= Production = Average 3,000 mt./year

To achieve 36,638.01 mt., only need 12 ha<u>l 99.5 % save</u>

SECTION A-A

ROAD | PEDESTRIAN WALKWAY | INDOOR VERTICAL FARMING VEGETABLES 1 | PLAZA | INDOOR VERTICAL FARMING VEGETABLES 1 | PEDESTRIAN WALKWAY | ROAD

SECTION B-B



ROAD | PEDESTRIAN WALKWAY | INDOOR VERTICAL FARMING VEGETABLES 1 | CORRIDOR | INDOOR VERTICAL FARMING VEGETABLES 1 | PEDESTRIAN WALKWAY | ROAD

MUHAMAD ADLI SALIHIN B.SAMSUDIN (GS 48113)

E