

Presented by: **Dato' Jebasingam Issace John**
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CREATING THE ESSENCE OF CITIES: THE PLANNING & DEVELOPMENT OF MALAYSIA'S NEW FEDERAL ADMINISTRATIVE CAPITAL, PUTRAJAYA



PUTRAJAYA: THE NEW FEDERAL GOVERNMENT ADMINISTRATIVE CENTRE OF MALAYSIA

- The creation of a Putrajaya marks a new chapter in the development history of modern Malaysia
- A challenge to Malaysian professionals to embark on something new and innovative representing Malaysian values and culture
- The Malaysian Government decided to move from Kuala Lumpur to Putrajaya in June 1993



PUTRAJAYA

The largest integrated urban development project in the history of Malaysia, combining the development of government institutions, commercial, residential, public amenities and infrastructure.



PUTRAJAYA
CORPORATION

PUTRAJAYA



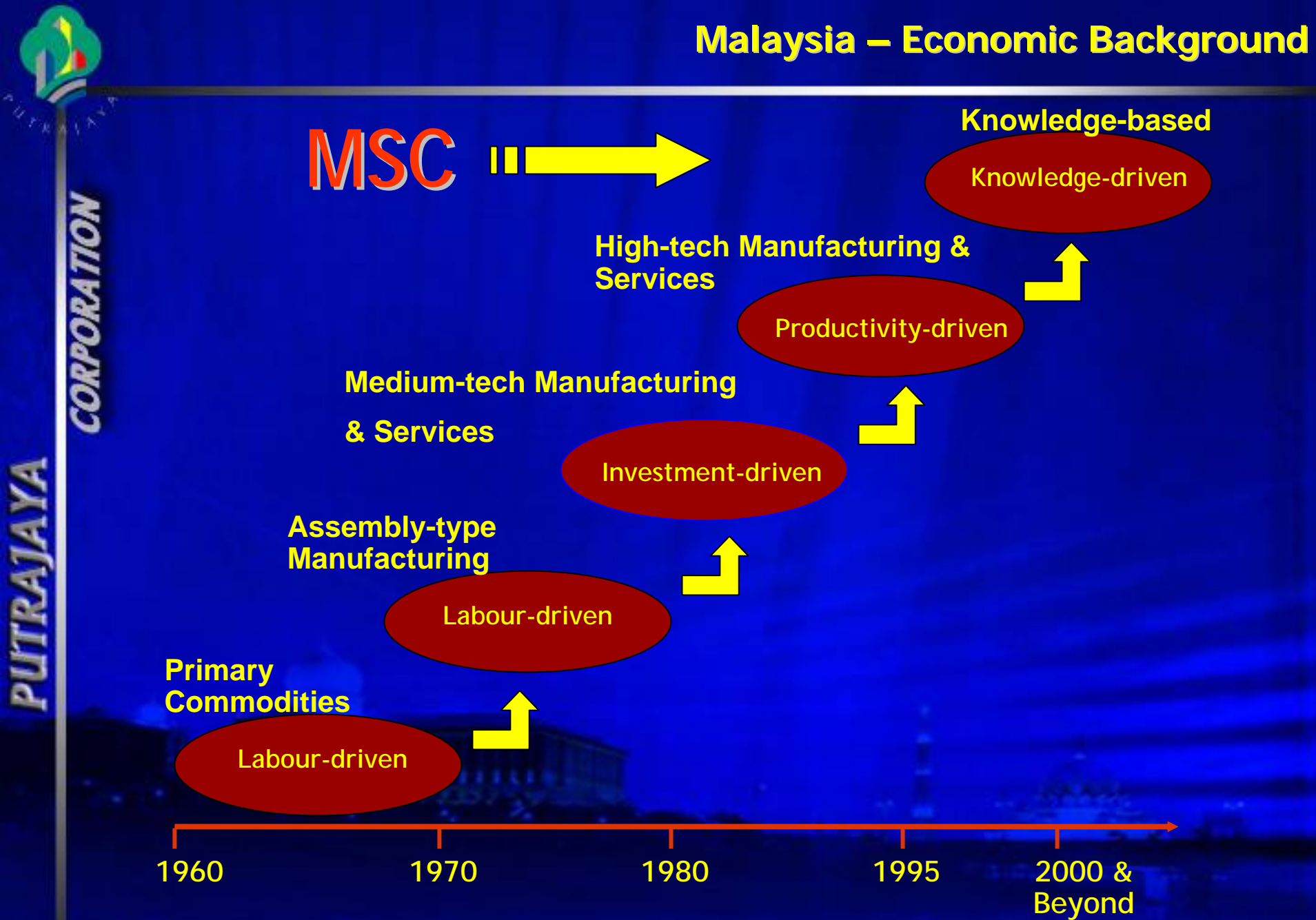
Quality urban living & environment

- To relieve the pressure on Kuala Lumpur's over-stretched infrastructure
- Scarcity of Government land in Kuala Lumpur to cater for increase in demand for Government office space
- To have a well-planned administrative centre with modern facilities and technology to enhance government efficiency and productivity

LOCATION OF PUTRAJAYA



Malaysia – Economic Background



Source : NEAC

Putrajaya in the context of MSC Malaysia

Phase 1

Successfully create the MSC Malaysia

Next Leap

Link the MSC Malaysia to other cybertcities in Malaysia and worldwide

Phase 3

Transform Malaysia into a knowledge society

Leapfrog into leadership in the Information Age

1996

2003

2010

2020



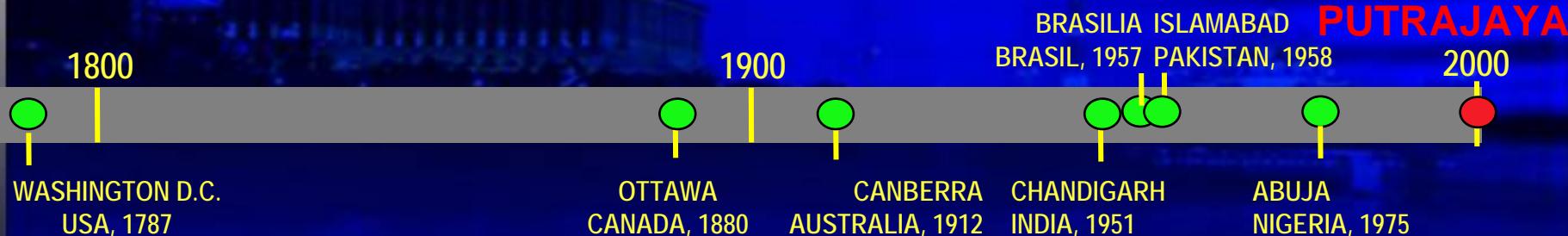
Flagships Application

- Smart schools
- Telehealth
- E-Business
- Smart card technology
- Electronic government
- Technopreneurship

Key success factors

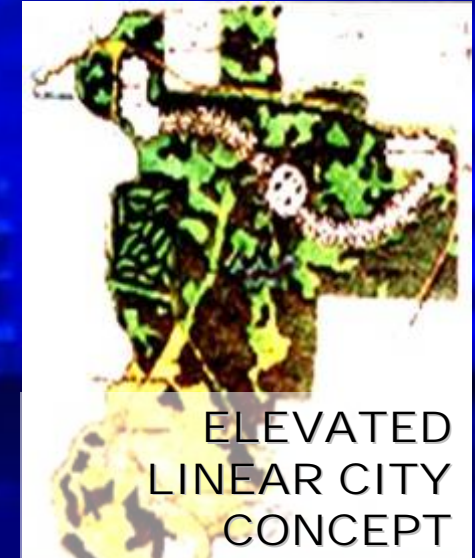
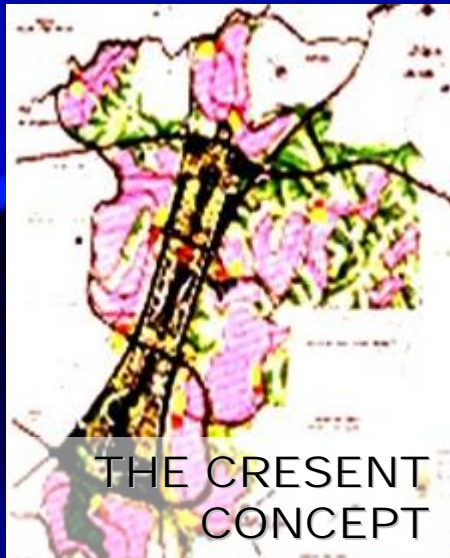
- Bill of Guarantees
- World class physical and communications infrastructure
- Cyberlaws
- Financial and non-financial incentives

Creation of a new Federal Government Administrative Centre



PLANNING CONCEPT

February 1994 – **Five Conceptual Schemes** were presented to the Government. Garden City Concept was chosen by the Cabinet



CHRONOLOGY OF EVENTS

- April 1994 - Conceptual Scheme based on the Garden City Concept was approved by the Cabinet.
- February 1995 - Putrajaya Master Plan approved by the Cabinet
- August 1995 – Official launch of the Putrajaya Project by the Prime Minister
- April 1996 – Review of Putrajaya Master Plan undertaken
 - Review is undertaken to conserve the environment:
 - Preservation of the natural topography
 - Minimization of earth cut and fill works
- October 1996 – First Construction Commenced

IMPLEMENTATION MECHANISM

MALAYSIA INCORPORATED



Putrajaya Corporation

- Develop, Manage and Administer
- Local Authority
- Local Planning Authority
- Land Administrator

Utility companies

- Telekom, TNB, Gas Malaysia, GDC

THE DEVELOPMENT OF PUTRAJAYA

KLCCPB

- Project Manager

Putrajaya Holdings Sdn Bhd

- Main Developer
- Construction of government offices, commercial areas, residential premises and the main infrastructure





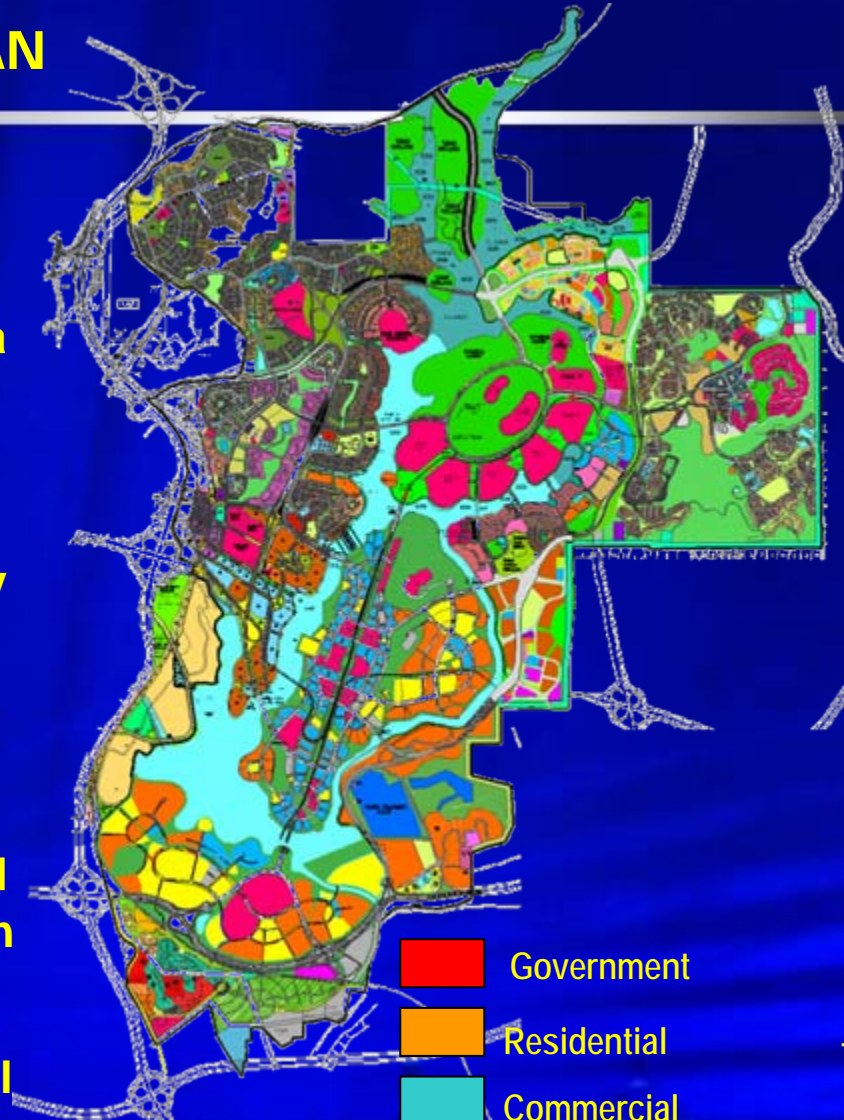
THE PUTRAJAYA MASTERPLAN







PUTRAJAYA CORPORATION

PUTRAJAYA

Main features of Putrajaya Masterplan:

- Large proportion of the city area is designated as green open space
- Waterbody (man-made lake and wetlands) created within the city
- 38km of waterfront area created by the lake
- City is divided into twenty precincts; core employment and commercial precincts located on Core Island
- 'Peripheral precincts (residential precincts) planned based on the neighbourhood planning concept
- A 4.2km long Boulevard forms the central spine of the city



	Government	- 5.8%
	Residential	- 23.8%
	Commercial	- 2.8%
	Public Amenities	- 9.2%
	Infrastructure & Utilities	- 21.2%
	Open Space	- 37.0%
	Civic & cultural	- 0.2%

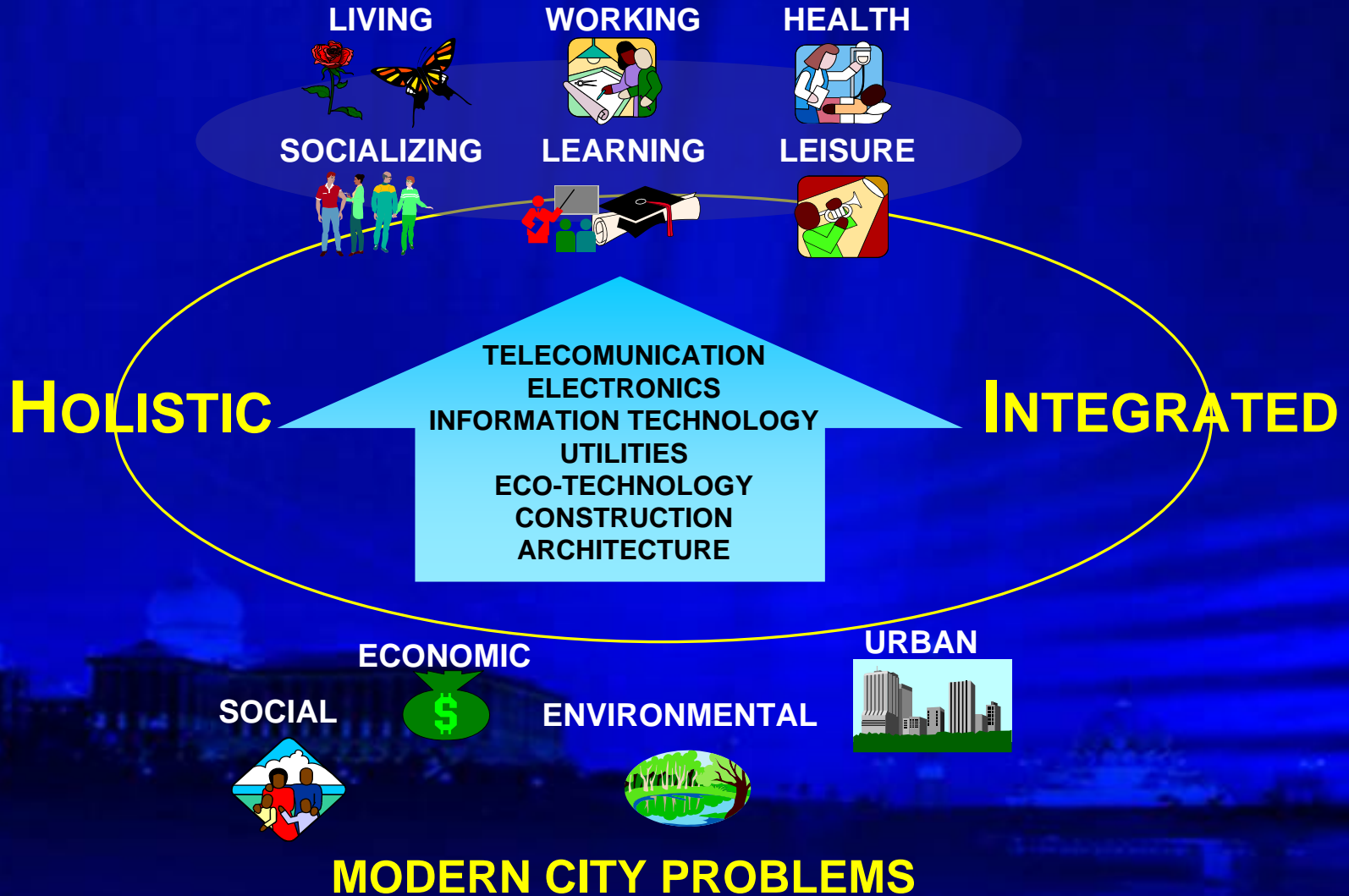
PUTRAJAYA BASIC FACTS AND FIGURES



Area	: 4,931 hectares
Planned Population	: 320,000
Daytime Population	: 500,000
Government	: 3.8 million sq.m.
Commercial	: 3.4 million sq.m.
Planned Housing Units	: 64,000 units
	(55% Government)
	(32% Public)
	(13% Affordable House)
Roads (major)	: 94.87km
Bridges	: 8 no.s
Monorail line	: 18.87km

CREATING THE ESSENCE OF CITIES

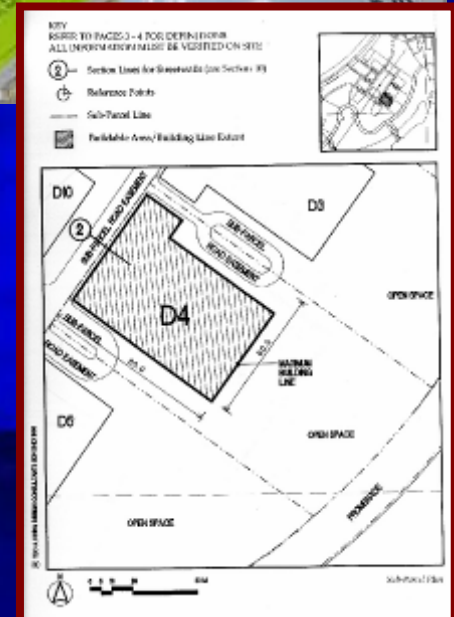
QUALITY OF LIFE



PLANNING GUIDELINES

The planning of Putrajaya is based on comprehensive policies and guidelines

- Master Plan
- Structure Plan
- Local Plans
- Landscape Master Plan
- Lake use and Navigation Master Plan
- Utilities Master Plan
- Transportation Master Plan
- Irrigation Master Plan
- Lighting Master Plan
- Urban Design Guidelines
- Fencing Design Guidelines
- Signage and Advertisement Design Guidelines



QUALITY URBAN LIVING THROUGH NEIGHBOURHOOD PLANNING

Achieved through:

- Influence on the scale, density, form & structure of development:
 - Design of streets
 - Urban spaces act as meeting places/centre for community activities
- Neighbourhood planning:
 - Neighbourhood centres as place for congregation
 - Each neighbourhood has a center and an edge. The center consists of public square, public facilities, meeting places, shops, etc.



5 minute walk, quarter mile

Neighbourhood
Centre Precinct 16:
Creating Communal
Space

Neighbourhood
Edge



QUALITY HOUSING DEVELOPMENT



Providing broad mix of housing types for all sections of society to encourage social integration.
Types ranging from affordable homes and apartments to condominiums and bungalows



QUALITY URBAN LIVING

Quality and modern public amenities & facilities are planned on a neighbourhood unit concept, easily accessible via walking



School Complex



Fire & Rescue Station



District Police Station

Surau



Lake Club

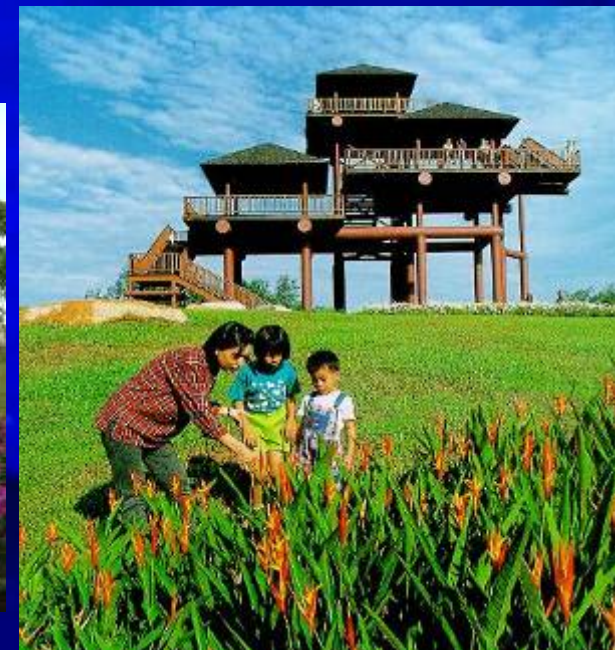
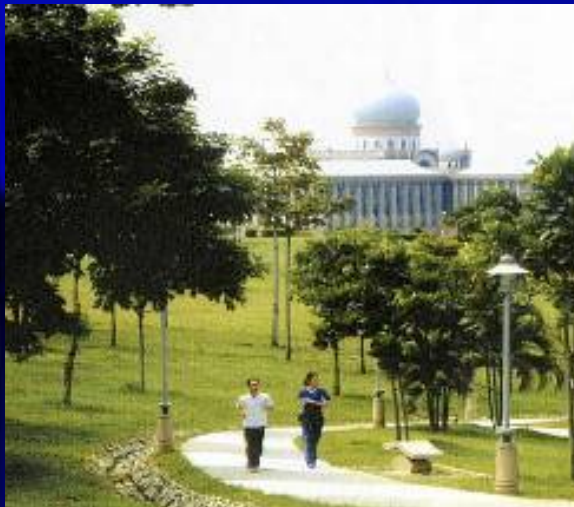
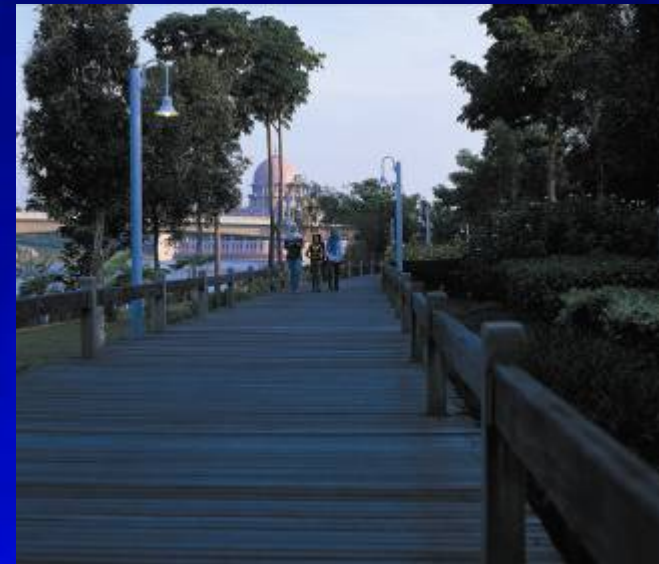


Neighbourhood Centre



District Hospital

Parks and open spaces



REVISITING THE TRADITIONAL ESSENCE :

Fostering the Spirit & Purpose of the City



Open character of traditional communities



Community interaction to be encouraged in Putrajaya

- The Latin root 'traditio' means to bring across; to offer guidance from the past into the present

Traditional kampung	Present-day city
Spirit of togetherness	Individualism
Sense of purpose	Lack of common purpose
Close daily interaction	Lack of interaction

- Planning by reference to past land use, spatial relationships and urban form
- To rediscover the interactive, spatially efficient qualities of a coherent public realm exhibited by earlier urban environments, small towns and villages

Fostering a sense of community and belonging through Design

Putrajaya Fencing Design Guideline – “permeability”

Encourage interaction & Community policing through:

- Solid fencing discouraged
- Permeable fencing preferred
(landscape treatments: hedges, shrubs, trees)



Permeability



**No front fence does not mean
no privacy and security**



Hedges & shrubs as fences

THE CARING CITY

Fostering a sense of community and belonging through:

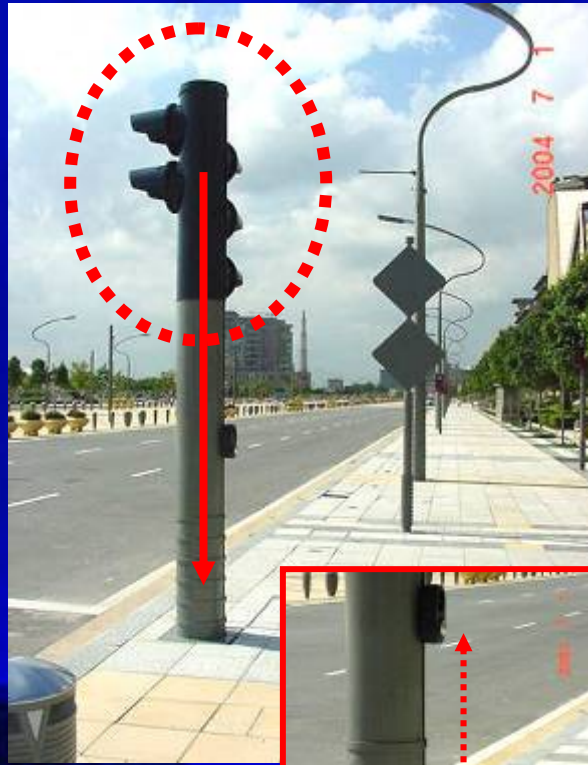
- **provision of adequate facilities**
- **organization of programs and activities**
- **planning & design**



PLANNING FOR THE PHYSICALLY CHALLENGED



PHYSICAL



HEARING



SIGHT

HELPING HAND



WITHIN REACH



PLANNING, URBAN DESIGN AND LANDSCAPE ARCHITECTURE

- Urban design and landscape architecture part of town planning process



PUTRAJAYA DETAILED URBAN DESIGN GUIDELINE (DUD)

- Prepared on Precinct basis
- Focuses on the following guiding principles :
 - Urban structure
 - Urban form
 - Urban character
- Outlines character and ambience of each development plot

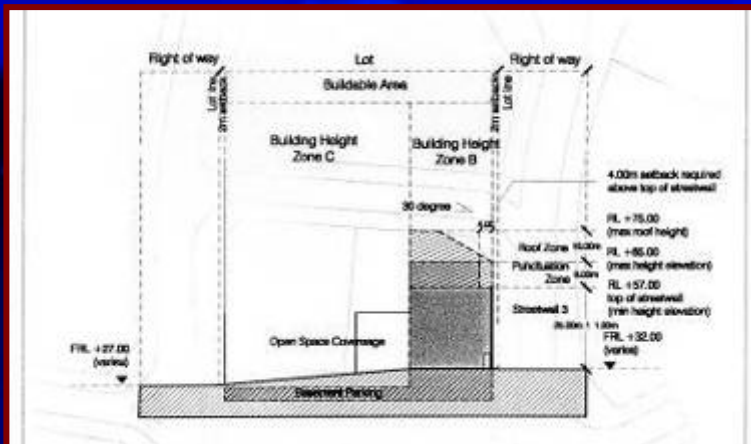




(DUD)

Design parameters that are controlled include:

- Land use detail
- Building height
- Skyline
- Urban rooms
- Visual axis and termination
- Street facade
- Building massing
- Building typology
- Pedestrian linkages
- Open space coverage
- Streetscape



CITY IMAGE AND CHARACTER

GENERAL INFORMATION:		HORIZONTAL CONTROL INFORMATION:	
Plot Area:	6,617.23 sqm	Max. Plinth Area:	3,986.38 sqm(60.27%)
Plot GFA (Max.):	16,406.41 sqm	Min. Open Space Coverage:	2,628.85 sqm(39.73%)
Plot Ratio:	2.48	Min. Landscape Reserve:	40.00% of open space
Reference Platform Level:	RL +32.08	Arcade Width:	4m (as indicated)
Parking Bays Required:	103 bays (car) 41 bays (m/cycle)		
Tower GFA (Max):	N/A		
BUILDING TYPOLOGY:		ADDITIONAL INFORMATION:	
U- shape Courtyard		Landuse Mix:	N/A
		No. of Residential Units:	N/A

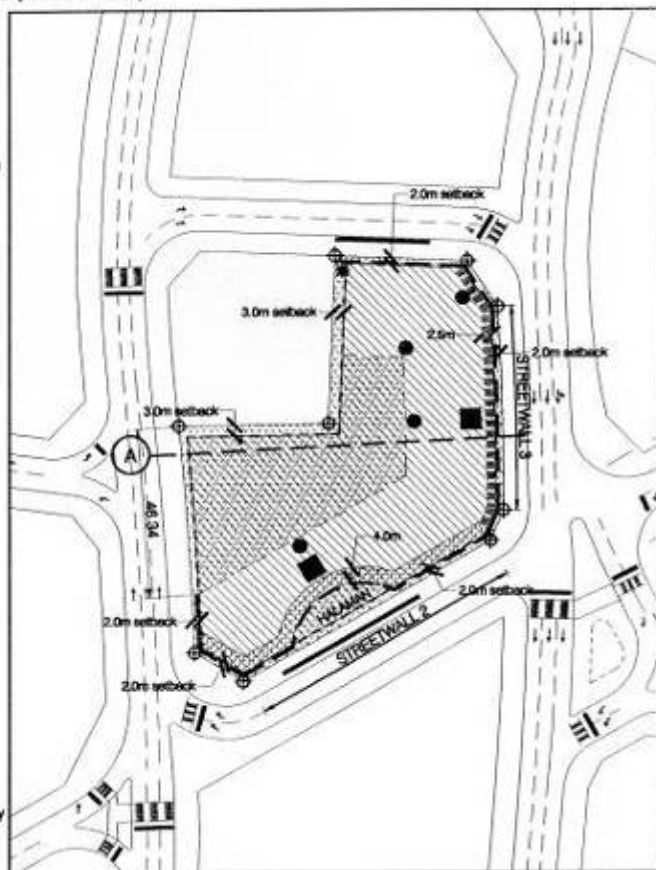


HORIZONTAL CONTROLS (Ground Level)

ALL INFORMATION MUST BE VERIFIED ON SITE

KEY

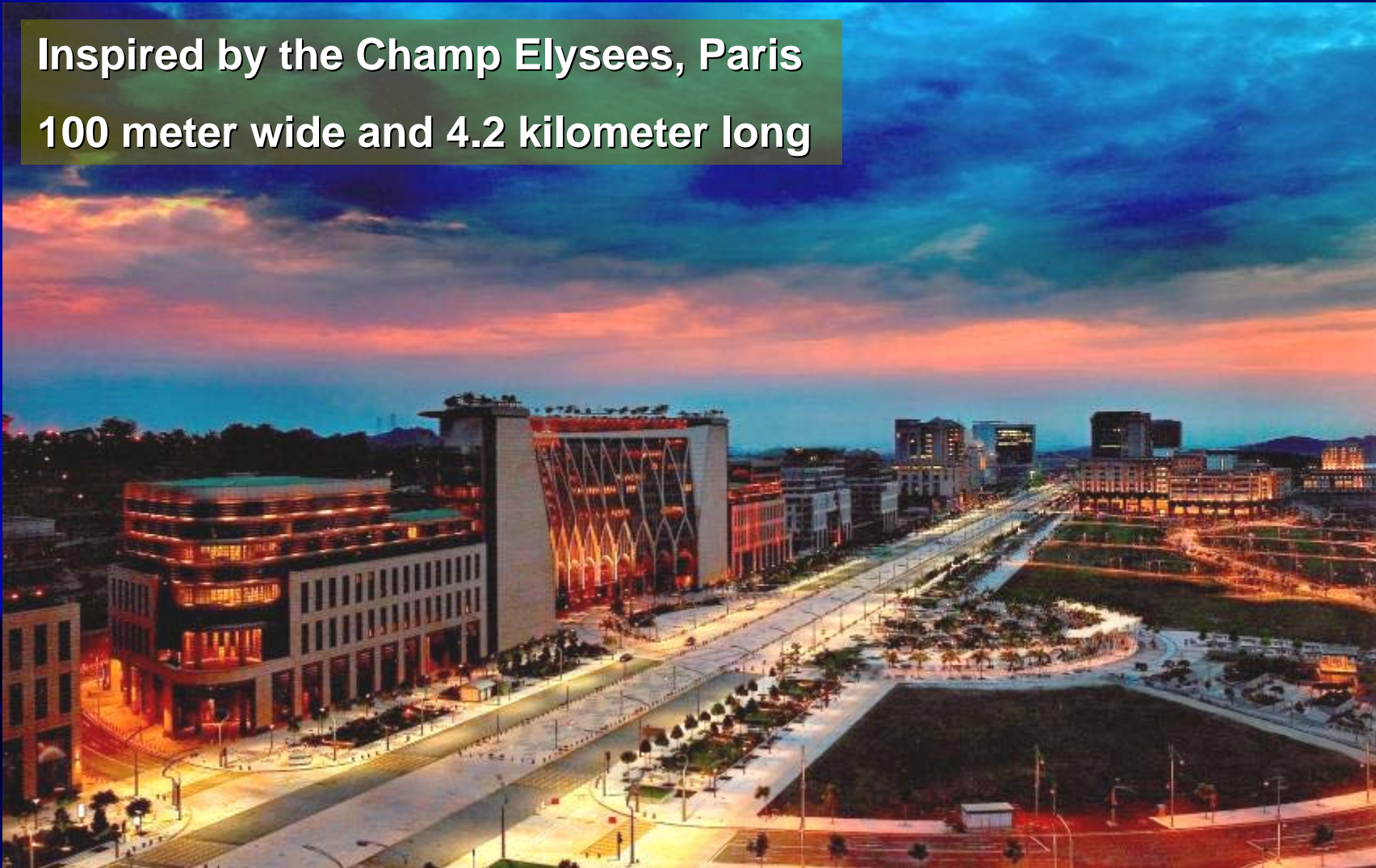
- Buildable Area
- Tower Zone
- Arcade
- Open Space Coverage
- Pedestrian Walkway
- Build-to-Line
- Setback Line
- Boundary Reference
- Kerb Cut Zone
- Preferred Lobby Location
- Ceremonial Entry
- Entrance Canopy
- Pedestrian Access
- Service Access
- Pedestrian Crossing
- Traffic Flow
- Bus Stop
- Section
- Streetwall (Boulevard)
- Streetwall (Sec. Axis)
- Streetwall (Drive)



NOTE: This Control Sheet is to be used in conjunction with the Glossary provided in Volume 1: Preliminaries and the Regulating Plans in Section 3.0 of Volume 2: Precinct 2.

PUTRAJAYA BOULEVARD

Inspired by the Champ Elysees, Paris
100 meter wide and 4.2 kilometer long





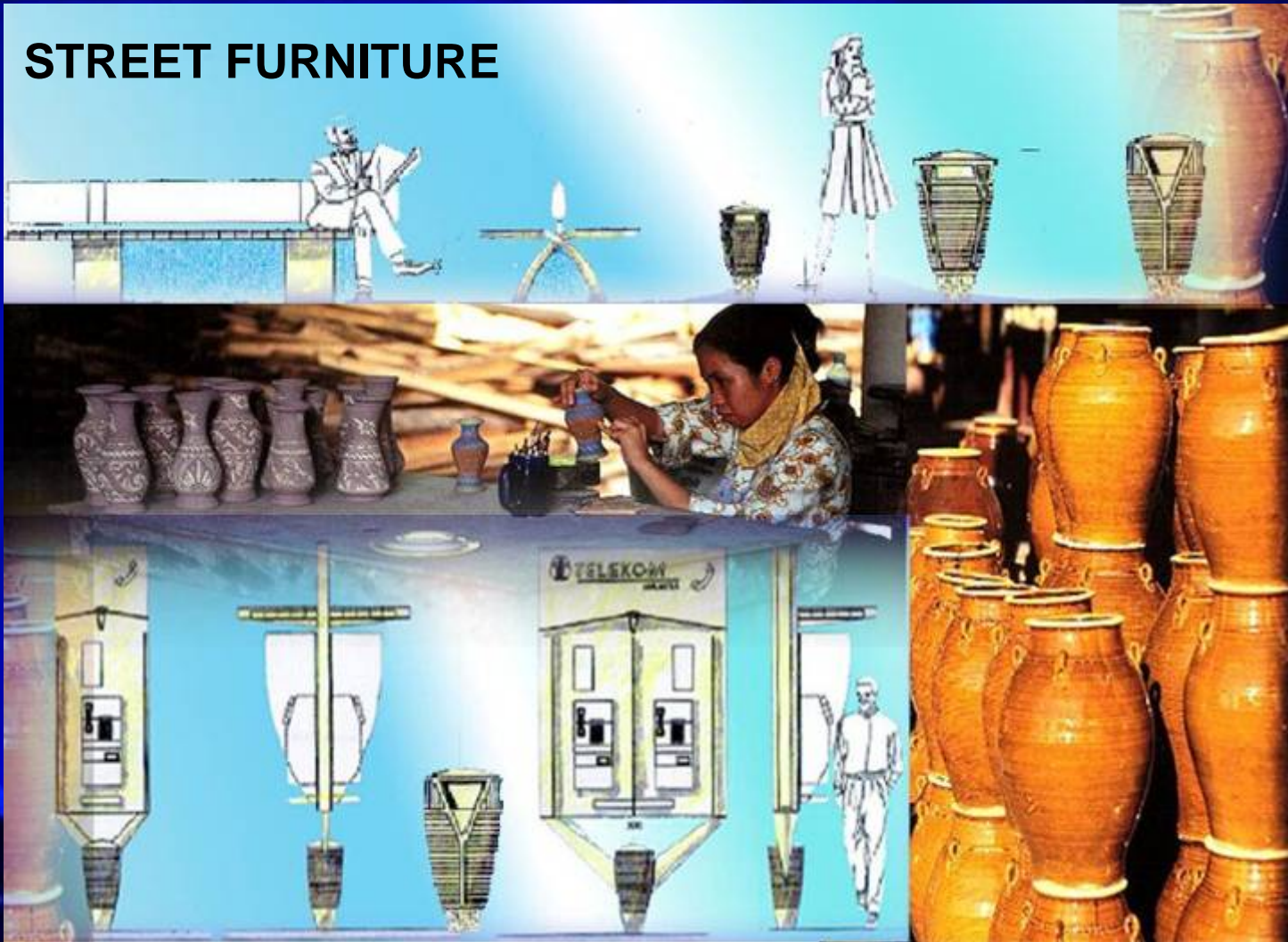
PUTRAJAYA BOULEVARD

Boulevard Hardscape Patterns



make reference to *mengkuang* mats and traditional *songket* weave pattern

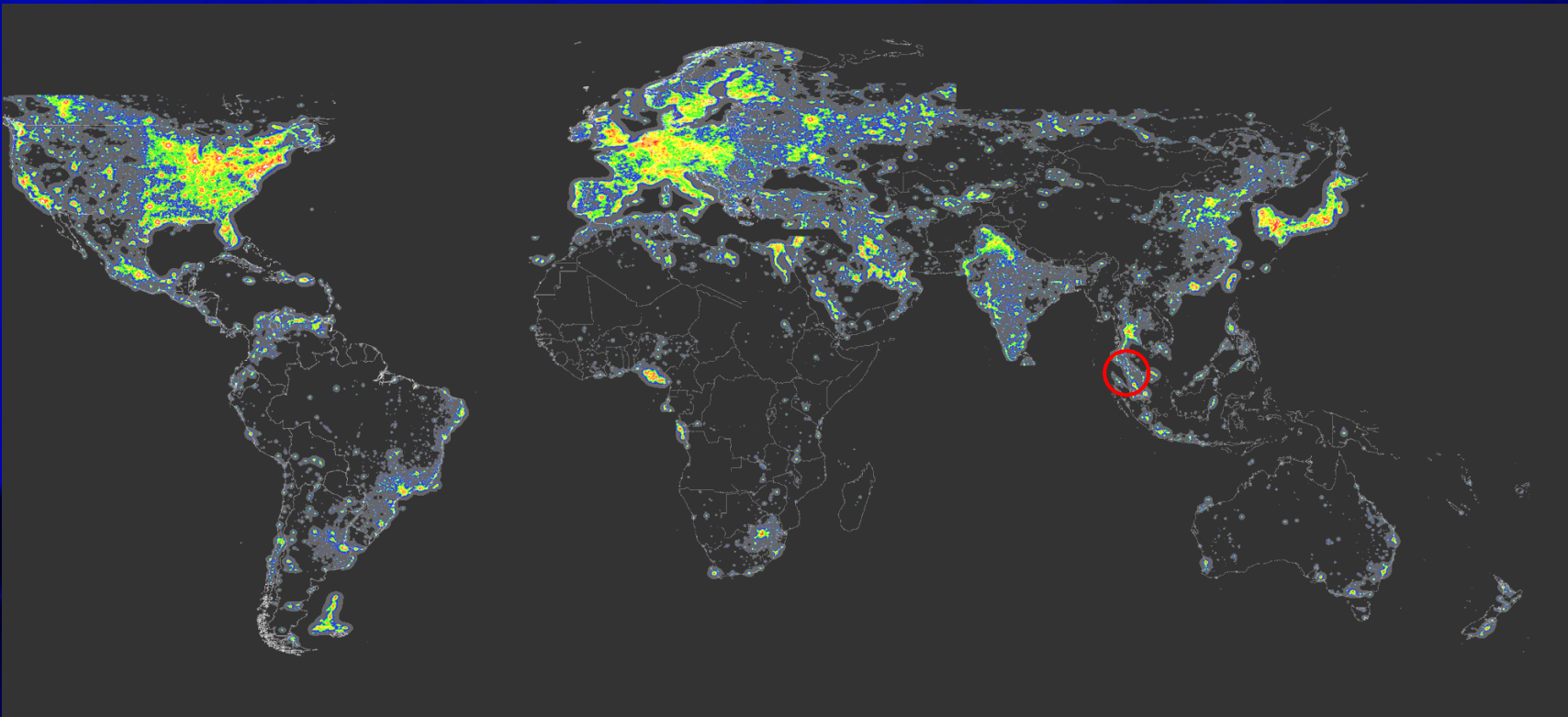
STREET FURNITURE



The furnitures along the Boulevard is predominantly developed from the traditional 'tempayan', the large ceramic water pot that has an elegant narrow base and a flaring full form that tapers to a narrow opening at the top.

PUTRAJAYA LIGHTING MASTERPLAN

Artificial night sky brightness due to Light Pollution



LOS ANGELES

1908

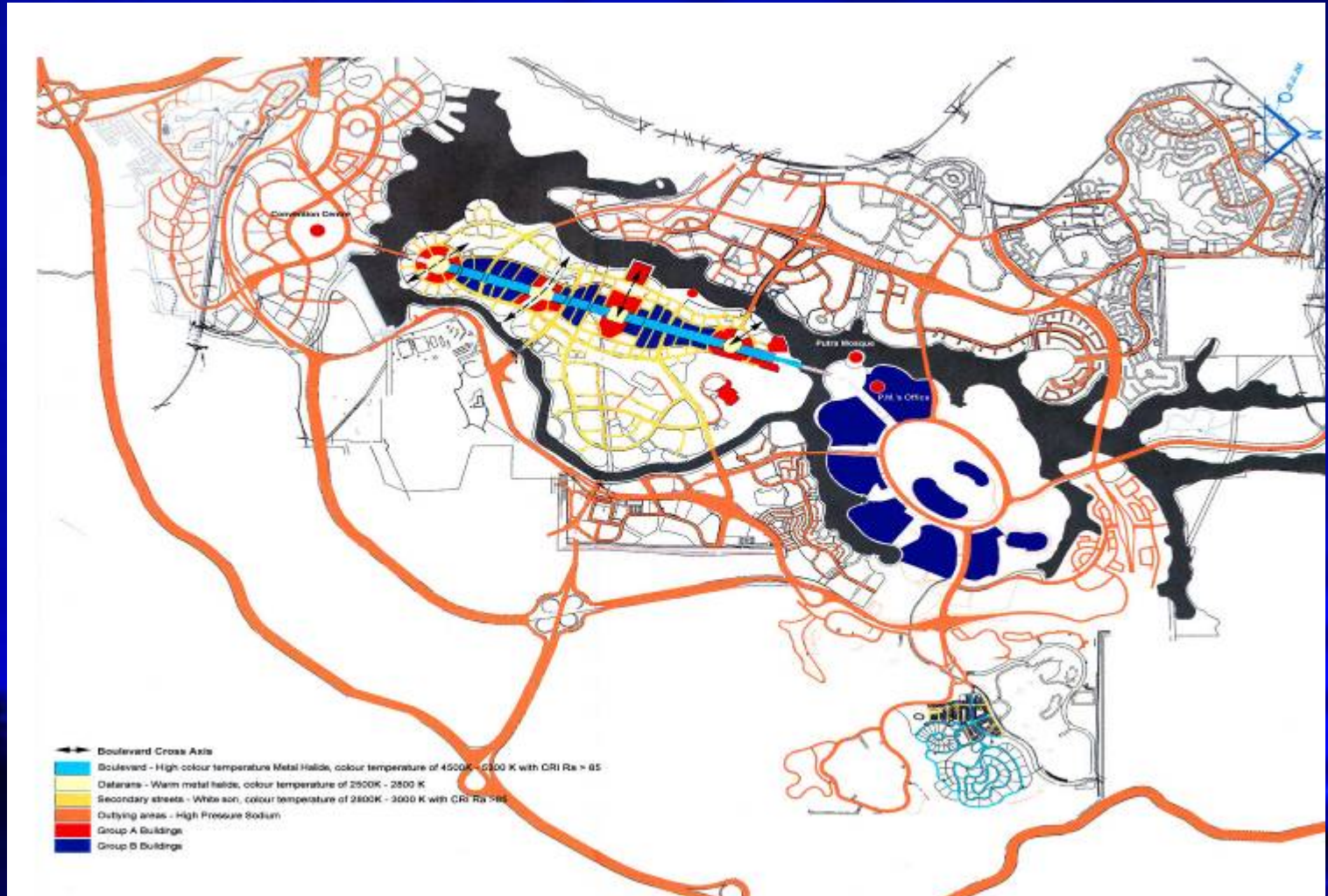
Los Angeles basin from Mt. Wilson Observatory, 1 hour exposure by Ferdinand Ellerman, 1908.
Kitt Peak National Observatory, Photo File No. 11781

1988

Skyglow

Excessive light escaping into the night sky

Lighting Plan



Lighting character through hierarchy of lighting quality

CITY IMAGE AND CHARACTER



PM's Office



Promenade



Putrajaya Seafood Restaurant

- **Fostering the city image and character through lighting**
- **Night time ambience is influenced through architectural lighting criteria**
- **Outdoor space which in the daytime is unpleasantly hot to be enjoyed fully, turns into a vibrant activity areas**

CITY IMAGE AND CHARACTER



PUTRAJAYA
CORPORATION

Ministry of Agriculture and



Jambatan Sri Wawasan



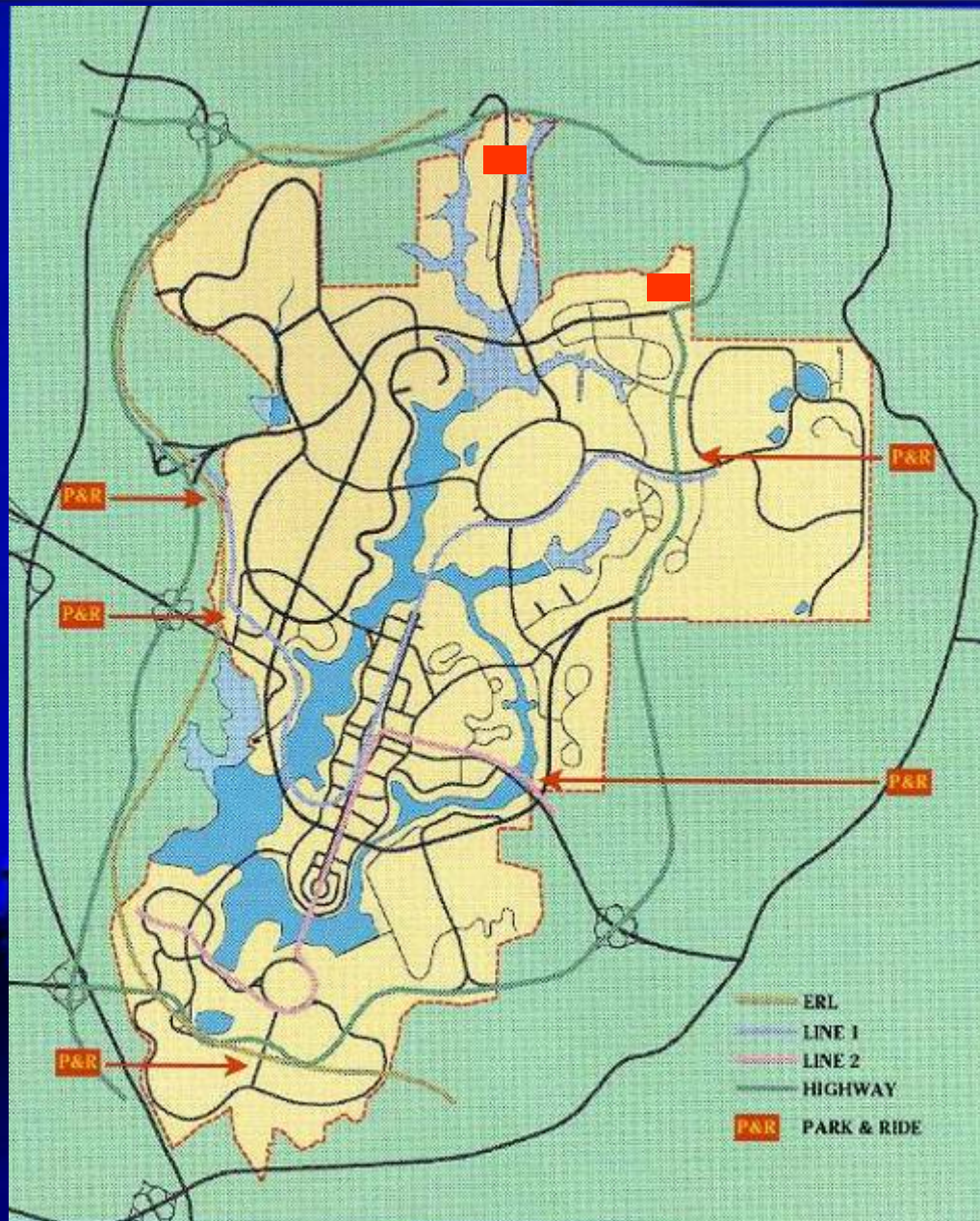
Putrajaya Convention Centre

Network of pedestrian walkways and cycleways



Public transportation system i.e. bus, taxi and rail supported by 'Park-and-ride' facilities – complement the pedestrian network in creating a sustainable transportation system





Park & Ride Locations

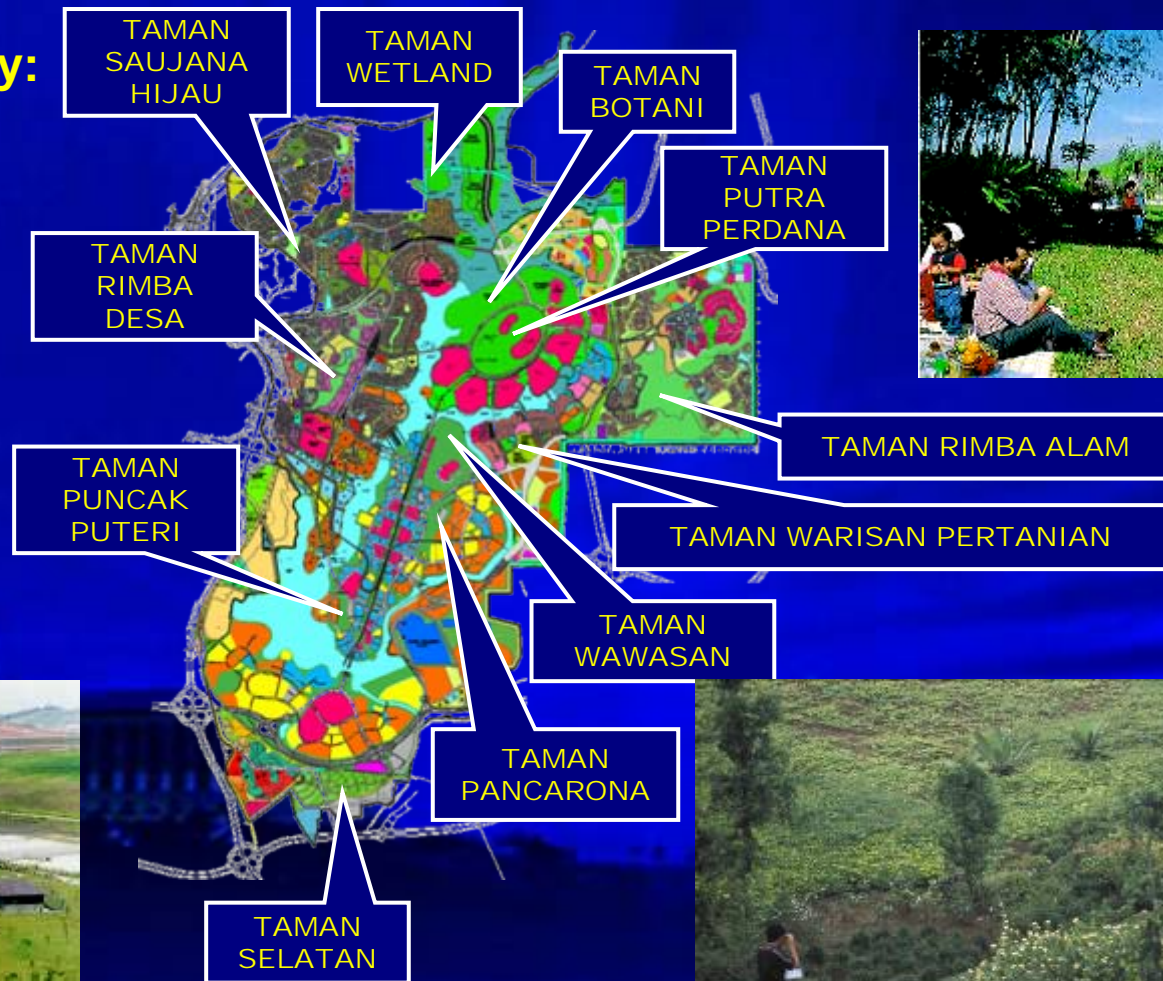
URBAN ECOLOGY : NATURE IN THE URBAN FABRIC

INTRODUCING NATURE INTO THE CITY

Creation of Parks and Open Spaces

Parks hierarchy:

- Metropolitan Park
- Urban Park
- City Park
- Pocket Park



URBAN ECOLOGY : NATURE IN THE URBAN FABRIC

TAMAN BOTANI PUTRAJAYA

A SHARED NATURAL HERITAGE

- CONTAINS 700 SPECIES FROM OVER 90 COUNTRIES
- 230 acres (93 ha) of land



- Explorer's Trail
- Palm Hill
- Floral Gardens
- Sun Gardens
- Lakeside



URBAN ECOLOGY : NATURE IN THE URBAN FABRIC

TAMAN WARISAN PERTANIAN

Showcases Malaysia's commercial agricultural crops

Interesting features:

- Agricultural crops – rubber, coffee, lowland tea, oil palm, cocoa, black pepper
- Seasonal fruits and non-seasonal fruits

Attractions:

- Visitor's Complex (fruit stalls, exhibition gallery, café)
- weekly pasar tani (market)
- viewing deck
- rubber processing demonstration
- cooking demonstrations





URBAN ECOLOGY : NATURE IN THE URBAN FABRIC



TAMAN RIMBA ALAM

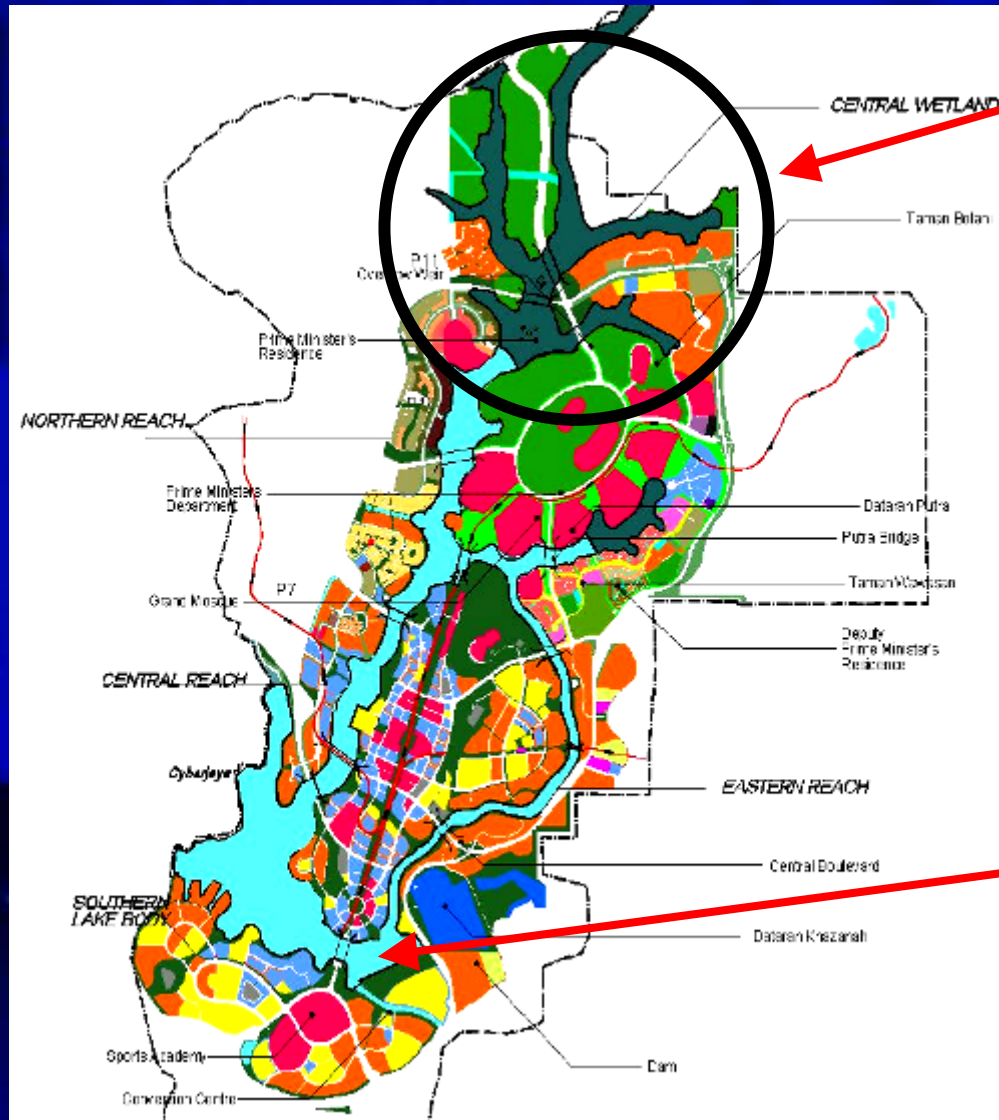
Recreating a forest park in an urban setting

Main attraction: a collection of lowland dipterocarp forest species (685 nos), including bamboo, rattan and palms .



URBAN ECOLOGY : NATURE IN THE URBAN FABRIC

PUTRAJAYA LAKE AND WETLANDS



Largest man-made wetlands in the tropics

The Wetland is 200 hectares in size

Wetland functions as a natural filtration system for the lake

Planted with more than 70 species of wetland plants totaling 12 million altogether

The Lake covers an area of 400 hectares, creating 38 kilometers of shoreline

URBAN ECOLOGY : NATURE IN THE URBAN FABRIC

PUTRAJAYA LAKE



Active activities

- fishing
- cruise & dining boat
- canoeing
- sailing



Passive activities

- Fishing
- Bird watching
- Walking
- Jogging



URBAN ECOLOGY : NATURE IN THE URBAN FABRIC

PUTRAJAYA LAKE IS A CENTRE FOR WATER SPORTS, RECREATION & TOURISM

Active Sports

- Formula One Powerboat
- High performance water sports competitions.



URBAN ECOLOGY : NATURE IN THE URBAN FABRIC

CRUISE BOAT



DINING BOAT



PUTRAJAYA WETLANDS

- Man made wetlands to act as a natural filter for lake water quality
- Living ecosystem
- Diverse habitats and plants
- Opportunities for educational and research activities
- living close to nature



Flora and Fauna of Putrajaya Wetlands



Waterlily (*Nymphaea nouchali*)



**Kinta Weed Vanda
*hookeriana***



ENVIRONMENTAL ARCHITECTURE

CONSTRUCTION TECHNOLOGIES

Most common building construction system in Putrajaya is the conventional construction system. It deals with existing systems which are standardized, tested, commonly practiced and understood by the general building industry.

However, in Putrajaya, new building construction methods and technologies that can improve, maintain high performance and environmental sustainability are always encouraged.



Conventional Construction System

CONSTRUCTION TECHNOLOGIES

INDUSTRIALISED BUILDING SYSTEM (IBS)

Industrialised Building System (IBS) is widely used in Putrajaya as it ensures;

quality construction, save cost, create safer and cleaner working environment as well as reduce the dependency on foreign workers

“The Industrialised Building System (IBS) is a construction process that utilizes techniques, products, components or building systems which include prefabricated components and on-site installation”

(Source : IBS Road Map 2003-2010, CIDB)



GAS DISTRICT COOLING (GDC)

- In most cities, each building has its own Cooling Tower. Proper individual tower maintenance is critical for ensuring optimal performance in meeting the cooling demands of the facility or operation.
- The large cooling tower placed on the roof top would also influence and constrain the design of the building façade.



In Putrajaya, the above issues have been addressed using share common source plants, i.e Gas District Cooling (GDC) centres.

Currently, 2 no.s of GDC plants are operating in Putrajaya :

- a) Government Parcels Precinct 1
- b) Core Island Precinct 2

- To enhance the GDC operation, *Co-generation* system is introduced. The technology involves the production of electricity and heat energy from a fuel source, ie. natural gas. The heat energy is captured and recycled for producing chilled water to cool the buildings.

ENVIRONMENTAL ARCHITECTURE

BUILDINGS UTILIZING GDC SYSTEM



Ministry of Finance



Government Complex



Ministry of Natural Resources & Environment



National Registration Department



Ministry of Agriculture & Agro-Based Industry



LOW ENERGY OFFICE BUILDINGS



Parcel E



Ministry of Energy, Water and Communications

- Integration of overall effective solution and minimum energy consumption
- Creation of green environment around the building
- Protection of windows from direct sunshine

LOW ENERGY OFFICE BUILDINGS



Parcel D

- Energy efficient space planning
- Optimization of building orientation
- Carefully designed building façade and roof
- Maximize use of diffuse daylight and use of high efficiency lighting
- Energy efficient office equipment – less electricity use and cooling demand



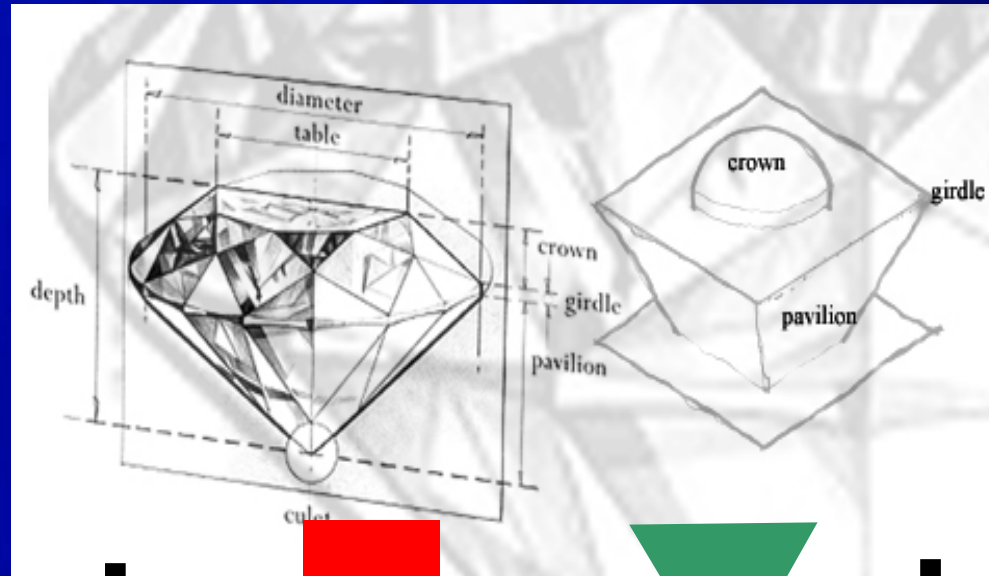
Putrajaya Corporation Complex



Alamanda Shopping Centre

ENVIRONMENTAL ARCHITECTURE

PROPOSED ENERGY COMMISSION HEADQUARTERS



The ideal layout form
Good energy efficient form
Low heat conduction from outside
Low infiltration
Low material use
The highest area with the lowest circumference

The conventional layout form
Good construction form
The practical and compromised form
Good energy and construction form

The ideal for elevation ('Inverted pyramid')
Good energy efficient form
Low heat conduction from outside by self-shading
Ground landscaping
High ventilation
Daylight use
Visual comfort

The practical and compromised elevation
Good energy and construction elevation form
The conventional elevation
Good construction form

The Building Layout Idea Development

The Building Elevation Idea Development

ENVIRONMENTAL ARCHITECTURE

SUSTAINABILITY : Façade Design

Sun Angle 21st June **Sun Angle 21st December**

North South

DIFFUSE LIGHT

ST Building

Façade tilt provides self-shading

65° tilted facade

Vertical facade

Sun incident on both facades

Sun incident on vertical facade only

Calculation Example (45° solar height):

- self-shading (47% solar reduction)
- lower transmittance (22% solar reduction)

Total solar reduction = 59%

DAYLIGHT

REFLECTED LIGHT FROM GROUND

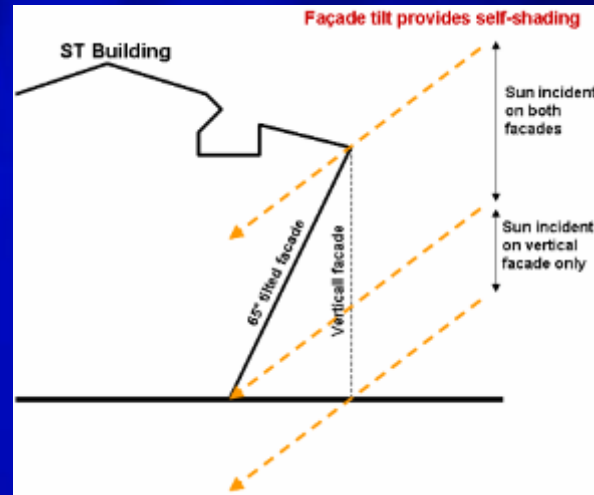
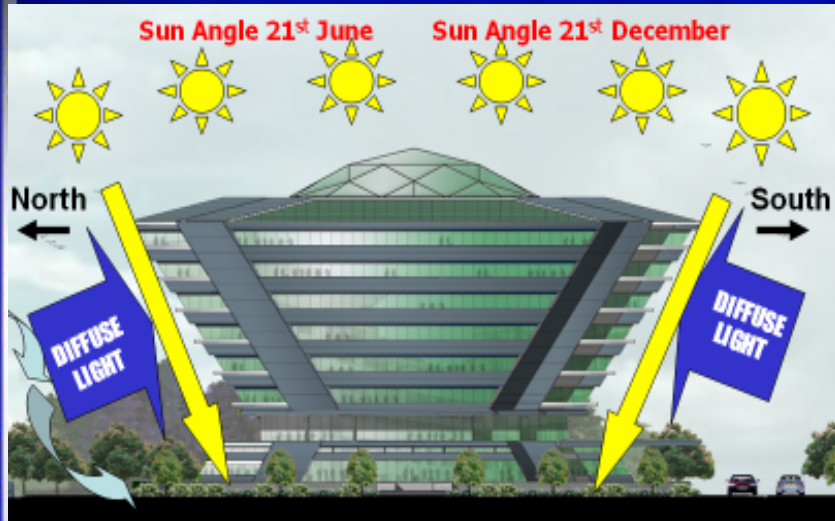
LAMINATED GLASS

MATT WHITE MARBLE

LIGHT FENESTRATION FOR INTERIOR DESIGN

PUTRAJAYA

SUSTAINABILITY : Façade Design



Calculation Example (45° solar height):

- self-shading (47% solar reduction)

**- lower transmittance
(22% solar reduction)**

**Total solar reduction
= 59%**

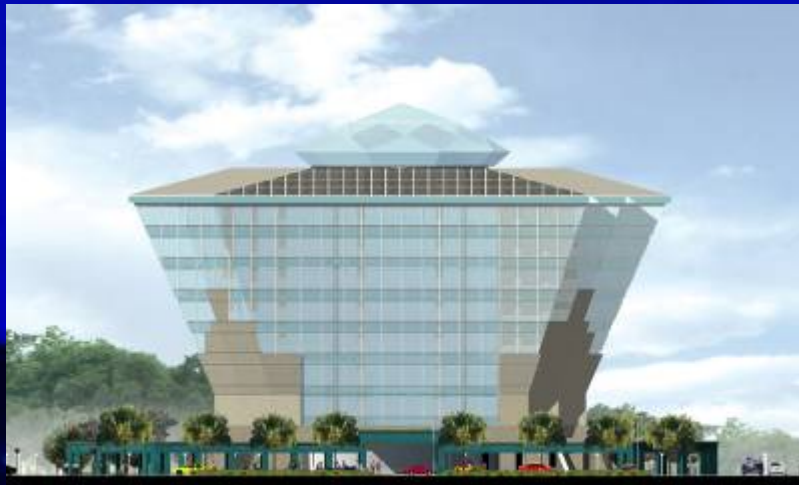


LIGHT FENESTRATION FOR INTERIOR DESIGN



SUSTAINABLE BUILDING MATERIALS AND IMPROVED AIR QUALITY

- Prudent use of basic building materials : Steel, concrete, wood
- Reduction of construction waste and recycling of waste
- Choice of interior materials for optimal Indoor Air Quality
- Design of composite structures for easy demolition and recycling
- Reduce local heating using greenery around and on the building



PROPOSED ENERGY COMMISSION HEADQUARTERS

SUSTAINABLE CITY MANAGEMENT

ENVIRONMENTAL AWARENESS



Recycling Programme



Environmental seminar



Environmental education

Enviro Hunt



Environmental exhibition



WASTE MANAGEMENT: RECYCLING PROGRAMME

- Cooperation between Putrajaya Corporation, Alam Flora & recycler
- 15 bins for recyclable materials have been placed at various locations in Putrajaya;
- 3 main programs implemented:
 - Community
 - Office (Wastewise)
 - School program(KitS)



SUSTAINABLE CITY MANAGEMENT



3R AWARENESS PROGRAMME REDUCE, REUSE, RECYCLE

• Community program:

- ☐ 3R awareness campaign
- ☐ Mobile Recycling Centre

• Office/Wastewise Program:

- ☐ 3R awareness campaign
- ☐ Scheduled collection carried out by a recycler
- ☐ Mobile Recycling Centre

• School Program:

- ☐ Launching, briefing & exhibition

COMMON UTILITY TRENCH CENTRAL BUSINESS DISTRICT

- Common Utility Trench to incorporate all utilities
- Reduce disruption to services and facilitate maintenance and upgrading works



CUT Local Action Centre



COMMON UTILITY TRENCH CENTRAL BUSINESS DISTRICT

- In compliance with this requirement, a tunnel has been built to house electrical power cable, water pipe, chilled water pipes, natural gas pipes, multimedia cables, telecommunication cables, fibre-optic cables and irrigation pipes.
- Securing the utilities inside the tunnel allows a year-round access for the purposes of inspection and maintenance work.



**T.N.B CABLES LAID AT THE STANDARD
C.U.T SECTION**



**INSTALLATION OF THE 800mm DIAMETER
WATER PIPES**

PUTRAJAYA AS AN INTELLIGENT CITY

Putrajaya is being equipped with high bandwidth fibre-optic backbone infrastructure



CITY CONTROL ROOM Integrated City Management System

INTELLIGENT TRANSPORTATION SYSTEM (ITS)

- Traffic Management System
- Travel Demand Management
- Commercial Vehicle Operation
- Emergency Management
- Advance Vehicle Control

FACILITIES MANAGEMENT SYSTEMS (FMS)

- Transportation Infrastructure Monitoring
- Utilities Infrastructure Monitoring
- Building and Ground Monitoring
- Maintenance System Monitoring

PUBLIC INFORMATION AND EMERGENCY SYSTEMS (PIES)

- Emergency Management System
- Public Information System
- Close-Circuit TV Surveillance System
- Hotline Services



TOURISM

Putrajaya is a popular tourist destination due to its natural environment, greenery, ample recreational space and timeless architecture.

Domestic Visitors: 400,000

International Visitors: 300,000



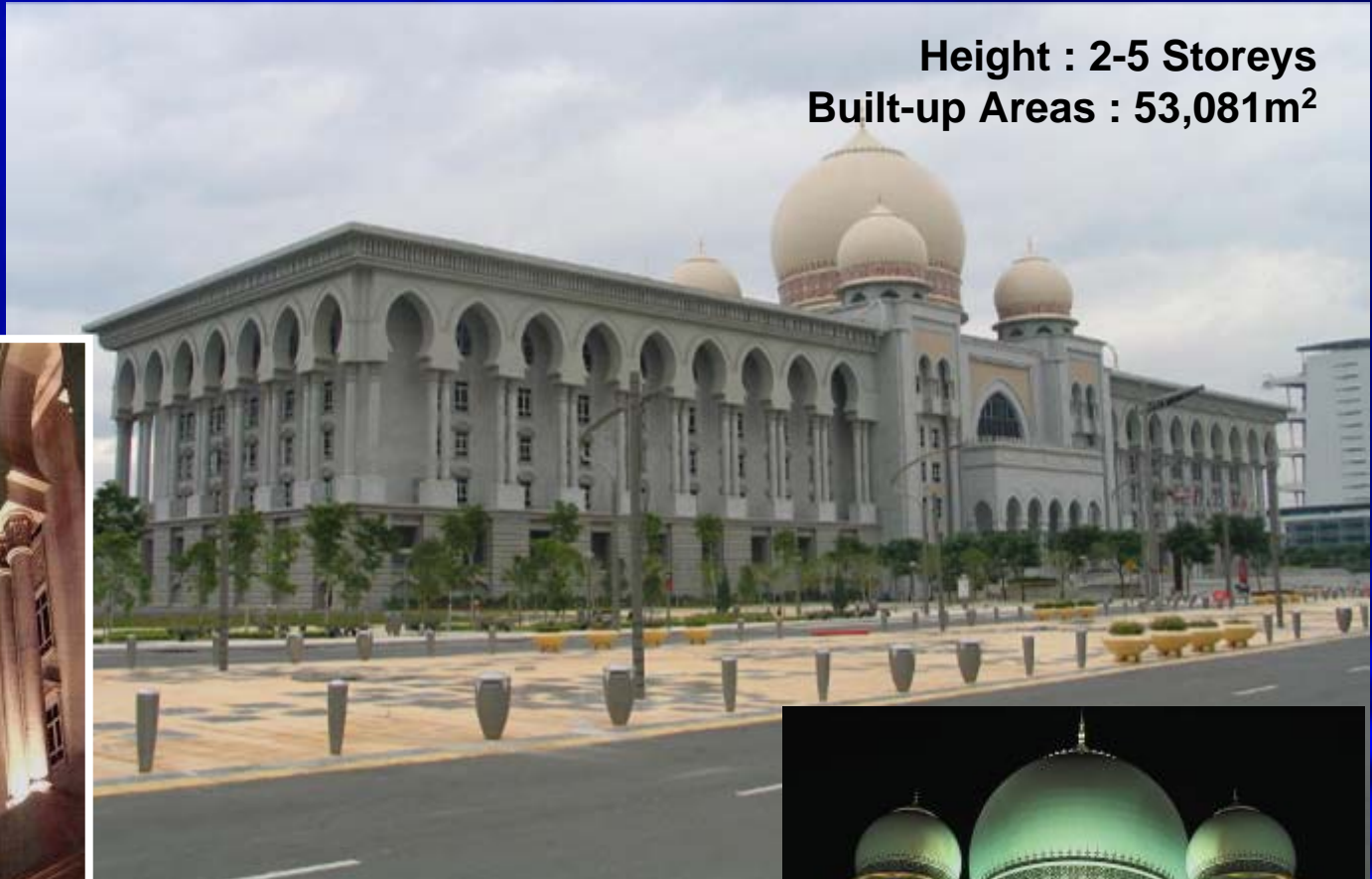
PRIME MINISTER'S OFFICE - PERDANA PUTRA

Height : 6-8 Storey
Built-up Areas : 67,102m²

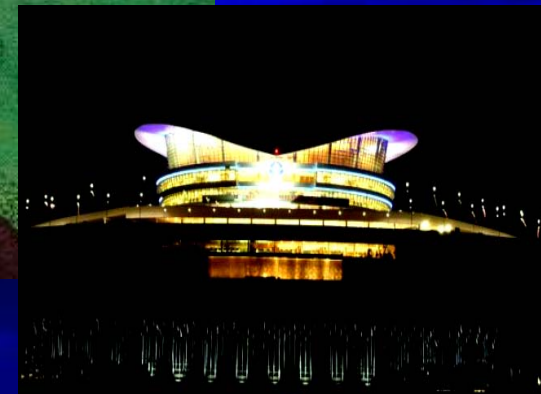


PALACE OF JUSTICE

Height : 2-5 Storeys
Built-up Areas : 53,081m²



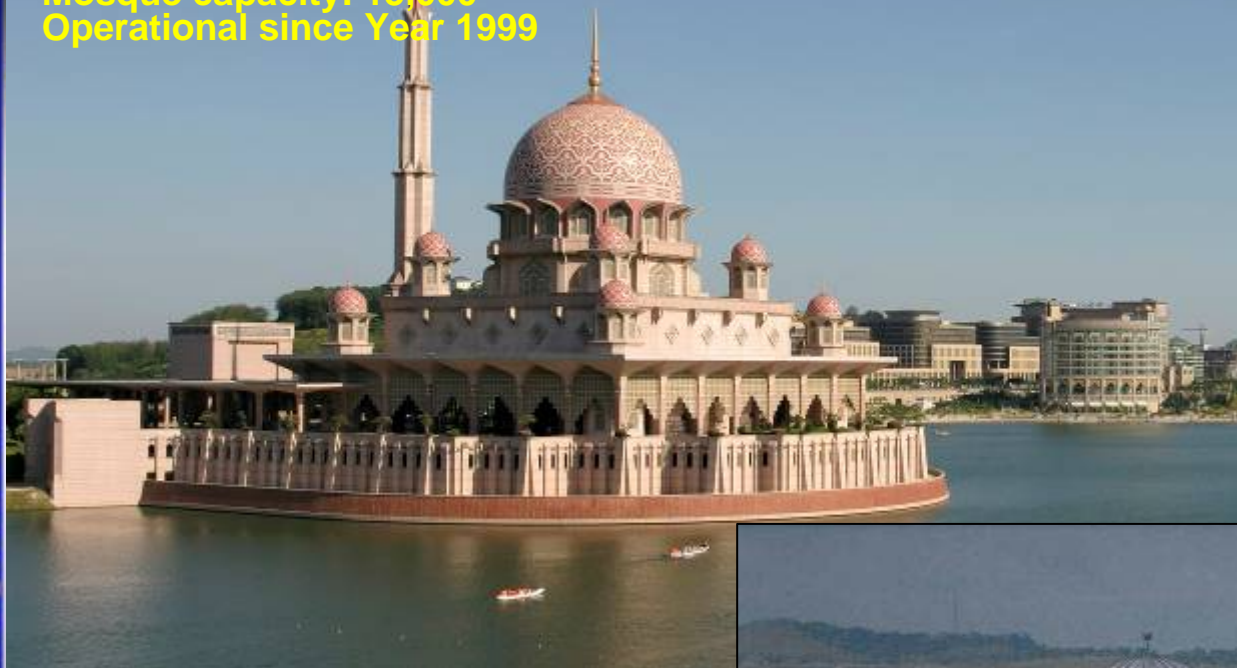
PUTRAJAYA INTERNATIONAL CONVENTION CENTRE





IMAGES OF PUTRAJAYA

Putra Mosque, Dataran Putra
Mosque capacity: 15,000
Operational since Year 1999



Mosque capacity: 20,000
Main attractions:

- Qiblat walk (raised garden)
- Waterfront promenade
- Sahn (courtyard)
- Iwan (main entrance arch)

Completion: Year 2007



City Mosque Precinct 3

PUTRAJAYA CORPORATION COMPLEX



- Auditorium Hall : 1000 seating capacity
- Conference facilities : Junior Hall – 450 banquet seating or 1058 theatre seating capacity

NATIONAL MILLENNIUM MONUMENT

Symbolises the
historical and
economic progress of
Malaysia



BRIDGES IN PUTRAJAYA



SERI WAWASAN

Single span supported by stay cables
Span : 240 m

BRIDGES IN PUTRAJAYA

PUTRA BRIDGE

Inspired by the Khaju Bridge, Isfahan
Span : 435 m

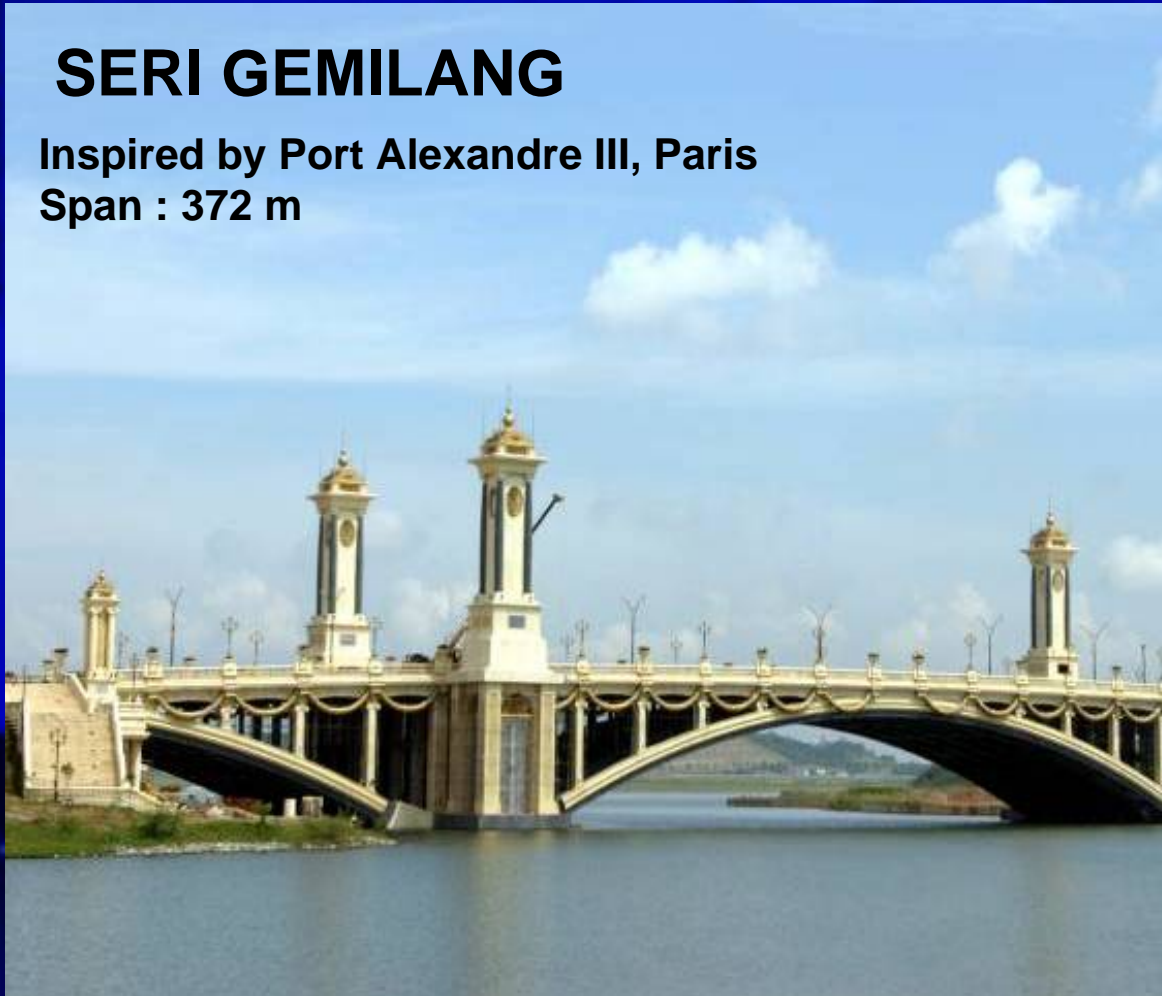


BRIDGES IN PUTRAJAYA

SERI GEMILANG

Inspired by Port Alexandre III, Paris

Span : 372 m



BRIDGES IN PUTRAJAYA

SERI SAUJANA

Single span cable stayed arch bridge
Span : 300 m



COMMERCIAL DEVELOPMENT

Alamanda Shopping Centre

Retail, Food & Beverage, Cinema, Bowling Alley, Hypermarket, Departmental Store, Leisure

"Great place to take a break and enjoy the week-end afternoon or just hang around....."



COMMERCIAL DEVELOPMENT

Putrajaya Shangri-La Hotel

- Operated since 4th February 2003
- 5-star hotel with 118 (nos) rooms
- Managed by Shangri-La International Hotels & Resorts Limited





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PUTRAJAYA NATIONAL DAY PARADE



CONCLUDING REMARKS

- Putrajaya is planned with urban quality of life in mind
- Sustainable Development entails going back to the basics of good town planning
- A city with a clear identity and character rooted in local culture and tradition
- Timeless architecture and urban design
- Putrajaya: A project for posterity
- A city for the new millennium



THANK YOU



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www.putrajaya.net.my