2020 INTERNATIONAL CONFERENCE ON CIVIL, ARCHITECTURE AND POLLUTION CONTROL

الجامعة الإسلامية العالمية ماليزيا
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
يونيورسيتي إسلام انتارابغسا ملايسيا
Garden of Knowledge and Virtue

CITY FORM, THE PEDESTRIAN REALM AND ZERO POLLUTION: ENGAGING URBAN DESIGN IN WORLDWIDE PATHWAYS OF LOW CARBON SUSTAINABILITY

A KEYNOTE PRESENTATION

6th March 2020

ASSOC. PROF. PUTERI SHIREEN BINTI JAHN KASSIM

INTERNATIONAL ISLAMIC UNIVERSITY OF MALAYSIA

KULLIYYAH OF ARCHITECTURE AND ENVIRONMENTAL DESIGN

TRANSDISCIPLINARY RESEARCH CLUSTER

SOURCES OF OUR CO2 EMISSIONS BY SECTORS

Worldwide trends

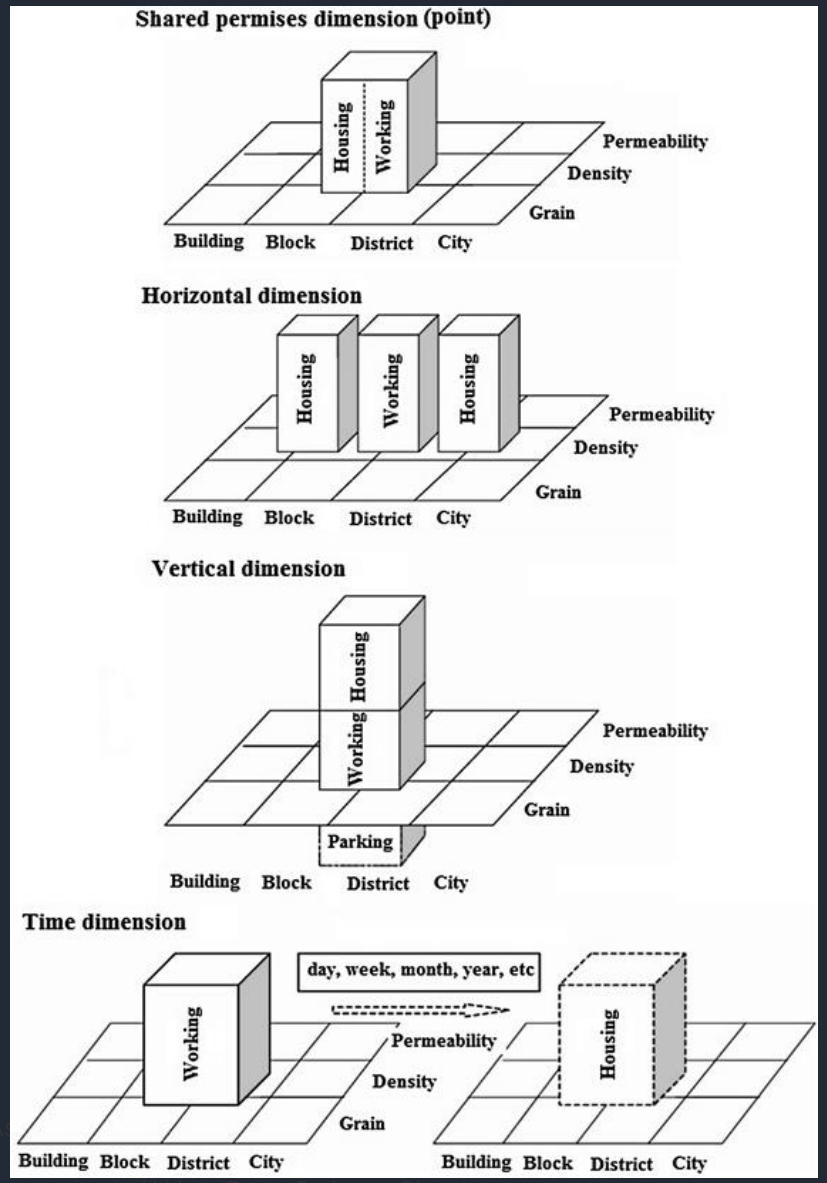
Sustainable cities: from energy saving to reducing long term lock-in impact of carbon emissions

- Health issues
- Greening the city
- Reducing pollution
- Walkable and permeable cities

Specific tropical and localised issues, :

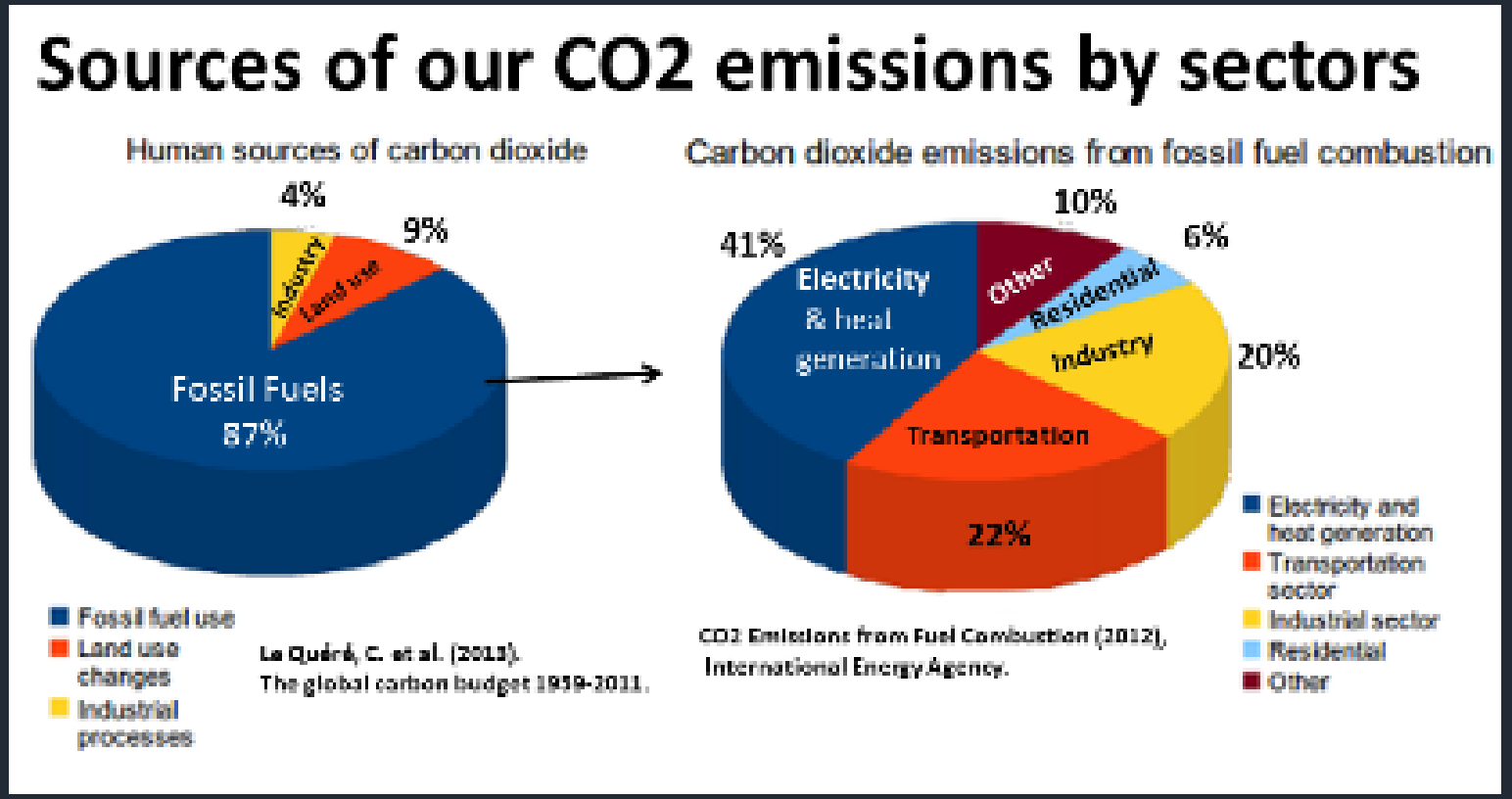
Comfort conditions in the city

Climatic intensity of location



Source: Abdullahi S., Pradhan B., Al-sharif A.A.A. (2017) Sprawl Versus Compact Development. In: Pradhan B. (eds) Spatial Modeling and Assessment of Urban Form. Springer, Cham

Sources of our CO2 emissions by sectors



PARIS FIRST FOUR ARRONDISSEMENTS GO CAR-FREE ON MARCH 1 2020

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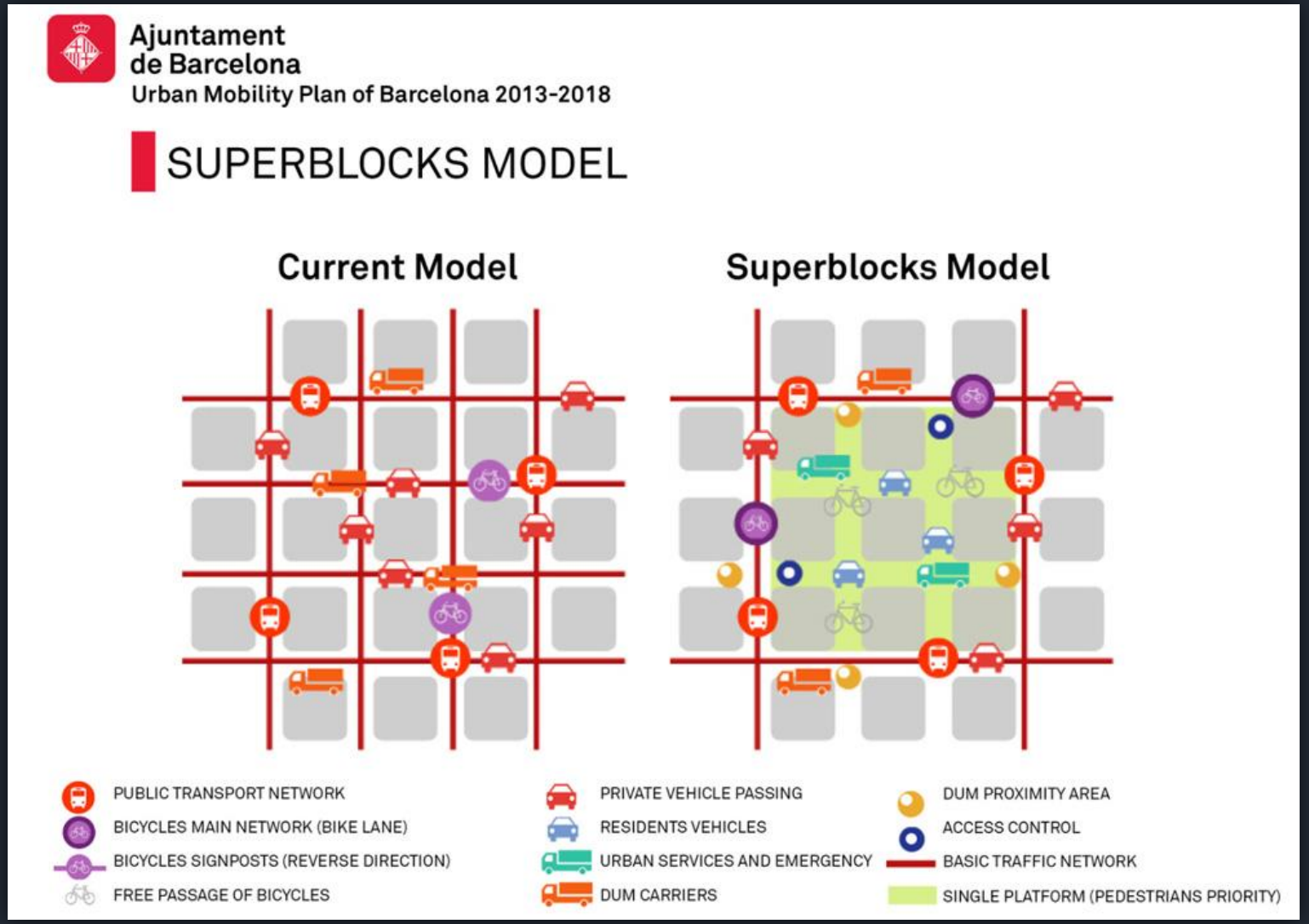
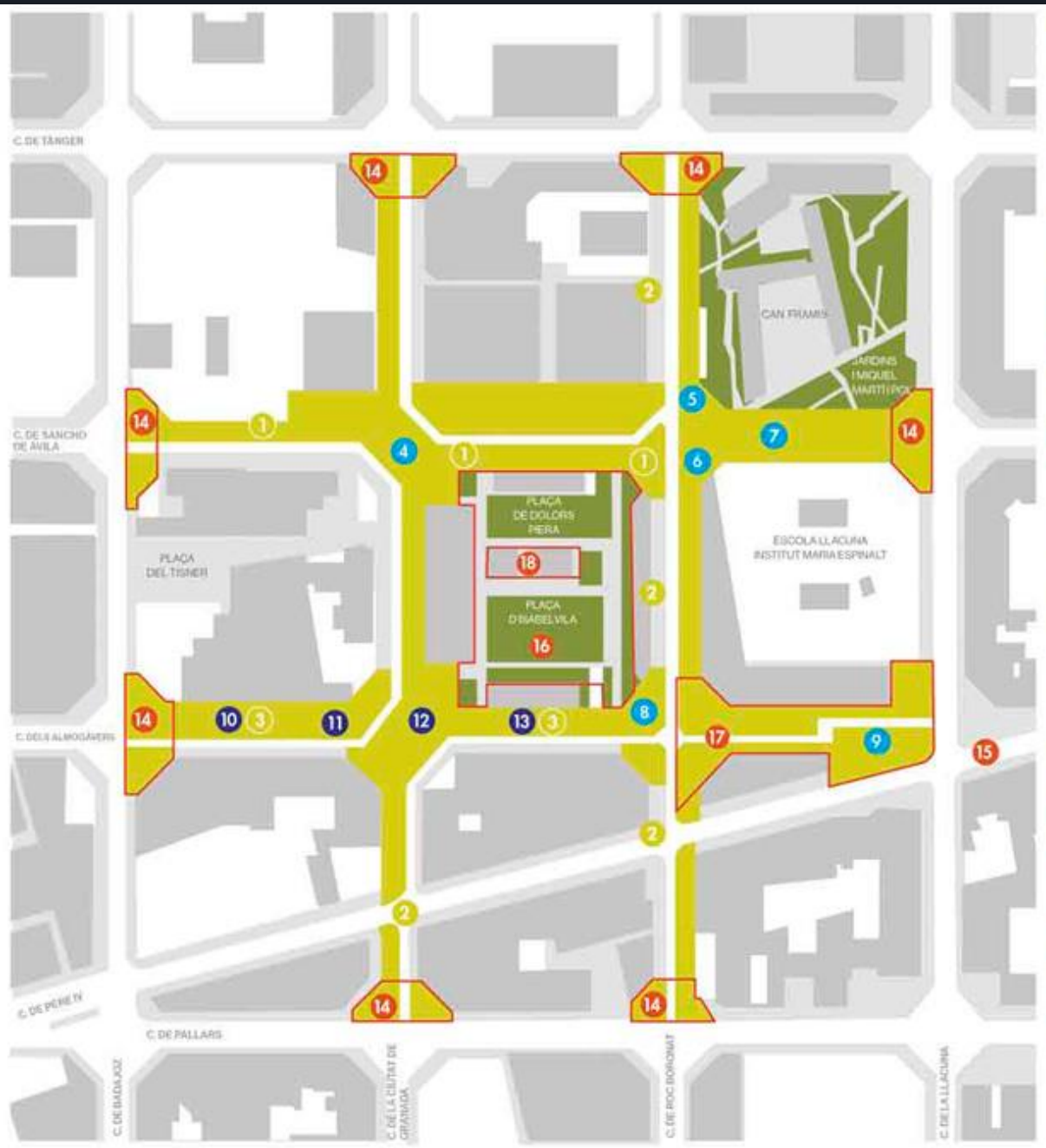


THE SUPERBLOCK – CAR FREE URBAN DESIGN – BARCELONA



ZONES D'ESTADA

1. Taules de pícnic
2. Recorregut literari
3. Espai per a mercats eventuals

ZONES DE JOC

4. Àrea gran de jocs infantils
5. Àrea petita de jocs infantils
6. Tarima per a espectacles
7. Espai de joc
8. Tauler d'escacs
9. Àrea de jocs infantils

ZONES ESPORTIVES

10. Circuit de joc
11. Taules de ping-pong
12. Cistella de bàsquet
13. Pista d'atletisme

OBRES DE REURBANITZACIÓ

14. Cruïlles d'accés a la superilla
15. Obres de reurbanització del carrer de Pere IV entre els carrers de Roc Boronat i Bilbao
16. Places de Dolors Piera i Isabel Vila
17. Tram del carrer dels Almogàvers entre els carrers de Roc Boronat i Llacuna
18. Obres de l'edificació del PMH, d'11 plantes i 68 habitatges en dret de superfície, d'entre 60 i 84 m². Data prevista d'inici a partir d'abril - maig de 2017

— Àmbits d'actuació de les obres de reurbanització

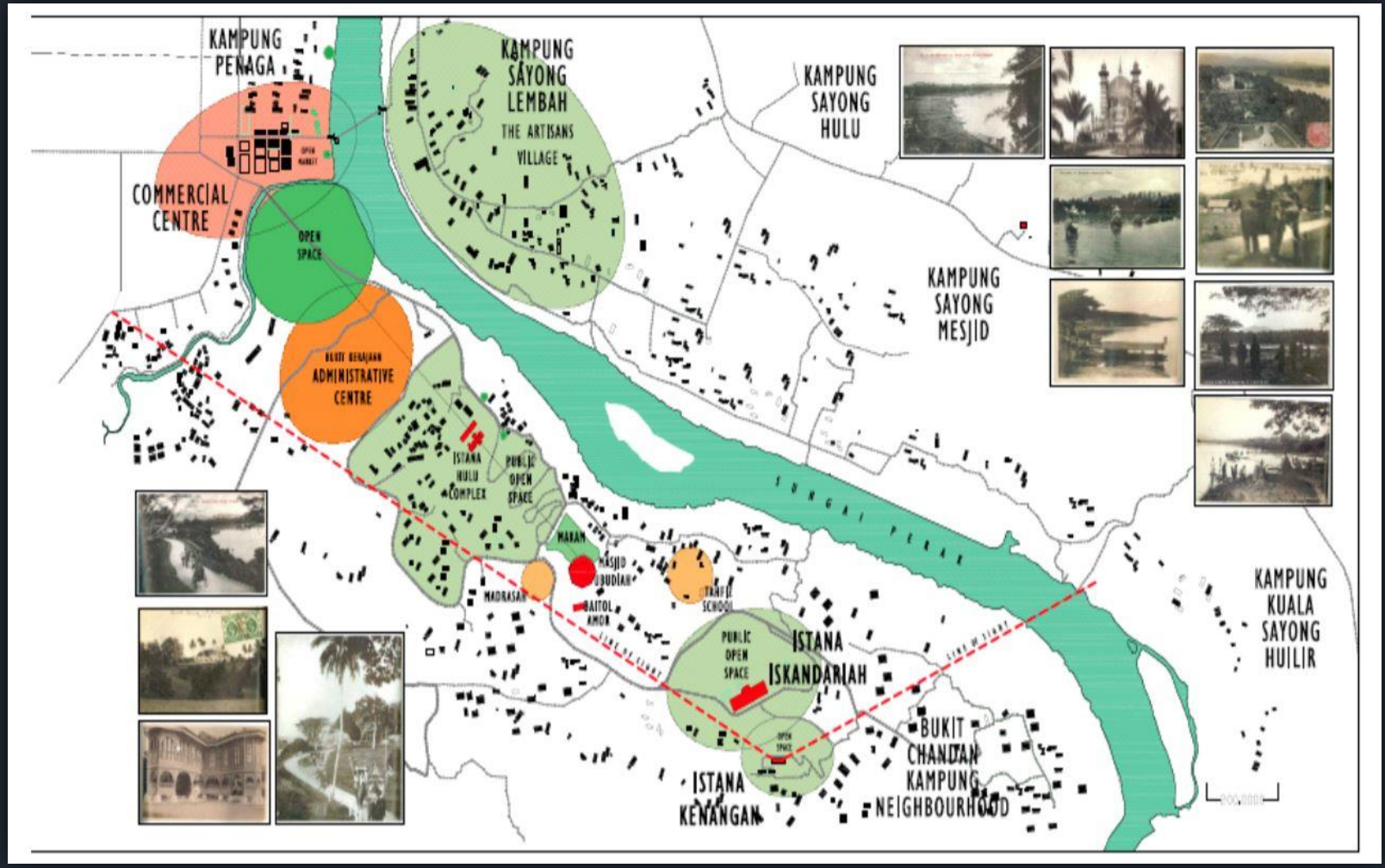
"Pedestian area:

No access to this area for non-residents by vehicle. Several time slots allow deliveries and residents to enter the zone. Access free for ambulances, police, etc.

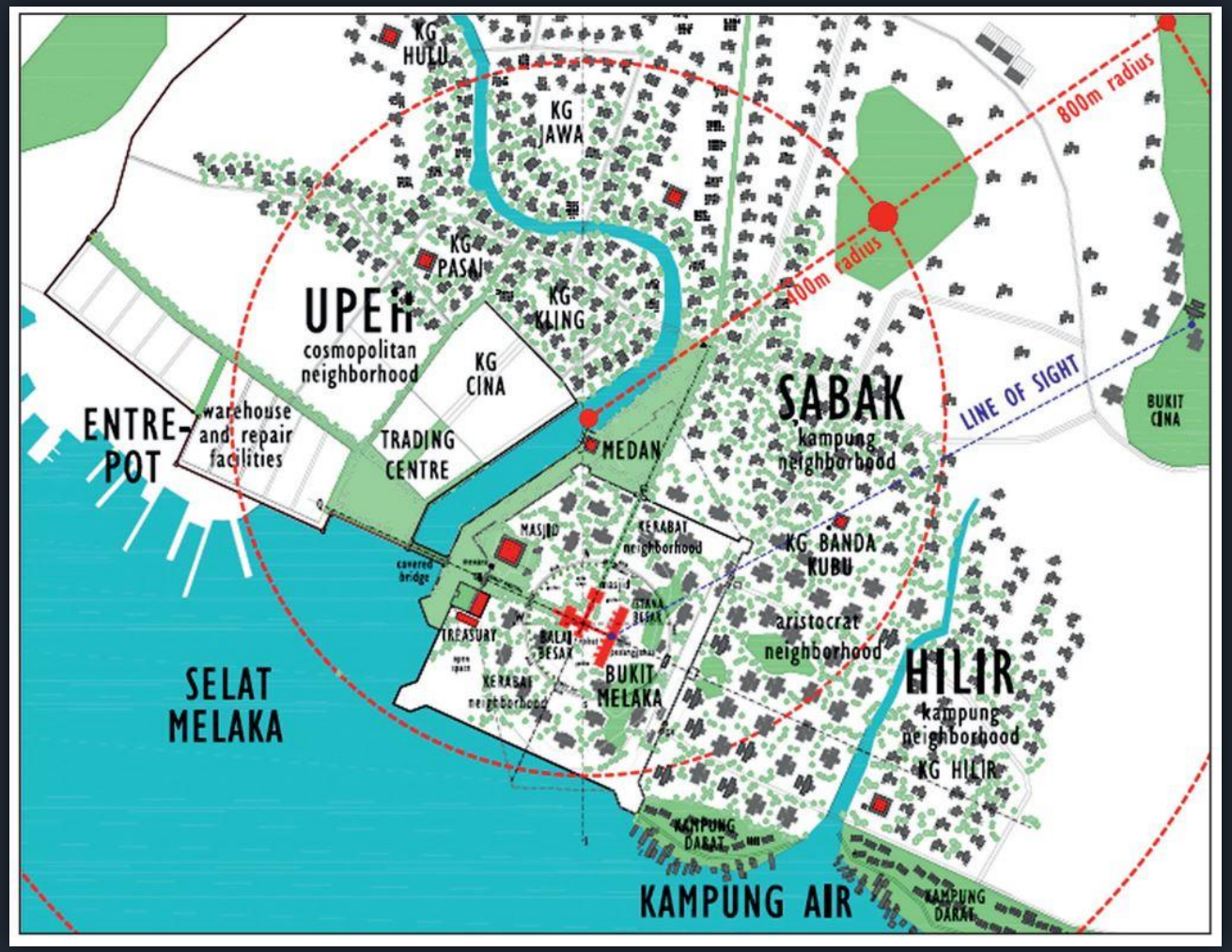
Maximum speed is 10km/h and maximum weight is 5.5 tonnes.

Superblocks:

Access only possible for residents with proper permit card. Card opens the bollards during the times the superblock is closed to traffic. Maximum speed is 10km/h and maximum weight is 5.5 tonnes."



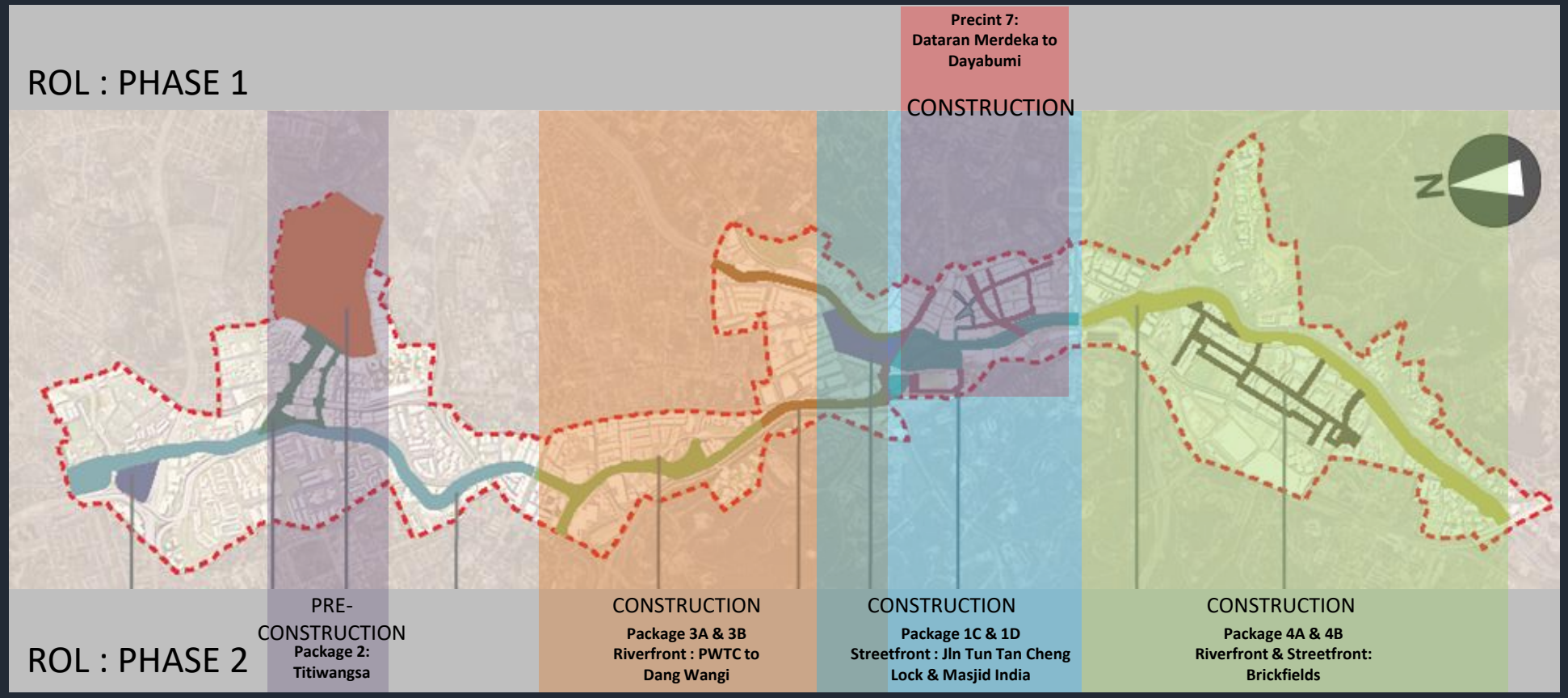
(Current work TRGS Group)The linear Urban Layout of Bukit Chandan Kuala Kangsar (late 19th century) with prominent landmark location on the hill top for the royal family comprises the complex of Istana Besar, Istana Kecil, Balai Mengadap, Taman Larangan/ Mandian (the forbidden garden) panca persada, bangsal gajah, and the open ground of non-hindering vista out to the sea and a line of site to Bukit Cina. Density of 5 to 7 units of houses per acre located to the southern side of the Perak River and within easy access via foot path to the river transport to the hinterland
(Source: Authors).



(Current work TRGS Group) Morphological Reconstruction urban core of pre-colonial Melaka. Kota Melaka (1511); © Kamariah Kamaruddin **Rys.**

RIVER OF LIFE: MASTERPLAN

RIVER OF LIFE: PROJECT PHASE



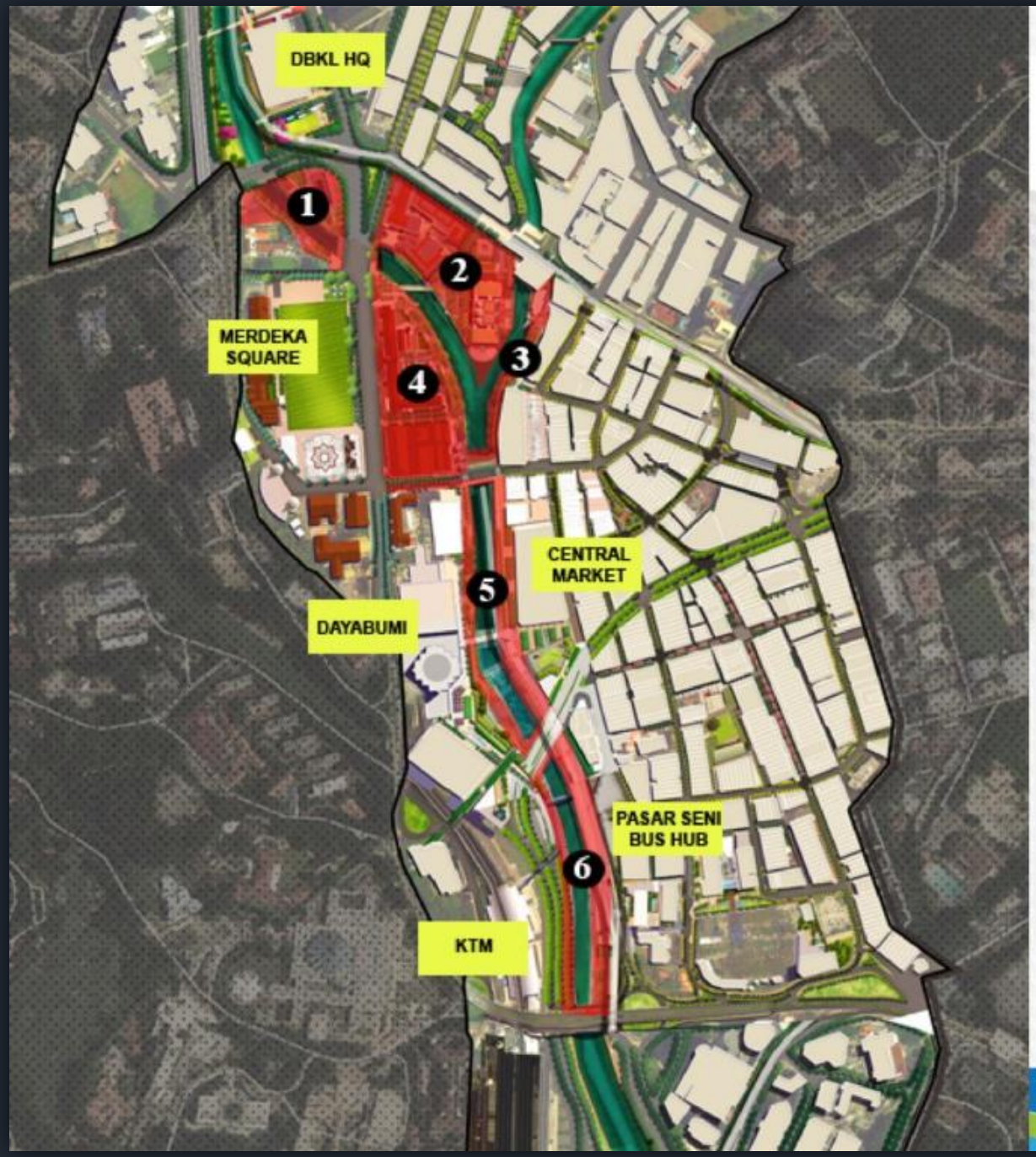
ROL FASA 1 : PRECINT 7

RIVERFRONT FROM ST. MARY'S CATHEDRAL(JALAN PARLIMEN) TO DOWNSTREAM DAYABUMI (JALAN KINABALU)

- CONTRACT COST : RM 130 mil
  VO No. 1 - RM 364,596.00
  : RM 30 mil (Supplementary Agreement - Interceptor Works)
- DATE OF SITE POSESSION : 03.03.2014
- DATE OF COMPLETION : 28.2.2016
  EOT No. 1 - 19.9.2016;
  EOT No. 2 - 15.12.2016
  EOT No. 3 - 15.4.2017
- CONTRACT PERIOD : 130 weeks
- LAD : RM35,000.00
- CONSULTANT : AECOM
- CONTRACTOR : Ekoriver Construction Sdn. Bhd

PHYSICAL PROGRESS (6 February 2017)

Schedule : 89.90%
Actual : 88.20%
Delay : -1.70%(65 days)



LOCATION PLAN

PHYSICAL ZONING
(CONSTRUCTION)

ZONE NO.1 - St.Mary Cathedral & Periuk Kera

ZONE NO.2 - Panggung Bandaraya & Masjid Jamek

ZONE NO.3 - Leboh Pasar Besar & Wisma Maran

ZONE NO.4 - BSAS & Loke Yew

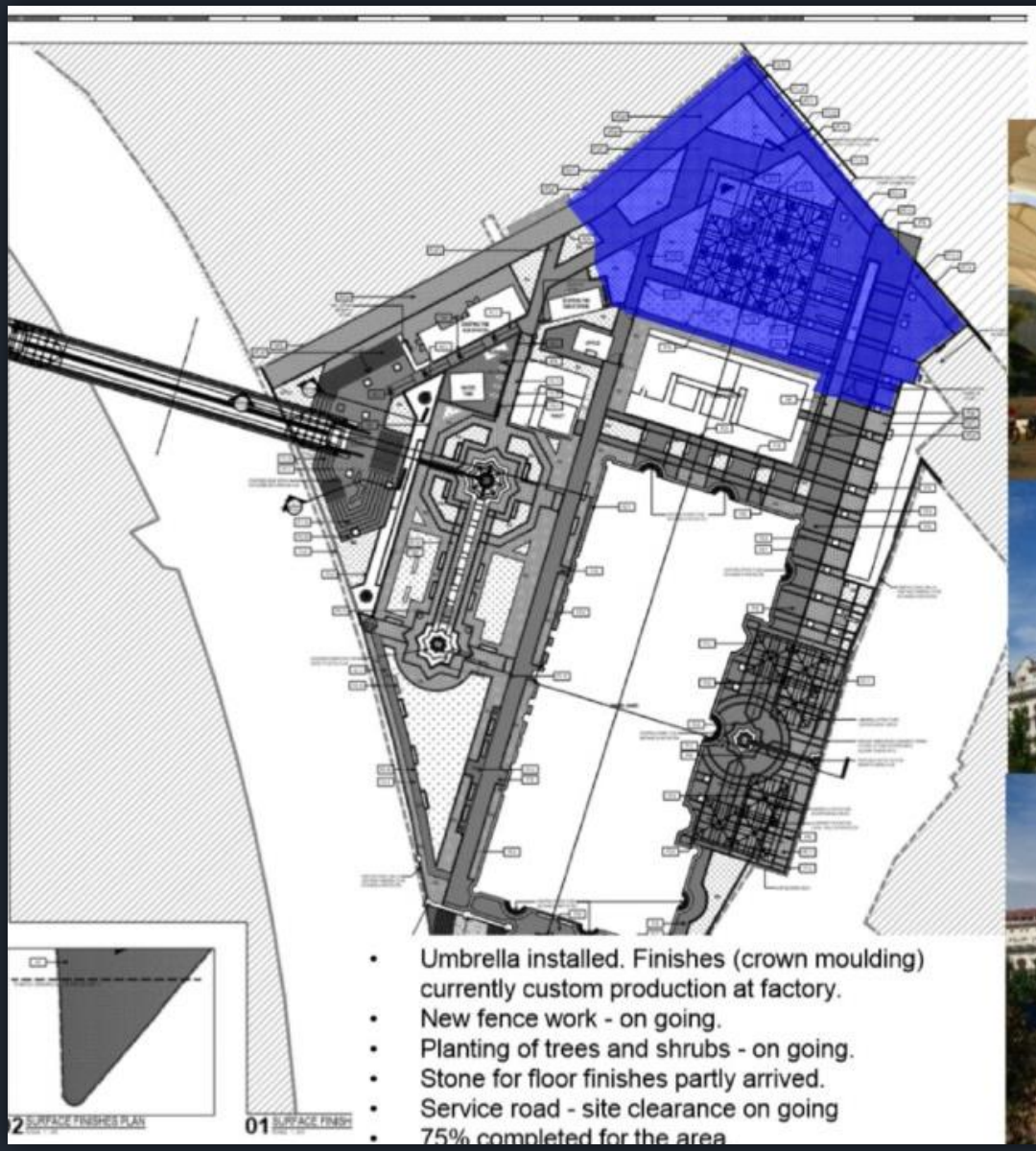
ZONE NO.5 - Central Market & Dayabumi

ZONE NO.6 - Pasar Seni Lrt & Dayabumi Downstream

MASJID JAMEK

Physical Progress – 11 Jan 2017

PLAZA



- Umbrella installed. Finishes (crown moulding) currently custom production at factory.
- New fence work - on going.
- Planting of trees and shrubs - on going.
- Stone for floor finishes partly arrived.
- Service road - site clearance on going
- 75% completed for the area

PROGRESS PICTURES

BANGUNAN SULTAN ABDUL SAMAD

MINISTRY OF FEDERAL TERRITORIES

Pedestrian bridge installation on going.

Work at Jalan Mahkamah Persekutuan slow.

PROGRESS PICTURES

BANGUNAN SULTAN ABDUL SAMAD

MINISTRY OF FEDERAL TERRITORIES

SYABAS sluice valve work on going.

Tree and shrubs planting in progress.

Mock-up for stone in progress.

Slot drain in progress.

O  **all Strategies –** lowering Carbon Emission For Existing Facility

Levels of ‘green’ action – The Case Of Malaysia Airports Berhad

“Influence”

- They need to influence industry partners to reduce emissions from aircraft during take-off and landing and support Government policy.

“Guide”

They need to guide emissions resulting from aircraft moving on the ground and from the activities of companies and staff based at the airport:

- -managing ground aircraft movement
- -staff travel
- -operational vehicles
- -water and waste

“Control”

They need to control emissions through a combination of energy efficiency initiatives and investment in less carbon intensive energy sources and buildings

KLIA- Forest in the Airport

16 esc

Welcome to the jungle

KLIA beefs up its retail initiative by placing a forest at its heart

17 esc

WEIB TALKING ABOUT WEEKENDER, SATURDAY 24 JULY 2010

Getting it green

While conservationists are mauling the aviation industry in the West, Asia is proving that air travel can be more eco-friendly.

By ANDREW PONNAMPALAM

T10 TRAVELTIMES NEW STRAITS TIMES, TUESDAY, DECEMBER 29, 2009

Forest in the airport

At the Jungle Boardwalk are (from right) Eraman CEO Umar Bustamam, Malaysia Airports chairman Tan Sri Datuk Dr Aris Othman, Puan Sri Sherina Aris and Malaysia Airports senior general manager ocommercial services Faizah Khairuddin

BERITA HARIAN EKONOMI Khamis 7 Januari 2010 | 23

BH PILIH 23A 7 (emel)

Hidu 'bau' hutan tropika di KLIA

DAVID KHOO/BERITA HARIAN

PENUMPANG boleh menghirup udara segar hutan hujan tropika di Jungle Broadwalk di KLIA.

Aviation Industry Commitment to Action on Climate Change

enviro.aero

As leaders of the aviation industry, we recognise our environmental responsibilities and agree on the need to:

- build on the strong track record of technological progress and innovation that has made our industry the safest and most efficient transport mode; and
- accelerate action to mitigate our environmental impact, especially in respect to climate change while preserving our driving role in the sustainable development of our global society.

Therefore, we, the undersigned aviation industry companies and organisations declare that we are committed to a pathway to carbon-neutral growth and aspire to a carbon-free future.

To this end, in line with the four-pillar strategy unanimously endorsed at the 2007 ICAO Assembly, we will:

1. push forward the development and implementation of new technologies, including cleaner fuels;
2. further optimise the fuel efficiency of our fleet and the way we fly aircraft and manage ground operations;
3. improve air routes, air traffic management and airport infrastructure; and
4. implement positive economic instruments to achieve greenhouse gas reductions wherever they are cost-effective.

We urge all governments to participate in these efforts by:

1. supporting and co-financing appropriate research and development in the pursuit of greener technological breakthroughs;
2. taking urgent measures to improve airspace design including civil/military allocation, air traffic management infrastructure and procedures for approving needed airport development; and
3. developing and implementing a global, equitable and stable emissions management framework for aviation through ICAO, in line with the United Nations roadmap agreed in Bali in December 2007.

Our efforts and commitment to work in partnership with governments, other industries and representatives of civil society will provide meaningful benefits on tackling climate change and other environmental challenges.

We strongly encourage others to join us in this endeavour.

ACI Airports Council International — Robert J. Aaronson, Director General; James C. Cherry, Chairman
CANSO — Alexandre ter Kuile, Secretary General; Ashley Smout, Chairman
IATA — Giovanni Bisignani, Director General & CEO; Fernando Pinto, Chairman
Marion C. Blakey, Chair; Takaroshi Hosoya, Vice-Chair
AIRBUS — Thomas Enders, President & CEO
BOEING — Scott Carson, President & CEO
BOMBARDIER — Steve Ridolfi, President Regional Aircraft
cfm — Eric Bachelet, CEO
EMBRAER — Frederico Fleury Curado, President & CEO
Scott C. Donnelly, President & CEO GE Aviation
Pratt & Whitney — Stephen Finger, President
Rolls-Royce — Mark King, President Civil Aerospace
ATAG — Philippe Rochat, Executive Director

3rd Aviation & Environment Summit; 22nd April 2008; Geneva, Switzerland

"We, the undersigned aviation industry companies and organisations, declare that we are committed to a pathway to carbon-neutral growth and aspire to a carbon-free future."

Signed by,

ACI, CANSO, IATA, ICCAIA, Airbus, Boeing, Bombardier, CFM, Embraer, Pratt & Whitney, Rolls-Royce, ATAG, AFRAA, ATA, AAPA, AEA, AACO, ERA, IACA, ALTA, SITA…

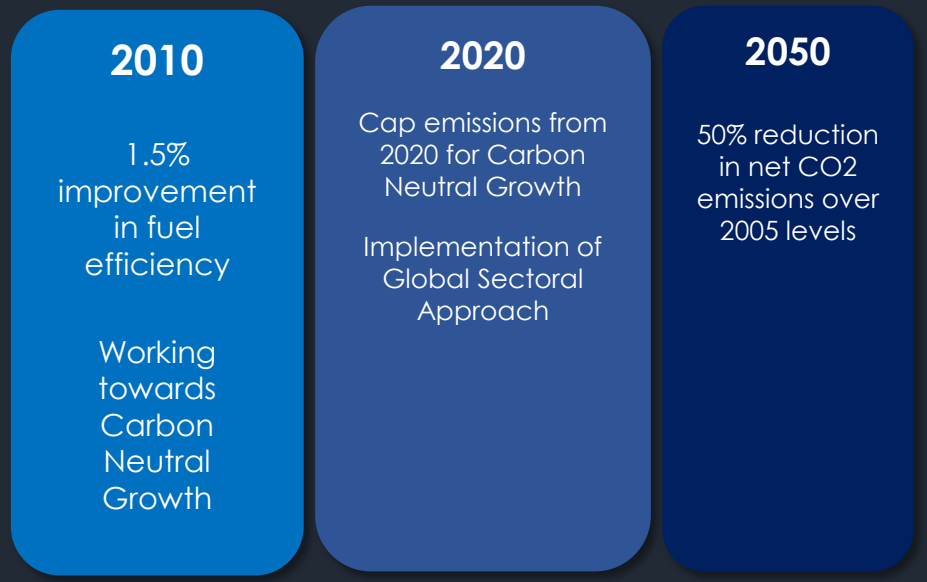
Malaysia Airports Holdings Berhad (Kuala Lumpur, Kota Kinabalu, Kuching, Penang, Langkawi)

COP 15 | COP 16

At least one industry has its act together

No other sector has such ambitious environmental targets, or can point to such sustained achievements in reducing CO2 as aviation.

Global Industry Targets



"Under ICAO's leadership, aviation has produced the first, and to date, only globally-harmonized agreement designed to address climate change on a global basis from a specific sector and ICAO is in the best position to effectively and systematically address the impact of international aircraft emissions on climate change."

ICAO President Roberto Kobeh González

Our Commitment

Low Carbon Growth by 2015

KUL, PEN, BKI, KCH, LGK

Carbon Neutral Growth by 2020

KUL, PEN, BKI, KCH, LGK

GREEN GLOBE 21 Certification

Preface

GREEN GLOBE 21 is the worldwide benchmarking and certification program which facilitates sustainable travel and tourism for consumers, companies and communities.

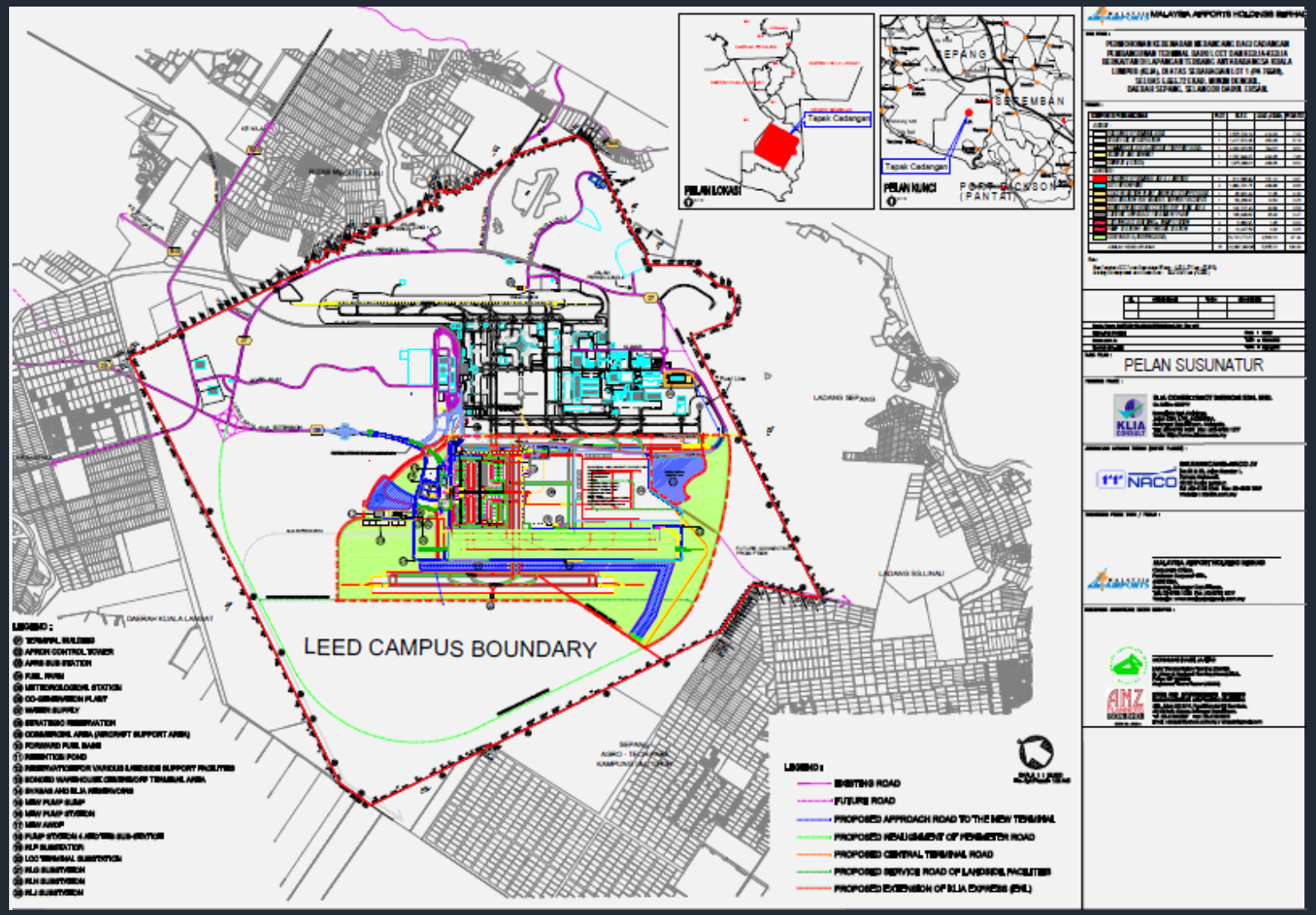
It is based on Agenda 21 and principles for Sustainable Development endorsed by 182 governments at the United Nations Rio de Janeiro Earth Summit in 1992.

There are 4 GREEN GLOBE 21 Standards ;

- The GREEN GLOBE 21 Company Standard
- The GREEN GLOBE 21 Standard for Communities
- The International Ecotourism Standard
- The Design and Construct Standard.

KLIA2 MASTER PLAN

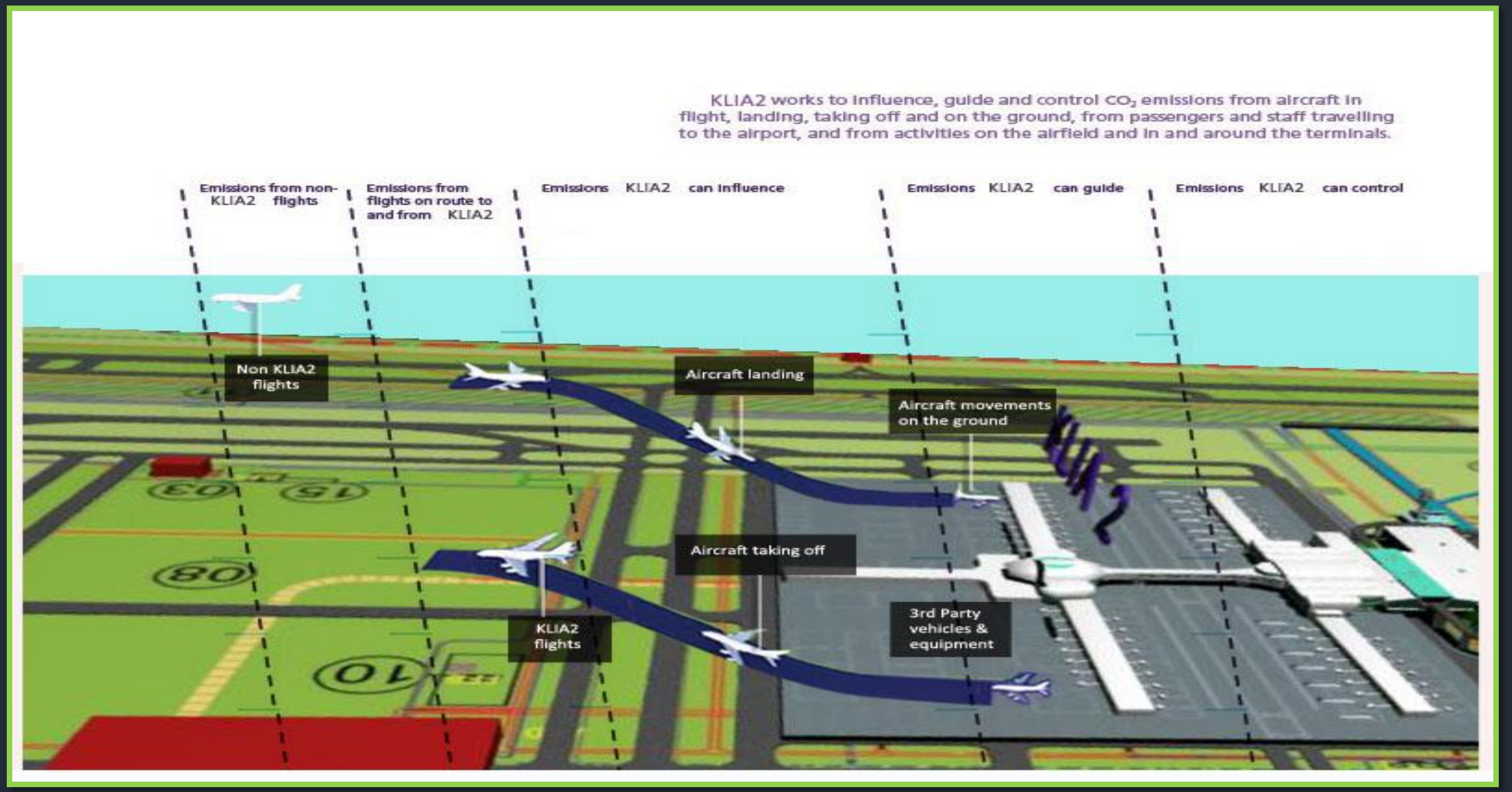
Layout Plan



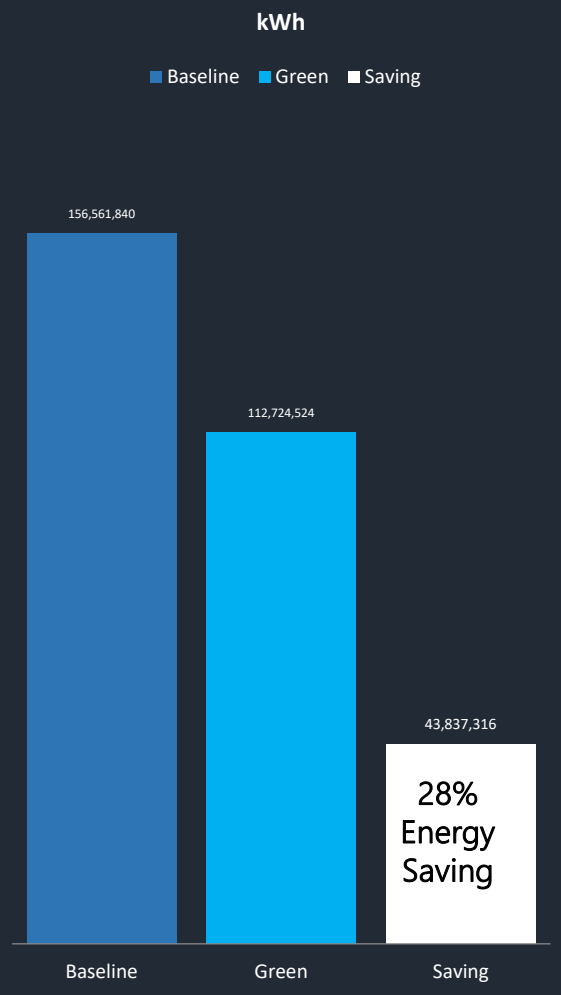
The green 'big' picture - Carbon Emission According to Scope

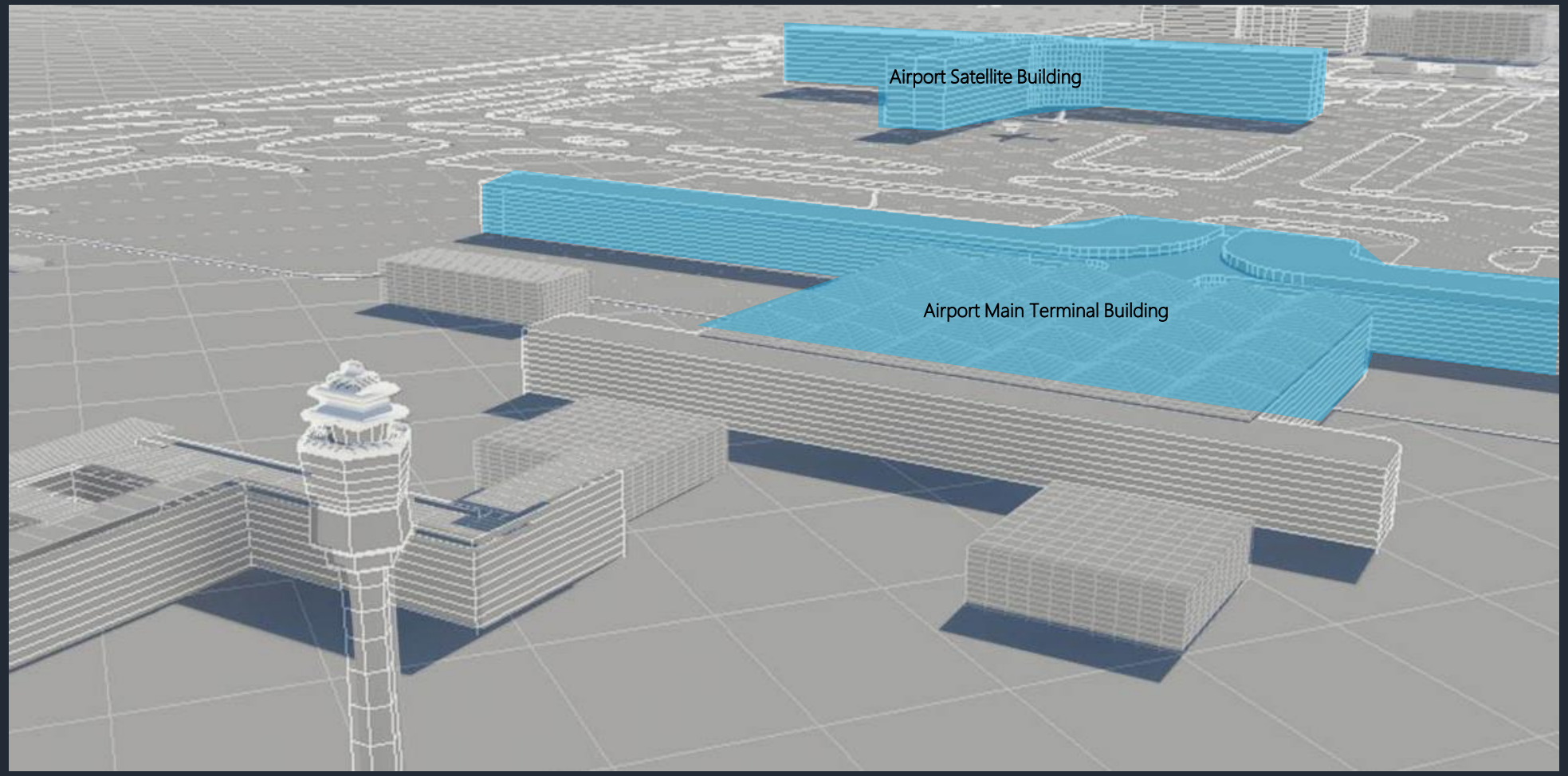
Scope	Category	Annual Carbon Emission (MT CO_2-eq)	
		Baseline (m^3)	Green (m^3)
Scope 1	Company Owned Vehicles	985	825
	Direct Combustion	129	129
Scope 2	Electricity Usage	44,353	92,417
Scope 3	Electricity Consumption by Tenants	2,971	
	Business Travel	726	725
	Employee Commute to Work	11,726	6,976
	Passenger Land Transportation	27,310	28,728
	Ground Services Operations	5,189	4,539
	Aircraft Movement	688,531	626,845
	TOTAL ANNUAL CO_2 EMISSION (MT CO_2-eq)	832,889	761,186
	Percentage of Reduction	9 %	

Steps For Reduce Of Carbon Emissions

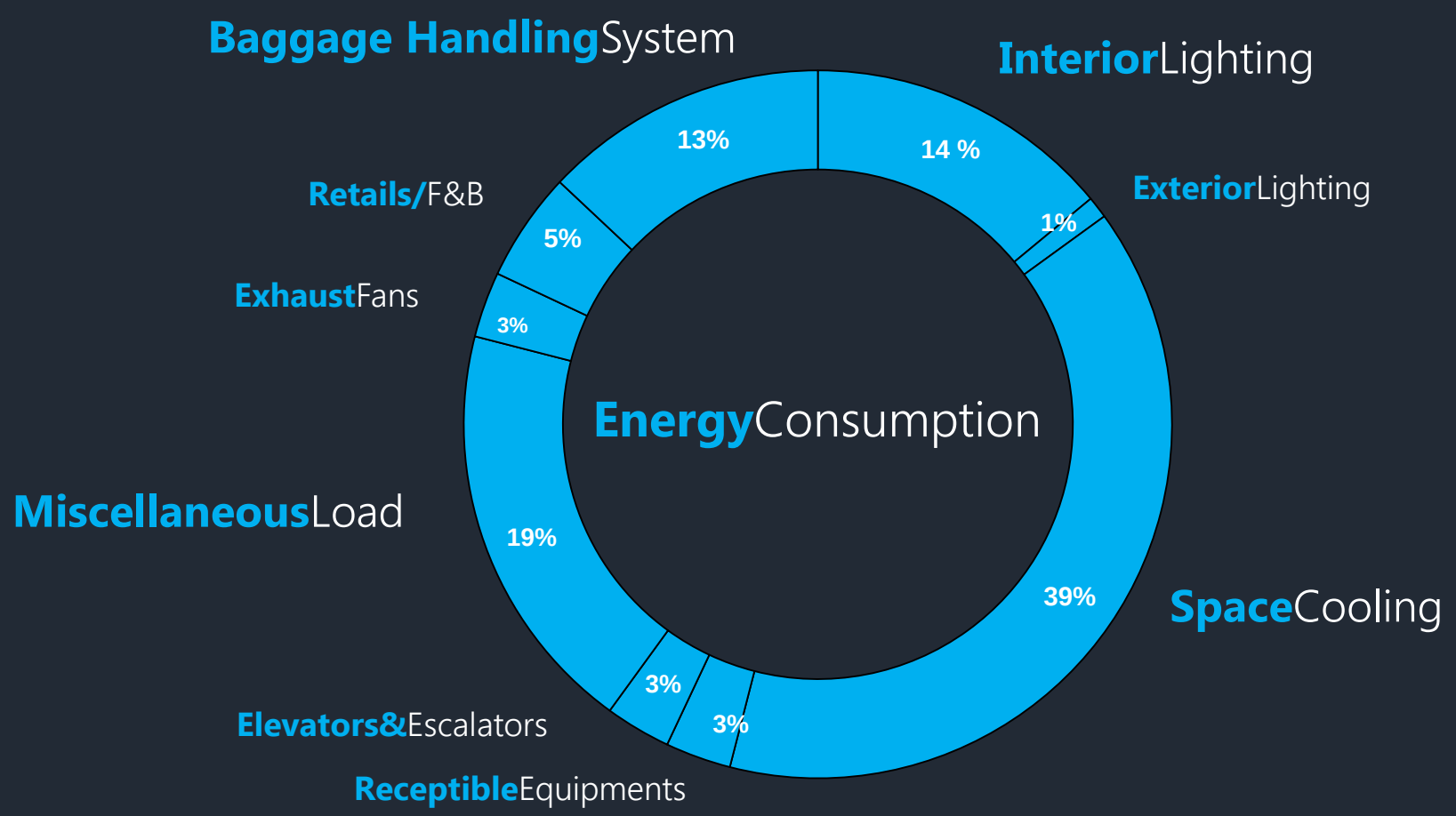


EnergyConsumption

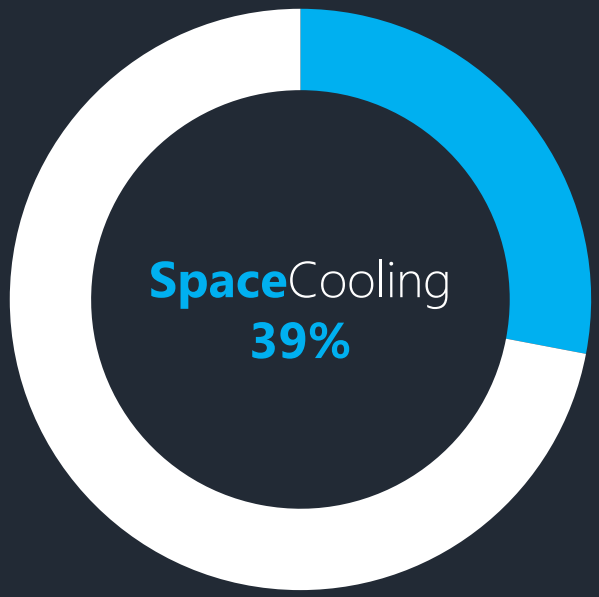


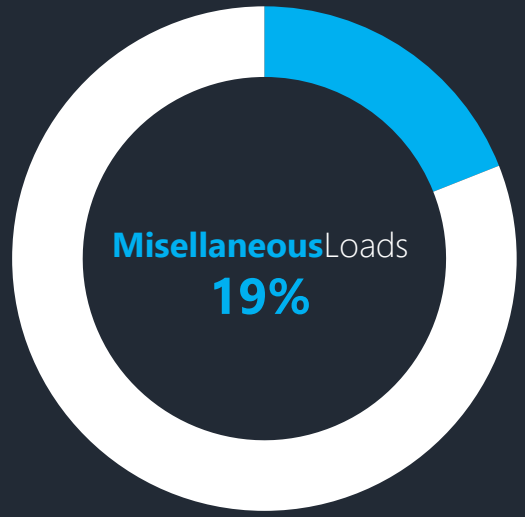


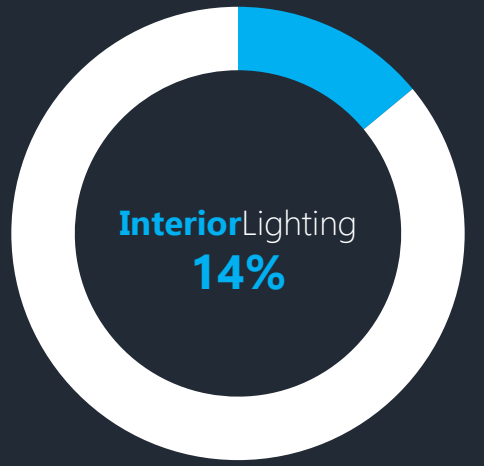
EnergyConsumption

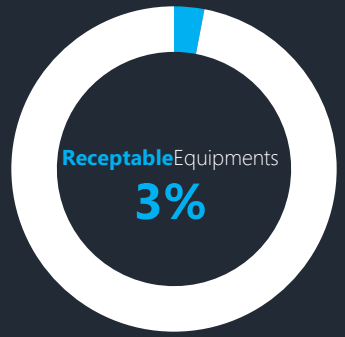


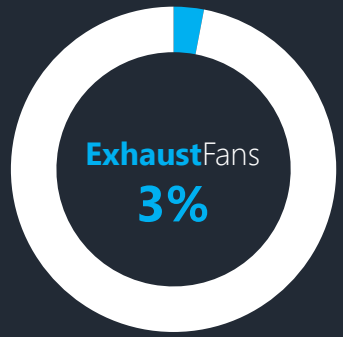
EnergyConsumption

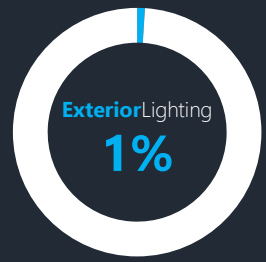








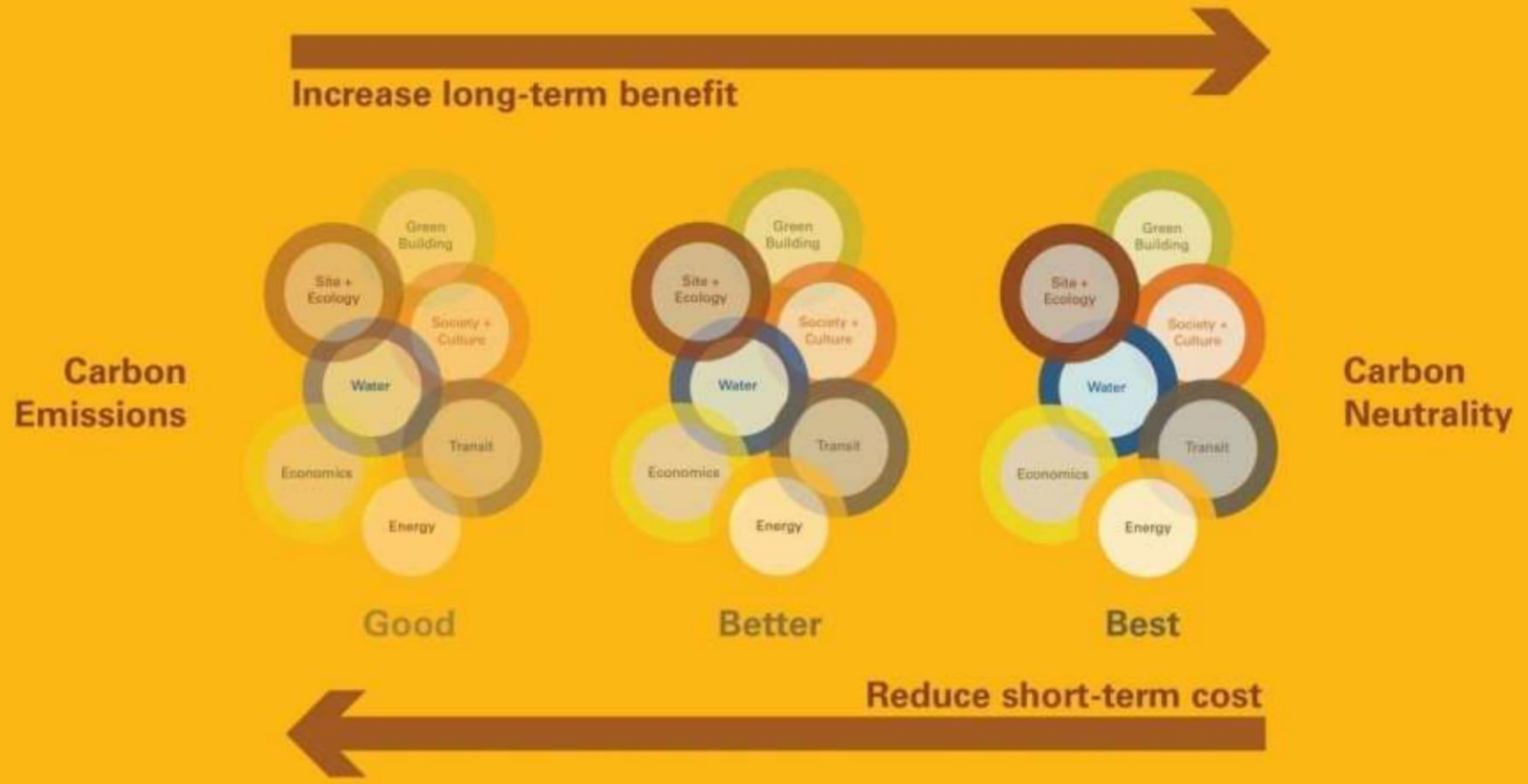




NEW DEVELOPMENT AND PRINCIPLES OF MASTERPLAN

SSIM™

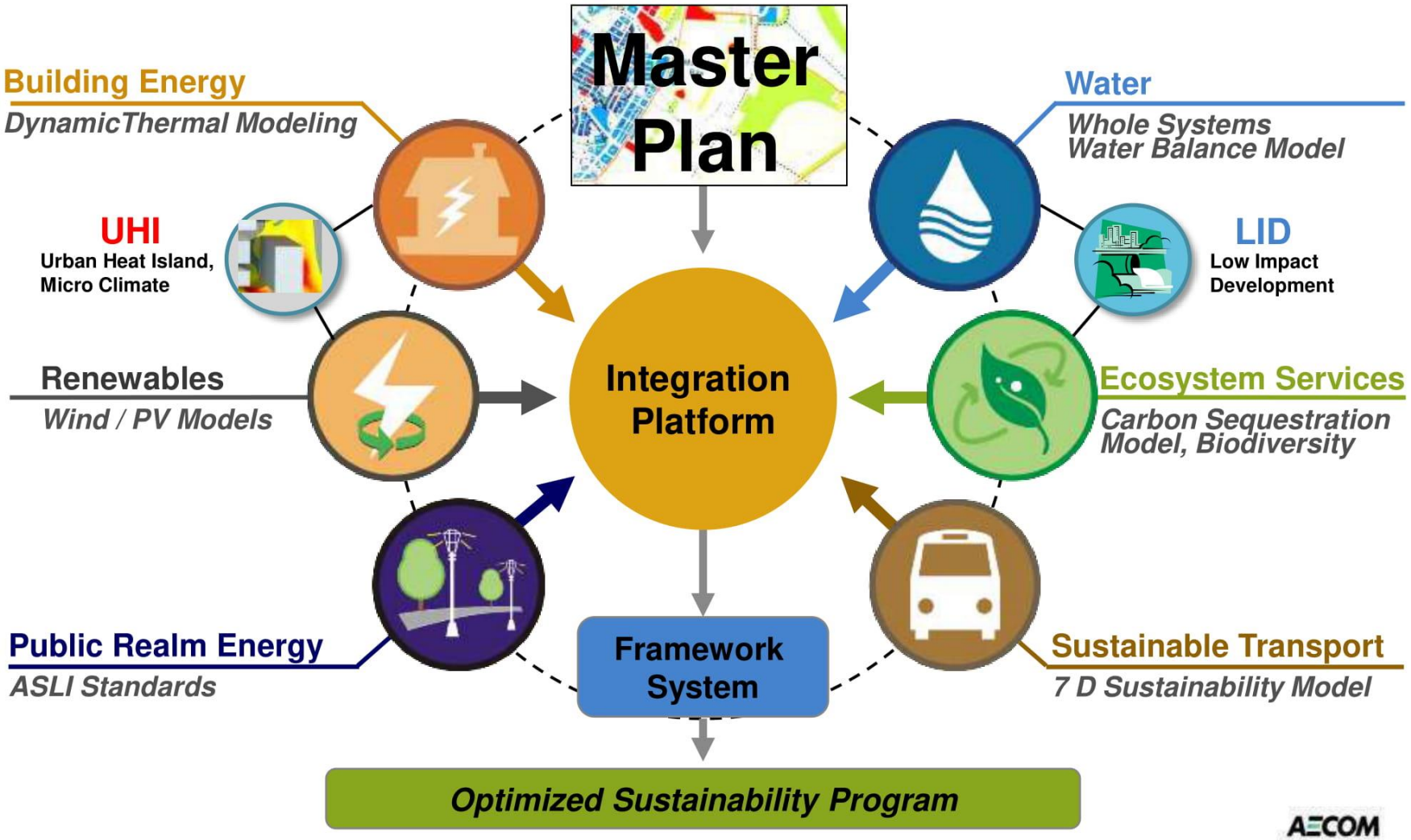
Sustainable Systems Integration Model



Framework of the SSIM system by AECOM

Sustainable Systems Integration Model: SSIM™

Integrated Systems Modeling to Close Gaps



AECOM

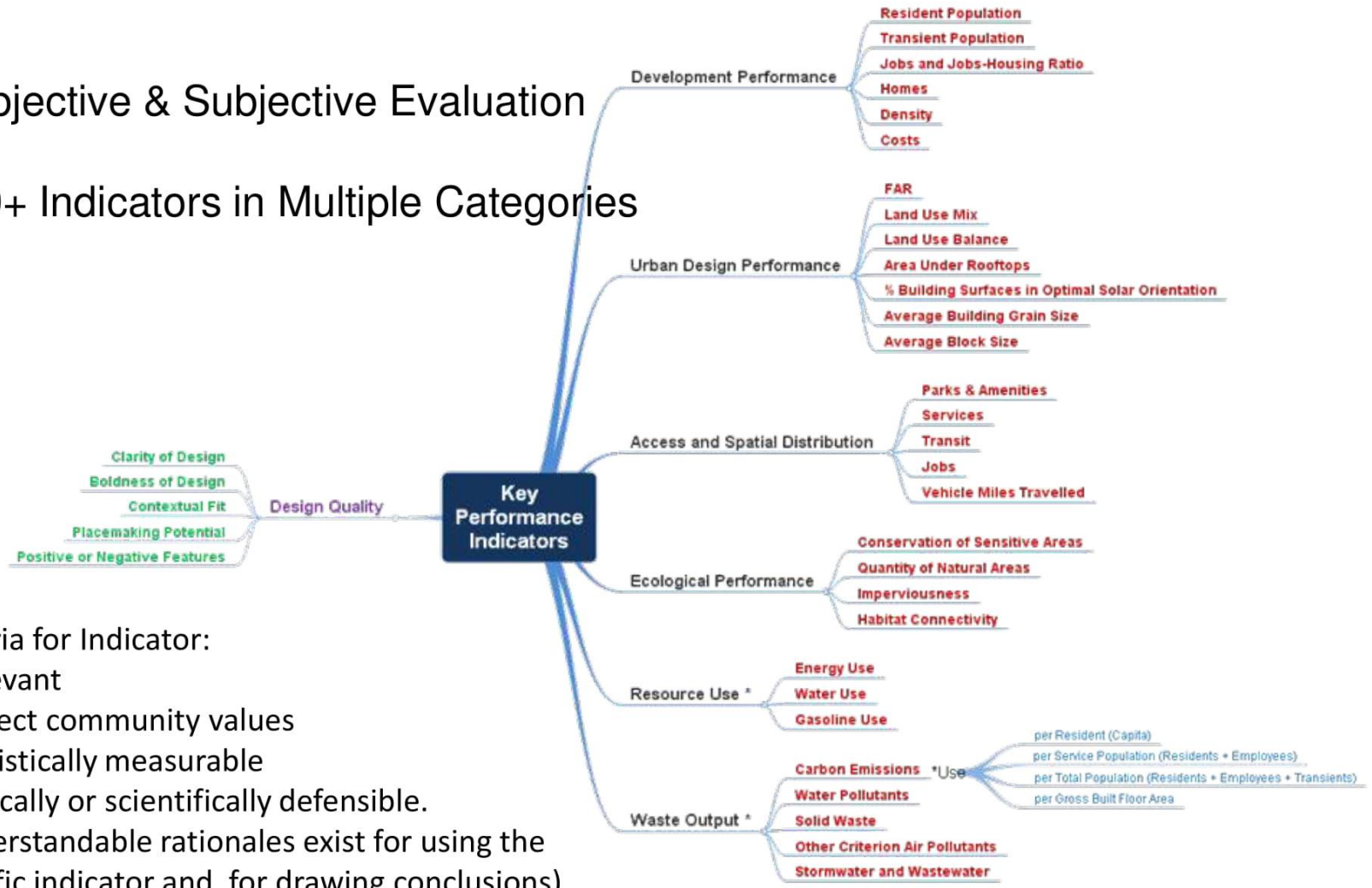
The SSIM™ Approach Works at Various Scales

AECOM

SSIM™ Urban Design and Planning Performance Analysis:
Key Performance Indicators

Objective & Subjective Evaluation

50+ Indicators in Multiple Categories



Criteria for Indicator:
- Relevant
- Reflect community values
- Statistically measurable
- Logically or scientifically defensible.

(Understandable rationales exist for using the specific indicator and for drawing conclusions)
- Reliable

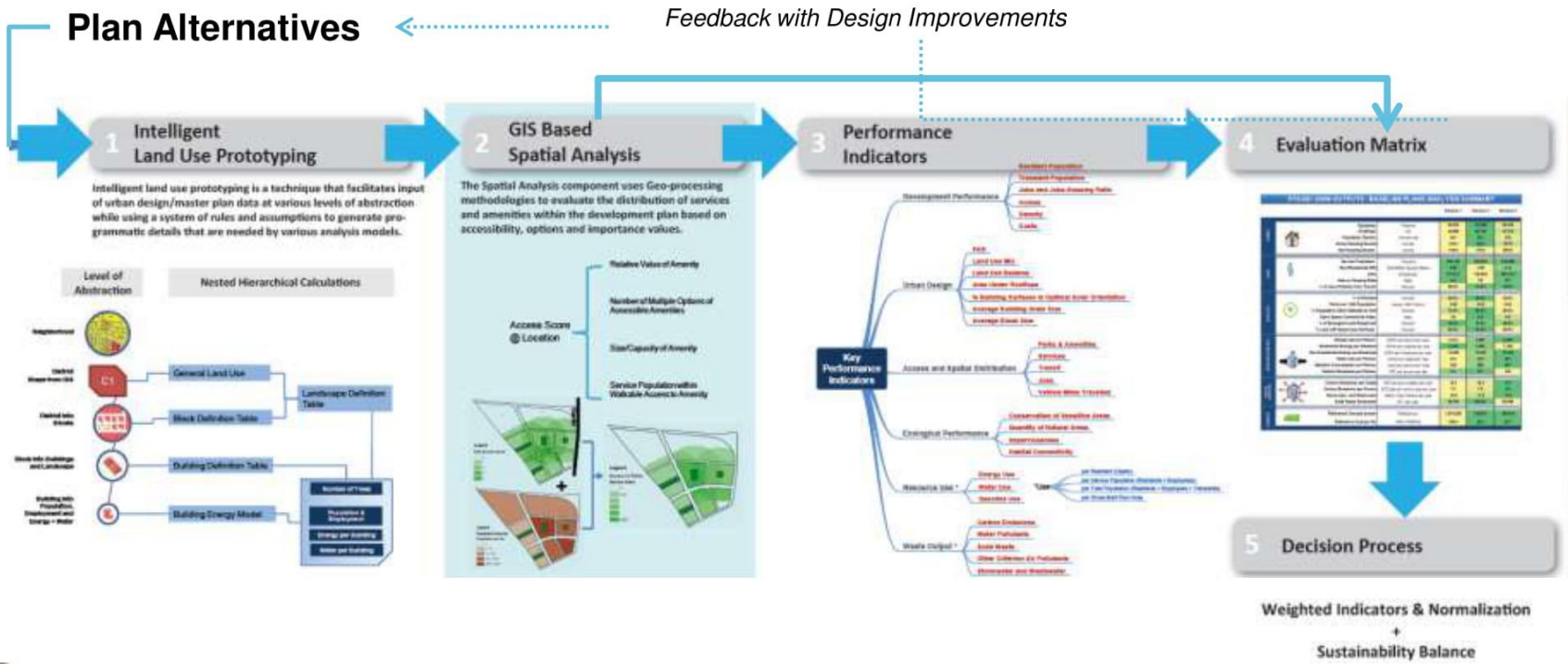
AECOM

Defining the Measures, KPI's and Targets

Introduction | Summary | Urban Form | Water | Energy | Transportation | Urban Heat Island | Eco-System Services | Green Building | Air Quality | Noise | Waste Management

Ref	Topic	Objectives	Strategies	Measures	Gateway /Lakeside	Priority Level	KPI	Target					Data Source /Assumptions
								BaU	Baseline	Good	Better	Best	
EN1	Building energy efficiency for residential	To improve energy efficiency of all residential buildings within the Jurong Lake District	Provide strategies for energy efficiency in all residential buildings				% reduction of energy from code for residential						
				High Efficiency Opaque Building Envelope	G/L	H				I	I	I	
				High Efficiency Fenestration (thermal and solar perfor	G/L				I	I	I	I	
				High Efficiency Split DX Cooling Equipment (Singapor	G/L				I				
				High Efficiency Split DX Cooling Equipment (Singapor	G/L					I			
				High Efficiency Split DX Cooling Equipment (Singapor	G/L						I		
				Centralized Hydronic Cooling with Water Cooled Coo	G/L							I	
				High Efficiency Service Hot Water Heating Systems	G/L				I	I	I	I	
				Use of low flow water fixtures and fittings (WELS Excel	G/L				I	I	I	I	
				Solar hot water heating / chiller heat recover for servic	G/L					I	I	I	
				High Efficiency (Compact Fluorescent) Lighting Fixtur	G/L				I	I	I	I	
				High Efficiency Appliances (e.g. Refrigerators)	G/L				I	I	I	I	
				Rooftop PV	G/L						I	I	
							% reduction of energy per code for Retail						
				High Efficiency Opaque Building Envelope	G/L					I	I	I	
				High Efficiency Fenestration (thermal and solar perfor	G/L				I	I	I	I	
				High Efficiency Packaged Cooling Equipment	G/L				I				Small in line retail only

SSIM™ Urban Design & Planning Performance Analysis:



Population Matrix

Residential Population (defined by avg. unit size and household size)

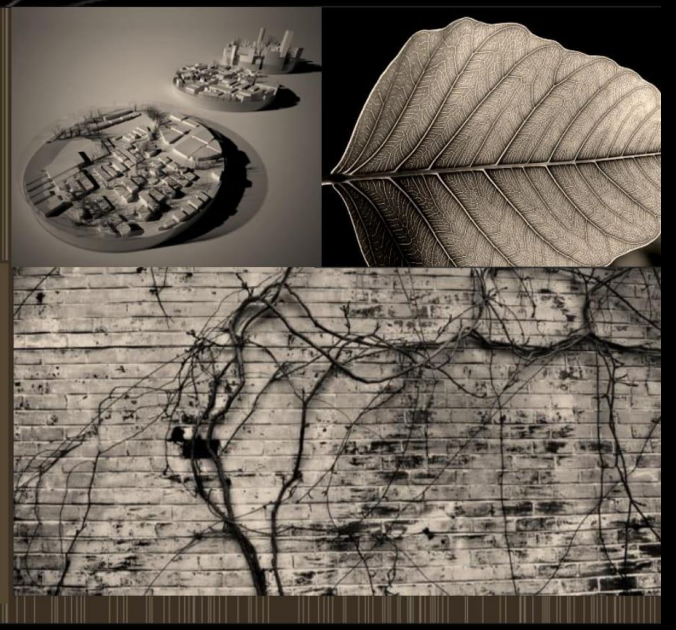
Employment Population (non-residential population)

Service Population = Residential Pop. + Employment Pop.

Transient Population (visitors to large public venues: museum, theme park, conference center, aquarium etc.)

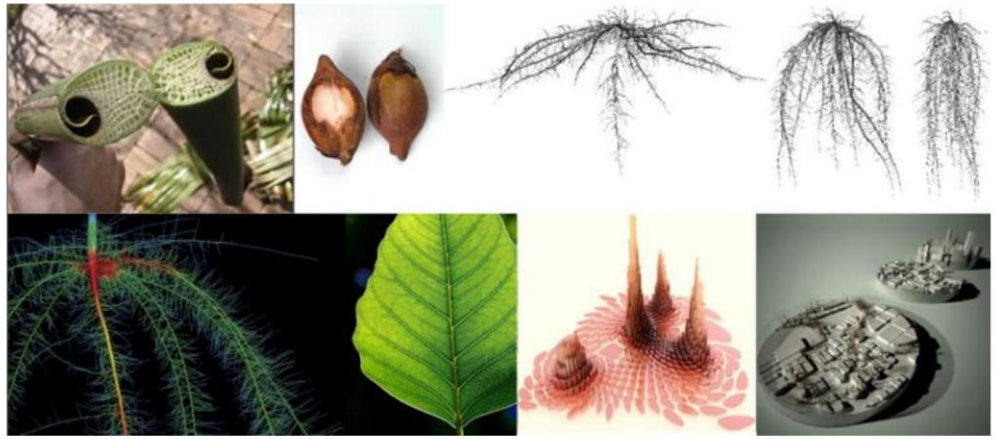
AECOM

ECOSFERA
@ BERTAM



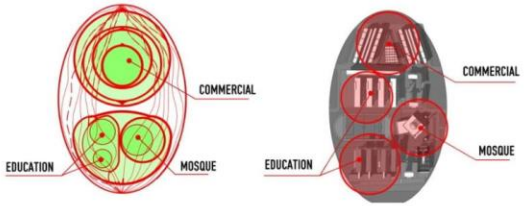
CONCEPT

CONCEPT

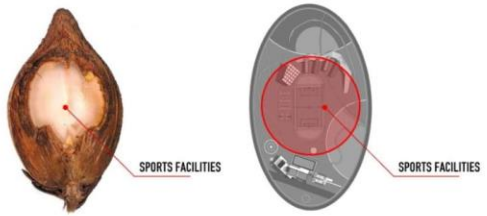


Bertam, the name of the place,originated from the Bertam tree. Our concept for the township of Ecosfera@ Bertam is inspired by the Bertam tree. The Bertam seed is the root of our concept, The growth from a seed to a stem and eventually a full grown tree is the basis of our planning.

ECOLOGY OF THE FRUIT & STEM OF BERTAM TREE

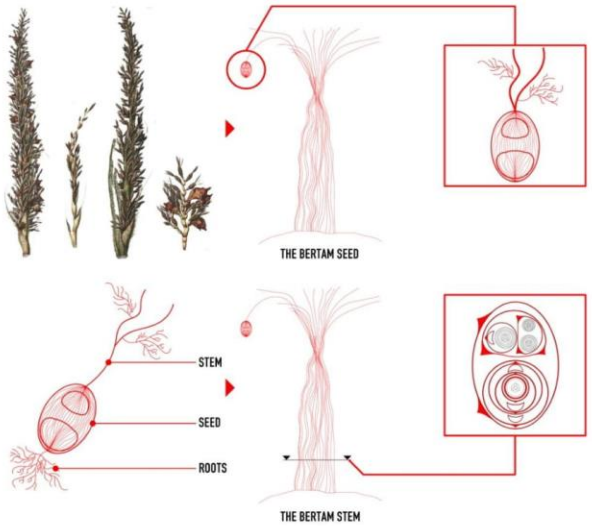


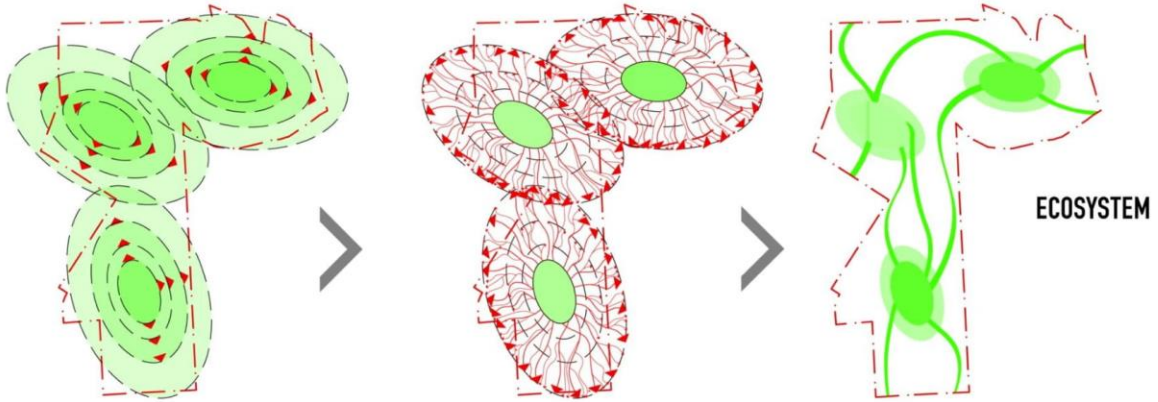
STRUCTURE OF BERTAM (UEGISSONA TRISTIS) TREE STEM



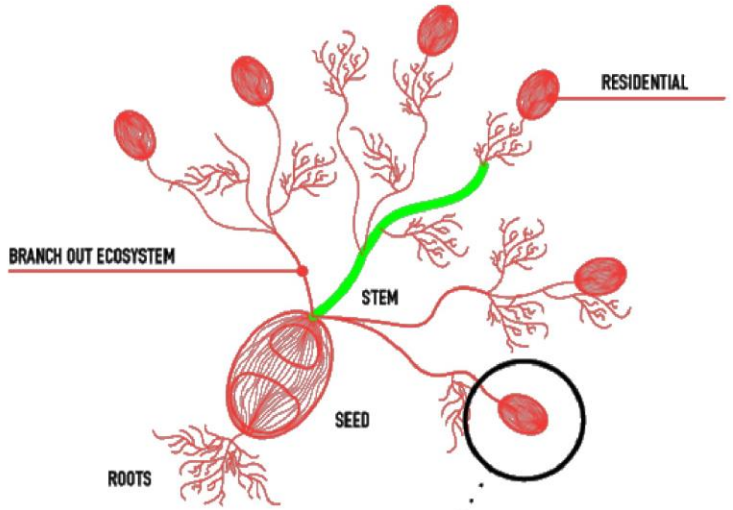
CROSS SECTION OF BERTAM (UEGISSONA TRISTIS) FRUIT

CONCEPT DEVELOPMENT

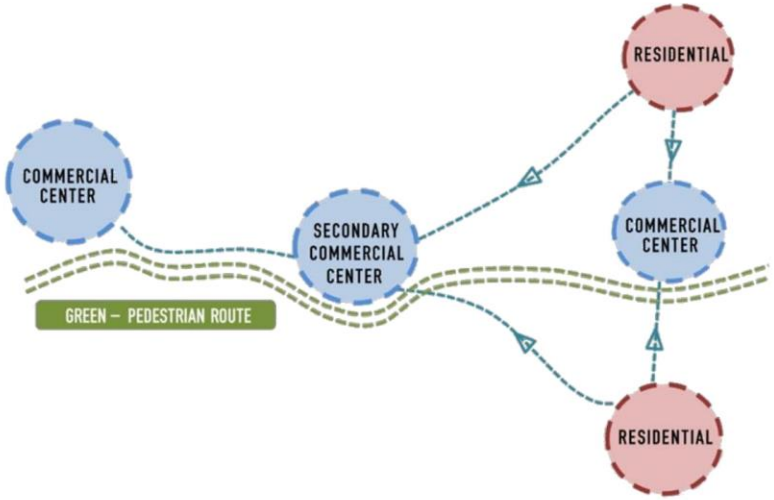




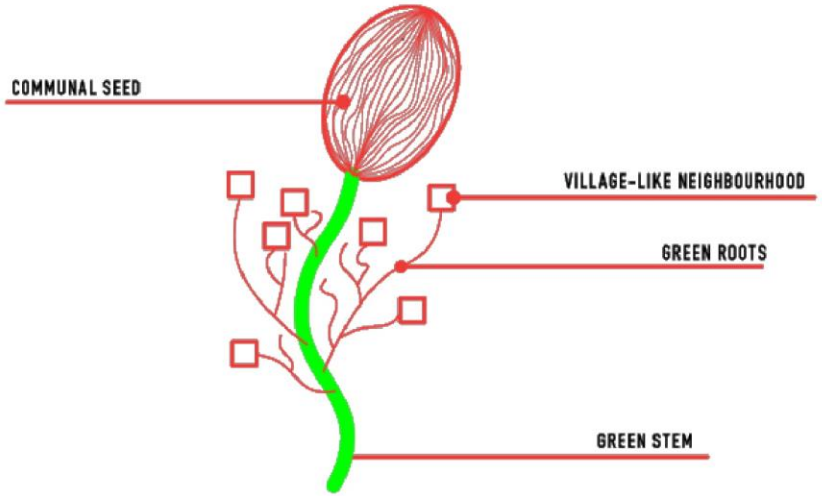
THE ECOSYSTEM



CONNECTIVITY



DESIGN IDEAS



GREEN

- PUBLIC PARK
- GREEN HOME
- NATURAL RESOURCES
- SUSTAINABILITY
- CULTIVATING RAINWATER FOR GREEN

RESIDENTIAL

- COMMUNITY HUB
- MIXED RESIDENTIAL COMPONENT
- VILLAGE-LIKE NEIGHBOURHOOD

COMMERCIAL

- COMMERCIAL CENTER THAT SERVES THE COMMUNITY & SUPPORTS THE EDUCATIONAL HUB
- SUSTAINABLE RETAIL
- 500M RADIUS (WITHIN WALKING DISTANCE) OF SMALL COMMERCIAL CENTRE

CONNECTIVITY

- PEDESTRIAN ROUTES VIA PUBLIC GREEN
- BRT STATIONS POINT AT STRATEGIC LOCATIONS
- POTENTIAL EDT STATION


COMMUNAL SEED
- KINDERGARTEN
- PRIMARY SCHOOL
- SECONDARY SCHOOL
- RELIGIOUS SCHOOL
- MOSQUE
- COMMUNITY HALL
- SHOP OFFICE
COMMUNAL LEAVES
-SMALL COMMERCIAL AREA
- SURAU
- COMMUNITY HALL
RECREATION SEED
- RECREATIONAL PARKS
- CLUBHOUSE
-SWIMMING POOL
- SPORTS CENTRE
POCKET GARDENS / DRY RETENTION
- RECREATIONAL PARKS
- PUBLIC PLAY AREA
- FLOOD CONTIGENCY RETENTION
GREEN ROOTS
- NEIGHBOURHOOD GREEN LINKAGE TO GREEN STEM
- RECREATION SPACE
GREEN STEM
-CENTRAL GREEN LINEAR PARK
- RECREATIONAL PARKS
- PEDESTRIAN PATHWAY
- BICYCLE TRACK
- JOGGING TRACK
COMMUNAL SEED
- KINDERGARTEN
- PRIMARY SCHOOL
- SECONDARY SCHOOL
- RELIGIOUS SCHOOL
- MOSQUE
- COMMUNITY HALL
- SHOP OFFICE
FRUIT CENTRE
-COMMERCIAL CENTRE
- SHOP OFFICES
- FLEA-MARKET
TO TASEK GELUGOR / KULIM
JALAN KUBANG MENERONG
TO KEPALA BATAS
MAIN ACCESS
N

MASTER PLAN

AERIAL PERSPECTIVE: DAY VIEW

ECOSFERA @ BERTAM

AERIAL PERSPECTIVE: DAY VIEW

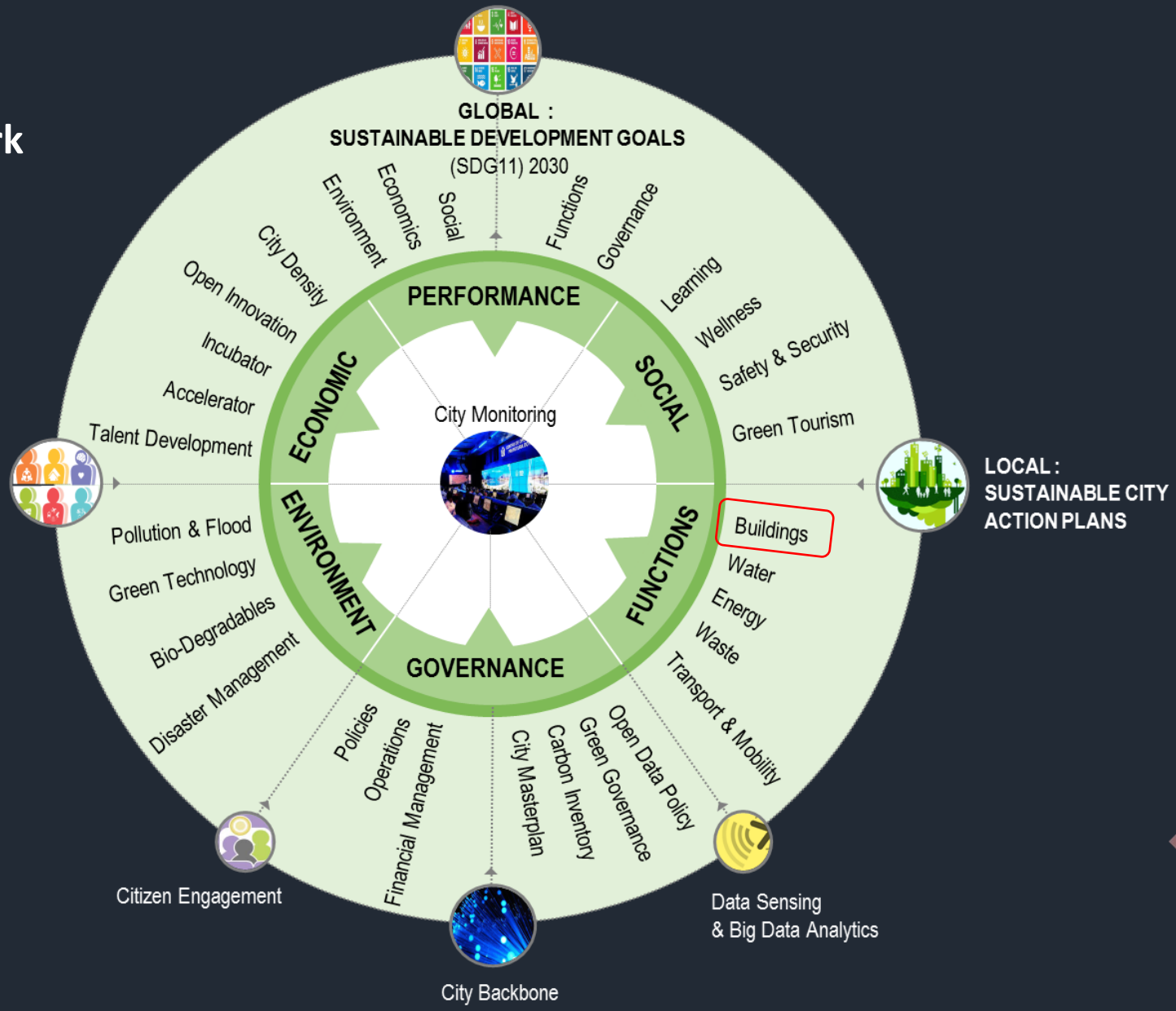
ECOSFERA @ BERTAM

PEDESTRIAN (WALKING & CYCLING) NETWORK

VEHICULAR NETWORK

National **Sustainable Cities** Program 2016-2020
(Global Program : 11 countries & 23 Cities)

City **Framework**



Global Partners

gef · WORLD BANK GROUP · UNIDO

National Secretariat

KPKT · MiGHT

National Partners

KeTTHA KEMENTERIAN TENAGA, TEKNOLOGI HIJAU DAN AIR · NRE · KKMM KEMENTERIAN KOMUNIKASI DAN MULTIMEDIA MALAYSIA

What is Sustainable City ?

ECONOMIC	ENVIRONMENT	SOCIAL
Competitive Cities	**Green & Resilient Cities**	**Liveable & Inclusive Cities**
Fostering economic growth through the benefits of density.	Protecting natural resources and ensuring investments as well as pro-active risk reduction and management	Ensuring access to affordable services for Rakyat

Smart Cities

- High adoption of ICT as Enabler
- To support Integration of City Systems

END SLIDE