

LOCAL PLAN MANUAL  
**PUTRAJAYA**  
**PRECINCTS 7, 8, 9 AND 10**



**PERBADANAN PUTRAJAYA**

APRIL, 2002

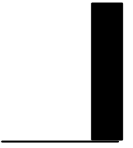




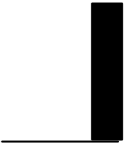
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# 1.0 INTRODUCTION

## 1.1 PURPOSE OF MANUAL

This Manual of Physical Planning Guidelines constitutes part of the Putrajaya Local Plan Precinct 7, 8, 9 and 10, 2001. It shall only be used for areas located within Precincts 7, 8, 9 and 10, Putrajaya.

The purpose of this Manual is to guide any new development application by landowners, developers or their consultants, submitted to Perbadanan Putrajaya as part of the development application (Permohonan Kebenaran Merancang) for planning permission.

This manual is by no means formulated to limit the creative thinking of a designer. It is by nature advisory rather than mandatory and shall be used as a tool to guide the overall design and development process in order to ensure the realisation of the overall intention and aspiration of Putrajaya.

This manual is to be read together with the Local Plan, which constitute the Proposal Map and Written Statement.

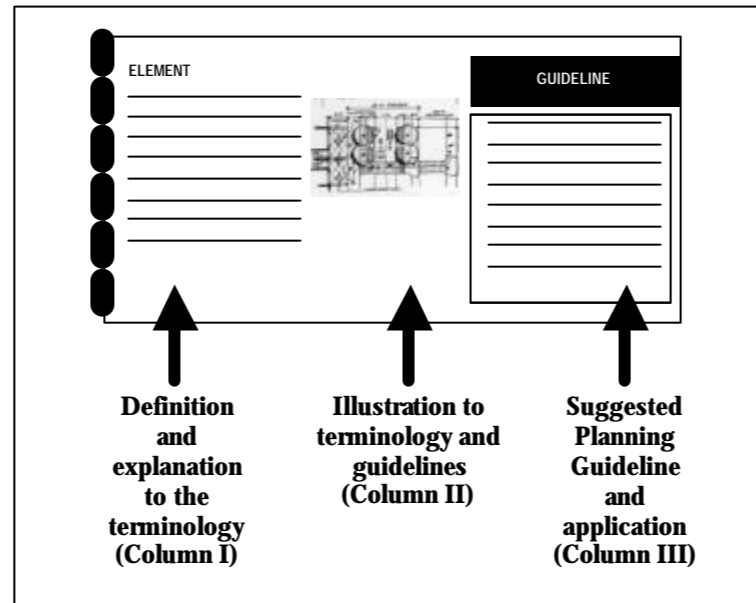


Figure 1.1  
Illustration on Format of Manual

## 1.2 STRUCTURE OF MANUAL

This manual is structured into eleven main topics as the following in accordance to major development components as specified in the Proposal Map of the Local Plan: -

- i. Introduction
- ii. Residential
- iii. Sub-commercial Centre
- iv. Local and Neighbourhood Commercial Centre
- v. Petrol Station
- vi. Western Transport Terminal
- vii. Public Amenities
- viii. Open space
- ix. Infrastructure and Utilities
- x. Promenade, Lake Edge and Water Bodies
- xi. Circulation

## 1.3 APPLICATION OF MANUAL

The Manual is organised into three elements i.e. definition and simple explanation of terminologies used, guidelines and diagrammatic or schematic illustration of the guidelines (Figure 1.1).

Column I illustrates the definition and explanation of terminologies used in the guideline (Column III).

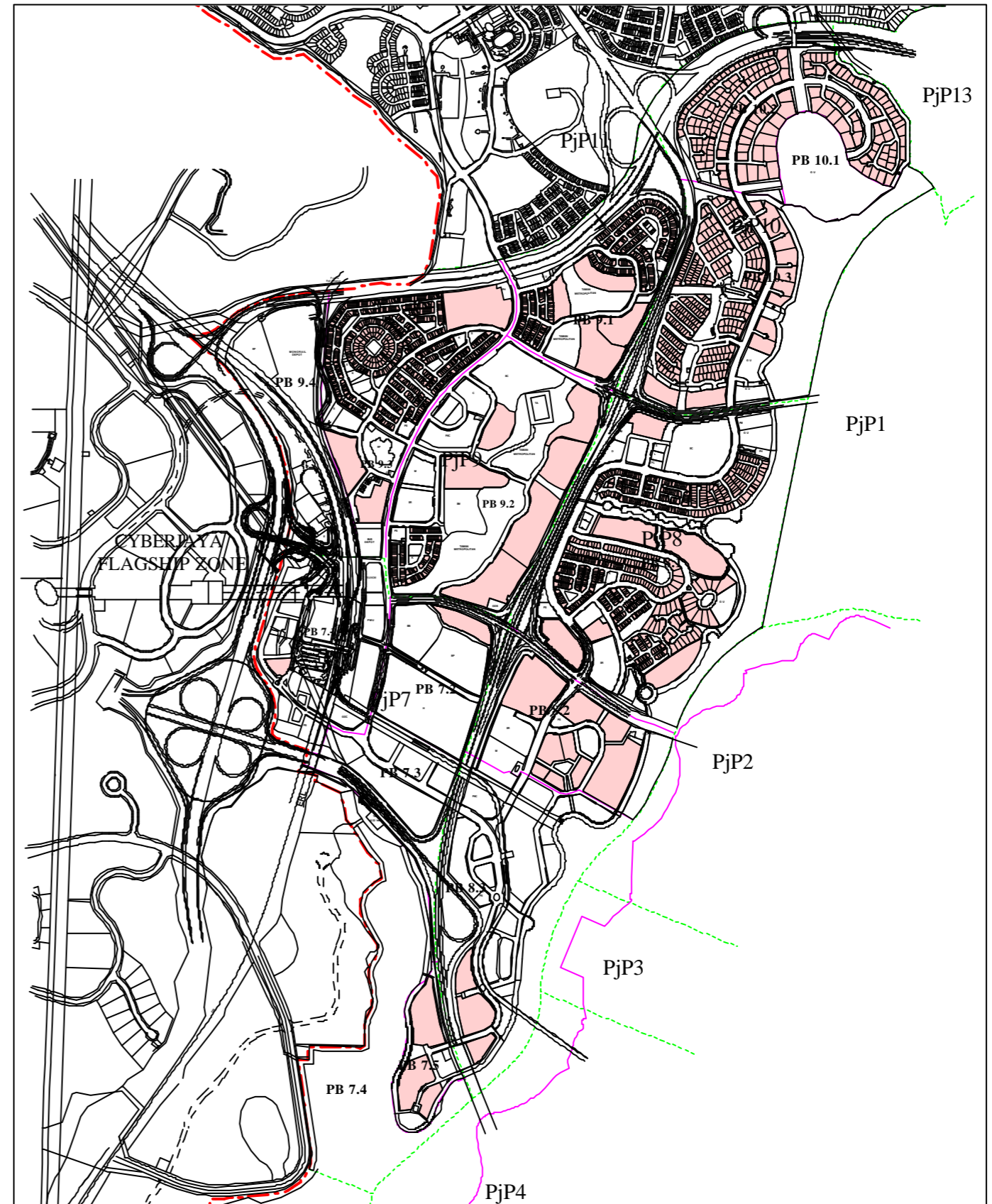
Column II shows the illustration that would give a clearer indication on the terminology and guidelines suggested in Column III.

Column III, which is shaded, contains planning and design guidelines applicable to the various categories and outlines its application within the context of the Local Plan.

## 2.0 RESIDENTIAL

### 2.1 USE

This guideline shall be used for all housing developments located within the residential zones as indicated by the Proposal Map of the Local Plan of Precincts 7, 8, 9 and 10, Putrajaya; in which the residential zones are the largest of the major landuse of the area as shown in **Figure 2.1**.



**Figure 2.1**  
**Residential Areas of Precincts 7, 8, 9 and 10, Putrajaya**

**2.2 PHYSICAL AND SITE PLANNING**

**2.2.1 Zoning and Composition**

Land use zoning as indicated by the Proposal Map prescribes the intensity and type of land use allowed. Development shall not contravene with the land use zones of the Proposal Map.

The zoning for residential of the Proposal Map is categorised into four as follows: -

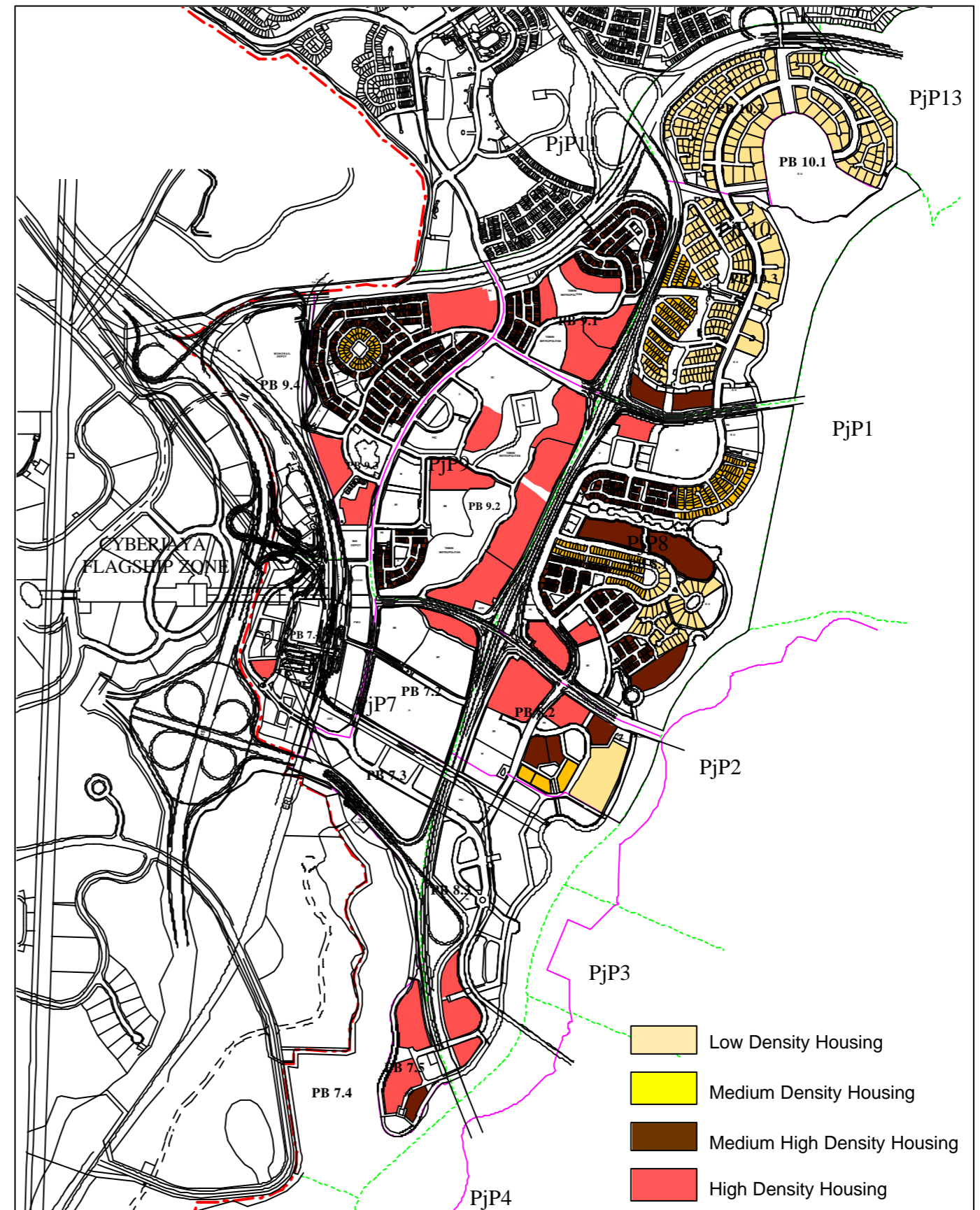
- Low Density,
- Medium Density,
- Medium High Density,
- High Density.

**Low Density Housing** is area where all housing will be subject to provisions that seek to ensure a pleasant, low-density living environment. The intended development shall be of detached and semi-detached houses in an almost exclusively low-density residential environment.

**Medium Density Housing** area comprises of terrace or link houses, which are in the form of row development with direct street frontage or town houses, which are multi-unit housing involving strata title.

**Medium High Density Housing** shall provide medium to high-density residential development in the form of multi-unit buildings of 4 storeys and above. Examples are terrace house, town house, condominium and low-rise apartment.

**High Density Housing** shall provide high-density residential development to meet the requirement for demand of such housing especially in the case of affordable homes. The residential development shall normally be of apartment type.



**Figure 2.2 Residential Zoning**

**2.2.2 Density**

The intensity of proposed development should not be so great as to cause congestion of buildings or to preclude the amenities of good housing. Specifically, resultant density of any proposal within the Local Plan area should be limited to provide: -

- i. Adequate daylight, sunlight, air and usable open space for all dwellings,
- ii. Adequate space for all community facilities,
- iii. A general feeling of openness and privacy.

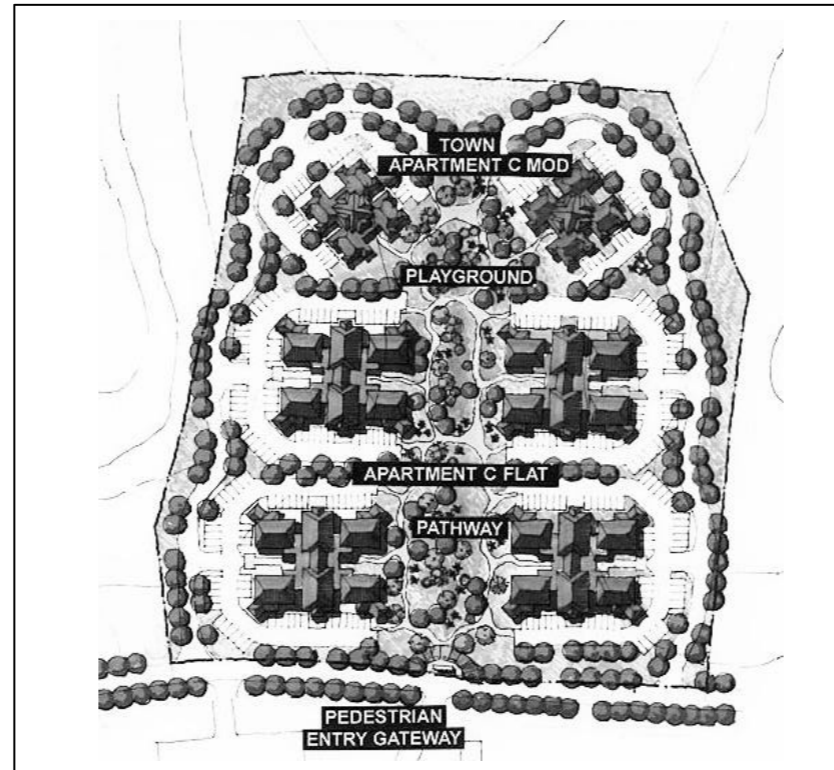
**Density** refers to the ratio of dwellings to the area of the site they occupy (including communal street and communal open space). It is measured as unit per acre of land.

**Single Dwelling Unit** refers to residential building on landed property with individual title given to individual unit. It includes detached or bungalow housing, semi-detached housing and terrace housing.

**Multi Dwelling Unit** refers to residential building where strata title is involved. It includes residential buildings such as apartments, condominium, flats, as well as town houses.



**Figure 2.3**  
**Example of Low Density Housing**



**Figure 2.4**  
**Example of High Density Housing**

**DENSITY**

- The density for any new development within residential zones as indicated by the Proposal Map shall not exceed the maximum density as indicated in **Table 2.1**. This is based on gross density, which is the number of dwelling units per acre of gross residential land including land for streets, parking, open spaces, and non-residential buildings.

**Table 2.1 Density Range for Residential Development**

Zone	Density Range	Types
Low Density Housing	1-8 units/ac	<ul style="list-style-type: none"> <li>▪ Bungalow</li> <li>▪ Zero Lot Line</li> <li>▪ Semi-D</li> </ul>
Medium Density Housing	9-24 unit/ac	<ul style="list-style-type: none"> <li>▪ Semi-D</li> <li>▪ Cluster Terrace</li> <li>▪ Terrace/Link</li> <li>▪ Town House</li> <li>▪ Walk-up apartments</li> </ul>
Medium High Density Housing	25-50 units/ac	<ul style="list-style-type: none"> <li>▪ Terrace/Link</li> <li>▪ Town house</li> <li>▪ Apartment</li> </ul>
High Density Housing	51-75 units/ac	<ul style="list-style-type: none"> <li>▪ Affordable Apartment</li> <li>▪ Apartment</li> <li>▪ Condominium</li> </ul>

Source: Perbadanan Putrajaya

**2.2.3 Subdivision and Layout**

Subdivision is the division of a parcel of land into two or more parts for the purpose of enabling any of the lots to be disposed of separately.

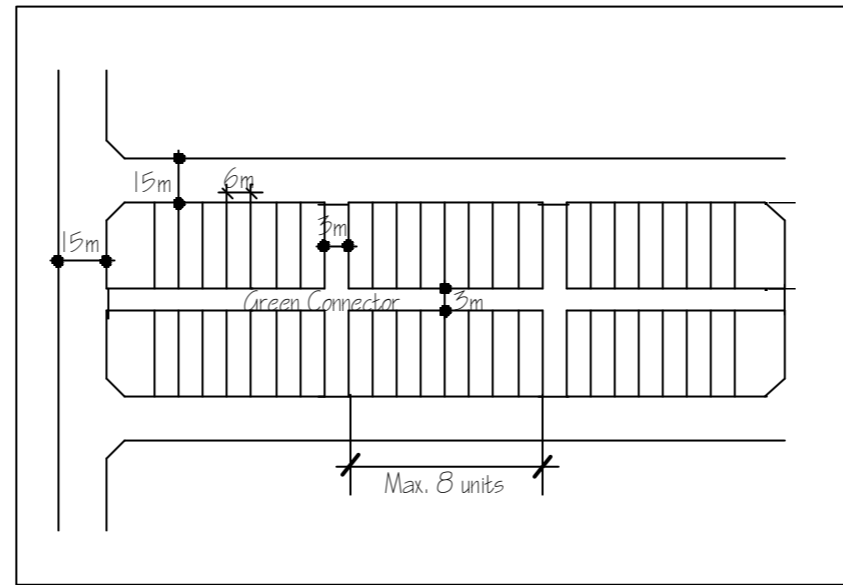
Development should be sensitive to the topography, soil, geology and hydrology of the site. The need for excessive earthworks and substantial retaining walls should be minimised.

Layout should ensure that: -

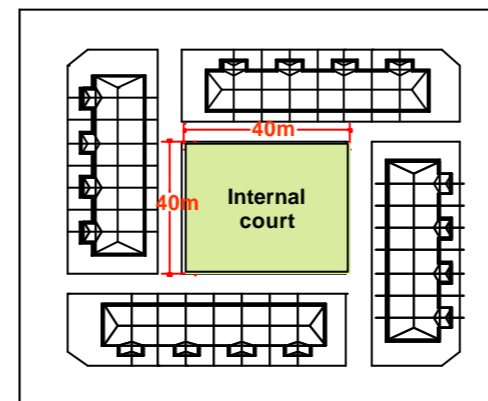
- Easy and safe access to internal public spaces are provided,
- Front entrance of each dwelling is easily found,
- Buildings face streets, public open spaces and waterfront,
- Personal and property safety as well as security of the neighbourhood by ensuring that dwellings do not face away from public places making casual surveillance difficult.

Residential lots shall have appropriate area and dimensions to enable efficient siting and construction of a dwelling, provision of private outdoor space and adequate parking.

**Lot Frontage** is the boundary line or part thereof, of the lot, which coincides with the alignment of a road, public open space, or promenade.



**Figure 2.5**  
**Maximum Length of Row Houses**



**Figure 2.6**  
**Perimeter Block for Cluster Terrace**

**LOT SIZE**

- Lot sizes for different residential types shall not be smaller than the minimum sizes allowed as indicated in **Table 2.2**.

**Table 2.2 Minimum Lot Size For Single Dwelling Units.**

Type	Min. Lot Size	Min Lot Frontage	Max. Floor Area (Gross)
<b>Bungalow</b>			
▪ Type A & B	743 sq.m. (8000 sq.ft.)	24m (80ft.)	465 sq.m. (5000 sq.ft.)
▪ Type C	743 sq.m. (8000 sq.ft.)	24m (80ft.)	418 sq.m. (4500 sq.ft.)
▪ Type D	557 sq.m. (6000 sq.ft.)	18m (60ft.)	344 sq.m. (3700 sq.ft.)
▪ Type E	446 sq.m. (4800 sq.ft.)	18m (60ft.)	344 sq.m. (3000 sq.ft.)
<b>Semi-detached</b>	297 sq.m. (3200 sq.ft.)	12m (40ft.)	214 sq.m. (2300 sq.ft.)
<b>Terrace</b>			
▪ Type A	153 sq.m. (1650 sq.ft.)	6.7m (22ft.)	200 sq.m. (2150 sq.ft.)
▪ Type B	133 sq.m. (1430 sq.ft.)	6.7m (22ft.)	149 sq.m. (1600 sq.ft.)

- Maximum length of a row of terrace house located in **Medium Density Housing in PB8.1 and PB9.2** shall not be more than 8 units per row (subject to site condition and constraints) (**Figure 2.5**). Each row shall be separated by any of the followings and shall respond to the changing topography: -
  - a. Access road, avenues or cul-de-sac
  - b. Green connector
- Cluster terrace designed as perimeter block that creates an internal court in the centre shall not be more than 8 units in a row or internal court of not more than 40m x 40m, which ever is less to ensure human scale, safety for children and privacy for dwelling units from encroachment of non-residents into the internal court (**Figure 2.6**).

**2.2.4 Setback and Distance between Buildings**

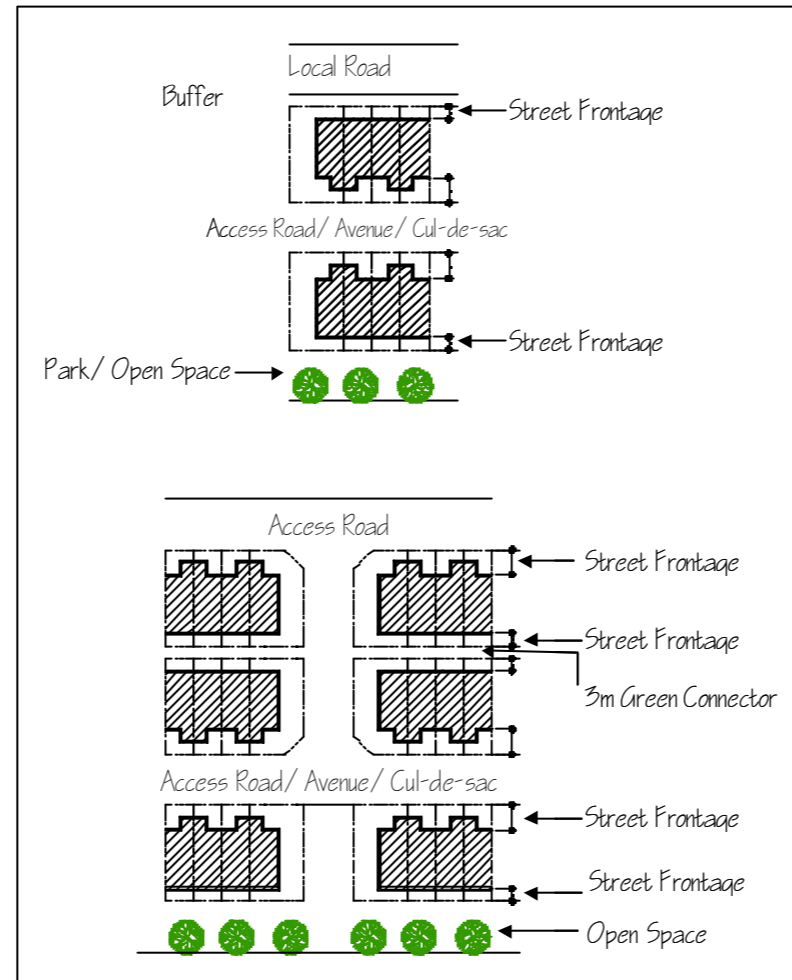
**Setback** refers to the minimum distance between a wall and a property boundary or a wall of another building.

**Street Frontage** refers to setback where lot/building frontage faces the following: -

- i. Street frontage for main roads such as local or spine roads
- ii. Street frontage for roadside buffer
- iii. Park/public open space
- iv. Green corridor linking neighbourhood centres or open space
- v. Waterfront/promenade

Buildings are setback from the boundary line to provide for: -

- Landscape and visual setting for the building,
- Space for car parking,
- A noise attenuation zone,
- Privacy from the street and fencing of buildings,
- A buffer to street activity,
- An area that allows sunlight to reach the building,
- A territorial threshold between the public or communal street and the private home; and
- Continuity of the existing streetscape.



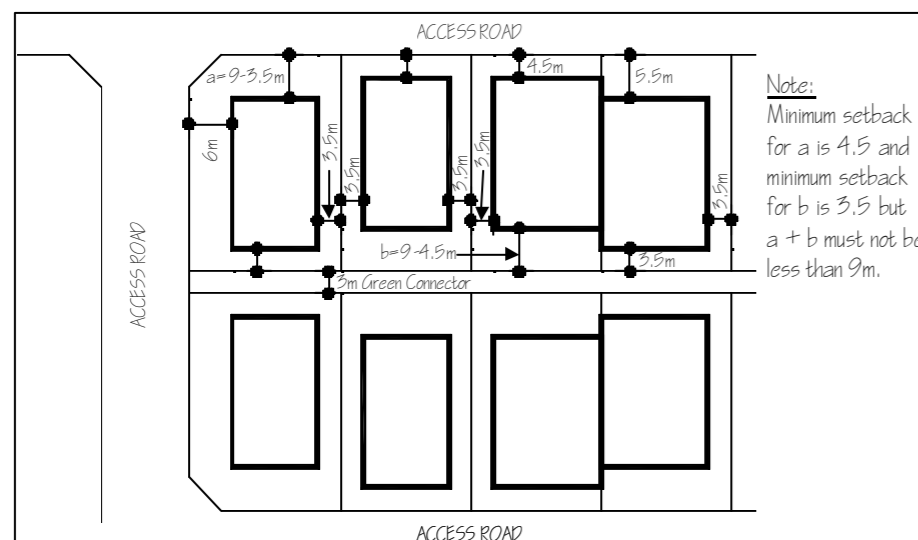
**Figure 2.7 Street Frontage**

**BUILDING SETBACKS**

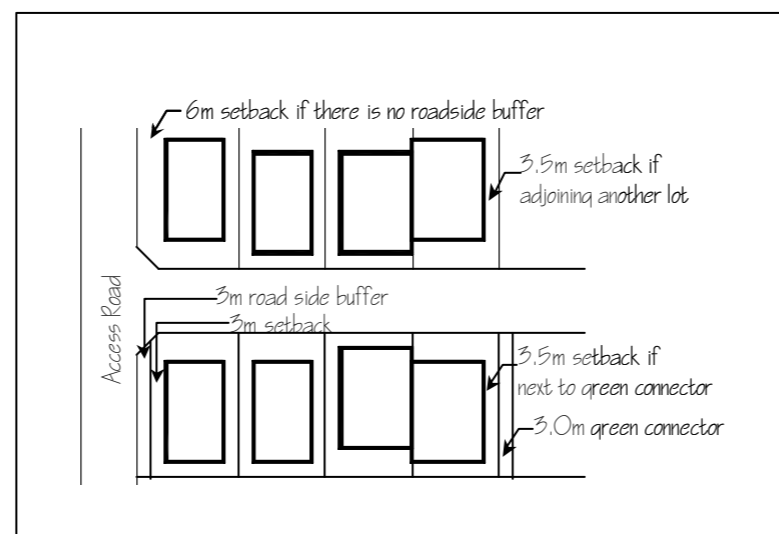
- Building shall have setback to the minimum distances as indicated in **Table 2.3**.

**Table 2.3 Setback for Residential Buildings**

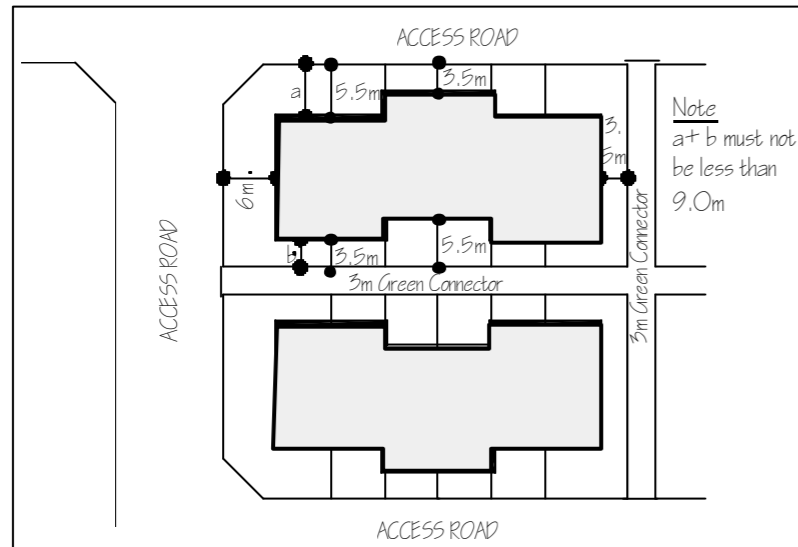
Dwelling Type	Minimum Setback		
	Front/Rear	Non-party/Side Boundary	Street Boundary
Detached/Bungalow	Minimum 3.5m for rear and 4.5m for street frontage subject to total setback distance of not less than 9.0m for both front and rear.	3.5m	<ul style="list-style-type: none"> <li>▪ 6m if no roadside buffer</li> <li>▪ 3.0m if 3.0m roadside buffers exist.. Total clearance from road reserve to wall must be 6.0m</li> </ul>
Zero Lot Line	Minimum 3.5m for rear and 4.5m for street frontage subject to total setback distance of not less than 9.0m for both front and rear..	<ul style="list-style-type: none"> <li>▪ No setback required on the zero lot boundary. Wall on the boundary line must not have windows.</li> <li>▪ For side with garden/ additional land area, minimum 3.0m setback</li> </ul>	<ul style="list-style-type: none"> <li>▪ 6m if no roadside buffer</li> <li>▪ 3.0m if roadside buffer exists. Total clearance from road reserve to wall must be 6.0m</li> </ul>
Semi-detached	Minimum 3.5m for rear and 4.5m for street frontage subject to total setback distance of not less than 9.0m for both front and rear.	3.5m	<ul style="list-style-type: none"> <li>▪ 6m if no roadside buffer</li> <li>▪ 3.0m if roadside buffer exists. Total clearance from road reserve to wall must be 6.0m</li> </ul>



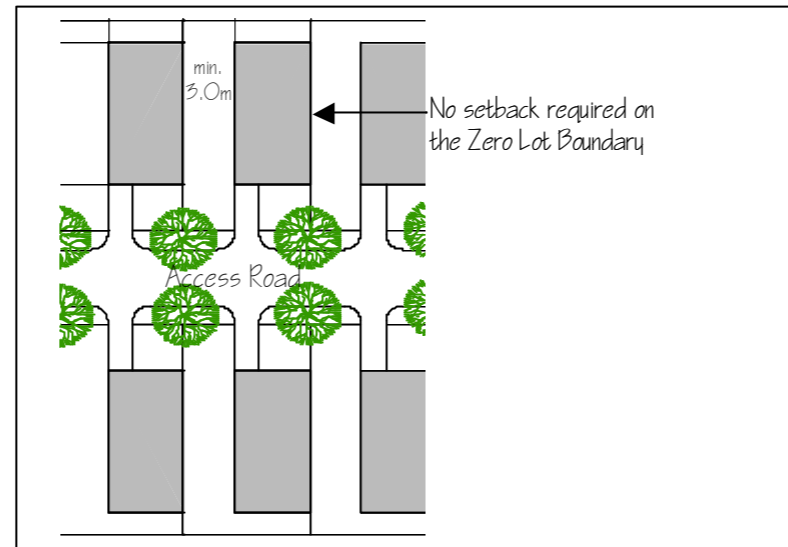
**Figure 2.8 Minimum Setback for Bungalow and Semi-detached**



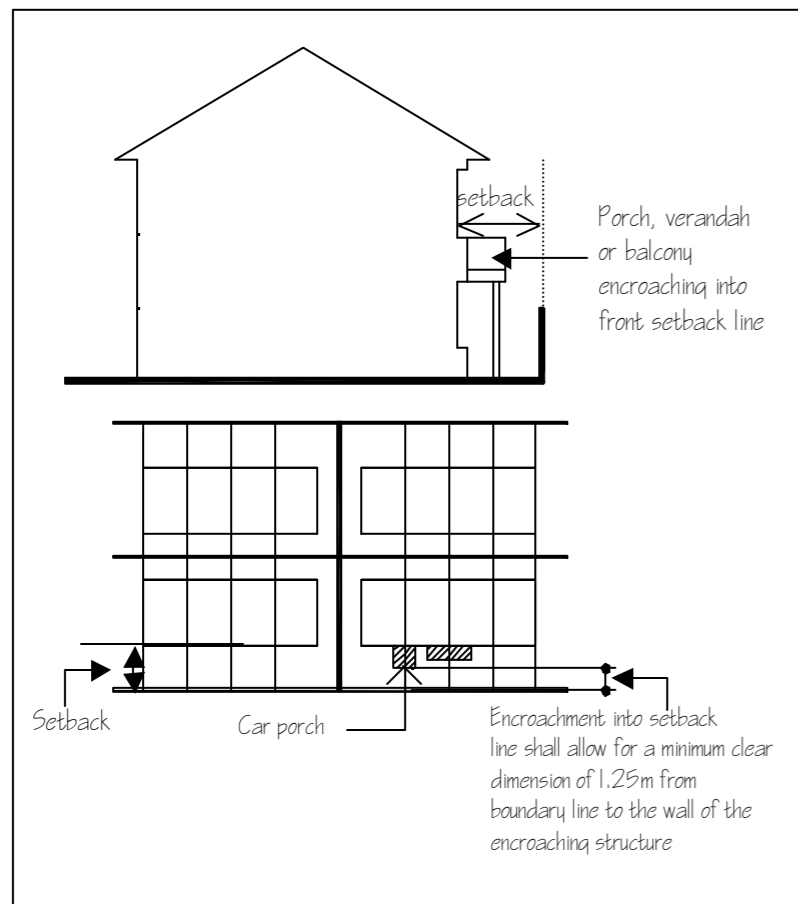
**Figure 2.9 Minimum Setback for Corner Building**



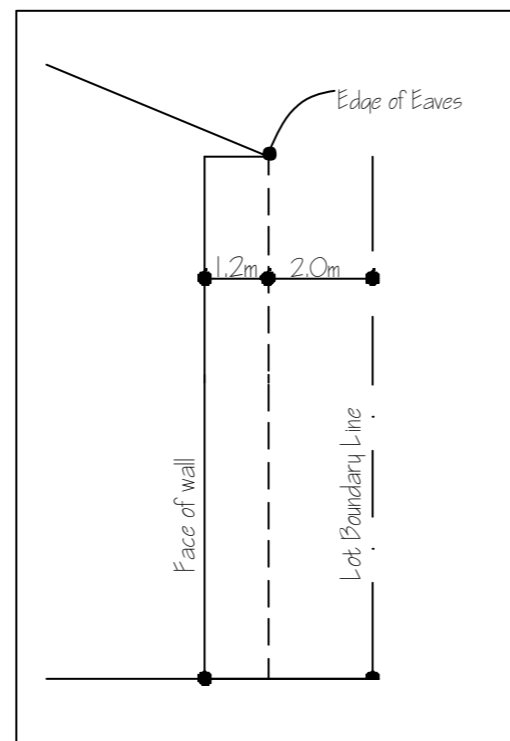
**Figure 2.10**  
**Minimum Setback for Terrace/Link**



**Figure 2.11**  
**Zero Lot Line**



**Figure 2.12**  
**Building Encroachment on Street Frontage**



**Figure 2.13**  
**Encroachment of Roof Eave**

**BUILDING SETBACKS**

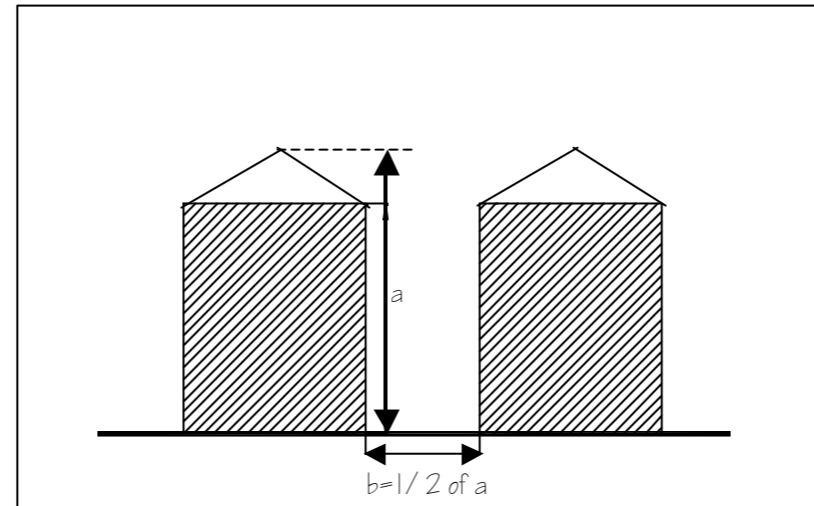
**Table 2.3 (cont) Setback for Residential Buildings**

Terrace	Minimum 3.5m for rear and 4.5m for street frontage subject to total setback distance of not less than 9.0m for both front and rear.	3.5m	<ul style="list-style-type: none"> <li>6m if no roadside buffer</li> <li>3.0m if roadside buffer exists. Total clearance from road reserve to wall must be 6.0m</li> </ul>
Town House	Minimum 3.5 for rear and 4.5m for front subject to total setback distance for both front and rear of 9.0m	3.5m	<ul style="list-style-type: none"> <li>6m if no roadside buffer</li> <li>3.0m if roadside buffer exists. Total clearance from road reserve to wall must be 6.0m</li> </ul>
Condominium	½ of the total building height measured ground to the roof. Subject to a minimum distance of 6 meters	NA	6m
Apartment		NA	6m

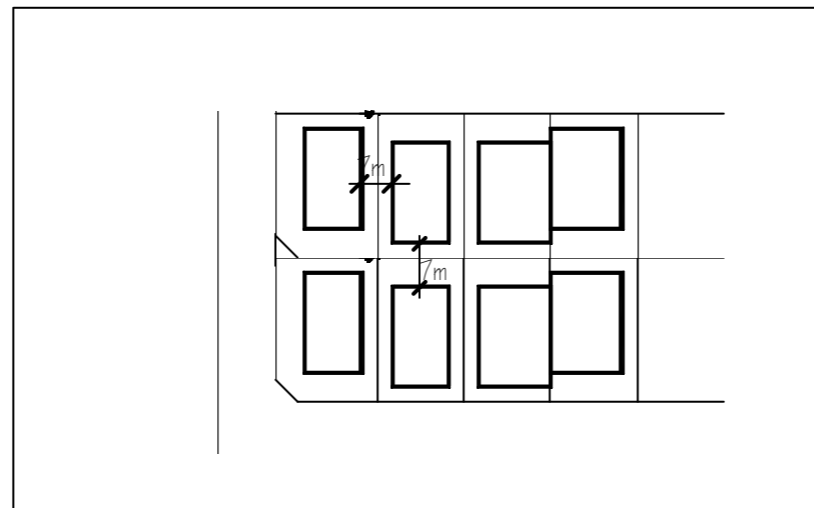
Note: NA – Not Applicable

- Buildings must not encroach into the setback line with exception to open porches, veranda and balconies. Porch for terrace house encroaching into setback line shall have a clear dimension of 1.25m measured from the boundary/lot line to the outermost projection of the encroaching structure (**Figure 2.12**).
- For terrace house, semi-detached and bungalow, encroachment of roof eaves shall not exceed 2.0m measured from the edge of the eave to the boundary/lot line (**Figure 2.13**).

**Distance between buildings** is the minimum distance measured horizontally from the outermost projection of the building to another building.



**Figure 2.14**  
**Distance between Buildings for High Rise Residential**



**Figure 2.15**  
**Distance between Buildings for Landed Properties**

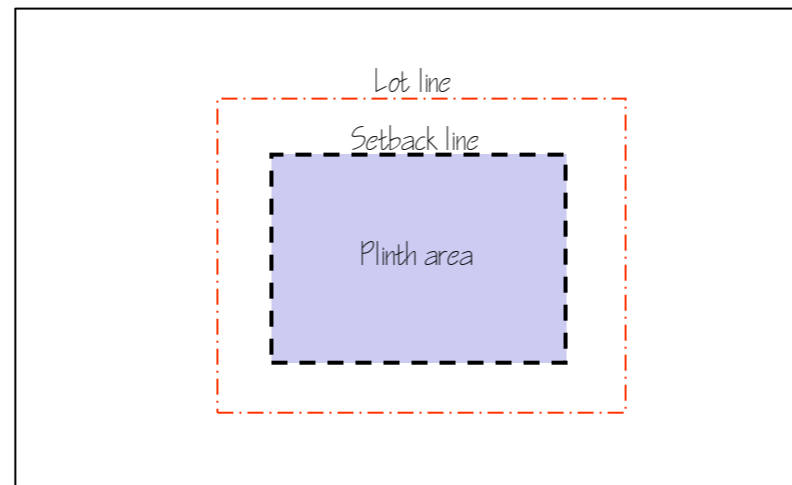
## DISTANCE BETWEEN BUILDING

- Distance between two buildings for high-rise residential shall be half of the total height of the building measured from ground to top of the roof subject to a minimum distance of 6m.
- Wider distance than the above may however be required subject to the discretion of Perbadanan Putrajaya in order to accommodate for other requirements such as buffer, green connector and open space. Green connector of 3m width shall be required in between apartment and terrace houses.
- For single dwelling unit or landed properties, minimum distance between two buildings facing or backing each other shall be 7m.

**2.2.5 Site Coverage/Plinth area**

**Plinth Area/Site Coverage** as defined by the Town and Country Planning Act 1972 is the proportion to be covered by building of the area of any lot.

**Open Space Coverage** is the portion of plot area outside plinth area. It may comprise of internal circulation, open space and both hard and soft landscape elements.



**Figure 2.16**  
**Plinth Area/Site Coverage**

**SITE COVERAGE**

- The maximum site coverage (excluding allowable encroachments), for residential buildings shall not exceed the percentages indicated in **Table 2.4**.

**Table 2.4 Site Coverage for Residential Buildings**

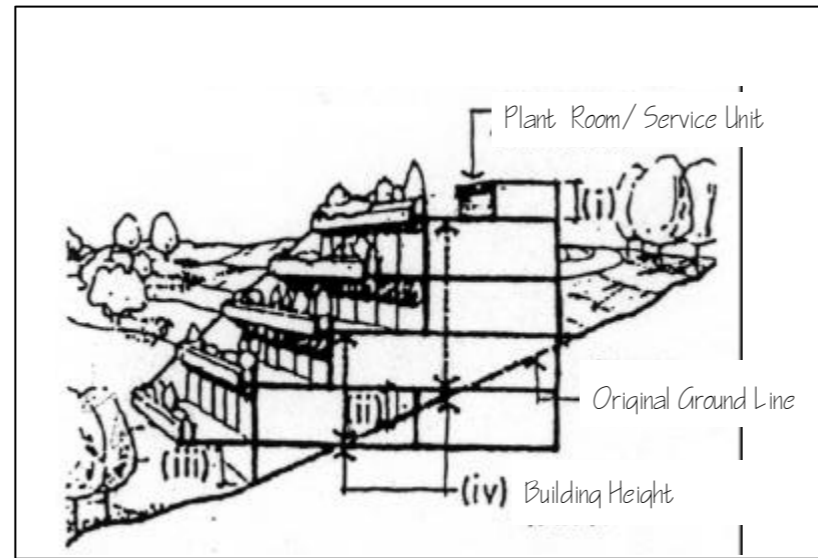
Dwelling Type	Max. Site Coverage (%)
Detached/Bungalow	60
Zero Lot Line	60
Semi-detached	60
Terrace	50
Town House	60
Condominium	40
Apartment	40

**2.2.6 Building Heights**

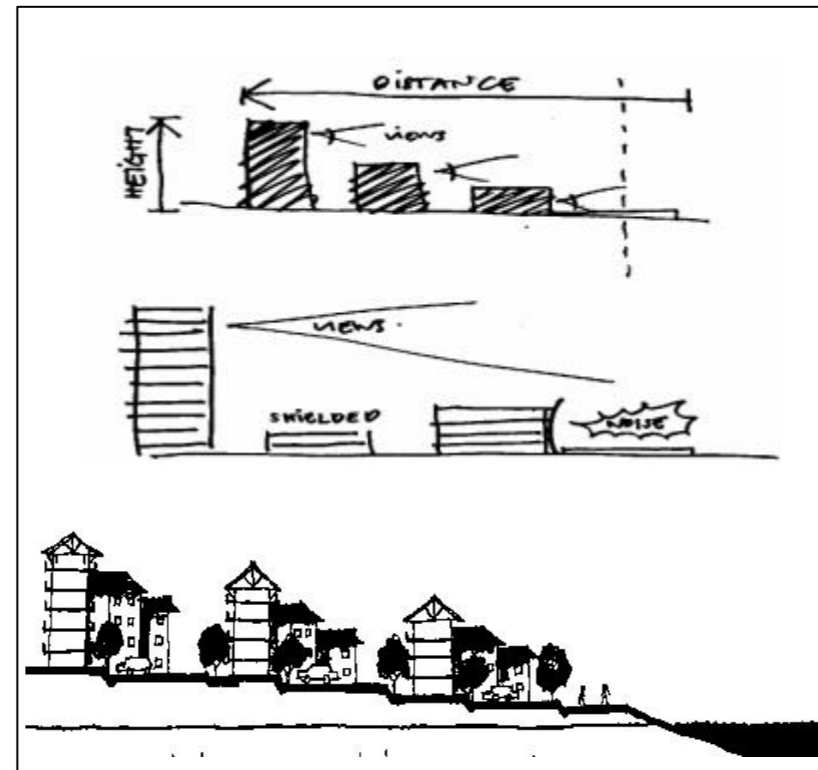
**Building Height** is the limit to the vertical extent of a building. It is measured as a number of storeys or floors from the ground level.

**Storey** refers to the space within a building which is situated between the floor of one level and the floor of the level next above, or, if there is no level above, the top of the ceiling above. The term includes any mezzanine floor or any space on the roof of a building, which is covered by impermeable material and areas of uncovered roof, which are assessed as comprising part of the gross floor area of the building. Provided that: -

- The two topmost storeys of the building shall not be included in the calculation of building height where they are used exclusively for plant rooms containing heating, ventilation, lift and other equipment or water tanks or similar service units and maintenance facilities or common access stairs,
- Basement which extend less than 1.0meter from ground level to the top of the slab above do not constitute a storey,
- The local authority may deem the area between the ground level where there is no floor at this level and the floor above the constitute one or more storeys where such area substantially adds to the overall height of the building,
- For buildings featuring a stepped design on sloping sites, the number of storeys shall be calculated as the greatest number of storeys in any vertical plane.



**Figure 2.17**  
**Determination Of Building Storeys On Sloping Sites**  
**(Example for 3 Storey Building)**



**Figure 2.18**  
**Building Profiles Adjacent to Waterfront**

**BUILDING HEIGHTS**

- Maximum height of dwellings shall not generally exceed the number of floor as indicated in **Table 2.5 and 2.6**.

**Table 2.5 Maximum Height for Residential Buildings**

Dwelling Type	No. of Storeys
Detached/Bungalow	2
Zero End Lot	2
Semi-detached	2 1/2
Cluster	2
Terrace	2 1/2
Town House	3
Condominium	8*
Apartment	12*

Note: \* Higher residential blocks up to a maximum height of **17 storeys** can be considered by Perbadanan Putrajaya subject to various urban design aspects for further deliberation by Perbadanan. Developers however shall submit **special report** to justify the need to have higher building for its particular scheme. Each case shall be considered on merits of the overall urban design impact for the whole of Putrajaya.

**Table 2.6 Maximum Height at Waterfront Areas**

Zone	Location	Maximum Height Allowable	
		Single Unit Dwelling	Multi Unit Dwelling
Low Density	<b>Waterfront</b>	2	NA
Medium Density	<b>Waterfront</b>	2	NA
Medium High Density	<b>PB8.1 (waterfront)</b>	2	4
High Density	<b>PB7.5 (waterfront)</b>	2	12
	<b>PB8.1 (waterfront)</b>	2	12
	<b>PB8.2 (near SCC)*</b>	2	6

Note: \* Building fronting the waterfront refers to the first layer immediate to the waterfront.

- Blocks of multi-unit dwellings within a plot shall have a staggering general profile from the waterfront with the lowest height facing the waterfront (**Figure 2.18**). Height and block massing should maximise on the view towards the waterfront with semi-enclosed courtyard facing the water be adopted.

2.3 URBAN DESIGN

2.3.1 Streetscape

**Streetscape** is part of urban character of the public realm that is made up of an assemblage of landscape, walks and curbs between the lot line and the vehicular lanes. Its physical character and ambiance is further defined by the vehicular lanes and building frontages aligning the public right of way.

a. Street Type

Residential streetscape is highly influenced by the type, hierarchy, reserve and capacity of its street. Streets in residential areas serve a number of functions:-

- Access to residences,
- Parking for visitors vehicles and overspill of residents vehicles,
- Social and activity space for neighbours to interact and children to play,
- Setting and approach for residences located on it, desirably with high aesthetic and amenity quality,
- Stormwater drainage path,
- Service location for utility to residences.

Planning for street within the residential area shall aim to establish a street network that provides convenient linkages to activity centres and local facilities either within or adjoining the development.

The design of residential street shall aim for the following: -

- Fulfil their designated functions within the street network and hierarchy,
- Accommodate public utility services and drainage system,
- Provide acceptable level of safety and convenience for all street users in residential areas,
- Minimising the negative impact of through-traffic.

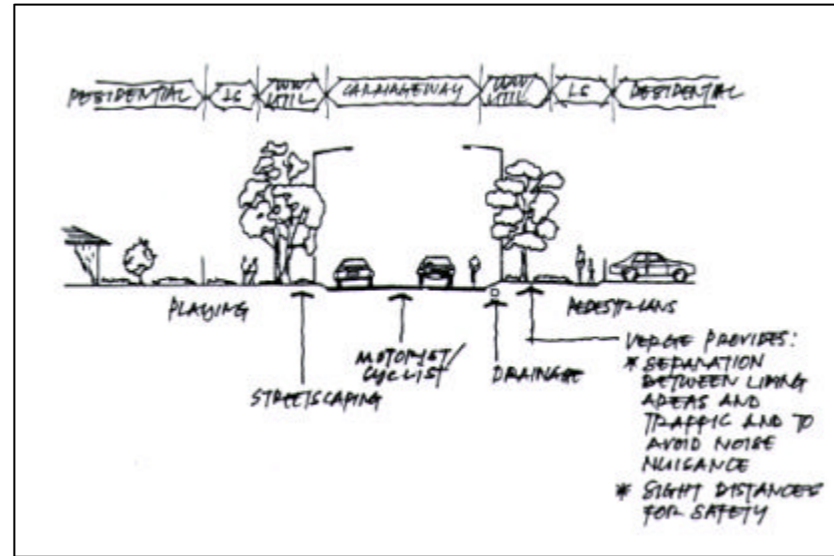


Figure 2.19  
Function of Residential Street



Figure 2.20  
Continuous Pedestrian Route at Intersections

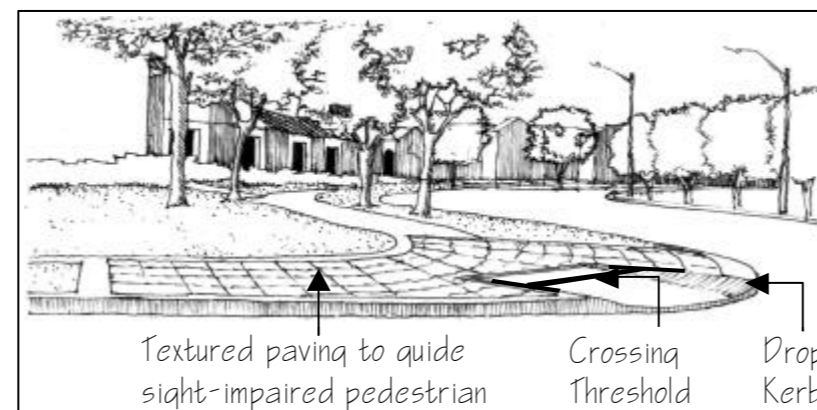


Figure 2.21  
Drop Kerb

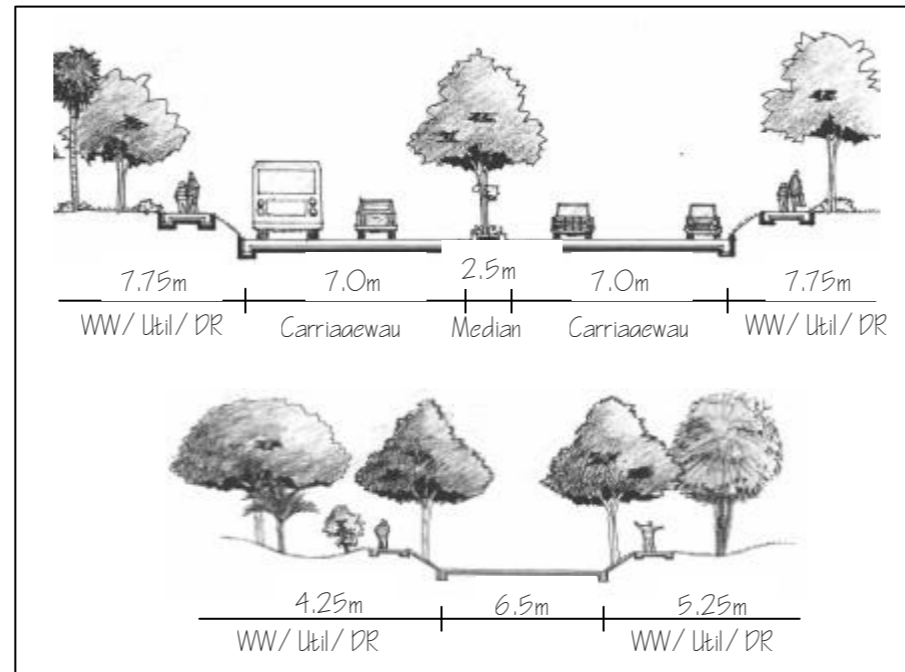
RESIDENTIAL STREETSCAPE

- Residential street shall be designed to fit into the road hierarchy systems of the Local Plan and shall have reserve as indicated in **Table 2.7**.

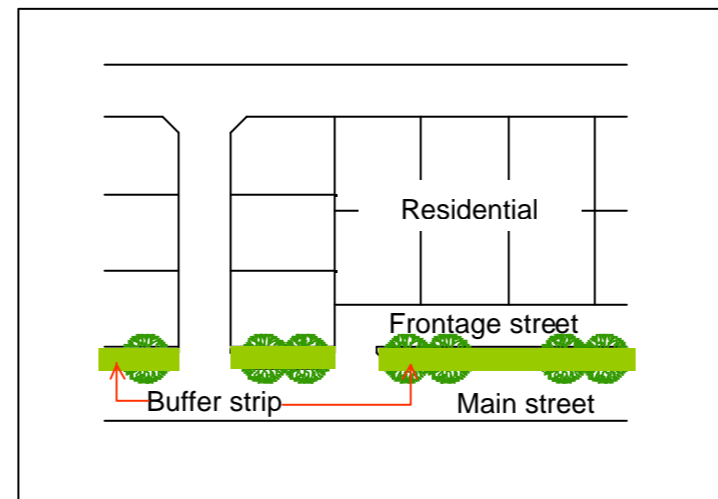
Table 2.7 Street Reserves

Hierarchy	Reserve
Local Road	22 m
Access Road	16m
Cul-de-sac & Avenue	15m

- Design and development of residential street shall conform to guideline on **Circulation** as specified in **Section 11.0** of this Manual. The emphasis in road layout should be on a clear structure to the road network, so that drivers are aware of the function of road type, and the control of vehicle speeds, particularly on the lower category roads.
- Layout should be used in a deliberate way to influence speeds, for example through reduced radii at junctions, though the avoidance of long, straight sections of road and through traffic calming measures such as localised road narrowing, chicanes or the interruption of sight lines. Road humps should be avoided, as they tend to create additional noise and increase vehicle pollution locally. See also *Traffic Calming*.
- Residential streetscape design shall allow for shared access for both pedestrian and vehicular traffic and shall encourage safe pedestrian friendly environment (**Figure 2.19**).
- Continuous pedestrian route shall be maintained at intersections (**Figure 2.20**). Drop kerb shall be used at every intersection (**Figure 2.21**). The width of the drop kerb crossing shall be equal to the width of crossing demarcated on the street surface. A band of 800mm tactile paving shall be positioned behind the crossing threshold and surface of crossing threshold shall be differentiated from the entire sidewalk pavement to facilitate sight-impaired pedestrians.



**Figure 2.22**  
**Residential Streetscape**



**Figure 2.23**  
**Buffer Strip/Roadside Buffer For Residential Development**

## RESIDENTIAL STREETSCAPE

- Streetscape detailing should establish a clear theme and identifiable character for the street. Material, pattern, planting, lighting and street furniture shall be consistent and coherent with the neighbourhood character.
- Appropriate trees should be provided in all streets except side lanes for pedestrian shelter, streetscape character, and traffic management.
- Where possible, pedestrian walkway on residential side within local and access streets with reserves of 22m or above shall be raised to a level not more than 1m higher than the carriageway level to help define the pedestrian enclave from vehicular route for safety and streetscape purposes.
- For multi-dwelling units, entrance into such development should be emphasised by identifiable character, convenient entry of fire fighting and maintenance.
- Where residential development fronts a major street, a buffer strip of marginal access/street should be provided for a more desirable streetscape (**Figure 2.23**).

**b. Frontage**

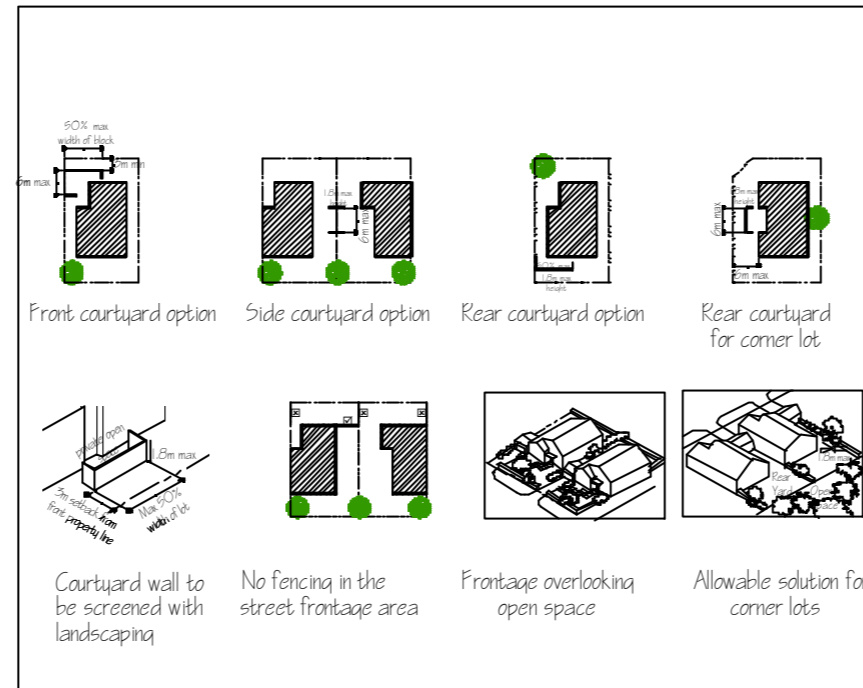
**Frontage** is the privately held layer between the façade of a building and the lot line that fronts the public streetscape. It is characterised by the dimensional depth of the front yard and the combination of architectural elements such as fences, stoops, porches and colonnades and is correlated with the distance within which the building is setback from the boundary line. See also Setback.

**c. Fencing**

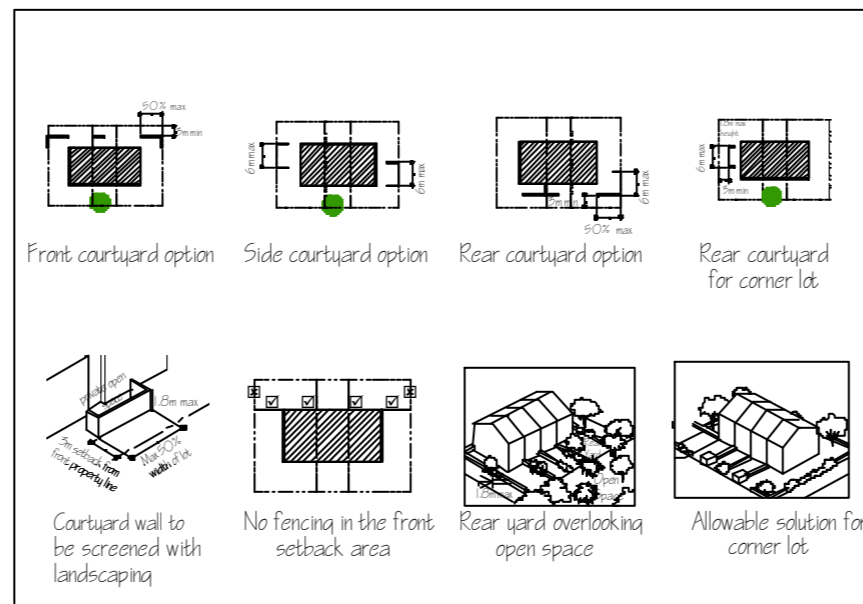
The term “fencing” for the purpose of this manual is a generic term. It refers to a broad range of approaches to property boundary demarcation including:

- Residential and non-residential fences of masonry, timber and metal construction (hard fencing),
- Fences comprised of hedges and other forms of landscape (soft fencing),
- Walls, including retaining structures, courtyard walls, party walls.

Source: Putrajaya Fencing Design Guidelines Manual



**Figure 2.24**  
**Allowable Fencing for Bungalow**  
Source: Putrajaya Fencing Design Guideline Manual



**Figure 2.25**  
**Allowable Fencing for Link House**  
Source: Putrajaya Fencing Design Guideline Manual

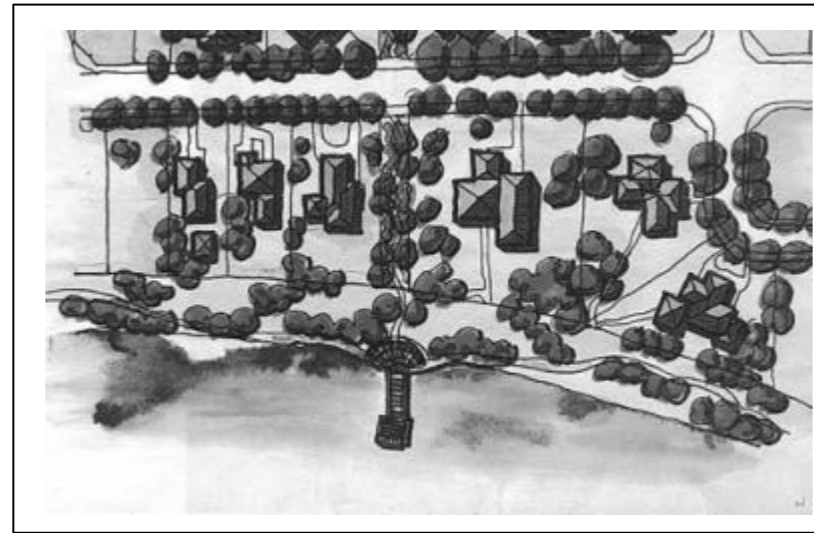
FENCING

- Boundary fence on front, rear, side and corner of residential plots shall not be encouraged. Any boundary demarcation if required should make use of landscaping elements as demarcation. Erection of fences and retaining walls shall conform to the provisions and requirements as stated in **Putrajaya Fencing Design Guidelines Manual, 1999**.
- Fences if allowed shall conform to the following specification as stated in the **Putrajaya Fencing Design Guidelines Manual, 1999** -
  - i. Front courtyard wall shall be setback 3m from the lot boundary, with maximum width of 50% of the lot boundary up to a max. height of 1.8m.
  - ii. Transparent landscape fences of side and rear boundary of max. height 1.2m.
  - iii. Side courtyard walls abutting side boundary shall not be more than 6m in length and 1.8m in height.
  - iv. If retaining walls of 0.6m exist, fence shall not be more than 1.2m in height. For corner allotments, the retaining wall shall terrace every 1.2m of vertical height.

### 2.3.2 Neighbourhood Character and Building Appearance

**Building Orientation** refers to arrangement of building façade to face certain direction normally the public realm.

**Building Façade** is the external vertical surfaces of buildings or structures. Façade shall respond to urban topological character and context to create a coherent urban environment and attractive streetscape. Elements such as veranda way, entrance and portals, window, vertical landscaping, exterior projections, expression lines, roof projections, utility such as gutters, drainpipes etc make up a harmonious entity of building façade.

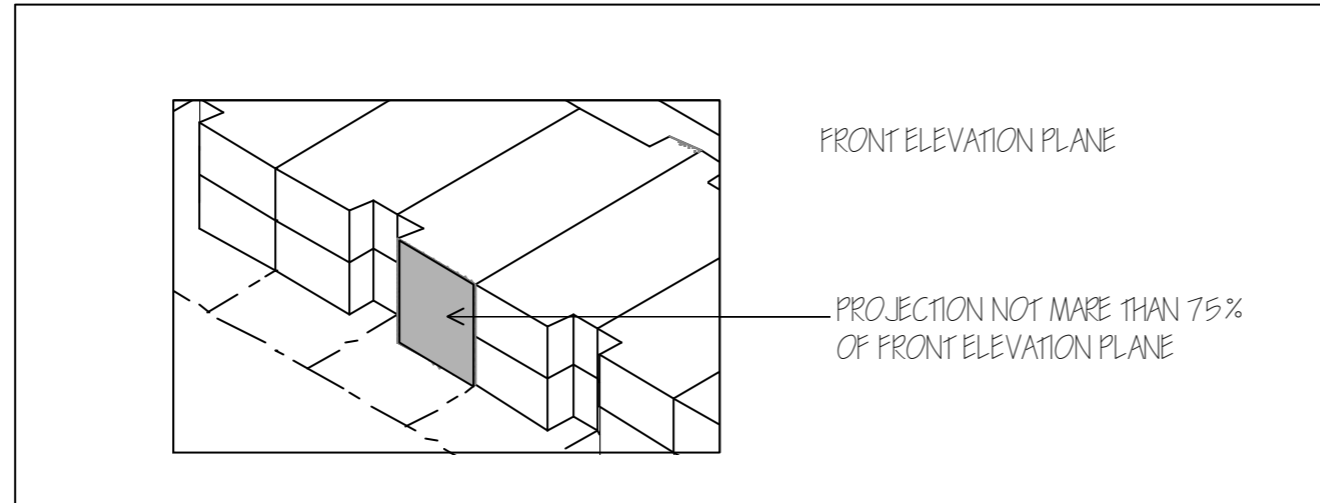


**Figure 2.26**  
**Orientation of Building to Address Public Realm**

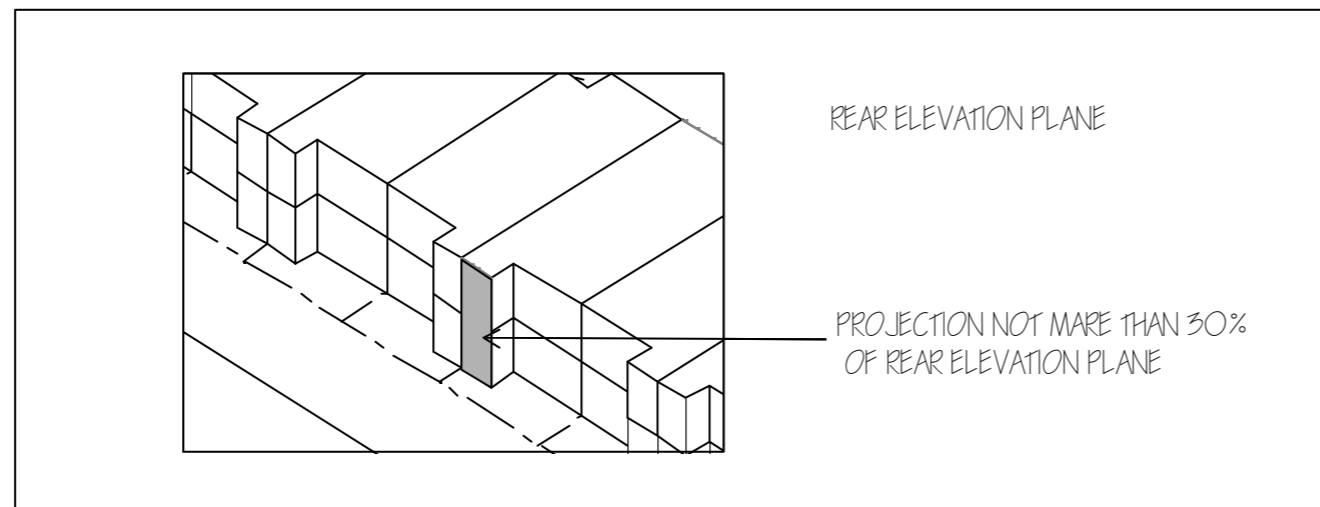
## BUILDING APPEARANCE

- Building adjacent to the public street, open spaces and waterfront should address the public realm.
- Appearance of dwellings from public streets, public open space and waterfront shall be designed to ensure that it is attractive and visually compatible with the character of the locality.
- Building façade shall be designed to reflect tropical environment using materials that are less maintenance intensive and more environmentally efficient.

**2.3.3 Architectural Detailing**



**Figure 2.27**  
**Projection on Front Elevation Plane**



**Figure 2.28**  
**Articulation on Rear Building Elevation**

ARCHITECTURAL DETAILING

**RHYTHM**

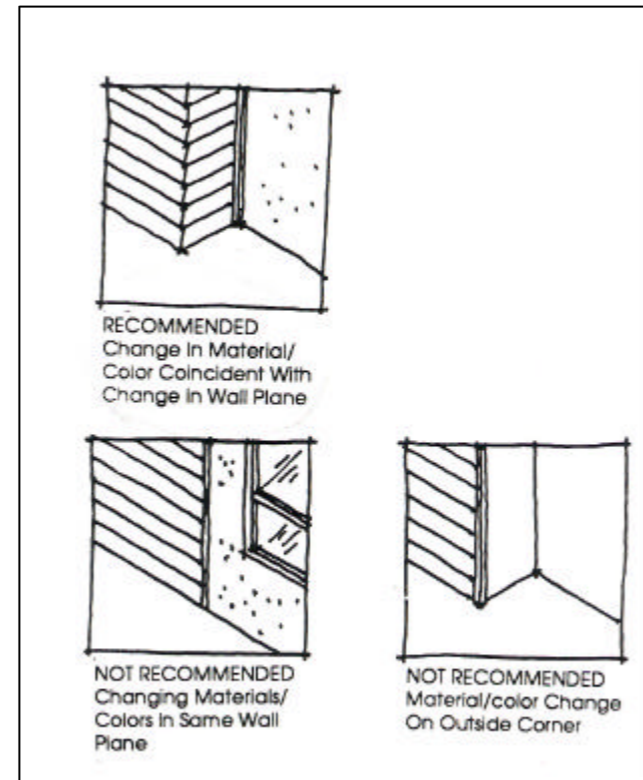
- Façade relief via vertical or horizontal wall breaks, insets, light and air wells, projecting decks or porches, bays, mouldings, material changes, or any other relief must be organised in a stylistically appropriate way, proportioned and scaled to create a coherent and fully integrated composition which is consistent around corners and into roof massing.

**WALL OPENINGS**

- Windows in any wall plane of any building elevation must align with one another or otherwise be proportionally or symmetrically composed.
- Windows should be sized and divided to be compatible with the scale of the wall or structure in which they occur, and may be stylistically or any type, shape or materials appropriate to the overall character of the project.
- Architectural shading devices shall conform to the architectural character established for the project.
- Projections are encouraged on front façade but shall not be more than 75% of the total elevation plane. Creative articulations are also encouraged for rear building elevations with a maximum projections of 30% of the total elevation plane.

**ROOF FORMS**

- Mechanical equipment on roofs must be completely obscured from view from the street and surrounding dwellings by parapets or screening entirely appropriate to the overall architectural character. Pitched roof massing or parapets integral with the building's character are the preferred alternatives.



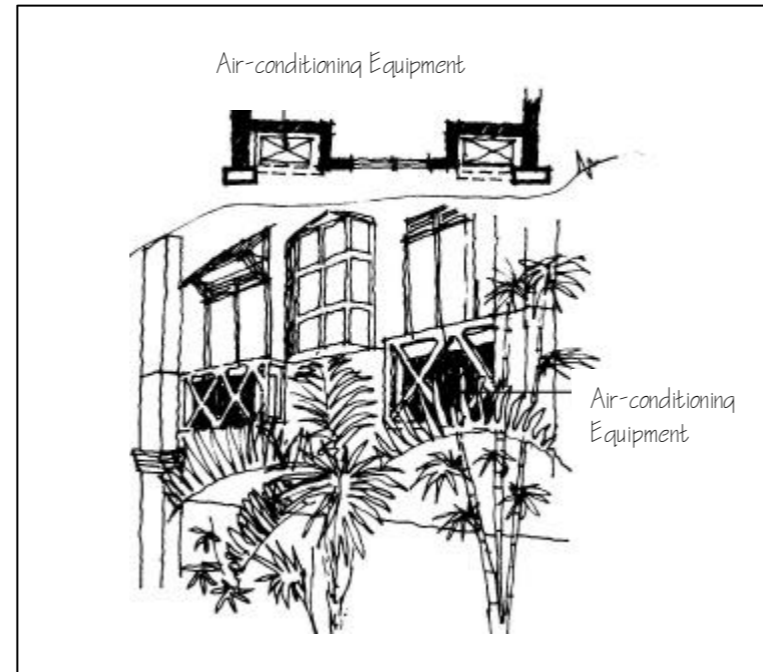
**Figure 2.29**  
**Possible Change in Colour**

#### **MATERIALS AND COLOUR**

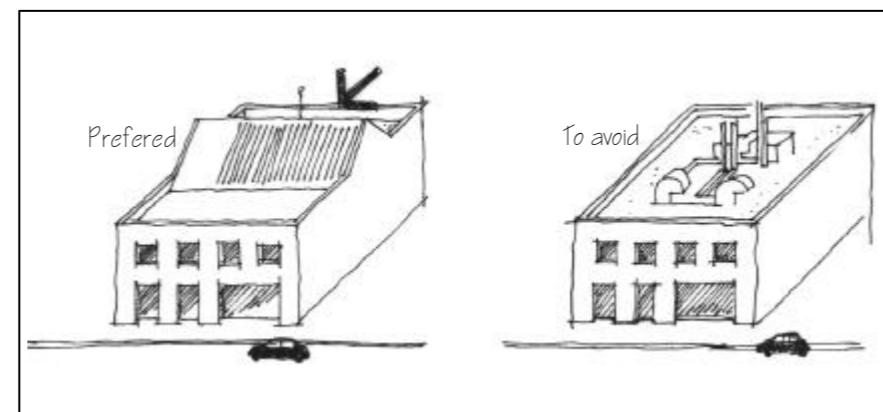
- Roofing materials exposed to public views from any angle must be architecturally appropriate thematically with respect to colour and type. Harmony between roofing materials and wall must be established.
- Use or colour variations at individual unit facades to enhance unit identity shall be considered only when facades are distinguished by vertical wall breaks or offsets.
- Colour or continuous horizontal trims shall not be changed except at inside corner breaks transitioning to another unit. Colour change to trims within the same building shall be avoided except at individual residential units such as bungalow or zero lot line.
- Variations in colour and texture at successive floor levels or varying unit facades shall also be considered.

### 2.3.3 Mechanical and Utility Appliances

**Mechanical and utility appliances** refer to appliances such as air conditioning equipments, service ducts for air-cons, drying yard, water tank, satellite dish, antenna etc.



**Figure 2.30**  
**Compartment for Air Conditioning Equipment**



**Figure 2.31**  
**Enclosed Service Equipment on Roof**

## MECHANICAL & UTILITY APPLIANCES

- Air conditioning equipments should be contained in compartments that are designed as an integral component of the building to ensure they are hidden from view particularly from the public street. Air conditioning ducts shall not be exposed on the external surfaces of the buildings.
- Drying yards for multi-unit dwellings should be incorporated in building design to ensure that they are hidden from public view. Yard area should have minimum size of 6 sq.m to allow for natural ventilation and light. The minimum width shall be 1.2m.
- Building design shall also take into consideration of placements of aerial and satellite dishes. For high-rise residential buildings, a central reception system should be incorporated into building design. For other residential buildings, aerial and satellite dishes shall be located to avoid adverse impact on the amenity of adjoining buildings as well as character and appearance of the streetscape.
- Water tank for high-rise residential buildings shall be incorporated into building design and architecturally expressed as feature within the cap zone of the building.
- No service ducting shall be exposed on the external surface of the buildings.

## 2.4 PROVISION OF PUBLIC AMENITIES

**Public amenities** defined under the provision of this guideline refer to amenities that need to be provided within development plot particularly strata residential developments for the use of the residents. It includes all amenities such as surau, mortuary/holding room, nursery/kindergarten facilities, laundrette, cafeteria, multi purpose room/hall and management office.

It does not include public amenities for wider neighbourhood or community such as schools, library, food court, mosque, surau (for landed residential area) and other religious facilities, which are already demarcated in the Proposal Map of the Local Plan and will be covered under separate guideline of this Manual.

**Provision Threshold** is the minimum limit for any amenity to be able to provide service for. In most cases the provision threshold relates to minimum population requirement or unit for housing. This minimum provision threshold will be the minimum standards for requirement of public amenities.

### PUBLIC AMENITIES

- All strata residential developments must provide for the following public amenities according to the threshold and requirements as in **Table 2.8** -
  - i. Surau
  - ii. Holding Room
  - iii. Nursery/Kindergarten
  - iv. Laundrette Room
  - v. Cafeteria
  - vi. Multi-purpose Room/Hall
  - vii. Management Office

**Table 2.8 Standard for Provision of Public Amenities for Strata Residential Development**

Public Amenity	Provision Threshold	Minimum Size
Surau	1 for every 500 dwellings*	0.25 ha. land area
Mortuary/holding room	0.11sm per dwelling unit	16.45sm floor area (Should be located adjoining surau)
Kindergarten & Nursery Facilities	1 for every 500 units**	0.20 ha. land area or 1090sm floor area
Laundrette Room	0.18sm per dwelling unit	87sm floor area (Min. room size shall be 4.5m x 5.8m)
Cafeteria	1 for every 1000 units	179sm floor area
Multi-purpose Room/Hall	0.45sm per dwelling unit	-
Management Office	1 for every development project	40sm floor area

Note: \* Based on Piawaian Perancangan Kemudahan Masyarakat JPBD  
 \*\* Based on the Physical Planning Guidelines for the Multimedia Super Corridor  
 GFA is in square meter

## PUBLIC AMENITIES

### **Surau**

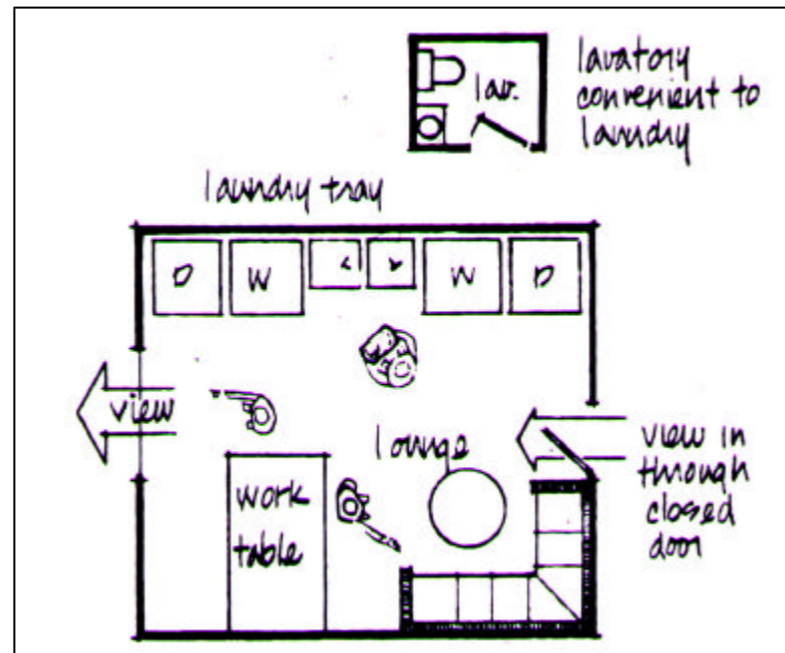
- Surau for strata residential developments shall be designed based on the following criteria: -
  - i. Freestanding building
  - ii. Located near parks and pedestrian links to facilitate easy access and be incorporated as part of the public space network
  - iii. Establish itself as a focal point to encourage a sense of identity for each neighbourhood or residential development
  - iv. Building should project an image compatible with character of the residential neighbourhood within which it is set
  - v. Design shall incorporate the iconography of Malaysian and Islamic building elements and principles
  - vi. Classes can be incorporated as part of the surau
  - vii. Provision for parking for the disabled shall also be addressed and shall follow provision standard as highlighted in **Chapter 11** of this Manual. *See also Disabled Parking*

### **Mortuary/Holding Room**

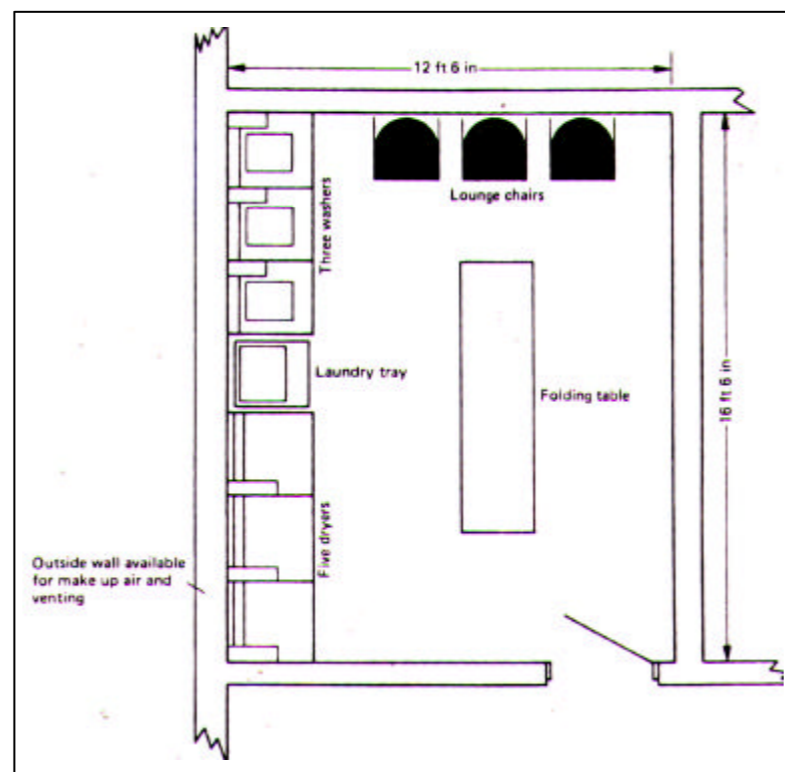
- Such amenities is required and is most often to be placed adjoining the surau.
- The room is used mainly for preparation of burial of any residents in the strata development.
- The room should be well accessible especially from car parking areas.

### **Nursery And Kindergarten**

- Nursery and Kindergarten facilities for strata residential developments shall be provided and designed based on the following criteria: -
  - i. Freestanding building or located at ground level of the block
  - ii. Located nearest to parks and pedestrian links to facilitate easy access without having to cross any street.
  - iii. Building design shall provide bright open space with colourful and integrated



**Figure 2.32**  
**Example of Laundry Room Orientation**



**Figure 2.33**  
**Typical Arrangement of Laundry Room**

## PUBLIC AMENITIES

- iv. Play equipments that can nurture and enhance the children's psychological development. Garden or play area should have a minimum area of 230 sq.m. Play equipments shall conform to SIRIM standards.
- v. Site coverage shall be not more than 30% of the total land area for free-standing building
- vi. Outdoor play area should be physically segregated from other activities particularly vehicular circulation areas such as street and car parking areas. Plant species used as fencing shall be 'child-friendly'. Guidelines as stated in **Putrajaya Fencing Design Guidelines Manual** should be adhered to.
- vii. Maximum building height 2 storeys for free-standing building
- viii. Building shall incorporate low windows at child eye level
- ix. Lay by for drop-off, pick-up area, and waiting area for parents shall be provided for a minimum length of 3 cars. Layout plan should indicate total gross net areas of indoor play, outdoor play, roofed shade and other outdoor shade areas

### **Laundrette Room**

- Laundrette room shall be located near elevators and should be sited near main movement patterns and not in secluded areas of buildings or development site. It should also be sited on the ground floor of the building and should ideally be provided for every block within the development area.
- It should be visible from corridors and walls should be of glass or contained glass panels. Natural light and views of the outdoors should also be provided for. It is desirable to achieve a close visual link between the laundry and natural focal points in the building circulation system.
- Adequate space for the equipment, for working, for passage and for equipment servicing shall be ensured. Tables of adequate size for folding laundry should be provided as well as sufficient numbers of washers and dryers.

## PUBLIC AMENITIES

### **Multi Purpose Room/Hall**

- Multi purpose room/hall can be located on the ground floor of apartment block or ideally in separate building from the residential units.
- A multi purpose room/hall should be located so that its entrance and interior can be observed from nearby public space, apartment units, buildings or streets.
- A multi purpose room/hall might include a large activity room with adjacent kitchen, a smaller room for meeting, men's and women's toilets, appropriate storage and a janitor's closet.

### **Management Office**

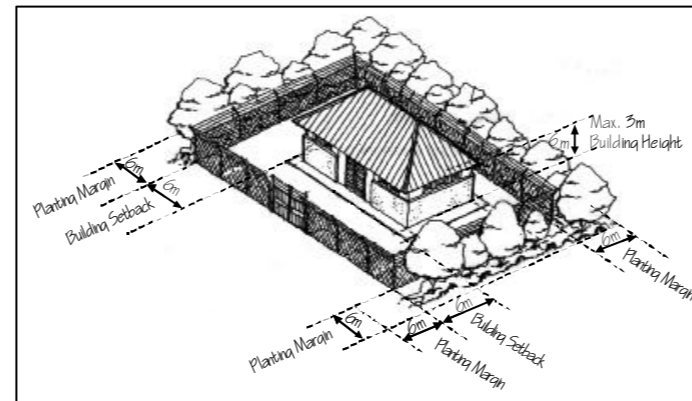
- Management office can be located on the ground floor of apartment block or ideally in separate building from the residential units and near the main entrance of the area.

### **Cafeteria**

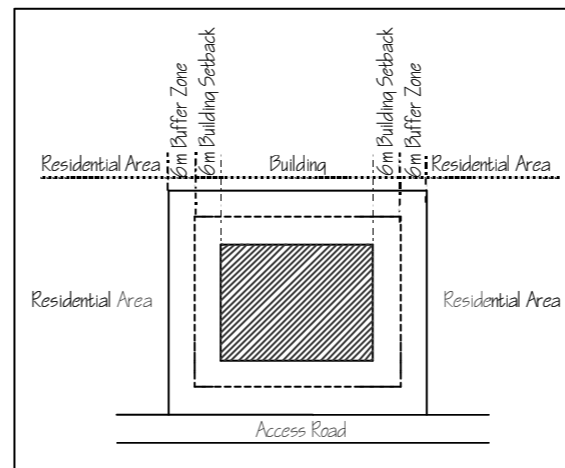
- Cafeteria should be located on the ground level of the apartment block and should preferably face public spaces such as parks or main entrance into the block.
- Circulation space should be allowed adjacent to doors and serving counters. Seating area should accommodate both large and small groups.
- Rubbish trap, oil interceptor and separator should be installed for all cafeteria.

**2.5 PUBLIC UTILITIES**

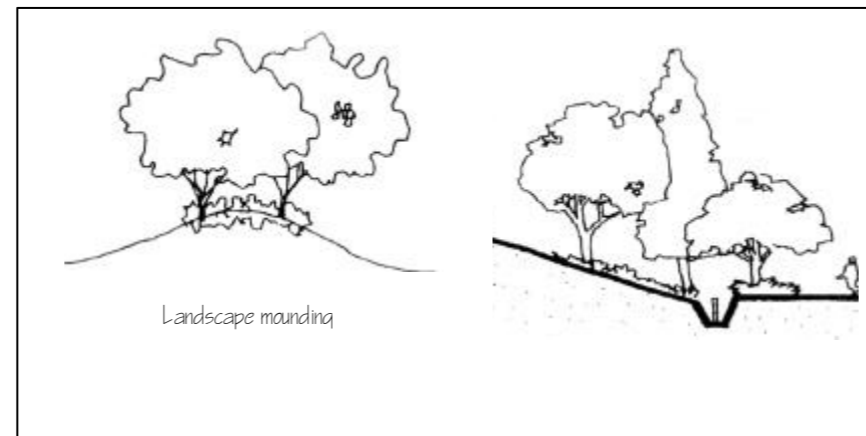
**Public Utilities** defined under the provision of this guideline refer to utilities that need to be provided within development plot for the use of the residents. It includes all utilities such as electric substations and feeder pillars, fibre distribution house (FDH) and solid waste storage and collection facilities. It does not include the higher catchments or capacity public utilities such as water tank, sewerage treatment plant and others, which are already demarcated in the Proposal Map of the Local Plan and will be covered under separate guideline of this Manual.



**Figure 2.34**  
**Electric Substation On Free Standing Site**  
Source: UDG Volume 3, Part 4: Service Industry, Transport and Public Utilities



**Figure 2.35**  
**Setback for Electric Substation**



**Figure 2.36**  
**Possible Option to Fencing for Utility Reserve**

**PUBLIC UTILITIES**

- Public utilities shall be provided by all residential development within the development plot as according to the standard requirements in **Table 2.9**.

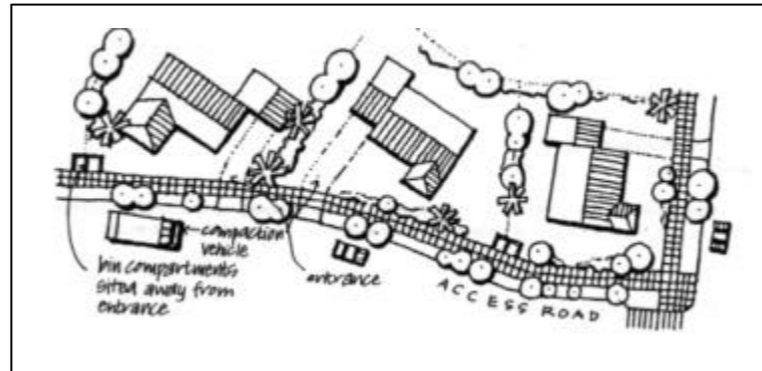
**Table 2.9 Standard for Provision of Public Utility for Residential Development**

Public Utility	Provision Threshold	Min. Size
TNB sub-station	1 : 100 dwellings	0.03 ha
Fibre Distribution House (FDH)	1 FDH : 500 dwellings (final decision depends on telecom requirements/level of service)	0.02 ha
Refuse Bins	1 for every unit (landed properties)	
Refuse Collection Centre/House	1 for every cluster of strata development of minimum 500 units	

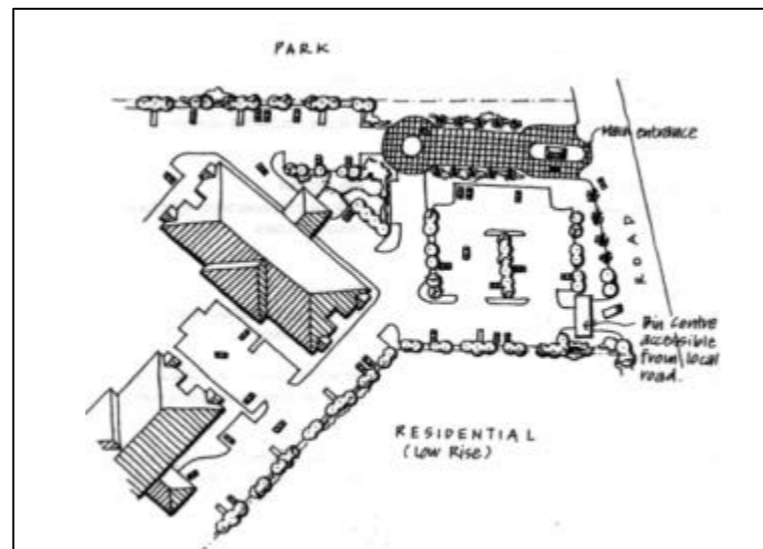
**Electric Substation**

- Location of electric substations for strata residential developments should be fully integrated within the development and shall be determined at preliminary layout stage. The building should be 12.2m x 5.5m built to blend with the individual residential blocks. It shall be located to have direct vehicle access for easy maintenance by the responsible agency.
- For independent substations, size of plot of land shall not be less than 16.5m x 13.5m with front road setback of minimum 6.0m and side/back of 3.0m (**Figure 2.35**). Buffer of 6m shall also be provided outside substation reserve and this buffer shall be planted with appropriate trees for screening.
- For landed residential development, electric substation shall be fully screened from view and public access using landscaping measures such as trees and earth moulding (**Figure 2.30**). Guidelines as stated in **Putrajaya Fencing Design Guidelines Manual** shall be fully adhered.

**Fibre Distribution House (FDH)** is telecommunication infrastructure, which terminate the fibre optic cable of the main telecommunication backbone before the final lines/coaxial lines/multi mode fibre optic lines are pulled to individual consumers.



**Figure 2.37**  
**Location of Refuse Compartments for Landed Residential Development**  
Source: UDG Volume 3, Part 4: Service Industry, Transport and Public Utilities



**Figure 2.38**  
**Location of Bin Centre for Strata Residential Development**  
Source: UDG Volume 3, Part 4: Service Industry, Transport and Public Utilities



**Figure 2.39**  
**Recycling Bin**

## PUBLIC UTILITIES

- Design of substations shall integrate together with the overall theme of the development and shall use the same construction materials and colour schemes as adjacent residential buildings with TNB's logo appearance on the building.

### Fibre Distribution House (FDH)

- A FDH must be provided for all residential development according to threshold as indicated in table 2.10
- Appearance and finishes of FDH must be visually compatible with the character of the surrounding residential development.
- Connection to individual consumers from the FDH shall be via underground clutch buried at least 1.5m in depths within its own designated reserve.

### Refuse Bins

- Bin compartments shall be provided for refuse bins and shall be conveniently accessible to garbage collectors.
- Compartments shall be appropriately located at the front but away from the main entrance of the house, be well ventilated yet enclosed to protect from rain and stray animals.

### Bin Centres/Refuse Chambers/House

- Bin centres/refuse chambers shall be provided for all multi dwelling units. Size and numbers depends on the scale of the building.
- Bin centres shall be located at the basement or ground floor near loading bays.
- Design shall include the followings:-
  - Good ventilation and lighting level (daylight or artificial)
  - Glazed wall and impervious ceramic floor or similar
  - Proper drainage for access water/liquid away from public area/walkway
  - Fully screened from public view. Strong loured metal doors are encouraged.

## PUBLIC UTILITIES

- Access for garbage collection should be provided at the early design stage to incorporate the following:-
  - i. To maintain a minimum height clearance of 4.1 meters, wherever the path for the garbage trucks have been identified.
  - ii. To maintain a minimum slope of 1:12 for the design of access road for garbage trucks.
  - iii. Provision for “ 3 point turns” or “cul-de-Sac” should be incorporated wherever necessary

**2.6 Environmental Consideration**

In order to minimize the impact of the environment it is important that the Environmental Management Plan (EMP) be complied throughout every phase of the development project.

**EMP** contains detail description of practices to be followed and activities to be undertaken for the environmental management of the development area.

ENVIRONMENTAL CONSIDERATION

**Noise Pollution Control**

- Noise at the boundary of the development should not exceed 65dB(A) during the day and 55dB(A) during the night.
- During construction times, that noise from the works shall not exceed 65dN(A) in terms of 30 min Leq at any noise sensitive receivers (NSR) at any time between 0600 to 2000 hours.
- All contractors will be required to submit lists of mechanical plants and methods statements for the control of noise level.
- An area 10m x 10m should be provided for air quality monitoring by the DOE. A signboard stating the use of the monitoring site should be erected. The criteria for the selection of the site are:-
  - i. The site should be located not less than 5m from the roadside.
  - ii. No structure that will inhibit air movement is allowed within 3m of the borders of the site.
  - iii. The site should be located in an open area with no restrictions at 120 degrees angle from above.
  - iv. The site should be located near a power source, preferably a TNB substation.

**Air Quality**

- Development activities shall be carried out in phase. Mitigation measures such as water spraying, wheel washing through and turfing should be provided and implemented during construction phase to control and minimize dust desperation. Air quality should not exceed the recommended Malaysian Guidelines during earthwork and construction phase as in **Table 2.10**.

**Table 2. 10 Air Quality Standard**

Parameter	Specification	
	Averaging Time	Malaysian Guidelines
Total Suspended Solid	24 hours	260µg/m <sup>3</sup>
Lead	3 months	1.5µg/m <sup>3</sup>
Sulphur dioxide	24 hours	0.04 ppm
Nitrogen Dioxide	1 hour	0.17 ppm
Carbon Monoxide	8 hours	9 ppm

ENVIRONMENTAL CONSIDERATION

- All open spaces and green corridors shall be landscaped to reduce air pollution.
- Buffer area between road and residential areas shall also be planted with tall trees to minimize noise and air pollution.

**Water Quality**

- Sewage, wastewater or effluent containing sand, cement, silt or any other suspended or dissolved material is not permitted to be discharged without the prior consent of the relevant Authority (DOE). Any such discharged shall comply to the Environment Quality (Perbadanan Putrajaya) (Lake Pollution Control) Regulations 1998. **Table 2.11.**

**Table 2.11 Putrajaya Ambient Lake Water Quality Standards and Standard for Discharge into Lake Area and Sewer**

Parameters	Unit	Putrajaya Ambient Lake Water Quality Standards	Standard for discharge into the lake area or onto land	Standard for discharge into sewer
Temperature	°C	-	38	45
pH		6.5-9.0	6.0-9.0	5.0-9.0
BOD	mg/l	3	10	400
COD	mg/l	25	30	1000
Suspended solids	mg/l	50	50	400
Mercury	mg/l	0.001	0.001	0.10
Cadmium	mg/l	0.005	0.01	1.0
Hexa-Chromium	mg/l	0.05	0.05	2.0
Arsenic	mg/l	0.05	0.05	2.0
Cyanide	mg/l	0.02	0.02	2.0
Lead	mg/l	0.05	0.05	2.0
Tri-Chromium	mg/l	-	0.20	10
Copper	mg/l	1.0	0.10	10
Manganese	mg/l	0.1	0.20	10
Nickel	mg/l	0.02	0.20	10
Tin	mg/l	0.05	0.20	10
Zinc	mg/l	5	1.0	10
Boron	mg/l	1	1.0	50
Iron	mg/l	0.3	1.0	2.0
Phenol	mg/l	0.01	0.001	2.0
Free Chlorine	mg/l	-	1.0	-
Sulphide	mg/l	-	0.5	2.0

## ENVIRONMENTAL CONSIDERATION

- ? Sedimentation ponds, silt traps and drainage systems to control surface run-off must be provided before the commencement of any earthworks. Discharges from sediment basins or any other discharge point from the site shall be collected, and removed via a suitable and properly designed temporary drainage system and disposed of at a location and in a manner that will cause either pollution nor nuisance.
- Solid waste material shall not be disposed to any watercourse or drainage facility.
  - Temporary drainage works and all other precautions shall be taken to ensure the avoidance of damage by flooding and silt washed down from the site.
  - All domestic wastewater are to be connected to the central wastewater sewerage system. No discharges into the storm water drainage system are allowed. This is to ensure that the ambient water quality of all inland waters and Putrajaya Lake are preserved at their high standard.
  - No discharge of any wastewater into the drainage system is allowed. All wastewater are to be connected to the central sewerage system. The drainage system is only to be used for removal of surface runoff from rainfall.
  - All toilets, domestic and commercial wastewater is to be connected to the central sewerage system. No individual sewerage system shall be allowed.

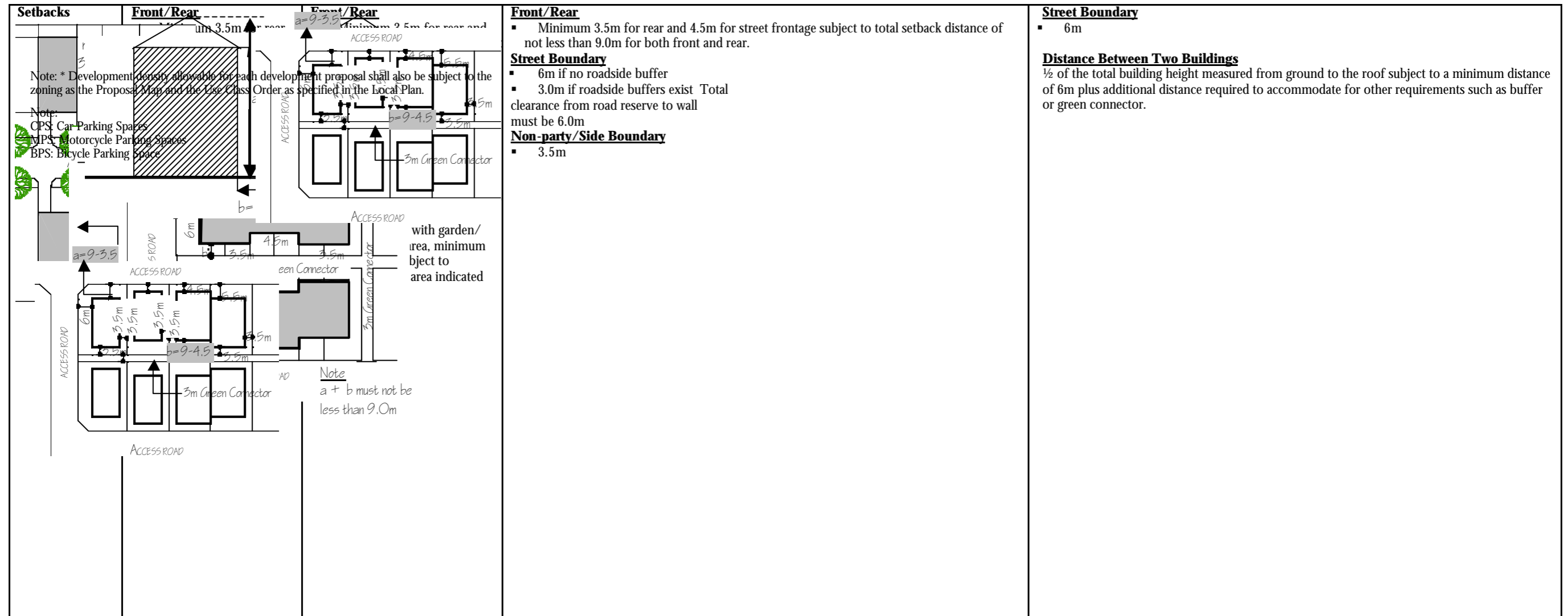
## ENVIRONMENTAL CONSIDERATION

### **Waste Management**

- The 4R's of waste management should be emphasized with reduction being the predominant "R" and followed by "Reuse", "Recycle" and "Recover". Awareness campaign should be organized to promote the 4R's of waste management.
- Recycling depot should be included in the design of community centre to encourage people to make recycling a way of life.
- Biodegradable waste should be disposed at an approved dumping site as soon as possible.
- Where necessary, drainage control measures should be constructed around waste storage areas.
- In the event those schedule wastes are generated especially at the Transport Terminal, these should be stored, handled and disposed according to the Environment Quality (Schedule Waste) Regulations, 1989.
- No open burning of solid waste shall be allowed.
- All solid waste are recommended to be sorted on site into two types-those that can be recycled and those that can be disposed.



	TYPE OF HOUSING							
	Detached/Bungalow	Zero Lot Line	Semi-Detached Houses	Terrace House	Town House (Strata)	Condominium	Apartment	Affordable Homes
<b>Maximum Density *</b>	8 units/ acre	12 units/ acre	10 units/acre	16 units/acre	32 units/acre	52 units/acre	60 units/acre	75 units/acre
<b>Minimum lot size</b>	<ul style="list-style-type: none"> <li>▪ Type A &amp; B – 743m<sup>2</sup></li> <li>▪ Type C – 743m<sup>2</sup></li> <li>▪ Type D – 557m<sup>2</sup></li> <li>▪ Type E – 446m<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ 260m<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ 297m<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ Type A – 153m<sup>2</sup></li> <li>▪ Type B – 133m<sup>2</sup></li> </ul>	1 hectare	1 hectare	1 hectare	1 hectare
<b>Minimum Lot Frontage</b>	<ul style="list-style-type: none"> <li>▪ Type A &amp; B – 24m</li> <li>▪ Type C – 24m</li> <li>▪ Type D – 18m</li> <li>▪ Type E – 18m</li> </ul>	<ul style="list-style-type: none"> <li>▪ 10m</li> </ul>	<ul style="list-style-type: none"> <li>▪ 12m</li> </ul>	<ul style="list-style-type: none"> <li>▪ Type A – 6.7m</li> <li>▪ Type B – 6.7m</li> </ul>	Not applicable	Not applicable	Not applicable	Not Applicable
<b>Maximum Floor Area (Gross)</b>	<ul style="list-style-type: none"> <li>▪ Type A &amp; B – 465m<sup>2</sup></li> <li>▪ Type C – 418m<sup>2</sup></li> <li>▪ Type D – 344m<sup>2</sup></li> <li>▪ Type E – 344m<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ 223m<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ 214m<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ Type A – 200m<sup>2</sup></li> <li>▪ Type B – 149m<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ Type A – 200m<sup>2</sup></li> <li>▪ Type B – 149m<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ 130m<sup>2</sup> (min.)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Type A – 111m<sup>2</sup> (min.)</li> <li>▪ Type B – 88m<sup>2</sup> (min.)</li> </ul>	<ul style="list-style-type: none"> <li>▪ 65m<sup>2</sup> (min.)</li> </ul>
<b>Maximum Height</b>	<ul style="list-style-type: none"> <li>▪ 2 storeys</li> </ul>	<ul style="list-style-type: none"> <li>▪ 2 storeys</li> </ul>	<ul style="list-style-type: none"> <li>▪ 2 storeys</li> </ul>	<ul style="list-style-type: none"> <li>▪ 2 storeys</li> </ul>	<ul style="list-style-type: none"> <li>▪ 3 storeys</li> </ul>	<ul style="list-style-type: none"> <li>▪ 8 storeys</li> </ul>	<ul style="list-style-type: none"> <li>▪ 12 storeys</li> </ul>	<ul style="list-style-type: none"> <li>▪ 12 storeys</li> </ul>
<b>Parking</b>	<ul style="list-style-type: none"> <li>▪ 2 Car parking spaces : 1 unit</li> </ul>	<ul style="list-style-type: none"> <li>▪ 2 Car parking spaces : 1 unit</li> </ul>	<ul style="list-style-type: none"> <li>▪ 2 Car parking spaces : 1 unit</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 Car parking space : 1 unit</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1 Car parking space : 1 unit</li> </ul>	<ul style="list-style-type: none"> <li>▪ CPS : 2CPS:1unit +10% visitors</li> <li>▪ MPS: 50% of total housing units</li> <li>▪ BPS : 1rack:50 housing units</li> </ul>	<ul style="list-style-type: none"> <li>▪ CPS : 1CPS:1unit +10% visitors</li> <li>▪ MPS: 50% of total housing units</li> <li>▪ BPS : 1rack:50 housing units</li> </ul>	<ul style="list-style-type: none"> <li>▪ CPS : 1CPS:1.5unit +10% visitors</li> <li>▪ MPS: 50% of total housing units</li> <li>▪ BPS : 1rack:50 housing units</li> </ul>
						HPS : 1% on top of the required parking provision or minimum 2 parking spaces whichever is higher		



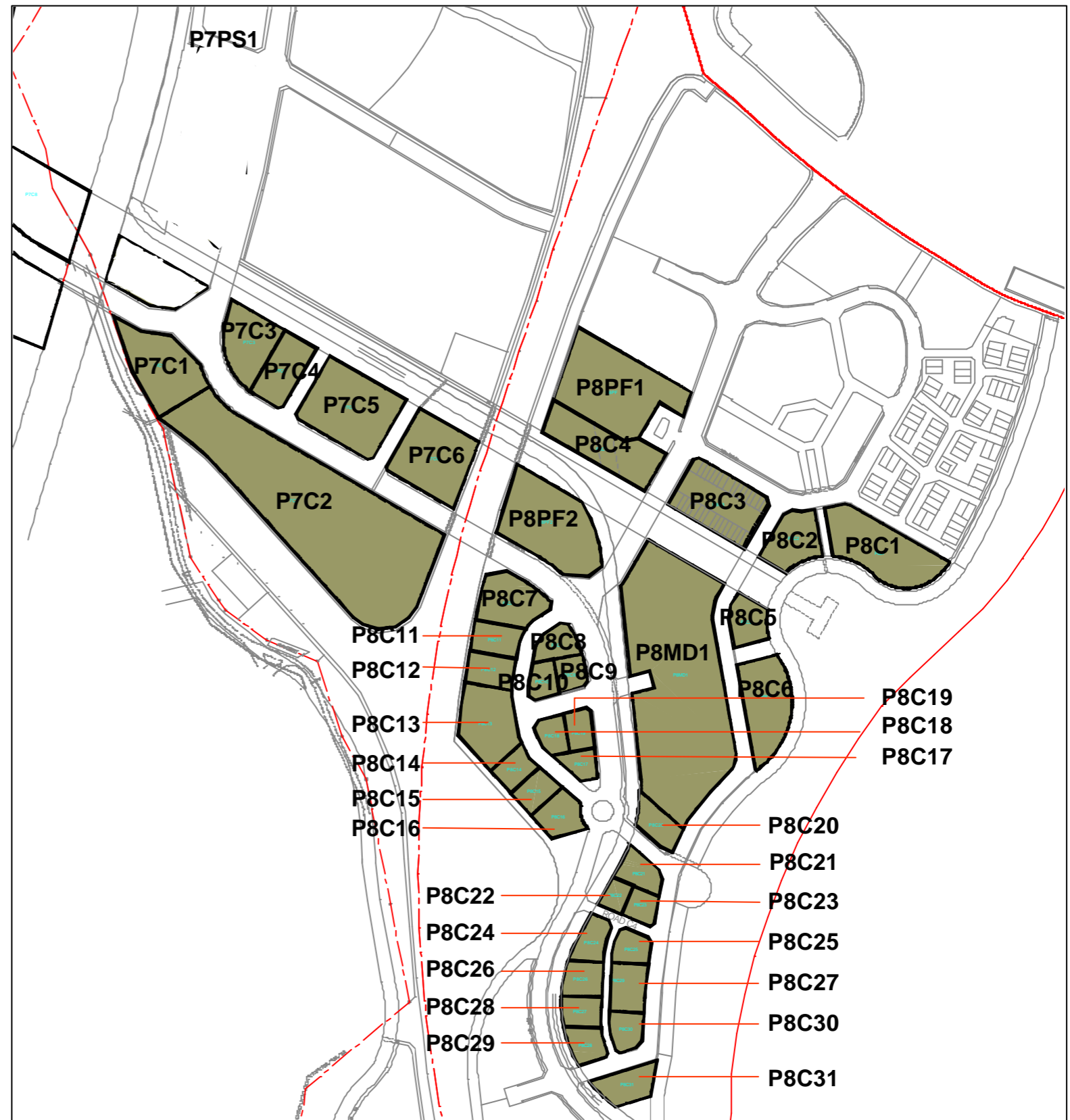
2.12 SUMMARY

# 3.0 SUB COMMERCIAL CENTRE

## 3.1 USE

This guideline shall be used for all commercial developments in the Sub-Commercial Centre (SCC) as indicated in the Proposal Map of the Local Plan area for Precinct 7, 8, 9 and 10, Putrajaya.

The SCC within the Local Plan area is located in PB7.3 and PB8.3 (Figure 3.1).



**Figure 3.1**  
**Sub-Commercial Centre and Plot Identification**

3.2 PHYSICAL AND SITE PLANNING

3.2.1 Setback

**Setback** refers to the minimum distance and a property boundary or a wall of another building

Building are setback at different distance from the boundary line to achieve the intend urban streetscape and frontages, to allow for easements for access and landscaping, as well as to satisfy mandatory regulations as prescribed in the Building-By-Law.

Some plots in the Sub-commercial Centre may have two or more front setbacks requirements and no rear/side setback requirements depending on its location. Some plots on the other hand may have two different side setback requirements. Therefore, all plots in the Sub-commercial Centre shall need to refer to setback requirements as specified in this Manual.

**Build-to-line** refers to compulsory alignment along a specific edge that is parallel to the street or public open space. It is a line graphically indicated as a setback dimension along which a façade or wall must be placed to enforce building alignment along specific edge.

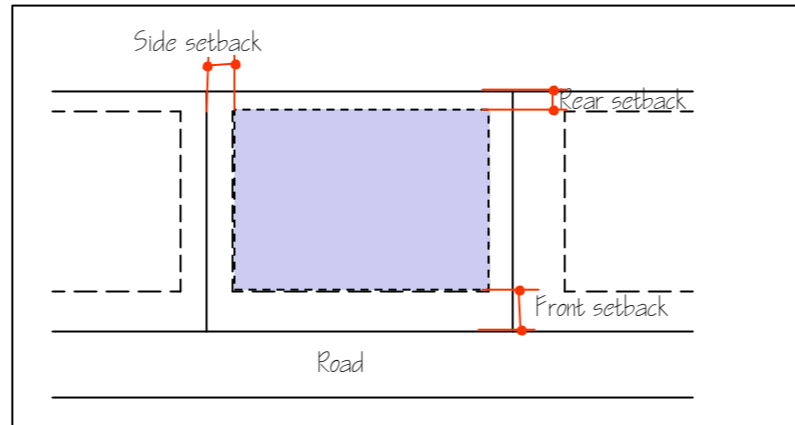


Figure 3.2  
Setback

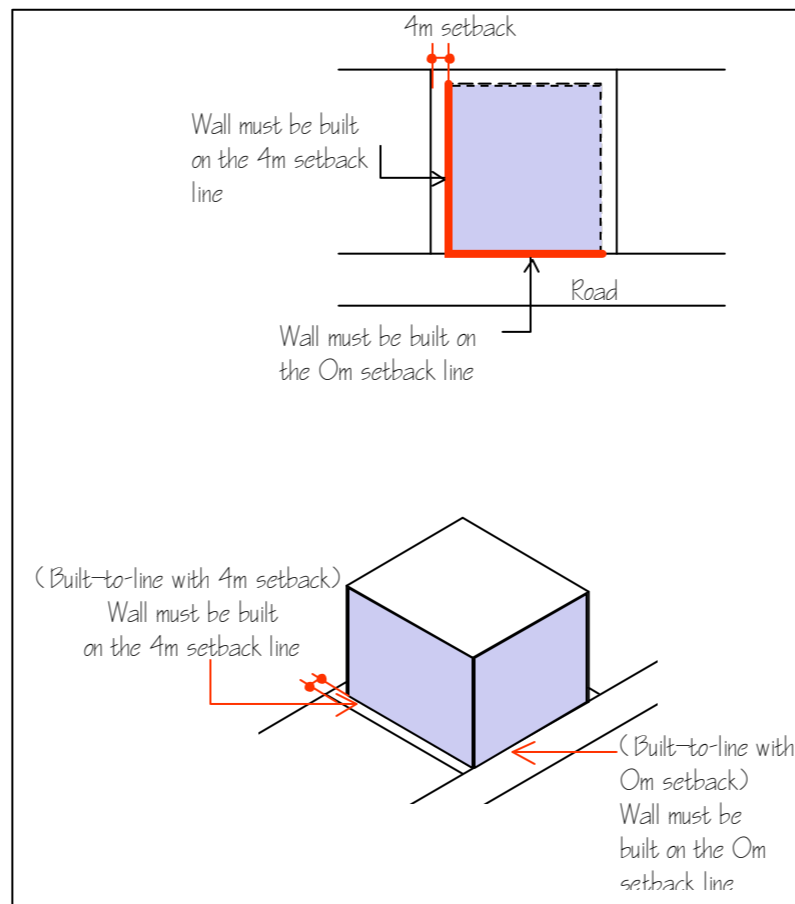
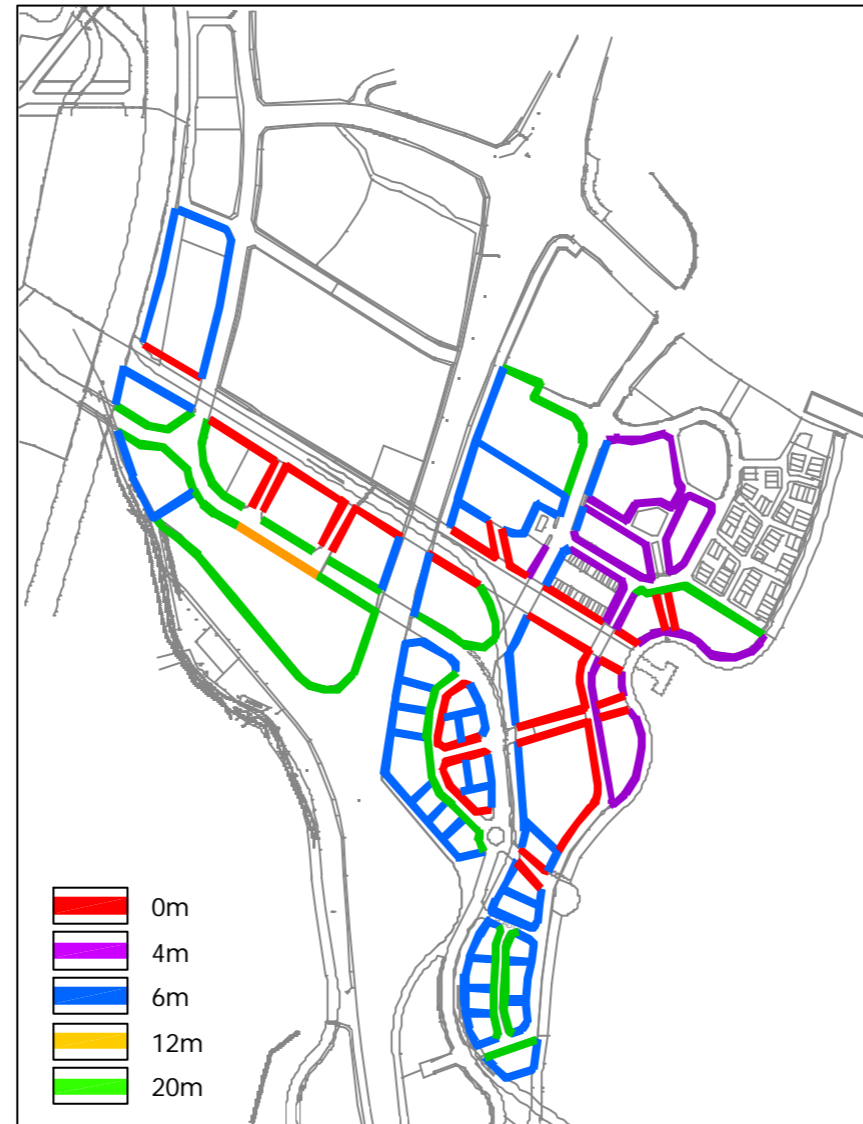


Figure 3.3  
Build-to Line on Setback Line

BUILDING SETBACK

- Buildings shall be setback to the minimum dimensions as shown in the **Table 3.1, Table 3.2 and Table 3.3**.
- Where build-to-line is indicated together with the setback dimensions, façade shall be erected on the setback line (**Figure 3.3**).
- Build-to-line walls on 0m setback line shall not have any extruding projection outside the setback lines.



**Figure 3.4**  
**Building Setback**

**BUILDING SETBACK**

**Table 3.1** **Setback Requirements for Commercial Plots in PB 7.3**

Plot No	Min. Setback (metre)
P7C1	Front facing spine road 32m – 12m Rear – 6m Side – 6m
P7C2	Front facing spine road 32m – 12m (Built-to-line) & 20m Front facing Primary Distributor Road – 12m Side facing Secondary Distributor Road – 12m Side adjoining Plot P7C1 – 6m
P7C3	Front facing spine road 32m – 12m Front facing Urban Park – 0m (Built-to-line) Side adjoining Plot P7C4 – 0m
P7C4	Front facing spine road 32m – 12m Front facing Urban Park – 0m (Built-to-line) Side adjoining Plot P7C3 – 0m Side – 0m (Built-to-line)
P7C5	Front facing spine road 32m – 12m Front facing Urban Park – 0m (Built-to-line) Sides – 0m (Built-to-line)
P7C6	Front facing spine road 32m – 12m Front facing Urban Park – 0m (Built-to-line) Side facing Secondary Distributor Road – 6m Side – 0m (Built-to-line)

**Table 3.2** **Setback Requirements for Commercial Plots in PB 8.3**

Plot No	Min. Setback (metre)
P8C1	Front facing promenade – 4m Rear – 12m Side fronting green connector – 0m
P8C2	Front facing Urban Park – 0m Front facing Local Road – 4m Side fronting green connector – 0m
P8C3	Front facing Urban Park – 0m (Built-to-line) Side fronting Spine Road – 6m Side fronting Local Road – 4m (Built-to-line) Rear – 4m (Built-to-line)
P8C4	Front facing Urban Park – 0m (Built-to-line) Side fronting Spine Road – 4m Side fronting Secondary Distributor Road – 6m Rear – 6m
P8C5	Front facing Urban Park – 0m Front facing promenade – 4m Front facing Local Road – 4m Side – 0m

BUILDING SETBACK

**Table 3.2 Setback Requirements for Commercial Plots in PB 8.3 (cont.)**

P8C6	Front facing promenade – 4m Front facing Local Road – 4m Side – 0m
P8C7	Front facing Local Road – 12m Rear facing Secondary Distributor Road – 6m Side facing Spine Road – 6m Side adjoining Plot P8C11 – 6m
P8C8	Front facing Spine Road – 6m Front facing Local Road – 0m Side adjoining Plot P8C9 & Plot P8C10 – 6m
P8C9	Front facing Spine Road – 6m Side adjoining Plot P8C8 – 6m Side facing access road – 0m Rear adjoining Plot P8C10 – 6m
P8C10	Front facing Local Road – 0m Side adjoining Plot P8C8 – 6m Side facing access road – 0m Rear adjoining Plot P8C9 – 6m
P8C11	Front facing Local Road – 12m Rear facing Secondary Distributor Road – 6m Side adjoining Plot P8C7 & P8C12 – 6m
P8C12	Front facing Local Road – 12m Rear facing Secondary Distributor Road – 6m Side adjoining Plot P8C11 & P8C13 – 6m
P8C13	Front facing Local Road – 12m Rear facing Secondary Distributor Road – 6m Side adjoining Plot P8C12 & P8C14 – 6m
P8C14	Front facing Local Road – 12m Rear facing Secondary Distributor Road – 6m Side adjoining Plot P8C13 & P8C15 – 6m
P8C15	Front facing Local Road – 12m Rear facing Secondary Distributor Road – 6m Side adjoining Plot P8C14 & P8C16 – 6m
P8C16	Front facing Local Road – 12m Rear facing Secondary Distributor Road – 6m Side adjoining Plot P8C15 – 6m Side fronting open space – 6m
P8C17	Front facing Spine Road – 6m Front facing Local Road – 0m Side adjoining Plot P8C18 & Plot P8C19 – 6m
PBC18	Front facing Local Road – 0m Side adjoining Plot P8C17 – 6m Side facing access road – 0m Rear adjoining Plot P8C19 – 6m

BUILDING SETBACK

**Table 3.2 Setback Requirements for Commercial Plots in PB 8.3 (cont.)**

PBC19	Front facing Spine Road – 6m Side adjoining Plot P8C17 – 6m Side facing access road – 0m Rear adjoining Plot P8C18 – 6m
P8C20	Front facing Local Road and promenade – 6m (Built-to-line) Rear facing monorail reserve – 6m Side facing Local Road – 0m (Built-to-line) Side adjoining Plot P8MD1 – 6m
P8C21	Front facing Local Road and promenade – 6m (Built-to-line) Rear facing monorail reserve – 6m Side facing Local Road – 0m (Built-to-line) Side adjoining Plot P8C22 – 6m
P8C22	6m all around (Built-to-line for frontage facing promenade)
P8C23	Front facing access road – 12m Rear facing monorail reserve – 6m Side facing access road – 6m Side adjoining Plot P8C25 – 6m
P8C24	Front facing Local Road and promenade – 6m (Built-to-line) Front facing access road – 12m Side facing Local Road – 6m Side adjoining Plot P8C28 – 6m
P8C25	Front facing access road – 12m Rear facing monorail reserve – 6m Side adjoining plots P8C23 & P8C26 – 6m
P8C26	Front facing access road – 12m Rear facing monorail reserve – 6m Side adjoining plots P8C25 & P8C27 – 6m
P8C27	Front facing access road – 12m Rear facing monorail reserve – 6m Side adjoining plots P8C26 – 6m Side facing Local Road – 6m (Built-to-line)
P8C28	Front facing Local Road and promenade – 6m (Built-to-line) Front facing access road – 12m Side adjoining plots P8C24 & P8C29 – 6m
P8C29	Front facing Local Road and promenade – 6m (Built-to-line) Front facing access road – 12m Side adjoining plots P8C28 – 6m Side facing Local Road – 6m (Built-to-line)
P8C30	Front facing Local Road and promenade – 6m Front facing Local Road – 12m Rear facing monorail reserve – 6m Side adjoining open space – 6m
P8MD1	Front facing Local Road – 4m (Built-to-line) Front facing Urban Park – 0m (Built-to-line) Rear facing monorail reserve – 6m Side adjoining plot P8C20 – 6m

**3.2.2 Plot Ratio**

**Plot Ratio** as defined by the Town and Country Planning Act, 1976, is the ratio of the total floor area of a building to the area of the building plot as measured between the survey boundary lines or, if there are no survey boundary lines, between the provisional boundary lines.

**3.2.3 Plinth Area/Site Coverage**

**Plinth Area** as defined by the Town and Country Planning Act, 1972, is the proportion to be covered by building of the area of any lot.

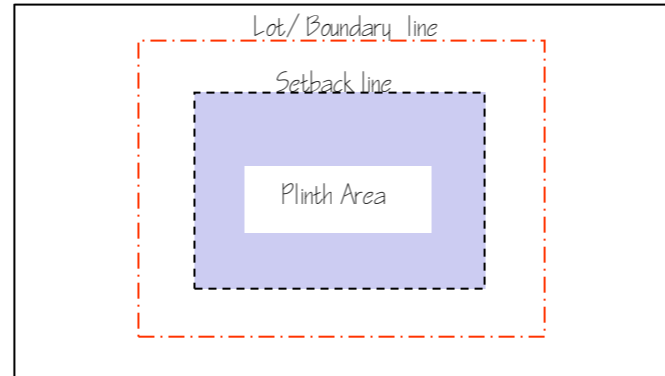
**Open Space Coverage** is the portion of plot area outside plinth area. It may comprise of internal circulation, open space and both hard and soft landscape elements.

**3.2.4 Gross Floor Area**

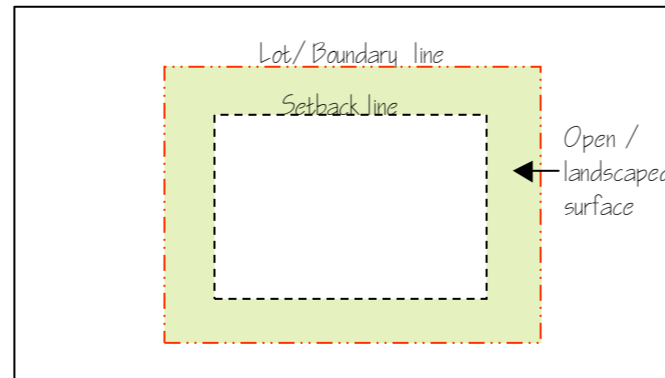
**Gross Floor Area (GFA)** is the sum of the plan areas of all floor levels (inclusive of the plan area of all walls, windows, columns, elevator shafts) and the plan area of all internal and external stairs, landing ramps, escalators, or other means of access between levels, or at each level in the building.

**3.2.5 Building Height**

**Building Height** is the limit to the vertical extent of a building. It is measured as a number of storeys or floors from the ground level within the Sub-commercial Centre within the Local Plan area.



**Figure 3.5**  
**Plinth Area**



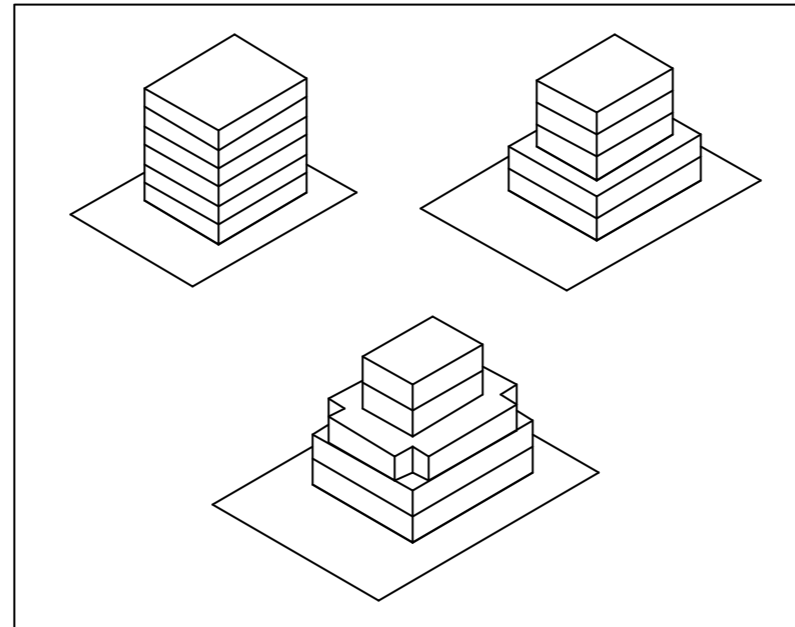
**Figure 3.6**  
**Open Space Coverage**

**OTHER PLANNING REQUIREMENTS**

- Plot ratio, maximum gross floor area, maximum building height, plinth area and percentages of open space coverage for commercial development located within the Sub-Commercial Centre shall conform to the planning standard as indicated in **Table 3.3 and 3.4.**

**Table 3.3 Planning Standard for Commercial Development in PB 7.3**

Plot No	Max. Plinth (%)	Plot Ratio	Max Gross Floor Area sm (sf)	Height		Min. Open Space Coverage (%)
				No of Storey	Tower (Storey)	
P7C1	61	1.50	15479 (166,617)	4	8	39
P7C2	82	0.56	30936 (333,000)	2-3	-	18
P7C3	77	2.37	16956 (182,516)	4	8	23
P7C4	89	1.50	8680 (93,436)	2-4	-	11
P7C5	82	1.00	15175 (163,350)	2-4	8	18
P7C6	83	1.50	17421 (187,525)	2-4	-	17



**Figure 3.7**  
**Possible Variation in Building Massing**

OTHER PLANNING REQUIREMENTS

**Table 3.4 Planning Standard for Commercial Development in PB 8.3**

Plot No	Plinth (%)	Plot Ratio	Max. Gross Floor Area sm (sf)	Height		Open Space Coverage (%)
				No. of Storey	Tower (Storey)	
P8C1	71	2.50	31,059 (334,323)	2-4	-	29
P8C2	69	2.50	14,164 (152,460)	2-4	-	31
P8C3	94	2.08	22,891 (246,400)	4	-	6
P8C4	83	0.48	4,694 (50,530)	1	-	17
P8C5	86	0.78	2,792 (30,056)	1	-	14
P8C6	85	0.39	3,442 (39,204)	5-6	-	15
P8C7	69	2.13	(13,935) 150,000	5-6	-	31
P8C8	74	2.03	5,574 (60,000)	5-6	-	26
P8C9	63	2.55	5,574 (60,000)	5-6	-	37
P8C10	75	3.47	7,432 (80,000)	5-6	-	25
P8C11	56	2.24	7,432 (80,000)	5-6	-	44
P8C12	56	2.21	7,432 (80,000)	5-6	-	44
P8C13	70	4.00	34,478 (371,131)	5-6	14	30
P8C14	52	2.12	5,574 (60,000)	5-6	-	48
P8C15	52	2.06	5,574 (60,000)	5-6	-	48
P8C16	54	3.51	12,774 (137,500)	5-6	-	46
P8C17	75	2.75	5,574 (60,000)	5-6	-	25

OTHER PLANNING REQUIREMENTS

**Table 3.4 Planning Standard for Commercial Development in PB 8.3 (cont.)**

Plot No	Plinth (%)	Plot Ratio	Max. Gross Floor Area sm (sf)	Height		Open Space Coverage (%)
				No. of Storey	Tower (Storey)	
PBC18	81	2.55	5,574 (60,000)	5-6	-	19
PBC19	64	2.42	5,574 (60,000)	5-6	-	36
P8C20	70	2.30	5,574 (80,000)	4	6	30
P8C21	79	2.35	5,574 (80,000)	4	6	21
P8C22	63	2.42	5,574 (100,000)	5-6	-	37
P8C23	59	2.75	5,574 (60,000)	5-6	-	41
P8C24	54	2.19	5,574 (60,000)	5-6	-	46
P8C25	41	2.45	7,432 (80,000)	5-6	-	59
P8C26	42	2.74	7,432 (80,000)	5-6	-	58
P8C27	51	2.70	7,432 (80,000)	5-6	-	49
P8C28	45	1.45	5,574 (60,000)	5-6	-	56
P8C29	48	2.09	5,574 (60,000)	5-6	-	52
P8C30	44	2.55	9,290 (100,000)	4	6	56
P8MD1	93	1.50	74,419 (801,068)	4	8	7

- The ground floor in the principal building shall be a minimum of 3.6m floor-to-ceiling heights while other floors shall be between 3m and 4m floor-to-ceiling height.

### 3.2.6 Use Class Order

**Use Class Order** is the permitted activity for the use of land or building. It is categorised into classes where change from one class to the other shall be deemed to constitute development and therefore shall require planning approval. Change within the same class however shall not require planning approval under the provision of the Local Plan.

**Limited Commercial** refers to development comprising of office, retail and residential within the same plot. It is similar to mixed use but is only applicable

### USE CLASS ORDER

- Development within the SCC shall conform to Use Class Order as specified in the Use Class Order Table within the Local Plan.
- Limited commercial developments within the SCC shall conform to the following requirements: -
  - i. The mix of commercial and residential on one plot shall be as follows: -
    - Commercial – 60%
    - Residential – 40%
  - ii. The total plot ratio of the proposed development shall not exceed the maximum as indicated in the above tables. This maximum plot ratio is the total for both commercial and residential components of the proposed development.
  - iii. Commercial uses especially retail are encouraged to be located on the ground floor fronting main streets whereas residential should be for upstairs levels and/or fronting secondary streets. Allowable activities within the plot shall conform to use class orders as specified in the Local Plan. Shop-office-home office (SOHO) concepts shall be considered as commercial use.
  - iv. Entries from the street to upper levels should be clearly identifiable. Entries for residential uses should also be separated from commercial uses to allow for privacy for residents.
  - v. Retail use should have appropriate delivery and garbage collection access, and related noise impacts on residents from early morning movements should be mitigated.

## 3.3 Urban Design

### 3.3.1 Streetscape

**Streetscape** is the urban character of the public realm which is made up of an assemblage of landscape, walks and curbs between the lot line and the vehicular lanes. Its physical character and ambiance is further defined by building frontages aligning the public right of way.

The streetscapes are of different characteristics and compositions. These can be perceived in the manner in which each detailed element that constitutes the streetscape is ordered to achieve the intended image in line with the urban identity and development focus.

Streetscape categories for the SCC are as the following: -

- Boulevard
- Avenue
- Drive
- Commercial Street

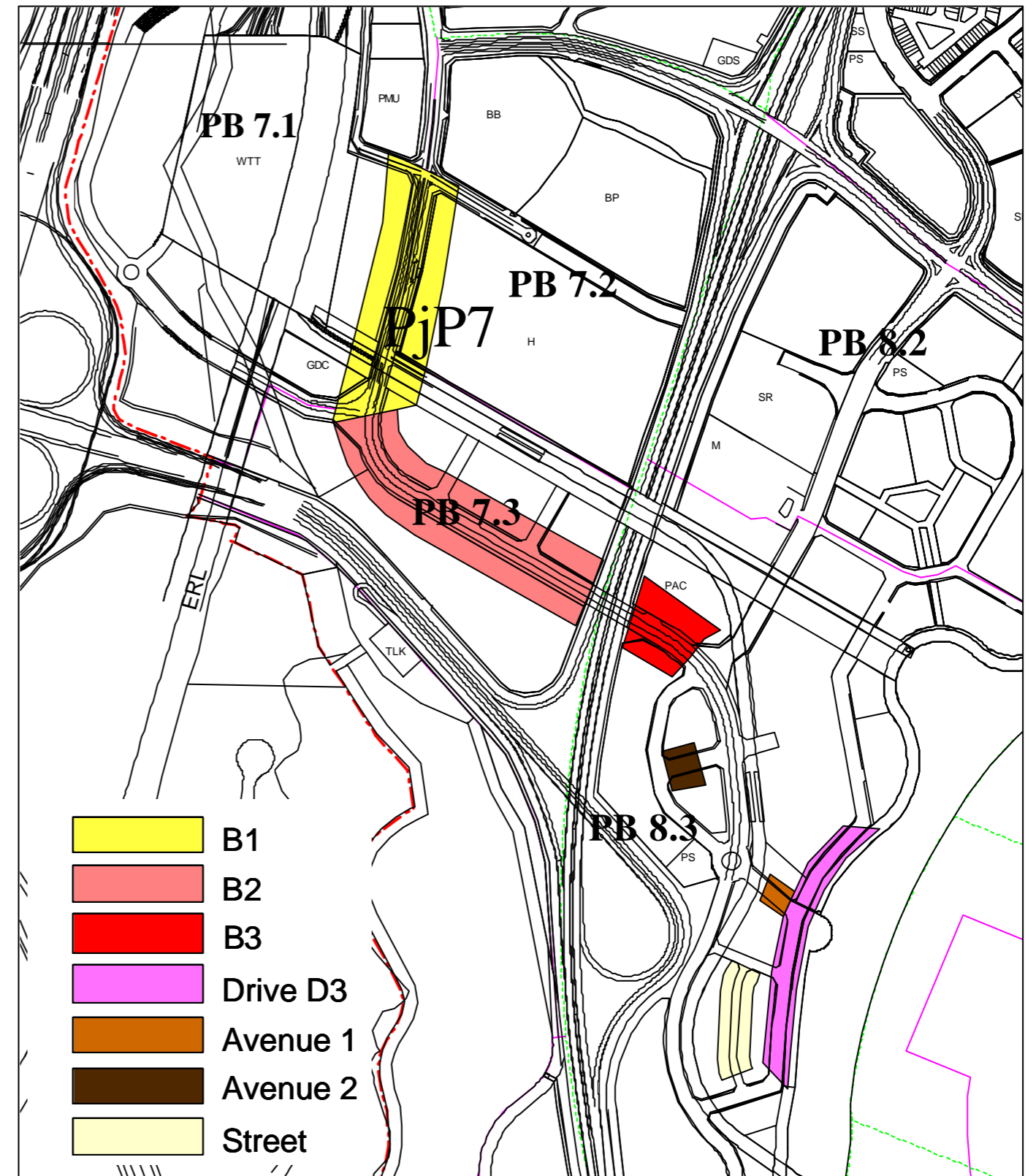
**Boulevard** is a long-distance, free movements thoroughfare traversing an urbanized area. A boulevard is flanked by wide parkway on both side of the thoroughfare with landscaped median in the centre. Buildings are setback from the lot line to accommodate for additional landscape strip, sidewalk or service lanes.

**Avenue** is a limited distance, free movement thoroughfare within an urbanized area. It is characterised by a median in the centre that may be wide enough to hold monuments or even buildings. Buildings or other structures to accentuate a focal point normally terminate its trajectory. An avenue may be conceived as an elongated square and access for vehicular traffic may be limited.

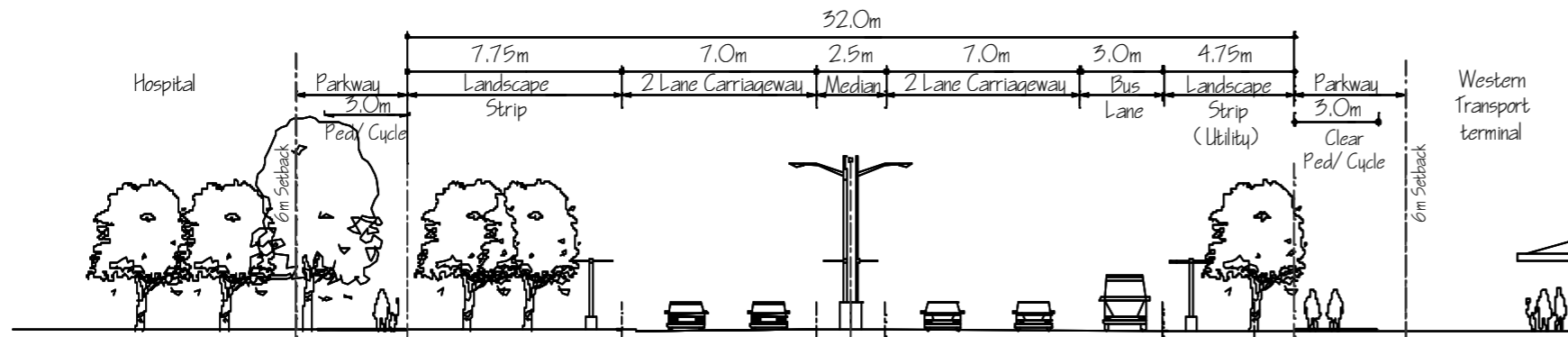
**Drive** is a thoroughfare along the boundary between an urbanized area and a natural condition, usually along a waterfront, a park, or a cape. One side of a drive has the urban character of a street or boulevard, with sidewalk and buildings, while the other has the qualities of a road parkway, with naturalistic planting and detailing.

**Street** is a local slow movement thoroughfare that provides frontages for higher density buildings such as offices and shops. The frontages are mostly green setbacks of buildings aligning it and sidewalks along the carriageway

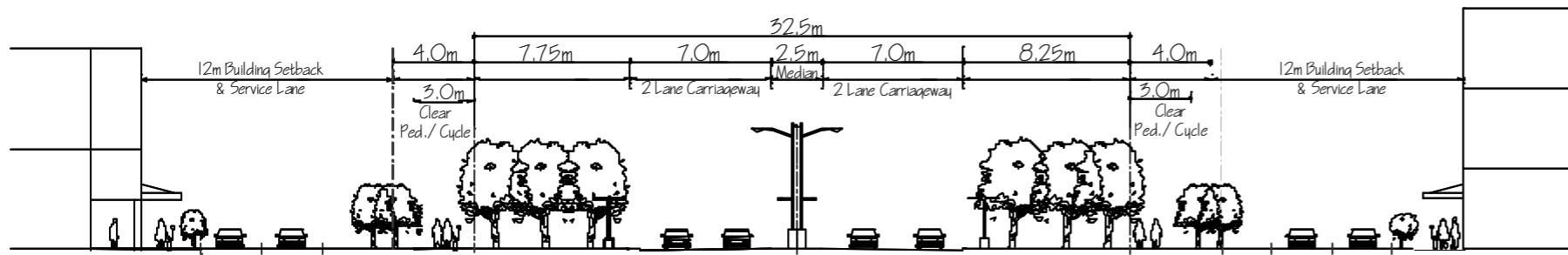
The variables of a streetscape are its parkway, sidewalks, kerbs, planters, trees and streetlights.



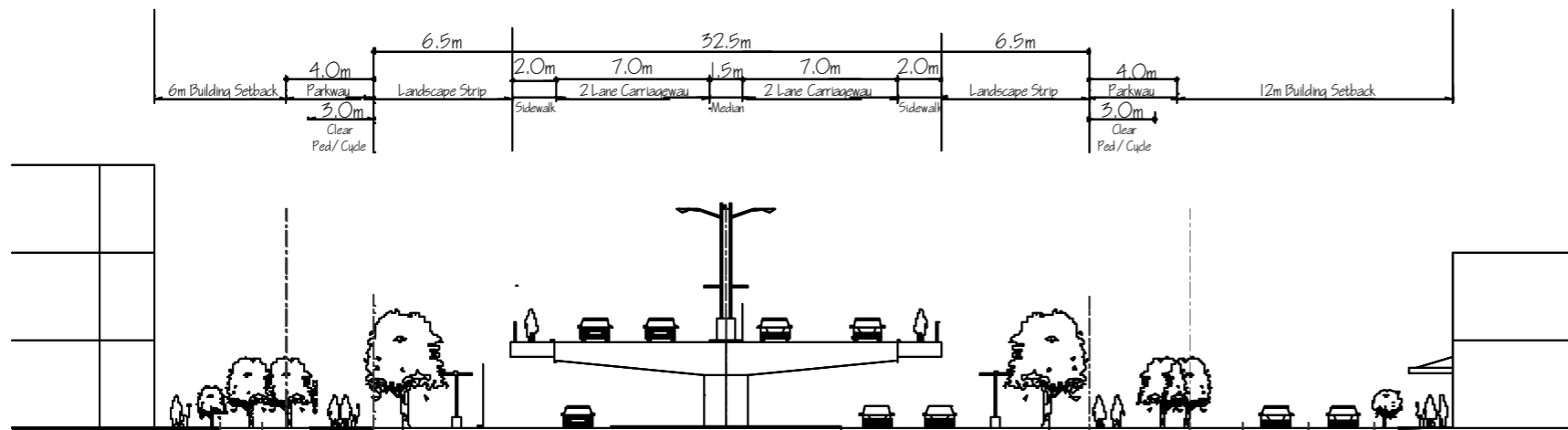
**Figure 3.8**  
Streetscape Type



**Figure 3.9**  
**Typical Boulevard Type B1**



**Figure 3.10**  
**Typical Boulevard Type B2**



**Figure 3.11**  
**Boulevard B3**

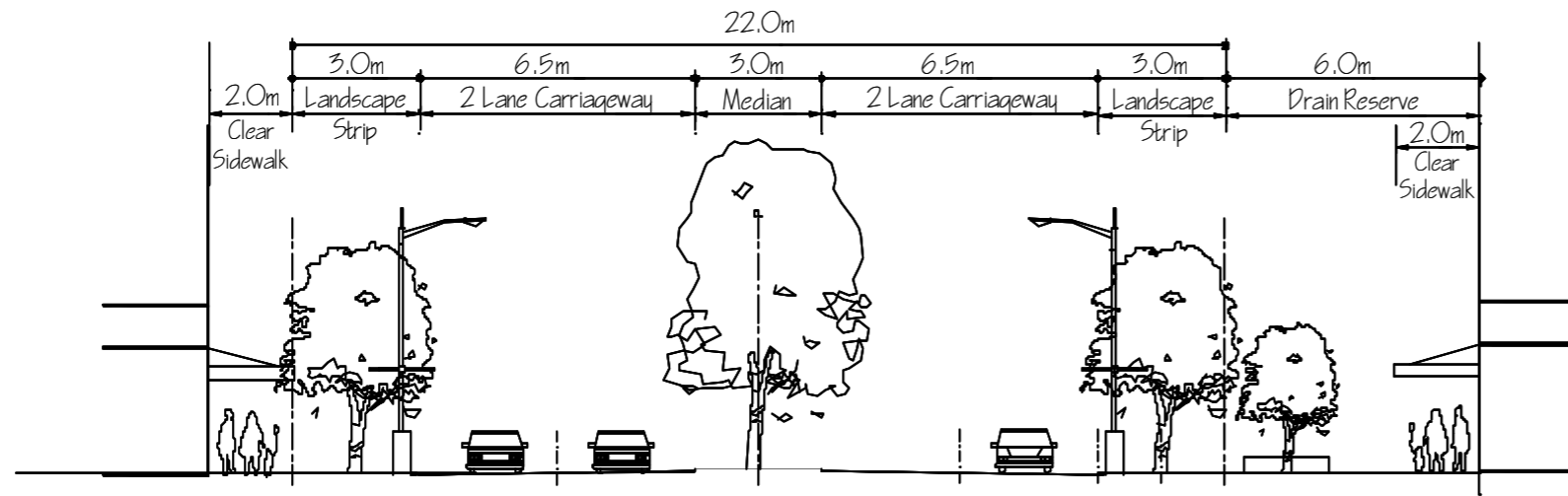
STREETSCAPE

- Streetscape within the SCC shall follow classification as indicated in **Table 3.5**.

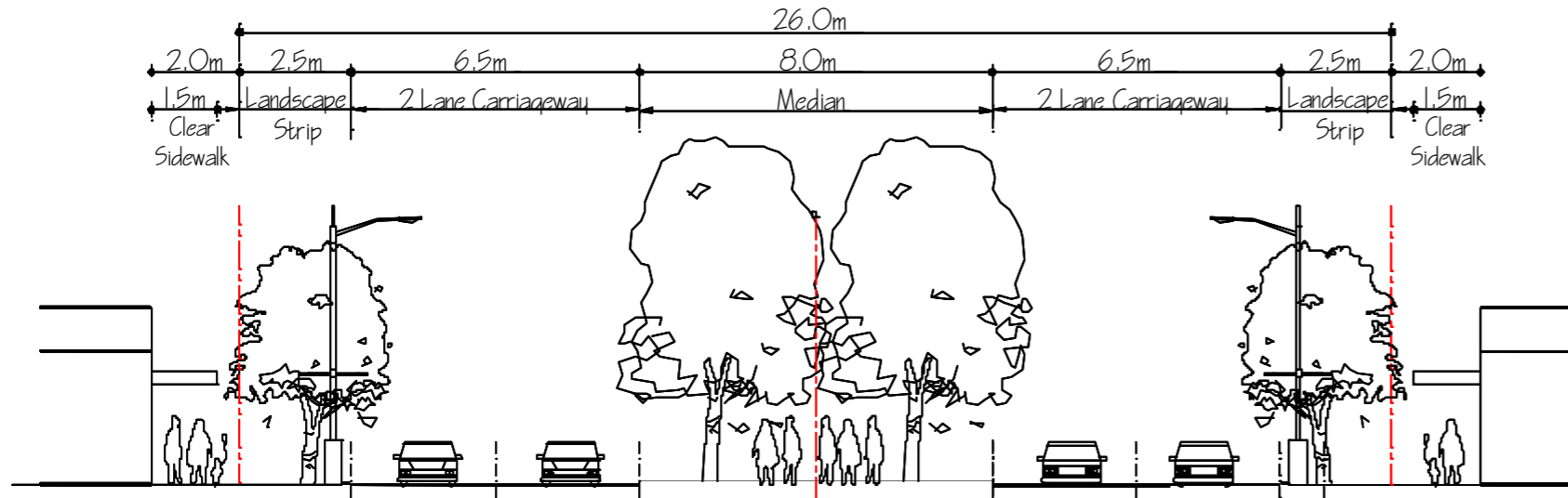
**Table 3.5 Streetscape Variables of Boulevard**

	Boulevard Type		
	B1	B2	B3
R.O.W	32m	32.5m	32.5m
No. Of Lanes	4	4	4
Carriageway Width	7m	7m	7m
Median	2.5m	2.5m	1.5m
Sidewalk/ Landscape Strip/ Drain/ Utility	7.75m	7.75m	6.5m
Parkway	4m	4m	4m
Others	3.0m bus lane	Service Lane	Monorail Reserve
Frontage Type	Verandah way	Verandah way	Stoop
Setback	6m	12m	6m
Parking	Parallel		None

Note: \* 32m and 32.5m ROW is inclusive of bridge and the ramps/steps on both sides of the bridge



**Figure 3.12**  
**Avenue A1**

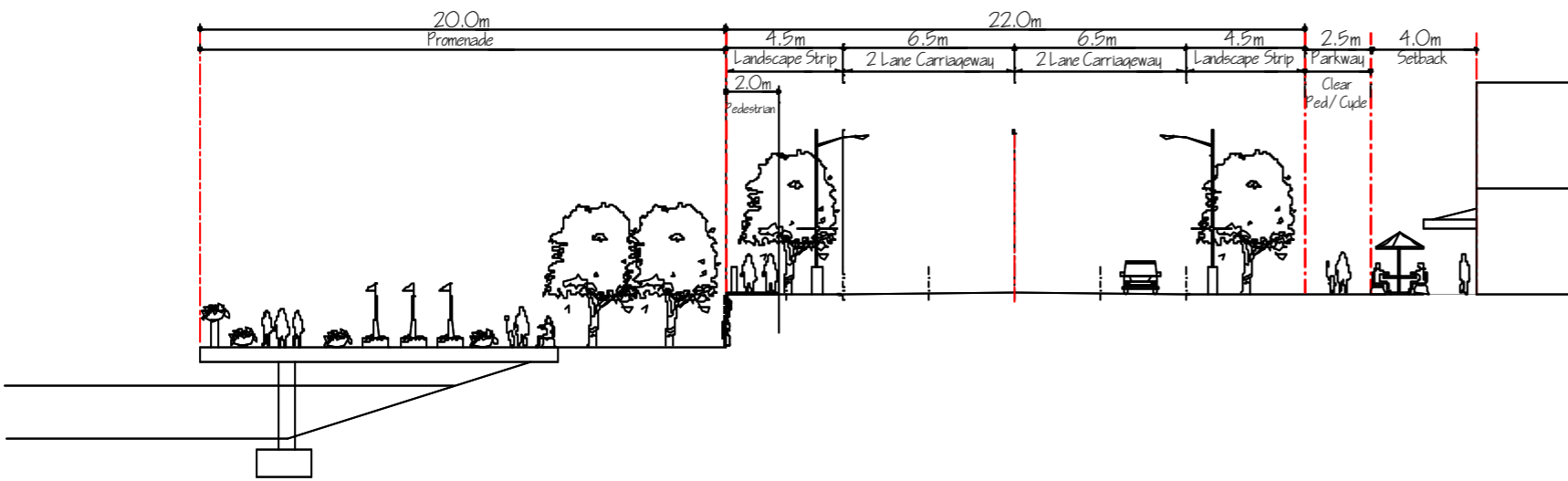


**Figure 3.13**  
**Avenue A2**

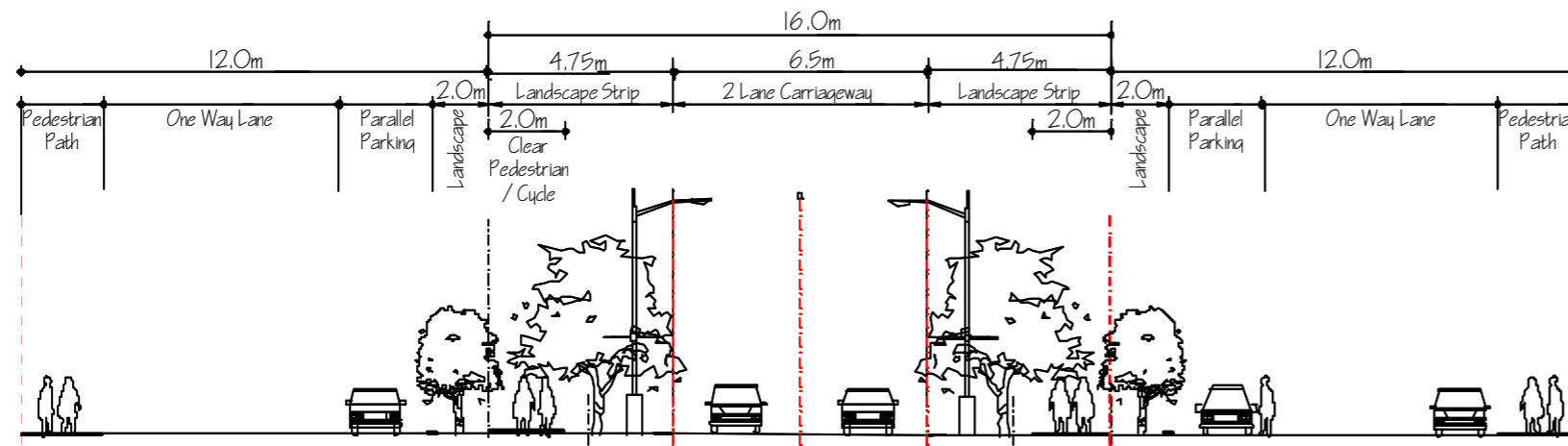
STREETSCAPE

**Table 3.6** Streetscape Variables Of A Drive, Avenue and Street

	Drive			
	D3	Avenue A1	Avenue A2	Street
R.O.W	22m	22m	26m	16m
No. Of Lanes	4	4	4	2
Carriageway Width	6.5m	6.5m	6.5m	6.5m
Median	-	3m	8m	-
Sidewalk/ Landscape Strip/Drain/ Utility	4.5m	3m	2.5m	4.75m
Parkway	2.5m on promenade side	2m	2m	-
Frontage Type	-	-	-	-
Setback	4m	6m	6m	12m
Kerb Type	150mm raised kerb	150mm raised kerb	150mm raised kerb	150mm raised kerb
Parking	2.5m Parallel within ROW	-	-	-
Planter	Separate	-	-	-
Road Surface	Special	-	-	-

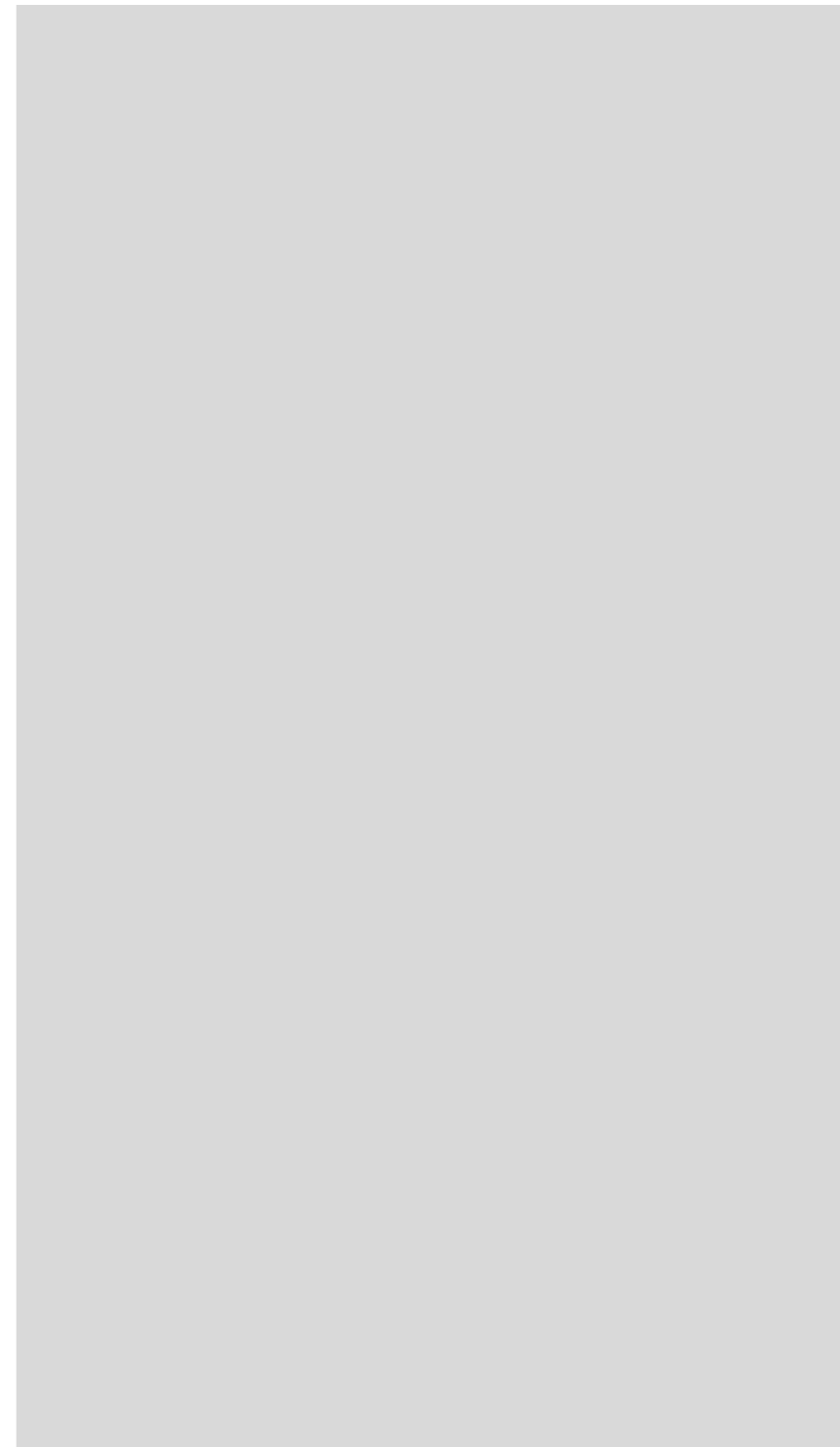


**Figure 3.14**  
**Drive D3**



**Figure 3.15**  
**Street**

## STREETSCAPE



**Sidewalk** Layer of the streetscape dedicated exclusively to pedestrian activity and small-wheeled oriented vehicles. It is normally situated within the road reserve or within the setback area of a development plot.

**Clear Sidewalk Zone** is the zone within the streetscape where pedestrian flow is in continuity and uninterrupted by any structures such as columns or any landscape furniture such as trees, benches, kiosks and utility elements such as covers and gratings.

**Kerb** is the detailing of the edge of thoroughfare pavement separating the level of vehicular carriageway and sidewalk. There are several types as the following:-

- Raised kerb
- Flat bed kerb
- Flat kerb
- Drop kerb

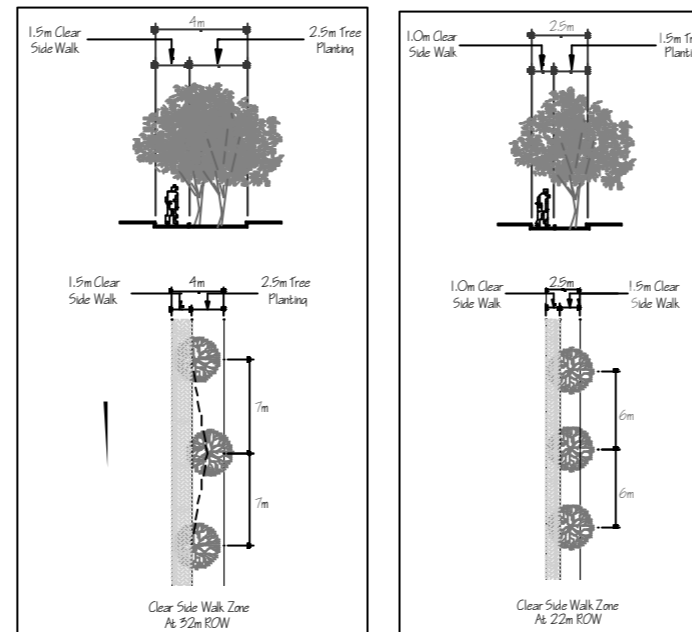
**Raised Kerb** is a raised paving of the sidewalk where level is higher than the carriageway and is used to demarcate the limits of carriageway.

**Flat Bed Kerb** is the smooth transition paving differentiating two different materials of the sidewalk and the carriageway that is laid flush with the surface or shallow ramp. This type of kerb is typically used along kerb cut zones where provision of vehicular access or drop off is made.

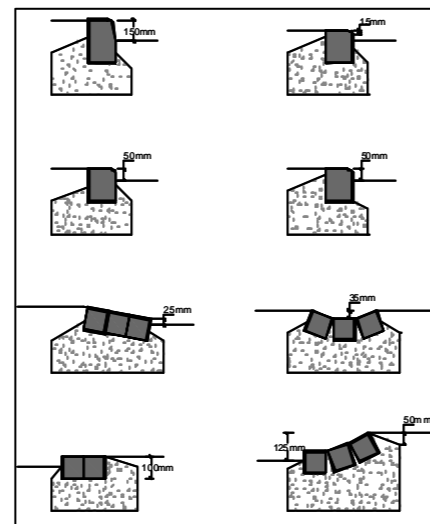
**Flat Kerb** is the edge between sidewalk and carriageway where change of level is minimal and the domain between pedestrian and vehicular is normally demarcated by kerb barriers. Typically used at public spaces such as parks.

**Drop Kerb** is the area where kerb reduces in height at pedestrian crossings and kerb cut zones.

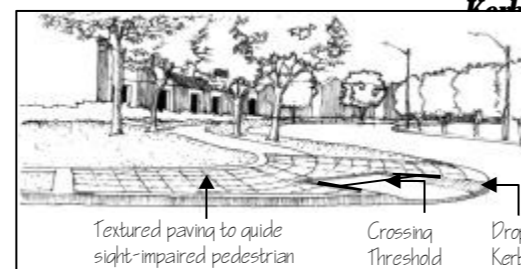
**Kerb Barriers** are low level traffic barriers employed to circumscribe vehicles on continuous paved surface and to ensure safety of pedestrians. Include bollards, landscaping and street furniture.



**Figure 3.16**  
**Clear Sidewalk Zone**



**Figure 3.17**  
**Kerb**



**Figure 3.18**  
**Drop Kerb**



**Figure 3.19**  
**Continuous Sidewalk**

KERB

- Clear sidewalk zone shall be ensured along all 32m and 22m roads according to the following minimum width (**Figure 3.16**). The clear sidewalk zone shall not be interrupted by any permanent or temporary structures including trees, utility covers and gratings.
 

32m roads	-	minimum 1.5m
22m roads	-	minimum 1.0m
- Raised kerb should be more than maximum height of 150mm.
- The inner edge of the flat bed kerb (next to the carriageway) shall be generally flush with the adjacent pavement. However, a 15mm chamfer is permissible where vehicular and pedestrian areas have to be differentiated. Gradient of flat bed kerb shall not exceed 1:10 (vertical: horizontal).
- Drop kerb shall be used at every pedestrian crossing. The width of drop kerb crossing threshold shall be equal to the width of crossing demarcated on the thoroughfare surface. Gradient of the drop kerb shall have a maximum grade of 1:12.
- Materials used shall of high durability, easily maintained and consistent with other kerb materials but may be selected to have a visual differentiation in terms of colour and design from the adjacent paving to clearly delineate a designated route. Kerb finish should blend with the urban floor pattern and shall not be painted.
- A band of 800mm tactile paving shall be positioned behind the crossing threshold and surface of crossing threshold shall be differentiated from the entire sidewalk pavement to facilitate sight-impaired pedestrians.
- Continuous sidewalk shall be maintained along kerb cut zone and level changes on footpath zone shall be avoided where possible to ensure smooth pedestrian movement. See Kerb Cut Zone

### 3.3.2 Frontages

**Frontage** is the privately held layer between the façade of a building and the lot line that fronts the public streetscape. It is characterised by the dimensional depth of the front yard and the combination of architectural elements such as fences, stoops, porches and colonnades and is correlated with the distance within which the building is setback from the boundary line. See also Setback Line.

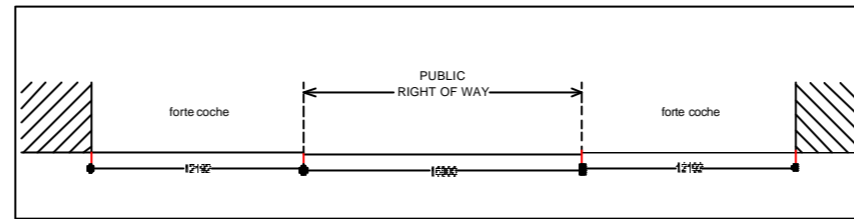
There are three typical frontage types as the following: -

- Forecourt
- Verandahway
- Stoop

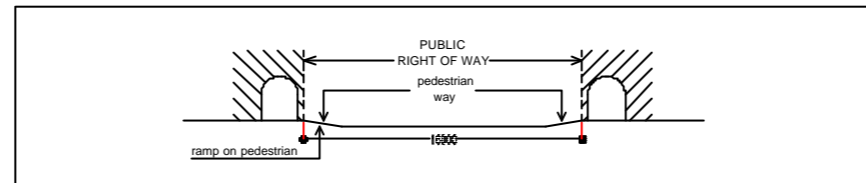
**Forecourt** is where the building façade is setback from the frontage line creating a forecourt suitable for vehicular drop-off, gardens and utility off-loading. This type is suitable for free-standing buildings.

**Verandahway** is where the ground level is setback from the lot line whilst the upper levels are aligned on the lot line. This accommodates pedestrian access along the frontage and more suitably applied to retail developments. Buildings are normally aligned on the boundary line. See also Build-to-line.

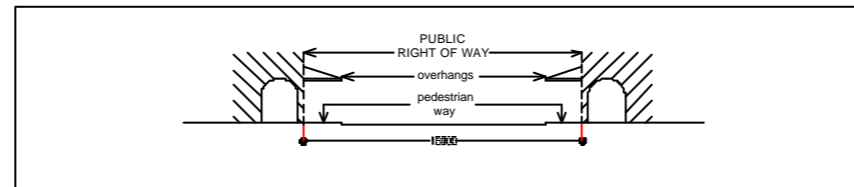
**Stoop Frontage** is where the façade is aligned build to line and the pedestrian way is elevated slightly from the street. Overhangs that extend into the public right of way are normally used to provide more coverage for pedestrians. See also Build-to-line.



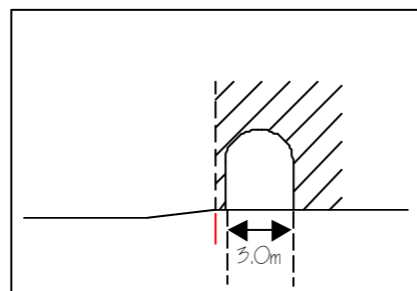
**Figure 3.20**  
**Forecourt Frontage**



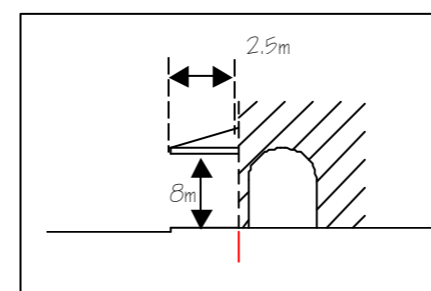
**Figure 3.21**  
**Verandahway Frontage**



**Figure 3.22**  
**Stoop Frontage**



**Figure 3.23**  
**Width of Verandahway**



**Figure 3.24**  
**Overhang on Stoop Frontage**



**Figure 3.25**  
**Examples of Treatment to Overhangs**

## FRONTAGE

- Buildings fronting a boulevard, a drive and the district park shall have either verandahway or stoop frontage.
- Building with 4m-setback line shall incorporate sidewalk within the setback line. The sidewalk shall be verandahway, covered walkway or uncovered walkway.
- The width of any verandahway shall not be less than 3.0m and height clearance of 8m. Where there is a change in levels along the verandahway between adjoining lots, steps with riser not exceeding 150mm and treads not less than 275mm or a pedestrian ramp of gradient of not exceeding one in ten (1:10).
- Columns defining front verandahway shall be between 400cm and 600cm in depth.
- Overhangs on buildings with stoop frontage shall not be more than 2.5m in width and the height measured from the surface shall not be less than 8m.



### 3.3.3 Urban Organisation and Character

Development of individual buildings within the SCC shall contribute towards achieving the overall urban design intentions of the Local Plan. Important urban elements such as axes, focal points, activity nodes and landmarks shall need to be emphasised.

**Axis** is an imaginary reference line linking two major points used for orientation and organization of urban elements along its trajectory.

**Focal Point** is primary areas or elements that act as visual or directional landmarks; e.g.: where activities or main movement networks converge, primary open spaces, and important structures.

**Activity Nodes** are created along axis line to break up monotonous of space and to create interesting gathering areas which enhance the urban identity and character of the development.

**Landmark** is a significant features or structure of superior or unique expression and form that adds interest to the urban fabric and language of the city.

Landmarks may incorporate: -

- Significant Buildings of unique architectural expression
- Public Buildings
- Important structures such as bridges
- Landscape features such as parks, halamans, urban plazas, etc
- Monuments or Sculpture

**Gateway** is an urban element which marks the entrance or the threshold of a sector or a district; one of the elements useful for orientation within the urban fabric.

## URBAN ORGANISATION AND CHARACTER

- Building along axis lines shall be aligned build-to-line to frame the public spaces enfronting it and to frame view towards identified vista or focal point. They should be aligned to reinforce and define the path and spaces. Any form of structures shall not obstruct the axis and if unavoidable, they should be framed through view corridors. These axes shall also be terminated at both ends via a focal point or activity nodes.
- Buildings along the axis shall have a high degree of uniformity in its proportion, height, materials, repetitive elements etc to define a strong urban space and view.
- Plots or landscape element, which terminates axis or function as focal point, should have focal treatment or special building treatment that addresses the termination point. This can be in the form of its proportion, design and architectural details such as colour and materials.
- Where plots function as landmark or gateway to the SCC, buildings should be designed to accentuate this function.

### 3.3.4 Building Façade

**Building Façade** is the external vertical surfaces of buildings or structures. Façade shall respond to urban topological character and context to create a coherent urban environment and attractive streetscape. Elements such as verandahway, entrance and portals, window, vertical landscaping, exterior projections, expression lines, roof projections, utility such as gutters, drainpipes etc make up a harmonious entity of building façade.

**Expression Line** refers to a visual horizontal line that shall be expressed architecturally at defined heights between the base zone and the mid zone. It defines the façade proportionately to street level and human scale. It is expressed by a variation of material or by a limited projection such as a moulding or any protruding elements.

**Maximum Roof Height** refers to height of measured at top of roof cone of the building.

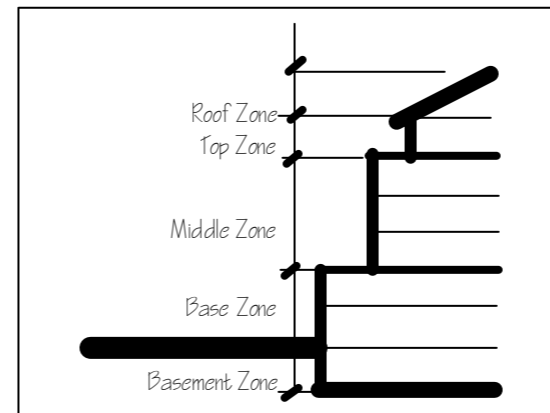
**Corner Buildings** are part of buildings located facing the chamfered section of a junction or public open space.



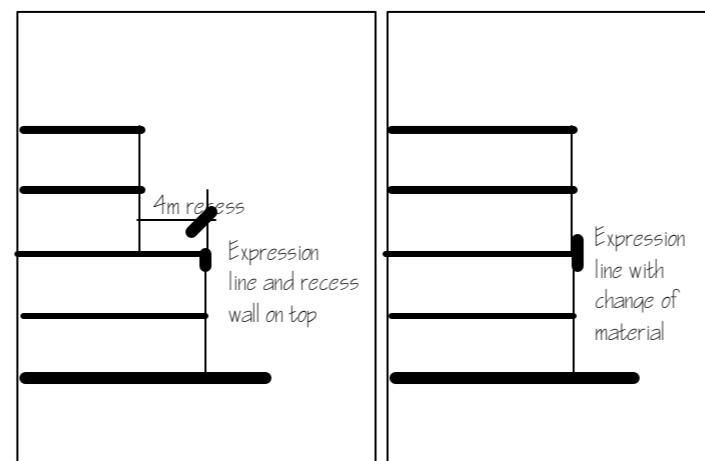
**Figure 3.26**  
Example of Treatment to Corner Buildings



**Figure 3.27**  
Corner Building Facing Landscaped Plaza



**Figure 3.28**  
Building Layers



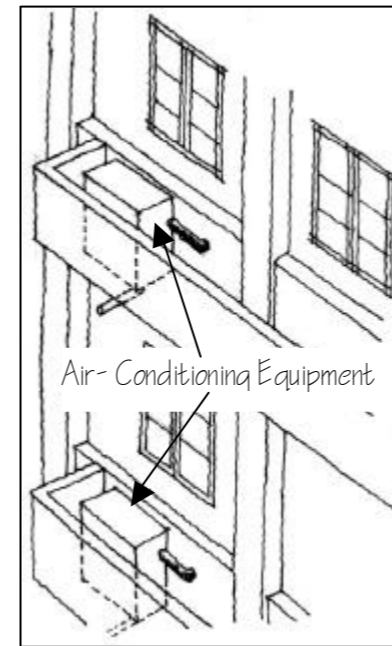
**Figure 3.29**  
Expression Line

## BUILDING FAÇADE

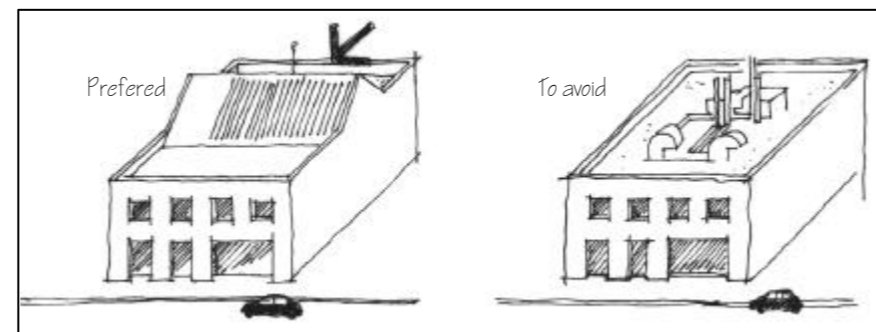
- Building façade shall be of similar in terms of character, scale and proportion to its adjoining neighbours.
- Façade on top of expression lines shall be setback to a minimum width of 4m. This is to ensure human scale at street level is maintained and proportionate spatial relationship with the street or open space is created.
- Expression line may or may not be continuous. Discontinued expression line shall be applied to accentuate rhythm and repetition of the façade. Variation of material, limited projection or protruding elements can be used.
- Break along the total length of built-to-line frontage shall be allowed and shall not exceed the 20% of the built-to-line, leaving wall frontage of 80%. Breaks shall be used to incorporate pedestrian and vehicular easements, change in façade alignment at corners of building and entrances.
- Maximum roof height shall not be more than 10m above the maximum height elevation of the building. The top zone shall accommodate for roof with roof cone of 30 degree measured from the maximum height elevation of the building.
- Corner buildings shall address the chamfered corner of the reference boundary line and be designed to accentuate and highlight the corner as a feature. Height at the chamfered corner can be higher than the rest of building elevation. Entrance into building shall be located at the chamfered corner to facilitate pedestrian movements into buildings.



**3.3.5 Mechanical and Utility Appliances**



**Figure 3.30**  
**Compartment for Air Conditioning Equipment**



**Figure 3.31**  
**Service Equipment on Roof**

**MECHANICAL EQUIPMENTS & APPLIANCES**

- Service and equipments on roof shall be located within the roof cone shall be positioned in such a way to minimise visual impact particularly from tall buildings and shall be housed in enclosures that are designed as a feature to effectively conceal any unsightly equipments.
- Air conditioning equipments should be contained in compartments that are designed as an integral component of the building to ensure they are hidden from view particularly from the public street. Air conditioning ducts shall not be exposed on the external surfaces of the buildings.
- Building design shall also take into consideration of placements of aerial and satellite dishes. For high-rise commercial buildings, a central reception system should be incorporated into building design. For other residential buildings, aerial and satellite dishes shall be located to avoid adverse impact on the amenity of adjoining buildings as well as character and appearance of the streetscape.
- All other service ducting shall not be exposed on the external surface of the buildings.

### 3.4 Access and Parking

**Access** refers to vehicular entrance and exit into development plot.

**Kerb Cut Zone** is the location where kerbs may be cut or discontinued for the purpose of incorporating vehicular and service access/drop off into the plots or easements without compromising the continuity of sidewalk.

**Parking** is the manner of storage and accommodation of vehicles when not in use. There are two types of parking categories, on-street parking and off street.

**On-street parking** is a single line of car parking bays located along the kerb line of thoroughfare accessible directly from a moving lane.

**Off-street parking** is a parking area located within a lot, away from the thoroughfare reserve. There are two types of off-street parking: surface parking and covered parking.

**Surface parking** is parking area at grade adjacent to building either as its rear, side or front. It provides convenient pedestrian access from the parking area to destination of the trip.

**Covered parking** is a specialised building or part of building dedicated for parking. The parking is at basement, sub-basement, multi-level or roof-top. This type is normally suitable for commercial or high-rise residential buildings.

**Parking standard** is a requirement for provision of parking space based on number of dwellings units for residential development and on gross floor area for commercial and other developments.

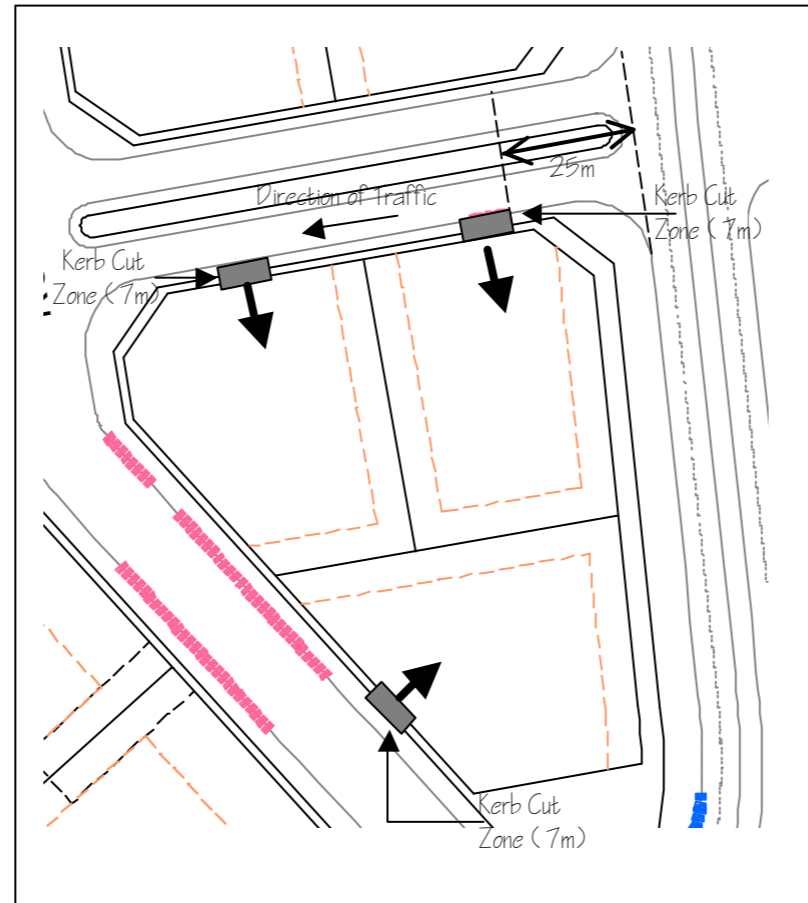


Figure 3.32  
Kerb Cut Zone



Figure 3.33  
Indented Parallel Parking

## ACCESS & PARKING

- Vehicular entrance and service access into development plot shall preferably incorporate 2 zones where kerb cuts (kerb cut zone) can occur to allow for main entry point and service entry point. Kerb cut zone should be incorporated on all roads.
- The kerb cut zone shall be setback to a minimum distance of 25m from the nearest junction from which traffic is approaching. The kerb cut should be of minimum width of 7m to allow for egress/ingress of vehicles into development plot (Figure 3.32). Drop kerb with gradient not more than 1:12 shall be used at all kerb cut zones.
- Commercial developments within the SCC shall provide parking in accordance to the requirements indicated in Table 3.7.

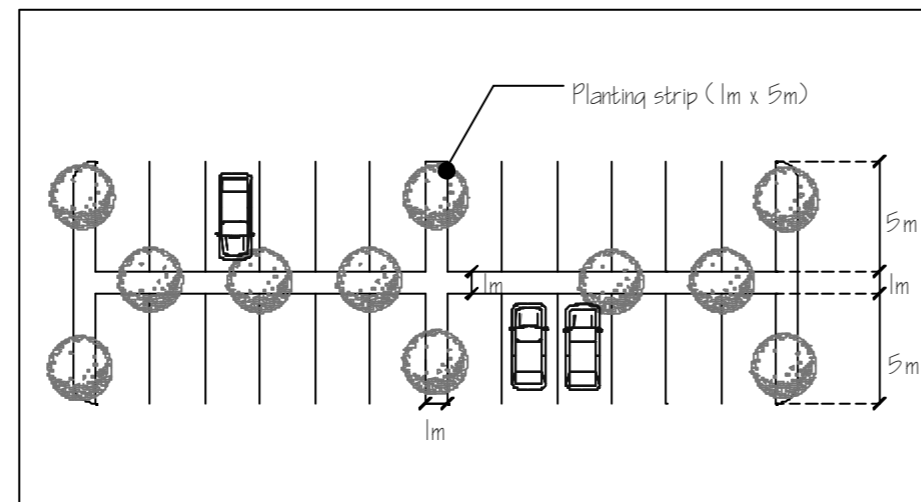
Table 3.7 Parking Requirement for SCC

Type of Development	Parking Requirements		
	Car Parking	Motorcycle	Others
Office	1CPS:70 GFA	1MPS:150 GFA	<ul style="list-style-type: none"> <li>Handicapped parking – 1% on top of the required parking provision or minimum 2 parking spaces whichever is higher.</li> <li>Min. 2 coach bays for hotels with 100 rooms or more.</li> </ul>
Office (within 200 meters of monorails stations)	1CPS:85 GFA	1MPS:200 GFA	
Hotel			
Bedrooms	CPS:5 bedroom + 10% visitor	1MPS:10 bedrooms	
Shopping arcade or mall	1CPS:60 GFA	1MPS:200 GFA	
Restaurant	1CPS:20 GFA	1MPS:160 GFA	
Conference Hall	1 CPS:8 seats	1 MPS:20 seats	
Superstores	1CPS:60sq.m	1MPS:160sq.m	
Retail	1CPS:70sq.m	1MPS:200sq.m	
Theatre/Cinemas	1CPS:5seats	1MPS:3seats	
Apartment	1 CPS : 1 unit + 10% for visitor	50% of total housing units	
Condominium	2 CPS : 1 unit + 10% for visitor	50% of total housing units	
Town House/ apartment	1 CPS : 1 unit + 10% for visitor	50% of total housing units	

Note: All GFA is in square meter  
CPS – Car parking Space  
MPS – Motorcycle parking Space



**Figure 3.34**  
*Use of Pervious Pavement at Parking Area*



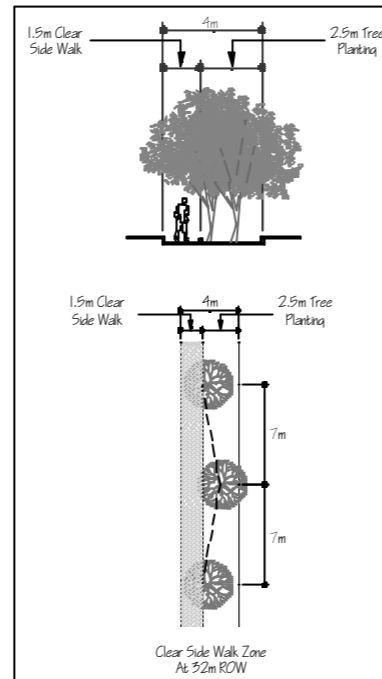
**Figure 3.35**  
*Planting Margin*

## PARKING

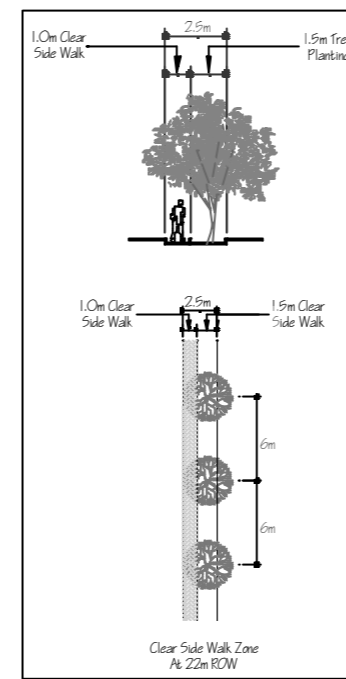
- All parking requirements shall be provided within buildings. Parking structures shall be designed as part of the overall building and shall incorporate landscaping elements to soften the impact on urban landscape.
- On-street parking shall only be allowed for developments fronting roads classified as Drive and Commercial Street. Car parking bays shall be of parallel parking. Desirably, the bays should be in a different surfacing to the moving lanes.
- Surface parking shall be located in pockets and as near to the pedestrian entry. Access for pedestrians via walkway and ramps where required shall be provided.
- Grasscrete surface shall be used for all surface parking spaces to allow for infiltration surface run-off (**Figure 3.34**). Landscape features shall be used to soften hard surface of parking courts. Linear rows of car parking bays shall be avoided and shades shall be provided. Planting island of 1m shall be incorporated for every 6 parking bays (**Figure 3.35**).

## 3.5 LANDSCAPE AND URBAN FURNITURE

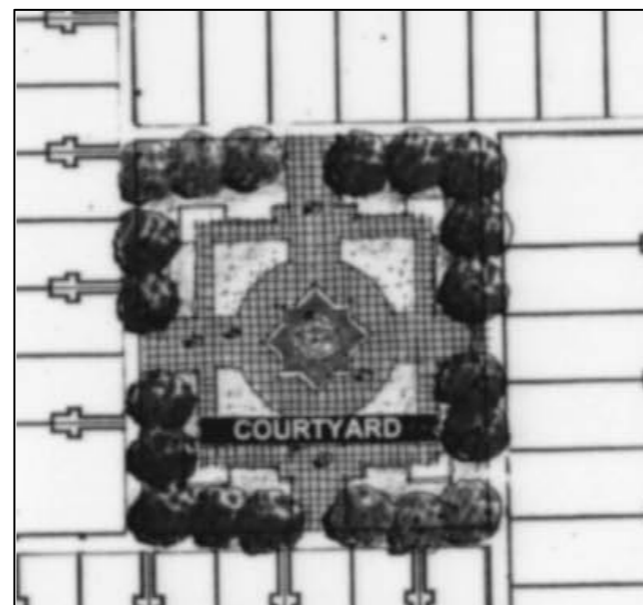
**Courtyard** is privately owned and maintained outdoor spaces but open to public use. It normally introduced to ensure adequate provision of outdoor landscape areas in line with the Garden City concept.



**Figure 3.36**  
**Tree planting at 32m ROW**



**Figure 3.37**  
**Tree planting at 22m ROW**



**Figure 3.38**  
**Typical Example of Enclosed Courtyard**

## LANDSCAPE

### Road Reserves

- Tree planting along 32m-road reserve shall be as follows: -
  - Double row tree planting at 7m intervals with staggered arrangement.
  - Large size trees of flowering species.
  - Recommended tree pit size is 2m x 2m wide and 2m deep and provision for irrigation.
- Tree planting along 22m-road reserve shall be as follows: -
  - Single row tree planting in planter.
  - Medium size trees of flowering species.
  - Recommended planter size of 1.5m x 1.5m and provision for irrigation.

### Courtyard Areas

- The courtyards shall allow direct access from a major green space or along pedestrian route. Buildings shall enclose these courtyards as complete space.
- Courtyards shall be at least 80% landscape either soft or hardscape and the balance can be part of retail kiosk, stage or exhibition pavilion.
- The courtyard shall be landscape to allow for a more effective cross ventilation and illumination of spaces within the buildings.
- The material and pattern used for the courtyard shall extend and complement the building enclosing the courtyard.
- Shading devices providing that it shall not exceed 50% of the total courtyard may cover courtyards.
- Flowery species shall be the major species planted for the parks. Colourful shrubs and seasonal flowers planted in pots are use sparingly to highlight entry or focal points.
- Where tree pits are used, recommended pit size is 2m x 2m wide and 2m deep.

**Plaza** is a public space at the intersection of important streets, set aside for civic purposes and commercial activity, including parking, circumscribed by building frontages, its landscape consisting of durable pavement and formally disposed trees, requiring limited maintenance.

**Corner Plaza** is Plaza located enfronting 'corner building' and usually happen at road junction or two designated path i.e. where the Peoples Parks meet the Drive, and intended to highlight the building frontage and to frame the view corridor. Introduced to ensure interesting variation to the streetscape and to highlight and emphasize frontage.

**Softscape Zone** refers to space within the urban fabric and open space network designated for soft landscape. The soft landscape zone may include all or a combination of trees, shrubs, ground cover planting and turfing.

**Hardscape Zone** refers to open space area dominated by paving, urban furniture. Parking and vehicular driveways can also be classified as hardscape.

**Bollard** short upright post usually found in multiple linear placements. Bollard is use to circumscribe vehicles on continuous paved surface, as in the design of plazas.

**Sculpture** can take the form of carvings, freezes, murals installations, pictures, lighting, earthworks or applied and integrated into structures and paving.



**Figure 3.39**

**Examples of Treatment to Corner Buildings**



**Figure 3.40**

**Corner Building Facing Landscaped Plaza**



**Figure 3.41**  
**Bollard**

## LANDSCAPE

### Corner Plaza

- The plaza shall allow frontage and access to the corner building.
- The built form shall embrace the plaza and form a strong urban space.
- Corner plaza shall landscape to enhance the built form.
- The material and pattern used for the plaza shall extend and complement the corner building and the landscape of junction.
- The width varies according to the corner cut of the junction. The plaza however shall have a minimum of 10 feet from the corner cut.
- The plaza shall incorporate drop kerb for pedestrian crossing at junctions and intersection.
- Colourful shrubs and seasonal flowers planted in pots are recommended to highlight entry and to ensure clear splay zone for vehicle stopping at the junction.
- Where tree pits are used, recommended pit size is 2m x 2m wide and 2m deep.

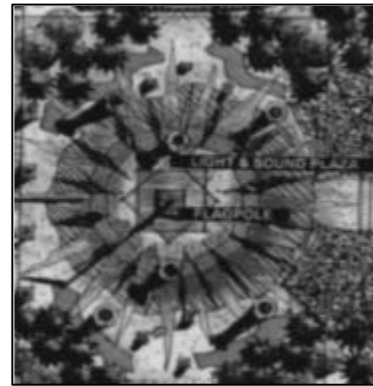
### Sculpture

- Should be located at points of visual focuses, gateways and where practicable, integrated into the nightscape concept.
- Ideally should be integrated into the public realm in the form of applied art in which the piece of sculpture also serves a functional as well as aesthetic purpose, for example the sculpture may also be a seat, a bin, a play structure, and bus-stop etc.

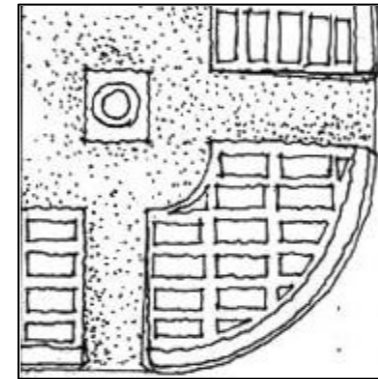
**Tree Grilles** is material used to protect the tree pit.

**Tree Pit** A cavity as deep as the height of the ball of earth of the tree stock with side somewhat larger and unfilled with topsoil.

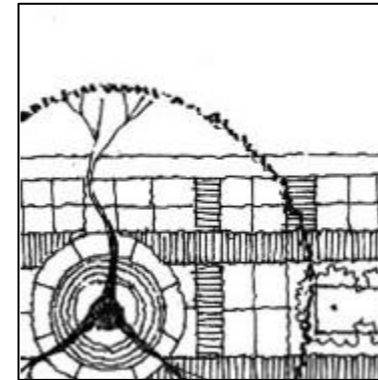
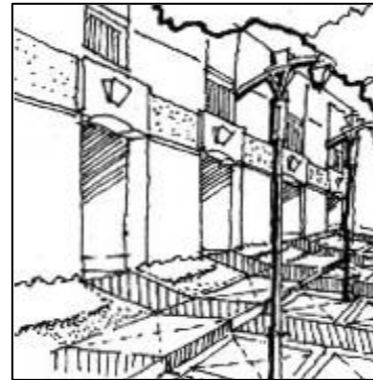
**Paving** refers to stone, brick, block or homogenous surface treatment applied to pedestrian or vehicular routes (pavements) to provide a solid, well defined, safe and easily negotiated surface on which both pedestrian and vehicular traffic can travel and to encourage as well as facilitate pedestrian movement in the public realm.



**Figure 3.42**  
**Decorative Paving**



**Figure 3.43**  
**Paving at Pedestrian Crossing**



**Figure 3.44**  
**Paving for Safety**

## OPEN SPACE & LANDSCAPE

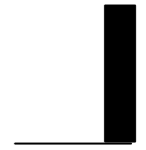
### Tree Grilles

- The design should respond to surrounding landscape context and adjacent architecture.
- Design should consider surface water to be drain out through grating.
- The design should have proper opening at min. 300mm radius.
- Grating can be incorporated as part of the total floor pattern in urban spaces.
- Selection of material should be easy to maintenance durable and easy resemble.
- The design should cover a surface at least 1600m X 1600m minimum.
- High ornamental decoration prefers to be avoided.
- Grating design pattern should consider cyclist and disable people especially at recreational area
- Design pattern shall be perpendicular to road, footpath or cycle path.

### Paving

- Paving design shall include textured paving for the partially sighted and visually impaired. Where practicable all surfaces should be non-slip.
- Paving shall be appropriate to the intended associated user.
- All paving shall be provided with cross-falls and a positive drainage system.
- Kerbs to paved areas shall be treated as an integral part of the pavement design.

# FINAL DRAFT

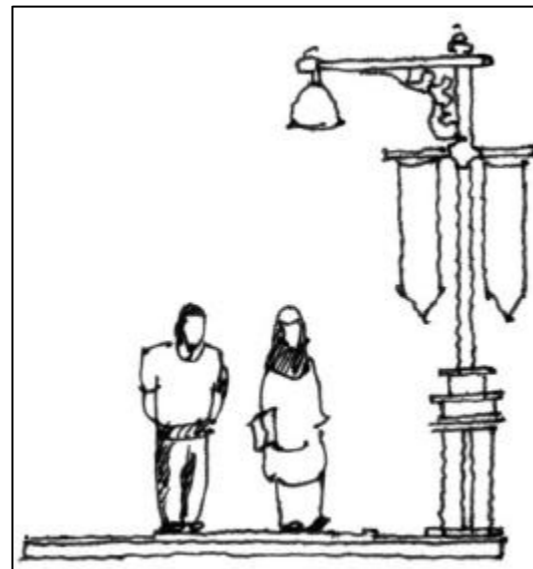


- The surface finish of paving shall be even and consistent. Irregular and un-even surface finishes should be avoided.

**Landscape lighting** is ornamental and atmospheric lighting to compound areas and public open space that is not governed by statutory regulations.

Function of landscape lighting is as follows: -

- i. To provide appropriate and safe lighting levels to areas the public can access that at night.
- ii. To enhance the nighttime ambience and atmosphere within the public realm.
- iii. To highlight and emphasise selected features within the landscape.
- iv. To provision of a safe nighttime environment shall encourage greater nighttime activity.
- v. To provide an opportunity for signage and banners within the public realm.



**Figure 3.45**  
**Typical Street Lighting**  
**Combined With Banners**

## OPEN SPACE & LANDSCAPE

- Paving colours shall reflect the spatial ambience and large areas of dark coloured paving should be avoided to reduce microclimatic radiant heat.
- Unless creating special patterns at specific locations, paving patterns should be simple and uncluttered using a limited palette of materials, colours and finishes.
- Paving patterns should sympathetically integrate walls, ramps, steps, street furniture, drainage and other utilities elements to create a unified effect to the hardscape. Paving materials should complement finishes associated with the adjacent built form.
- At selected locations, feature paving may be introduced to convey specific concepts. However, this should be nodal and unique to the location and should not compete with the general paving but contrast at that particular nodal point.

### Landscape Lighting

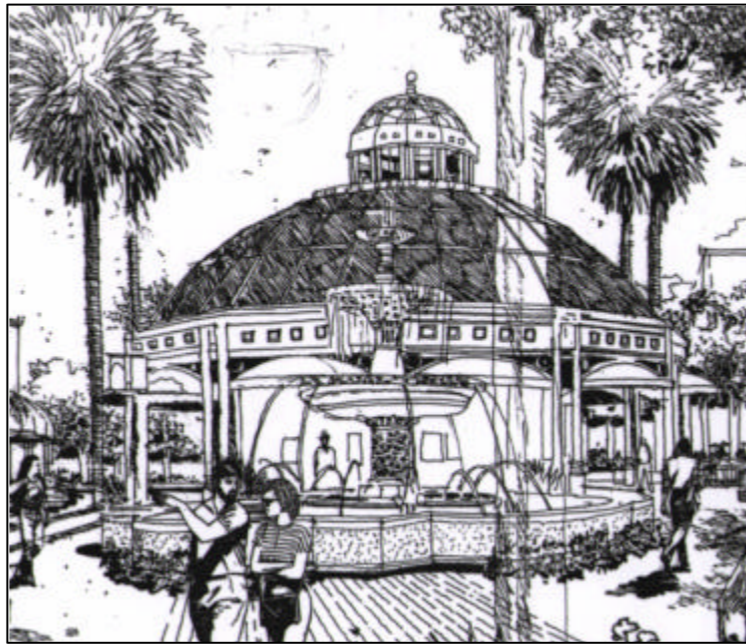
- All types of lighting fixings shall be able to withstand any form of vandalism by using durable and easily maintained materials.
- All lighting fixings and junction boxes should be well concealed or hidden from view where applicable.
- For pole lighting consideration should be given for banner fixing.
- Lighting design should be sympathetic with the adjacent landscape treatment.
- Where tree canopies interfere with lighting, trees will need to be clipped back.
- Materials, finishes and colours should be durable and easy to maintain and replace. The lighting should effectively integrate with pedestrian paving wall finishes, ramps, steps, street furniture, drainage and other utilities elements to create a unified effect to the hardscape where lightings are used.

**Kiosk** is a lightweight open-fronted booth or structure selling food, newspapers and other small consumer items.

Functions of kiosks are as the following: -

- i. To protect against inclement weather.
- ii. As a focal point or nodes for street activity.
- iii. To provide comfortable and user-friendly environment for pedestrian user.
- iv. As an information or selling outlet to promote street activity.
- v. To provide small non-permanent retail opportunities within the public realm.

**Benches** are long seats for sitting on. This can be in the form of a freestanding structure or a low wall, and can include arms and back rests as well as integrating other street furniture and lighting elements depending on designers preference.



**Figure 3.46**  
**Kiosk**

## OPEN SPACE & LANDSCAPE

### **Kiosk**

- The design should reflect surrounding context and represent main function and activity of the area.
- Kiosk should be located at major pedestrian routes. Kiosk should be readily visible from street. This is to ensure security upon pedestrian user and public facility.
- Kiosk design shall incorporate some space for advertisement or information. Information board and lighting fixing shall be able to withstand vandalism.
- Kiosk design should look good from every angle. The interior space should provide sufficient space for retailer to do business. Kiosk design shall have flexibility in term of display items or selling items. Construction method should be fast and easy to assemble on site.
- Selection of material should allow for easy maintenance and should also be designed in sympathy with the adjacent street furniture.
- Consideration should be given to how the kiosk is serviced and whether vehicular access is necessary right to the structure.

### **Benches**

- Benches shall be designed within standard ergonomic parameters.
- Benches shall be designed to allow comfortable sitting for reasonable periods but shall discourage 'lounging' or 'sleeping'. The design of benches shall be coordinated with other street furniture and reflect the Precinct's character.
- A flat platform shall be provided around freestanding benches. Space shall be allocated adjacent to benches for wheelchair parking.
- Fabrication materials shall be durable, easy to assemble and easy to replace/maintain.



### 3.6 PUBLIC UTILITIES

**Public Utilities** defined under the provision of this guideline refer to utilities that need to be provided within development plot for the use of the commercial buildings. It includes utilities such as electric substations and feeder pillars, fibre distribution house (FDH) and solid waste storage and collection facilities.

#### PUBLIC UTILITIES

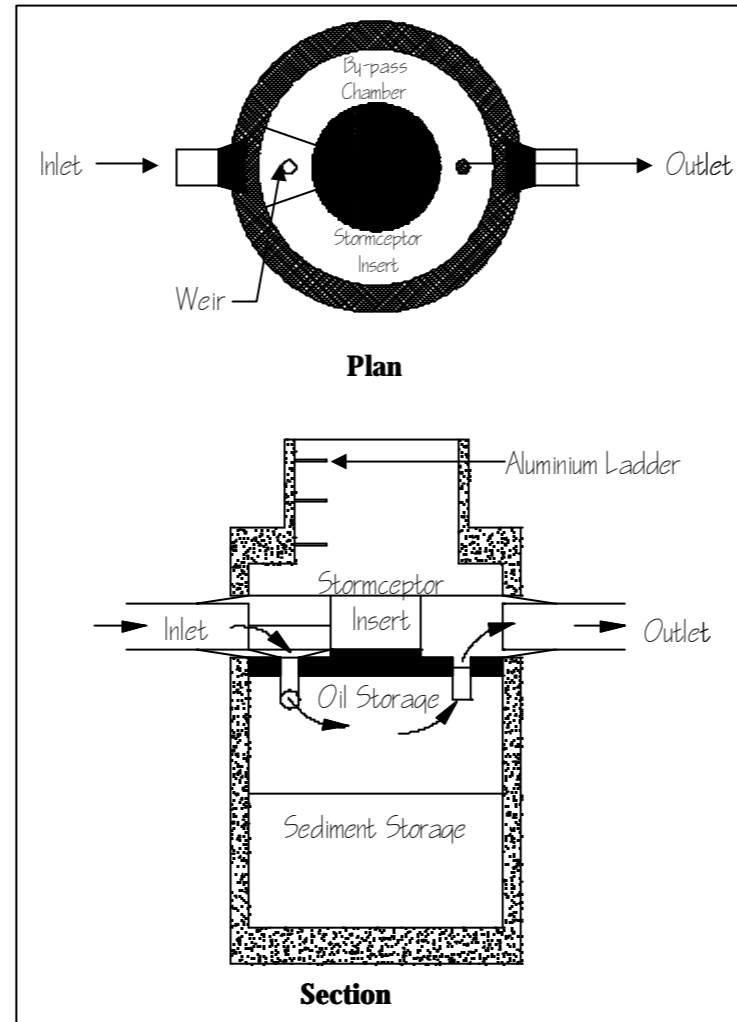
##### **Electric Substation**

- Location of electric substations for commercial developments should be fully integrated within the development and shall be determined at design stage. The building should be 12.2m x 5.5m. The provision shall be on the ratio 1 : 30 shops for commercial developments. This however, will depend on final decision by TNB after total demand load of the proposed development have been studied in detail.
- Stand-by facilities, for mains-power supply for public buildings, are advisable. Sub-stations should be sited along the rear or side elevations of commercial buildings, so as to avoid intruding upon commercial and retail frontages.
- Design of substations shall integrate together with the overall theme of the development and shall use the same construction materials colour schemes as adjacent buildings.
- Direct access from local road shall be provided for maintenance and services for the substation.

### 3.7 Environmental Consideration

Environmental aspects required considerations by any developments within the Sub-commercial Centre are related to water quality, air quality, noise and waste. In order to minimize the impact of the environment it is important that the Environmental Management Plan (EMP) be complied throughout every phase of the development project.

*EMP* contains detail description of practices to be followed and activities to be undertaken for the environmental management of the development area.



**Figure 3.47**  
**Typical Oil, Grease and Grit Trap(OGGT)**

## ENVIRONMENTAL CONSIDERATION

### Water Quality and Drainage

- All effluents generated within the project area shall be treated to Standard A of the Environment Quality Act 1974 and should only comprise of sewage and sullage.
- There shall be no discharges of any substance such as organic or inorganic solvents, refuse, garbage, human or animal waste or solid matters into any inland waters within the project area especially the lake.
- There shall be no discharge to the storm drain system other than surface runoff. This includes wash water from equipment and vehicles used in the area.
- Gross Pollutant Trap (GPT) shall be install at the outlets into the proposed lake to minimise contamination of the lake water. The GPTs shall be periodically cleared to minimise blockage and odour.
- Water conservation shall be practiced as much as possible by all personnel during the life span of the project. This includes measures such as using rainwater for irrigation purposes and installing water conservation fixtures such as low flow toilets.
- Sedimentation ponds, silt traps and drainage systems to control surface run-off must be provided before the commencement of any earthworks. Discharges from sediment basins or any other discharge point from the site shall be collected, and removed via a suitable and properly designed temporary drainage system and disposed of at a location and in a manner that will cause either pollution nor nuisance.
- Surface run-offs shall be designed in accordance to **Putrajaya Stormwater Management Design Guidelines** and the **Manual Saliran Mesra Alam (MaSMA, 2000)**, see also Chapter 9.0 Infrastructure and Utilities.
- Solid waste material shall not be disposed to any watercourse or drainage facility.

ENVIRONMENTAL CONSIDERATION

- Sewage, wastewater or effluent containing sand, cement, silt or any other suspended or dissolved material is not permitted to be discharged without the prior consent of the relevant Authority (DOE). Any such discharged are shall comply with the **Environment Quality (Perbadanan Putrajaya)(Lake Pollution Control) Regulations 1998. Table 3.8.**

**Table 3.8 Putrajaya Ambient Lake Water Quality Standards and Standard for Discharge into Lake Area and Sewer**

Parameters	Unit	Putrajaya Ambient Lake Water Quality Standards	Standard for discharge into the lake area or onto land	Standard for discharge into sewer
Temperature	°C		38	45
pH		6.5-9.0	6.0-9.0	5.0-9.0
BOD	mg/l	3	10	400
COD	mg/l	25	30	1000
Suspended solids	mg/l	50	50	400
Mercury	mg/l	0.001	0.001	0.10
Cadmium	mg/l	0.005	0.01	1.0
Hexa-Chromium	mg/l	0.05	0.05	2.0
Arsenic	mg/l	0.05	0.05	2.0
Cyanide	mg/l	0.02	0.02	2.0
Lead	mg/l	0.05	0.05	2.0
Tri-Chromium	mg/l	-	0.20	10
Copper	mg/l	1.0	0.10	10
Manganese	mg/l	0.1	0.20	10
Nickel	mg/l	0.02	0.20	10
Tin	mg/l	0.05	0.20	10
Zinc	mg/l	5	1.0	10
Boron	mg/l	1	1.0	50
Iron	mg/l	0.3	1.0	2.0
Phenol	mg/l	0.01	0.001	2.0
Free Chlorine	mg/l	-	1.0	-
Sulphide	mg/l	-	0.5	2.0

- Temporary drainage works and all other precautions shall be taken to ensure the avoidance of damage by flooding and silt washed down from the site.

ENVIRONMENTAL CONSIDERATION

- All domestic wastewater are to be connected to the central wastewater sewerage system. No discharges into the storm water drainage system are allowed. This is to ensure that the ambient water quality of all inland waters and Putrajaya Lake are preserved at their high standard.
- No discharge of any wastewater into the drainage system is allowed. All wastewater are to be connected to the central sewerage system. The drainage system is only to be used for removal of surface runoff from rainfall.
- All toilets, domestic and commercial wastewater is to be connected to the central sewerage system. No individual sewerage system shall be allowed..
- All eating outlets and parking spaces in the local and neighbourhood commercial centres shall be equipped with oil, grease and grit trap (OGGT) to trap effluents before being discharged into drainage outlets and lake.

**Air Quality**

- There shall be no burning of refuse, produce and waste except when permission has been obtained from the Department of Environment.
- Development activities shall be carried out by phase. Mitigation measures such as water spraying, wheel washing through and turfing should be provided and implemented during constriction phase to control and minimize dust desperation. Air quality should not exceed the recommended Malaysian Guidelines during earthwork and construction phase as in **Table 3.11**

ENVIRONMENTAL CONSIDERATION

**Table 3.9 Air Quality Standard**

Parameter	Specification	
	Averaging Time	Malaysian Guidelines
Total Suspended Solid	24 hours	260µg/m <sup>3</sup>
Lead	3 months	1.5µg/m <sup>3</sup>
Sulphur dioxide	24 hours	0.04 ppm
Nitrogen Dioxide	1 hour	0.17 ppm
Carbon Monoxide	8 hours	9 ppm

- Regular inspection of vehicles and machinery are to be made to ensure optimal performance and minimal pollution.
- The use of public transport systems to the project site shall be encouraged and promoted in order to reduce the reliance of private vehicles especially for visitors and routine travellers. Car-pooling shall also be encouraged to reduce traffic flow during peak periods.
- Public areas within the project shall be designated as a 'non smoking zone'.
- The project areas shall incorporate as much open spaces as possible in order to increase filtering of air by vegetation.

**Noise Control**

- All noise pollution within the project shall be addressed on a case-by-case basis in order to ensure sufficient and well-planned management measures are implemented.
- All facilities within the project shall be designed to act as noise barriers from outside influences.

ENVIRONMENTAL CONSIDERATION

**Waste Management**

- The 4R's of waste management will be emphasised with reduction being the predominant R and is listed below where the primary focus will be on the first 3R's.  
Reduce-Reuse-Recycle-Recover
- Schedule waste generation within the project is expected to be at the bare minimum. Nevertheless, the management of Schedule Waste within the project should follow the existing regulations as stipulated under the **Environment Quality (Schedule Wastes) Regulation, 1989.**

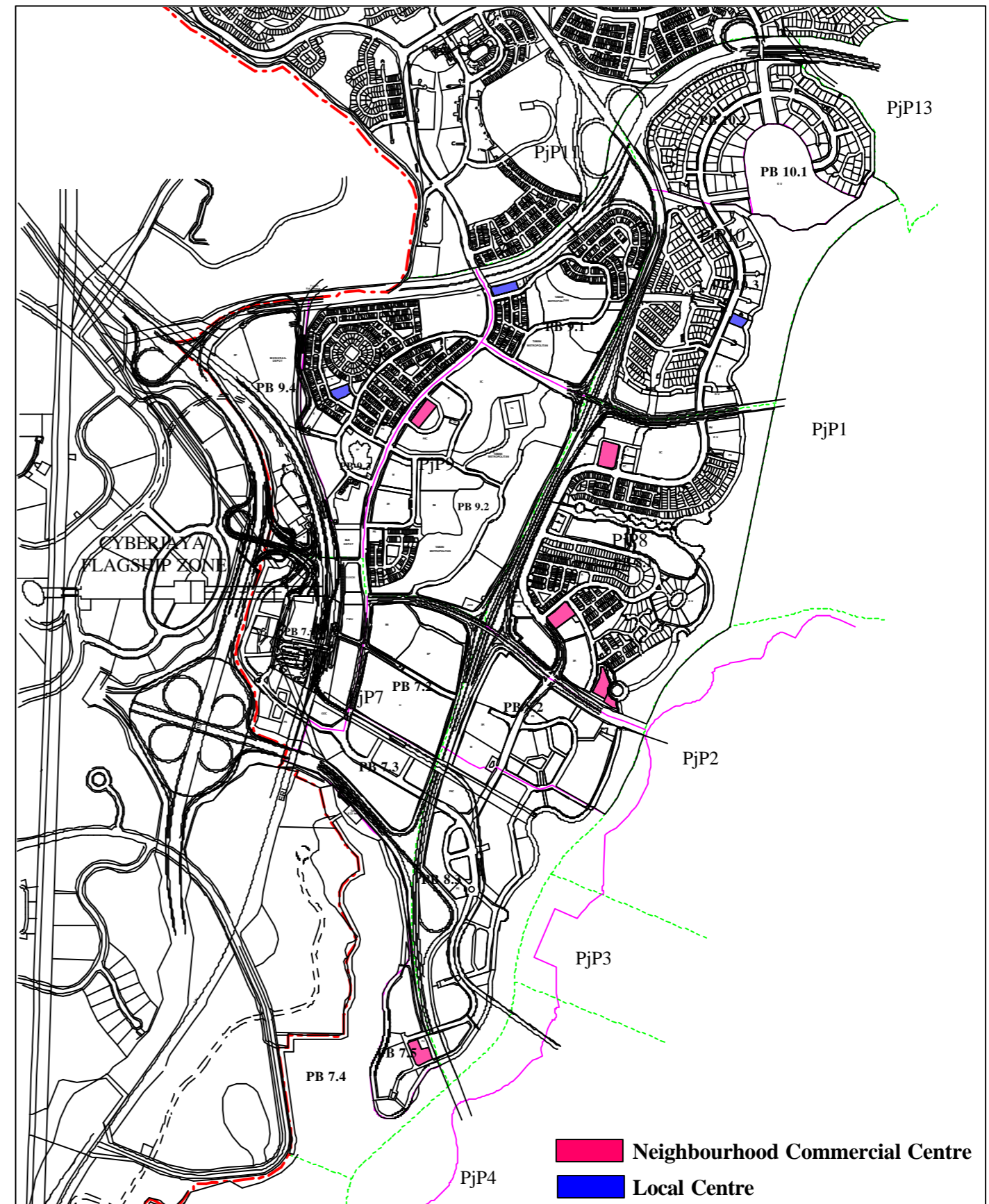
## 4.0 LOCAL AND NEIGHBOURHOOD COMMERCIAL CENTRES

### 4.1 USE OF GUIDELINE

This guideline shall be used for all commercial developments located within the neighbourhood and local centres of Precincts 7, 8, 9 and 10, Putrajaya (**Figure 4.1**).

**Local Centre** is an area where commercial activities and spaces are provided to serve a local community. It is normally centrally located within one or several housing neighbourhoods. Commercial activities within the local centre usually include retail shops for convenient goods and the supply of basic services. Within the context of Precincts 7, 8, 9 and 10, Putrajaya, the local centres are located in PB9.1, PB9.3 and PB 10.3.

**Neighbourhood Commercial Centre** is a commercial area that serves a bigger catchments area than the local centre. It will serve several neighbourhoods and has the function and activities of higher order goods than a local centre. In the Local Plan area, the neighbourhood commercial centre can be found in PB7.5, PB 8.1 and PB 9.2.



**Figure 4.1**  
Location of Local And Neighbourhood Centre

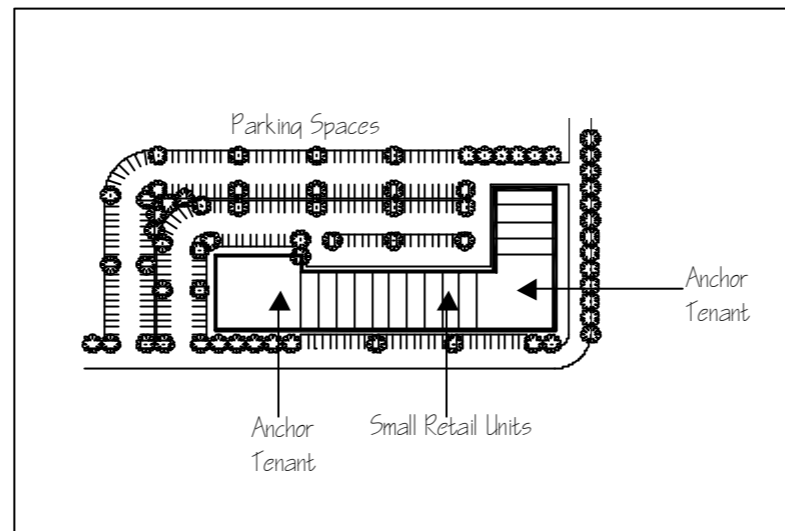
**4.2 DEVELOPMENT TYPE AND SIZE**

**Shophouse** refers to a row of commercial buildings where the frontage is associated normally with verandahway that allows pedestrian access from one end to the other. Shophouse also refers to mixed use of commercial activities at the lower ground and residential use at the upper floors.

**Shopoffice** refers to a row of commercial buildings where frontage is associated normally with verandahway that allows pedestrian access from one end to the other, and all floors or levels are used for commercial activities only.

**One-stop Centre** refers to a block of commercial spaces located within one large plot where parking spaces are normally centralised and characterised by not more than two anchor tenants together with smaller retailers to support daily needs of the neighbouring residents.

**Gross Floor Area** is the sum of the planned areas of all floor levels (inclusive of the planned area of all walls, windows, column, elevator shaft) and the planned area of all internal and external stairs, landing, ramps, escalators, or other means of access between levels, or at each level in the building.



**Figure 4.2**  
**Typical Concept of One Stop Centre**

**DEVELOPMENT TYPE & SIZE**

- Development type within the Neighbourhood and Local Centre shall desirably be of shophouses/shopoffice or one-stop commercial centre. These shall be provided based on indicative threshold ratio as shown in **Table 4.1**. This threshold shall be used as guidance in developing commercial areas to ensure that the commercial developments are not larger than required which may result in undesired influx of people and cars or marginal business that cannot provide proper services.

**Table 4.1 Threshold Ratios for Local and Neighbourhood Commercial Centres**

Development Type	Indicative Provision Threshold
Shop-house/shopoffice	1 shop : 40 residential units
One-stop centre	2600sq. ft. : 40 residential unit

- Local and neighbourhood commercial centre shall typically include 8 to 12 stores with an average gross floor area of about 36,000 sq. ft. The site will vary from 0.6 hectares to 1.6 hectares. (1.5 to 4.0 acres).

**4.3 PHYSICAL PLANNING REQUIREMENTS**

**Plot Ratio** as defined by The Town and Country Planning Act, 1976, is the ratio of the total floor area of a building to the area of the building plot as measured between the surveys boundary lines or, if there are no survey boundary lines, between the provisional boundary lines.

**Plinth Area** as defined by the Town and Country Planning Act 1972 is the proportion to be covered by building of the area of any lot.

**Open Space Coverage** is the portion of plot area outside plinth area. It may comprise of internal circulation, open space and both hard and soft landscape elements.

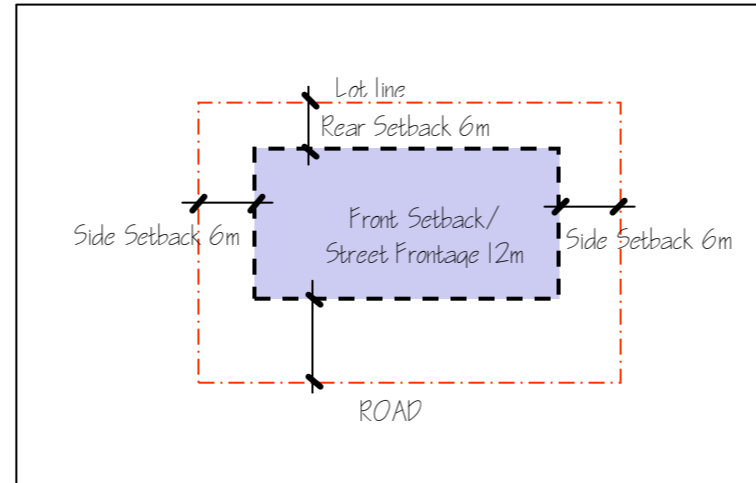
**Building Height** is the limit to the vertical extent of a building. It is measured as a number of storeys or floors from the ground level.

**Setback** refers to the minimum distance between a wall and a property boundary or a wall of another building.

**Front Setback/Street Frontage** refers to setback where lot/building frontage faces the following

- Park/public open spaces,
- Street frontage for main roads such as local or spine roads
- Street frontage roadside buffer
- Green corridors linking neighbourhood centres or open space
- Waterfront/Promenade

**Side Setback** refers to setback on the sides of the lot that adjoin another lot.



**Figure 4.3**  
**Building Setback for One-Stop Retail Centre**

PHYSICAL PLANNING REQUIREMENTS

- Development of commercial buildings shall conform to the requirements as specified in **Table 4.2**.

**Table 4.2 Planning Standards For Developments in Local and Neighbourhood Commercial Centre**

Type	Min. Size	Plot Ratio	Max. Height	Max. Plinth
Shop-house/shop-office	20' x 70'	1 (on subdivided lot)	<ul style="list-style-type: none"> <li>▪ 4 storeys in Neighbourhood Commercial Centre</li> <li>▪ 2 storeys in Local Centre</li> </ul>	100% over plot of commercial
One-stop centre	-	2	<ul style="list-style-type: none"> <li>▪ 4 storeys in Neighbourhood Commercial Centre</li> <li>▪ 2 storeys in Local Centre</li> </ul>	60%

- Buildings shall be setback to the minimum dimensions as shown in the **Table 4.3**.

**Table 4.3 Setback Requirements for Commercial Development.**

Type	Setback		
	Front	Rear	Side
Shop-house/shop-office	-	-	-
One-stop Centre	12m	6m	6m

4.4 URBAN DESIGN

4.4.1 Streetscape

**Streetscape** is the urban character of the public realm that is made up of an assemblage of landscape, walks and curbs between the lot line and the vehicular lanes. Its physical character and ambiance is further defined by building frontages aligning the public right of way.

The streetscapes are of different characteristics and compositions. These can be perceived in the manner in which each detailed element that constitutes the streetscape is ordered to achieve the intended image in line with the urban identity and development focus.

For local and neighbourhood commercial centres, the streetscape character is less elaborated in its detailing as compared to those in the sub-commercial centre. The ambiance is more localised to reflect local character and function.

**Raised Kerb** is a raised paving of the sidewalk where level is higher than the carriageway and is used to demarcate the limits of carriageway.

**Flat Bed Kerb** is the smooth transition paving differentiating two different materials of the sidewalk and the carriageway that is laid flush with the surface or shallow ramp. This type of kerb is typically used along kerb cut zones where provision of vehicular access or drop off is made.

**Flat Kerb** is the edge between sidewalk and carriageway where change of level is minimal and the domain between pedestrian and vehicular is normally demarcated by kerb barriers. Typically used at public spaces such as parks.

**Drop Kerb** is the area where kerb reduces in height at pedestrian crossings and kerb cut zones.

**Kerb Barriers** are low level traffic barriers employed to circumscribe vehicles on continuous paved surface and to ensure safety of pedestrians. Include bollards, landscaping and street furniture.

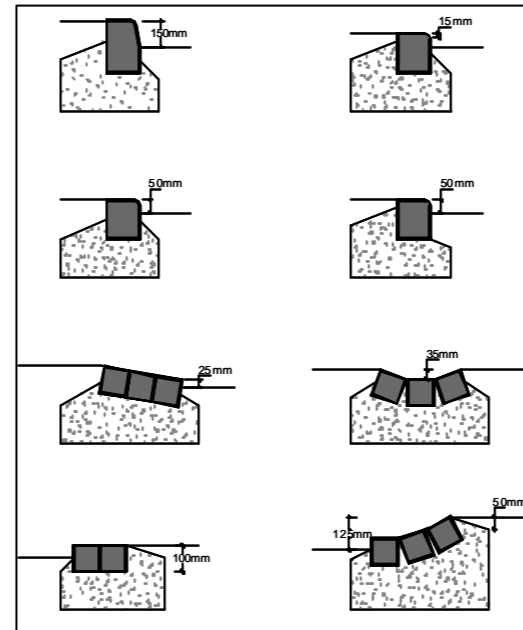


Figure 4.4  
Kerb



Figure 4.5  
Drop Kerb



Figure 4.6  
Continuous Sidewalk

STREETSCAPE

- The design of each street should convey to the user its primary function, character and identity, and encourage appropriate driver behaviour.
- Appropriate street trees should be provided in all streets except back lanes for pedestrian shelter, streetscape and amenity, and traffic management.
- Raised kerb should be of maximum height of 150mm. (Figure 4.4).
- The inner edge of the flat bed kerb (next to the carriageway) shall be generally flush with the adjacent pavement. However, a 15mm chamfer is permissible where vehicular and pedestrian areas have to be differentiated. Gradient of flat bed kerb shall not exceed 1:10 (vertical: horizontal).
- Drop kerb shall be used at every pedestrian crossing. The width of drop kerb crossing threshold shall be equal to the width of crossing demarcated on the road surface. Gradient of the drop kerb shall have a maximum grade of 1:12.
- A band of 800mm tactile paving shall be positioned behind the crossing threshold and surface of crossing threshold shall be differentiated from the entire sidewalk pavement to facilitate sight-impaired pedestrians.
- Continuous sidewalk shall be maintained along kerb cut zone and level changes on footpath zone shall be avoided where possible to ensure smooth pedestrian movement.
- Materials used shall of high durability, easily maintained and consistent with other kerb materials but may be selected to have a visual differentiation in terms of colour and design from the adjacent paving to clearly delineate a designated route.

## 4.4.2 Frontages

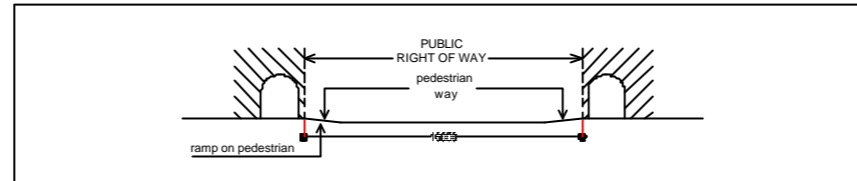
**Frontage** is the privately held layer between the façade of a building and the lot line that fronts the public streetscape. It is characterised by the dimensional depth of the front yard and the combination of architectural elements such as fences, stoops, porches and colonnades and is correlated with the distance within which the building is setback from the boundary line.

There are two typical frontage types normally associated with streetscape character and activity pattern of the local and neighbourhood commercial centres as the following: -

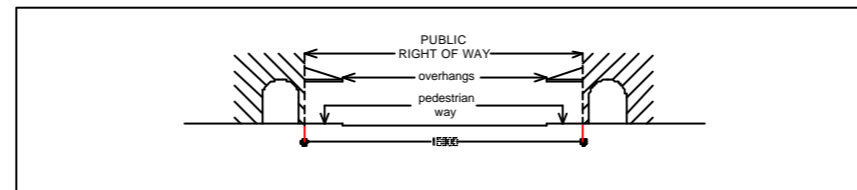
- Verandahway
- Stoop

**Verandahway** is where the ground level is setback from the lot line whilst the upper levels are aligned on the lot line. This accommodates pedestrian access along the frontage and more suitably applied to retail developments. Buildings are normally aligned on the boundary line. See also Build-to-line.

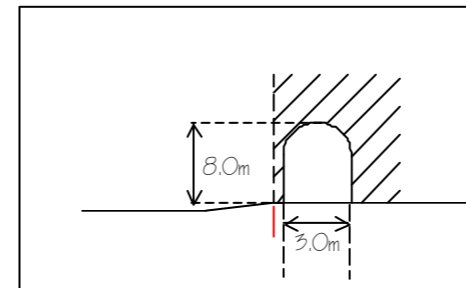
**Stoop Frontage** is where the façade is aligned build to line and the pedestrian way is elevated slightly from the street. Overhangs that extend into the public right of way are normally used to provide more coverage for pedestrians. See also Build-to-line.



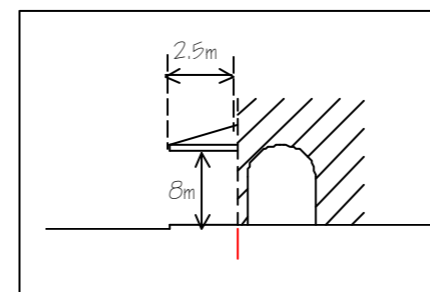
**Figure 4.7**  
**Verandahway Frontage**



**Figure 4.8**  
**Stoop Frontage**



**Figure 4.9**  
**Width of Verandahway**



**Figure 4.10**  
**Overhang on Stoop Frontage**

## FRONTAGE

- The width of any verandahway shall not be less than 3.0m and height clearance of 8m. Where there is a change in levels along the verandahway between adjoining lots, steps with riser not exceeding 150mm and treads not less than 275mm or a pedestrian ramp of gradient of not exceeding one in ten (1:10).
- Columns defining front verandahway shall be between 400cm and 600cm in depth.
- Overhangs on buildings with stoop frontage shall not be more than 2.5m in width and the height measured from the surface shall not be less than 8m.

## 4.4.3 Building Façade and Elevation

**Building Façade** is the external vertical surfaces of buildings or structures. Façade shall respond to urban topological character and context to create a coherent urban environment and attractive streetscape. Elements such as verandahway, entrance and portals, window, vertical landscaping, exterior projections, expression lines, roof projections, utility such as gutters, drainpipes etc make up a harmonious entity of building facade.

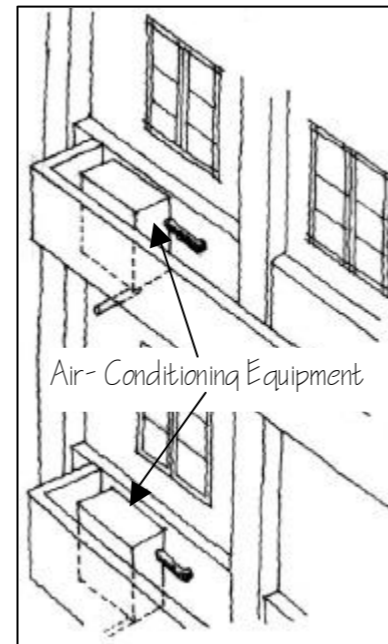


**Figure 4.11**  
**Variation in Building Facade**

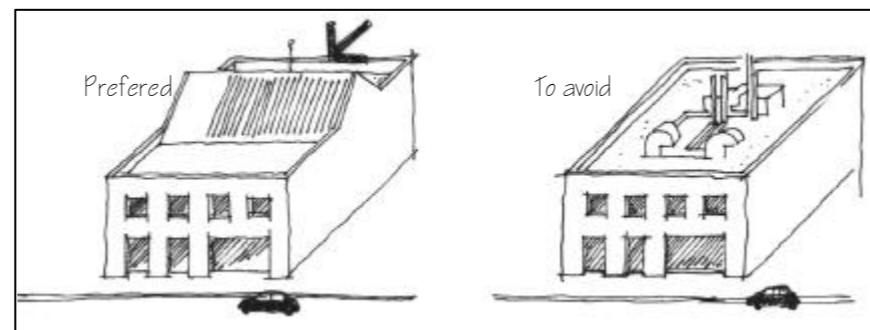
## BUILDING FAÇADE & ELEVATION

- The façade treatment should: -
  - Provide sun shading
  - Incorporate tropical vernacularism design character
  - Avoid continuous blank walls or continuous or monotonous elevation treatment
  - Incorporate screening devices for mechanical units
  - Incorporate lively character for street level facades
- Construction material and finishes should be selected to achieve a harmonious environments within the local or neighbourhood centre as well as the overall neighbourhood.
- Colour and tone of facades should blend with the environment and shall provide visual continuity with adjacent buildings and avoid extreme contrast.
- Roof design should incorporate traditional Malaysian roof and gable roof form that are responsive to local climatic conditions and shall be visually free of water tanks, ventilators, solar panels, etc.
- Commercial buildings in local centres adjacent to residential areas with predominantly gabled roofs shall have gabled roof to create a residential scale and character.
- Maximum roof height shall not be more than 10m above the maximum height elevation of the building. The top zone shall accommodate for roof with roof cone of 30 degree measured from the maximum height elevation of the building.

**4.4.4 Mechanical and Utility Appliances**



**Figure 4.12**  
**Compartment for Air Conditioning Equipment**

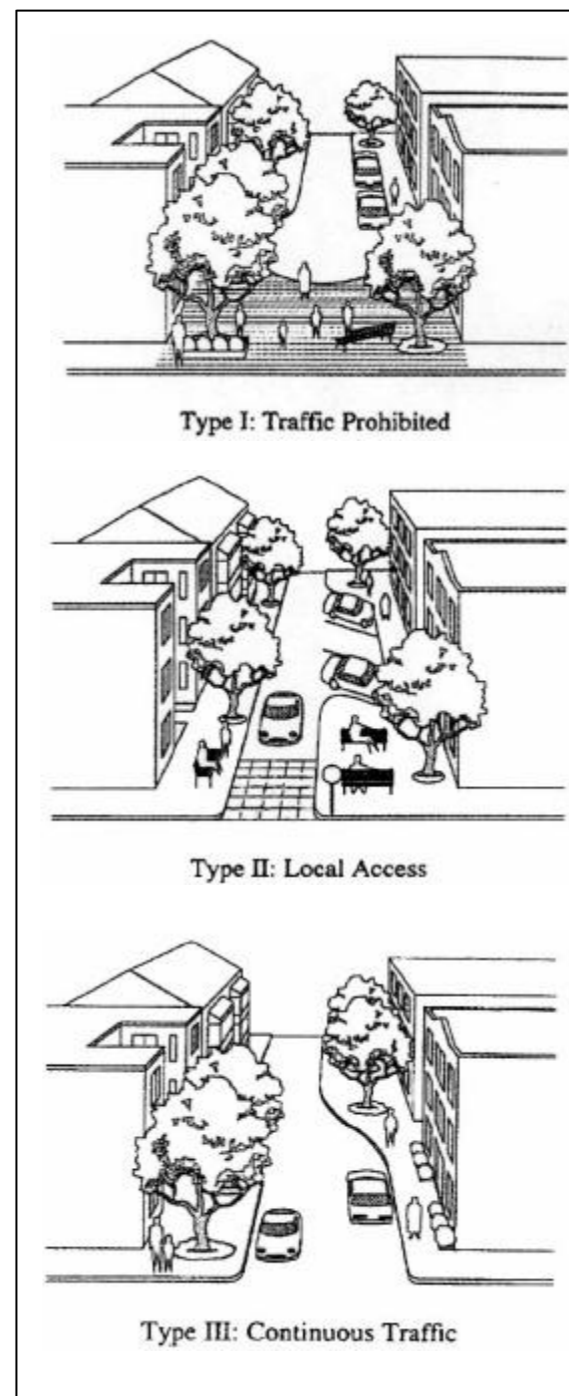


**Figure 4.13**  
**Service Equipment on Roof**

FRONTAGE

- Service equipments on roof shall be located within the roof cone and shall not be visible at ground level for up to a lateral distance of 57m from the façade of the building. They shall be positioned in such a way to minimise visual impact particularly from tall buildings and shall be housed in enclosures that are designed as a feature to effectively conceal any unsightly equipments.
- Air conditioning equipments should be contained in compartments that are designed as an integral component of the building to ensure they are hidden from view particularly from the public street. Air conditioning ducts shall not be exposed on the external surfaces of the buildings.
- Building design shall also take into consideration of placements of aerial and satellite dishes. They should be located to avoid adverse impact on the amenity of adjoining buildings as well as character and appearance of the streetscape.
- All other service ducting shall not be exposed on the external surface of the buildings.

4.5 ACCESS AND PARKING



**Figure 4.14**  
**Traffic Calming Measures in Local and Neighbourhood Commercial Centre**

VEHICULAR ACCESS

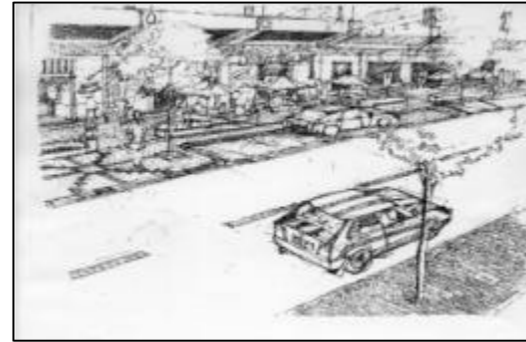
**Vehicular Access**

- A clearly identifiable road hierarchy should be established to provide safe circulation, with as few intersections as possible.
- Vehicular circulation should be segregated from pedestrian routes.
- Traffic calming devices should be introduced at strategic locations.
- Adequate provision should be provided for service and delivery vehicles.

**Parking** is the manner of storage and accommodation of vehicles when not in use. There are two types of parking categories, on street parking and off street.

**Surface parking** is parking area at grade adjacent to building either at its rear, side or front. It provides convenient pedestrian access from the parking area to destination of the trip.

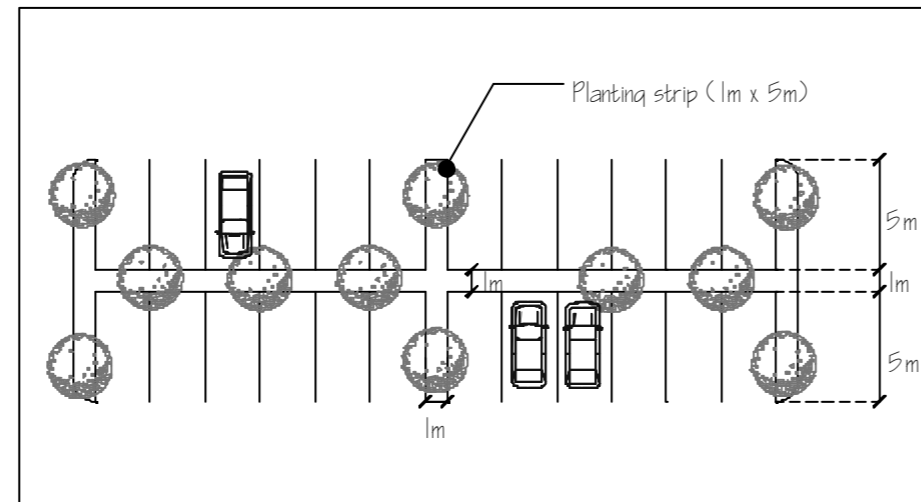
**Parking standard** is a requirement for provision of parking space based on number of dwellings units for residential development and on gross floor area for commercial and other developments.



**Figure 4.15**  
**Indented Parking within Access Road in Local And Neighbourhood Commercial Centre**



**Figure 4.16**  
**Pervious Surface for Parking Area**



**Figure 4.17**  
**Planting Island**

**PARKING**

**Parking**

- Provide spaces for disable/handicapped close to building entrance
- Adequate and convenience parking for all type of users.
- Parking for other types of vehicles such as bicycles and motorcycles should be provided
- Public parking and parking for servicing should be differentiate by using different material.
- Adequate lighting for security and safety reason
- Parking shall be provided in accordance to the requirements indicated in **Table 4.4**.

**Table 4.4 Parking Standard for Neighbourhood and Local Centre**

Type of Development	Number of Car Parking Spaces (CPS)	Number of Motorcycle Parking Spaces (MPS)	Others
Retail	1 CPS : 70 GFA	1 MPS : 200 GFA.	Handicapped parking – 1% on top of the requirement parking provision or minimum 2 parking spaces whichever is higher.
Shop Office	1 CPS : 70 GFA	1 MPS : 150 GFA	
Restaurants	1 CPS : 20 GFA.	1 MPS : 160 GFA	
Food Court	1 CPS : 20 GFA	1 MPS : 70 GFA	Min. 1 Bicycle rack

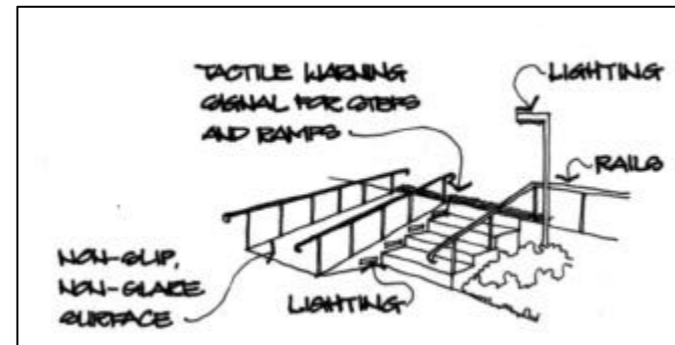
Note: GFA is in square meter  
 CPS – Car Parking Space  
 MPS – Motorcycle Parking Space  
 1 Rack Can Accommodate 10 Bicycle Parking Spaces

- Surface parking shall be located in pockets and as near to the pedestrian entry. Access for pedestrians via walkway and ramps where required shall be provided. Grasscrete surface shall be used for all surface parking to allow for infiltration of surface run-off. Landscape features shall be used to soften hard surface of surface parking.
- Linear rows of car parking bays shall be avoided and shades shall be provided. Planting island of 1m shall be incorporated for every 6 parking bays.

**Clear Sidewalk Zone** is the zone within the streetscape where pedestrian flow is in continuity and uninterrupted by any structures such as columns or any landscape furniture such as trees, benches, kiosks and utility elements such as covers and gratings.



**Figure 4.18**  
*Grille Shall Be Properly Positioned to Avoid Difficulty For Walking*



**Figure 4.19**  
*Ramps and Stairs Should Be Provided For Any Change in Grade*

## PEDESTRIAN ACCESS

### Pedestrian

- Pedestrian routes should be segregated from vehicular circulation.
- Plaza or open spaces should be created along important pedestrian street.
- Shading devices such as awning, canopies etc should be incorporated along pedestrian routes.
- Level changes along pedestrian routes shall be avoided.
- Main pedestrian route shall not be disrupted either by improper positioning of landscaping elements or any other utility equipments. Continuous pedestrian route or clear sidewalk zone must be maintained along important pedestrian route.
- Provision for the handicapped along main pedestrian route shall be made.

**4.6 Environmental Consideration**

Environmental aspects requiring considerations by any developments within the local and neighbourhood commercial centres are related to water quality, air quality, noise and waste. In order to minimize the impact of the environment it is important that the Environmental Management Plan (EMP) be complied throughout every phase of the development project.

*EMP contains detail description of practices to be followed and activities to be undertaken for the environmental management of the development area*

ENVIRONMENTAL CONSIDERATION

**Noise Pollution Control**

- Noise at the boundary of the development should not exceed 65dB(A) during the day and 55dB(A) during the night.
- During construction times, that noise from the works shall not exceed 65dB(A) in terms of 30 min Leq at any noise sensitive receivers (NSR) at any time between 0600 to 2000 hours.
- All contractors will be require to submit lists of mechanical plants and methods statements for the control of noise level.

**Air Quality**

- Development activities shall be carried out by phase. Mitigation measures such as water spraying, wheel washing and turfing should be provided and implemented during construction phase to control and minimize dust desperation. Air quality should not exceed the recommended Malaysian Guidelines during earthwork and construction phase as in **Table 4.5**

**Table 4.5 Air Quality Standard**

Parameter	Specification	
	Averaging Time	Malaysian Guidelines
Total Suspended Solid	24 hours	260µg/m <sup>3</sup>
Lead	3 months	1.5µg/m <sup>3</sup>
Sulphur dioxide	24 hours	0.04 ppm
Nitrogen Dioxide	1 hour	0.17 ppm
Carbon Monoxide	8 hours	9 ppm

- All open spaces shall be landscaped to reduce air pollution.
- Buffer area between road and local and neighbourhood commercial centre shall also be planted with tall trees to minimize noise pollution.

ENVIRONMENTAL CONSIDERATION

**Water Quality**

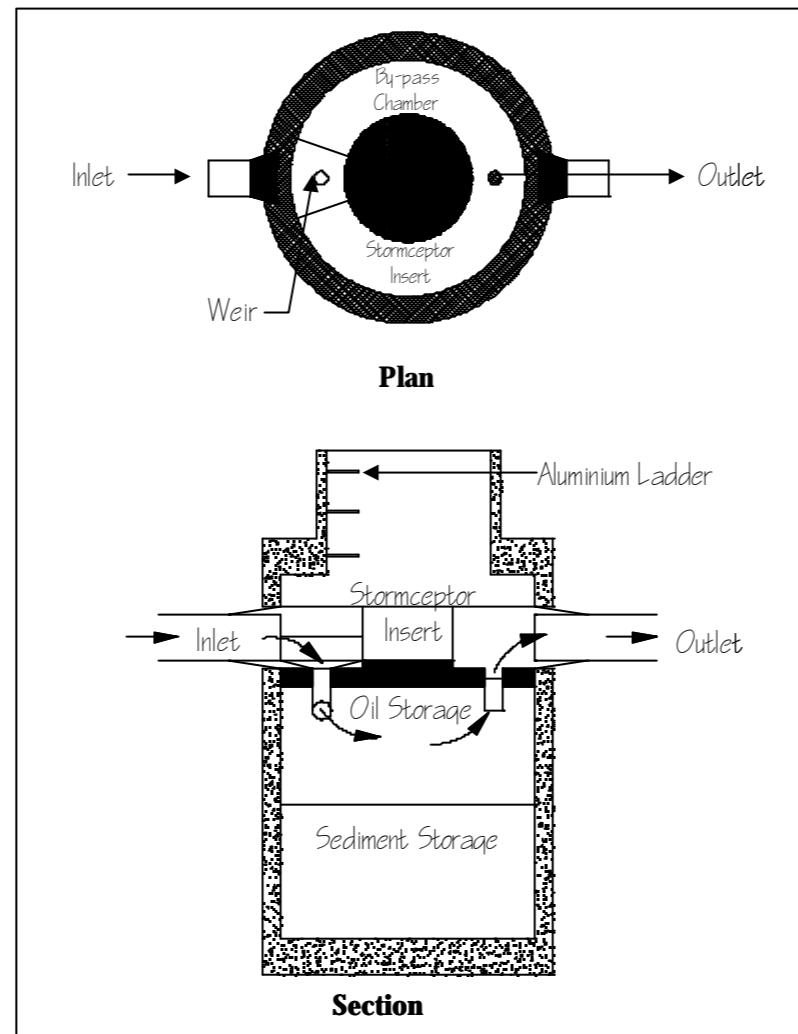
- Sewage, wastewater or effluent containing sand, cement, silt or any other suspended or dissolved material is not permitted to be discharged without the prior consent of the relevant Authority (DOE). Any such discharged are shall comply with the Environment Quality (Perbadanan Putrajaya)(Lake Pollution Control) Regulations 1998. **Table 4.6.**

**Table 4.6 Putrajaya Ambient Lake Water Quality Standards and Standard for Discharge into Lake Area and Sewer**

Parameters	Unit	Putrajaya Ambient Lake Water Quality Standards	Standard for discharge into the lake area or onto land	Standard for discharge into sewer
Temperature	°C		38	45
pH		6.5-9.0	6.0-9.0	5.0-9.0
BOD	mg/l	3	10	400
COD	mg/l	25	30	1000
Suspended solids	mg/l	50	50	400
Mercury	mg/l	0.001	0.001	0.10
Cadmium	mg/l	0.005	0.01	1.0
Hexa-Chromium	mg/l	0.05	0.05	2.0
Arsenic	mg/l	0.05	0.05	2.0
Cyanide	mg/l	0.02	0.02	2.0
Lead	mg/l	0.05	0.05	2.0
Tri-Chromium	mg/l	-	0.20	10
Copper	mg/l	1.0	0.10	10
Manganese	mg/l	0.1	0.20	10
Nickel	mg/l	0.02	0.20	10
Tin	mg/l	0.05	0.20	10
Zinc	mg/l	5	1.0	10
Boron	mg/l	1	1.0	50
Iron	mg/l	0.3	1.0	2.0
Phenol	mg/l	0.01	0.001	2.0
Free Chlorine	mg/l	-	1.0	-
Sulphide	mg/l	-	0.5	2.0

## ENVIRONMENTAL CONSIDERATION

- Sedimentation ponds, silt traps and drainage systems to control surface run-off must be provided before the commencement of any earthworks. Discharges from sediment basins or any other discharge point from the site shall be collected, and removed via a suitable and properly designed temporary drainage system and disposed of at a location and in a manner that will cause either pollution or nuisance.
- Surface run-offs shall be designed in accordance to **Putrajaya Stormwater Management Design Guidelines** and the **Manual Saliran Mesra Alam (MaSMA, 2000)**, *see also Chapter 9.0 Infrastructure and Utilities*.
- Solid waste material shall not be disposed to any watercourse or drainage facility.
- Temporary drainage works and all other precautions shall be taken to ensure the avoidance of damage by flooding and silt washed down from the site.
- All domestic wastewater are to be connected to the central wastewater sewerage system. No discharges into the storm water drainage system are allowed. This is to ensure that the ambient water quality of all inland waters and Putrajaya Lake are preserved at their high standard.



**Figure 4.20**  
**Typical Oil, Grease and Grit Trap(OGGT)**

## ENVIRONMENTAL CONSIDERATION

- All toilets, domestic and commercial wastewater is to be connected to the central sewerage system. No individual sewerage system shall be allowed.
- All eating outlets and parking spaces in the local and neighbourhood commercial centres shall be equipped with oil, grease and grit trap (OGGT) to trap effluents before being discharged into drainage outlets and lake.

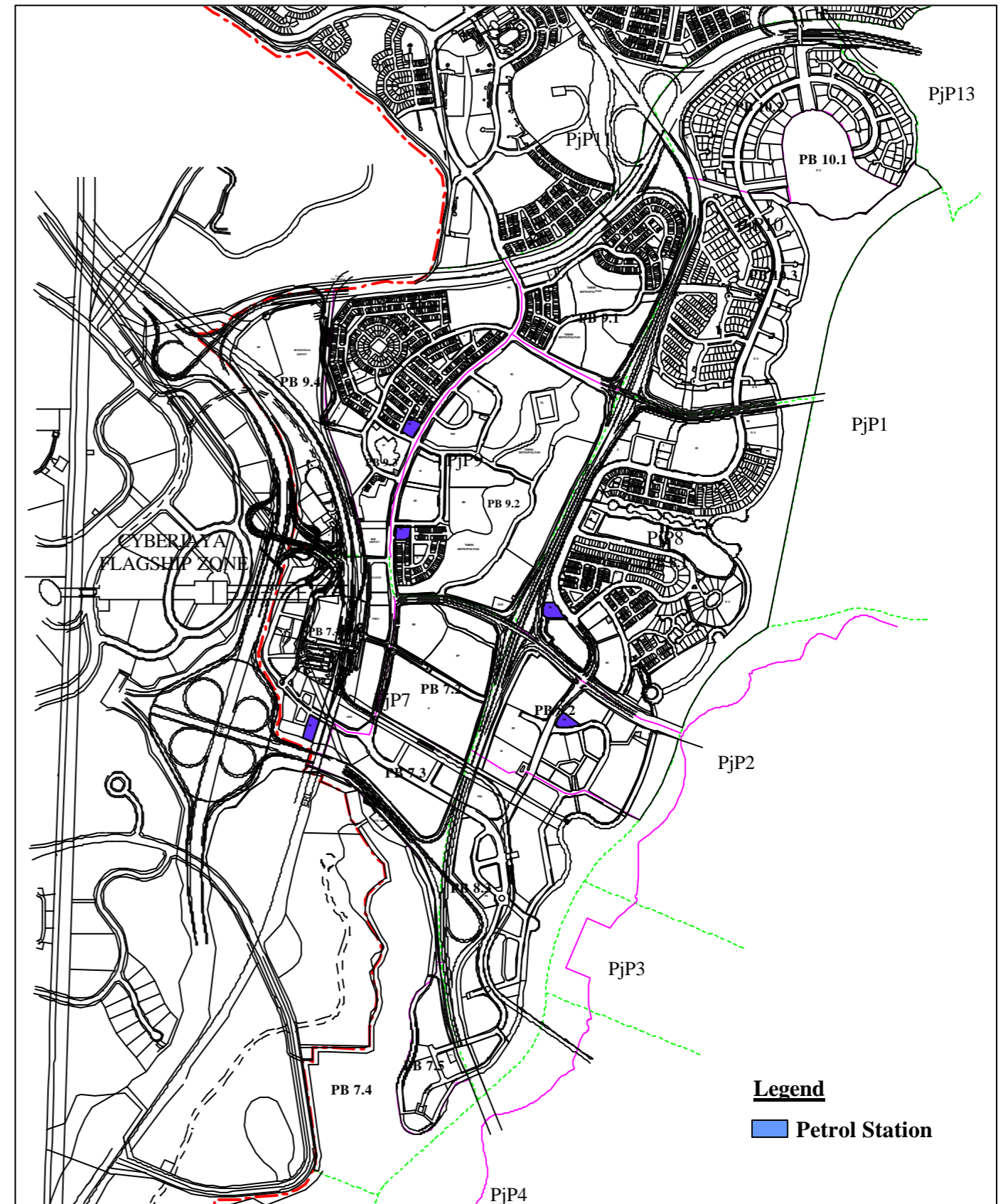
### Waste Management

- The 4R's of waste management should be emphasized with reduction being the predominant "R" and followed by "Reuse", "Recycle" and "Recover". Awareness campaign should be organized to promote the 3R's of waste management.
- Recycling depot should be included in the design of community centre to encourage people to make recycling a way of life.
- Biodegradable waste should be disposed at an approved dumping site as soon as possible.
- Where necessary, drainage control measures should be constructed around waste storage areas.
- No open burning of solid waste shall be allowed.
- All solid waste is recommended to be sorted on site into two types: - those that can be recycled and those that can be disposed.

## 5.0 PETROL STATION

### 5.1 USE

This guideline shall be used for all petrol station developments located in **PB7.1, PB8.1, PB8.2, PB8.3, PB9.2** and **PB9.3** as indicated in the Proposal Map (Figure 5.1).

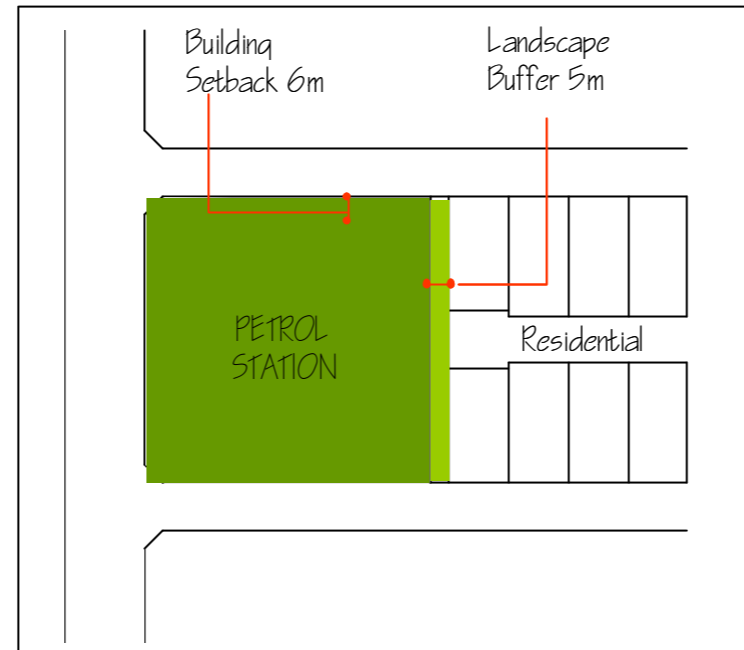


**Figure 5.1**  
**Location of Petrol Station in Local Plan Area**

## 5.2 PLANNING REQUIREMENTS

Planning requirements for petrol station shall comprise the following aspects: -

- Lot size and building configuration
- Use
- Setback
- Parking provision



**Figure 5.2**  
**Setback and Buffer Requirements**

## PLANNING REQUIREMENTS

### ▪ Lot Size and Building Configuration

Size of each petrol station is subject to the following requirements:-

Min. lot size	-	0.4 hectare
Max. lot size	-	1.0 hectare
Min. frontage	-	60m except for petrol station in <b>PB8.2</b> where allowable minimum frontage shall be 58m.
Height	-	1 storey (6.0m max)
Plot Ratio	-	0.5 (max)
Plinth Area	-	40% max

### ▪ Use

Sales of petrol, diesel, NGV will be the main use of petrol stations while convenience shop selling dry grocery goods and car wash/polish facility can be permitted for all petrol stations subject to approval by Perbadanan Putrajaya. Repair works and servicing of heavy vehicles shall not be permitted in all petrol stations.

### ▪ Setback

Setback for permanent structures within petrol station site shall be a minimum of 6m measured from the road reserve to the nearest permanent structure in the petrol station.

A minimum landscape buffer of 5m shall be provided for petrol station located next to a residential building (**Figure 5.2**).

### ▪ Parking Provision

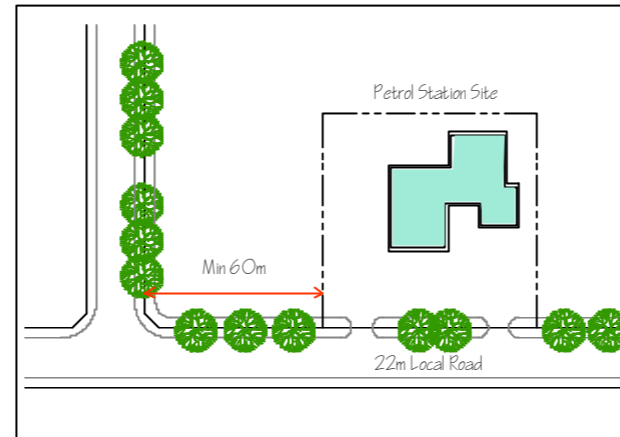
Petrol stations with convenience shop shall provide parking in the ratio 1 cps: 150sq.m (gross floor area).

### ▪ Other Requirements

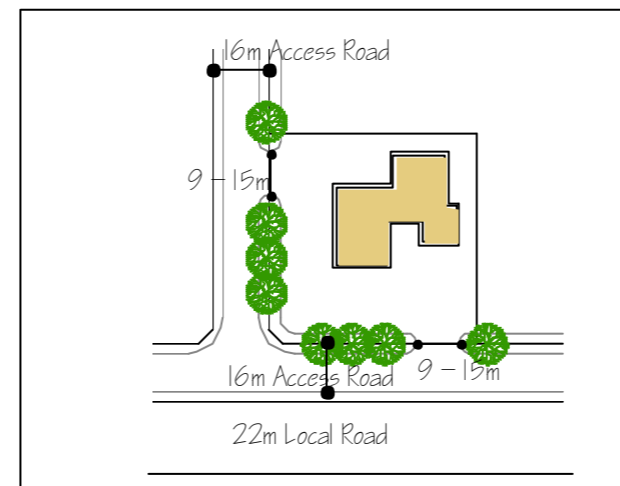
Oil/gas storage area shall be located at the farthest location from the nearest residential building. If a petrol station site is located next to residential building, a splash wall of 3m high shall be constructed on the boundary next to the residential building. This splash wall shall be landscaped to aesthetically improve the surrounding and to mitigate any noise or oil splash onto the residential building.

## 5.3 ACCESS

Access into petrol station is essentially related to egress and ingress points from public roads.



**Figure 5.3**  
**Distance of Petrol Station from Junction**



**Figure 5.4**  
**Egress/Ingress into Petrol Station from Access Road**



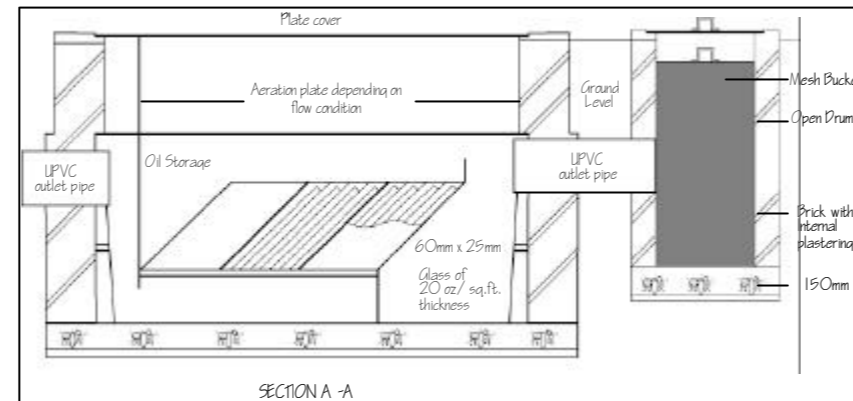
**Figure 5.5**  
**Access Signage into Petrol Station**

## ACCESS

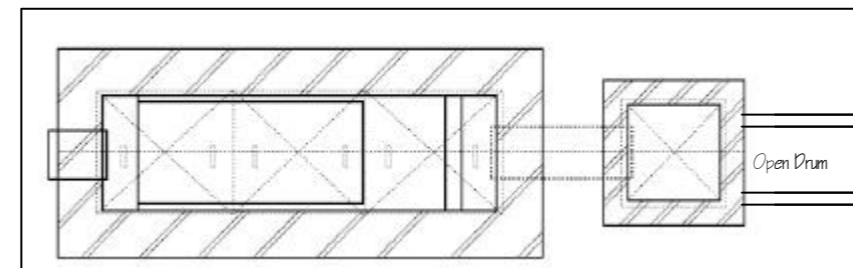
- Petrol stations shall be located fronting access roads. In the instance where petrol station is located fronting higher hierarchy road, an access road must be provided.
- Direct entrance into petrol stations from higher hierarchy roads other than access road shall not normally be allowed. Direct entrance into petrol station from higher hierarchy roads shall only be allowed if the petrol station is located at a minimum distance of 60m away from a junction or a roundabout (**Figure 5.3**).
- Two ingress and egress points shall desirably be provided for all petrol station sites. The width of the ingress/egress shall not be less than 9m and not more than 15m. The egress/ingress points shall be located farthest away from any junction (**Figure 5.4**).
- Signage indicating 'MASUK' and 'KELUAR' shall be provided with sufficient lighting to improve visibility at night (**Figure 5.5**). Signage shall conform to requirement set out in **Signage and Advertisement Design Guidelines for Putrajaya, 1999**.
- Access into petrol stations located fronting spine roads shall be slip-in and slip-out only. Crossover from opposite direction shall not be allowed.
- If the platform level between the petrol station sites differs from finished road level, gradient for access to the petrol station site from the main road shall not be more than 1:15 or any other ratio as determined by Perbadanan.

**5.4 Environmental Consideration**

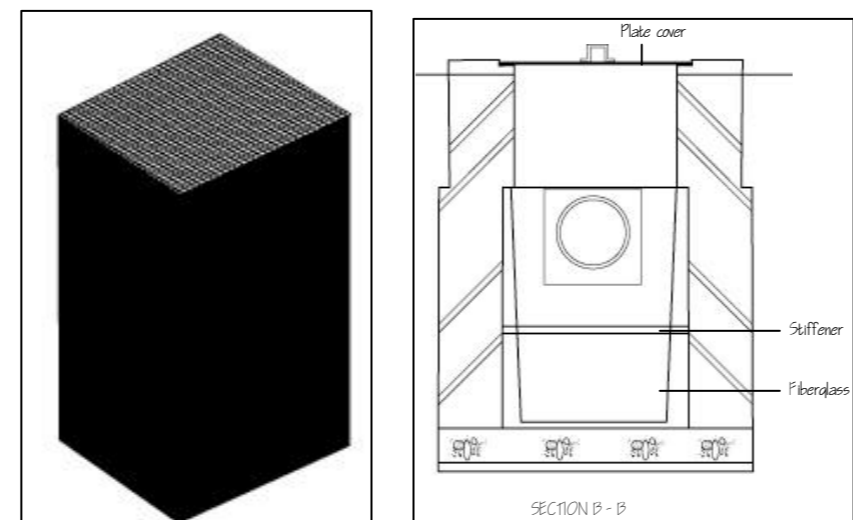
Environmental consideration for development of any petrol station within the Local Plan Area shall be related to provision of oil interceptor and separator to ensure discharge of wastes and effluents conform to required environmental regulations.



Section



Plan



Isometric View Of Wire Mesh Bucket

Section

**Figure 5.6**  
**Typical Oil Separator and Interceptor**

**ENVIRONMENTAL CONSIDERATION**

- Oil interceptor and oil separator shall be provided for all petrol stations. Excess oil shall be stored as scheduled waste and shall conform to **Environmental Regulation (Scheduled Waste) 1987**.
- Discharge of effluent into drainage system must conform to **Class II National Water Quality Standard and Environmental Quality (Perbadanan Putrajaya) (Water Pollution Control) Regulations, 1998**.

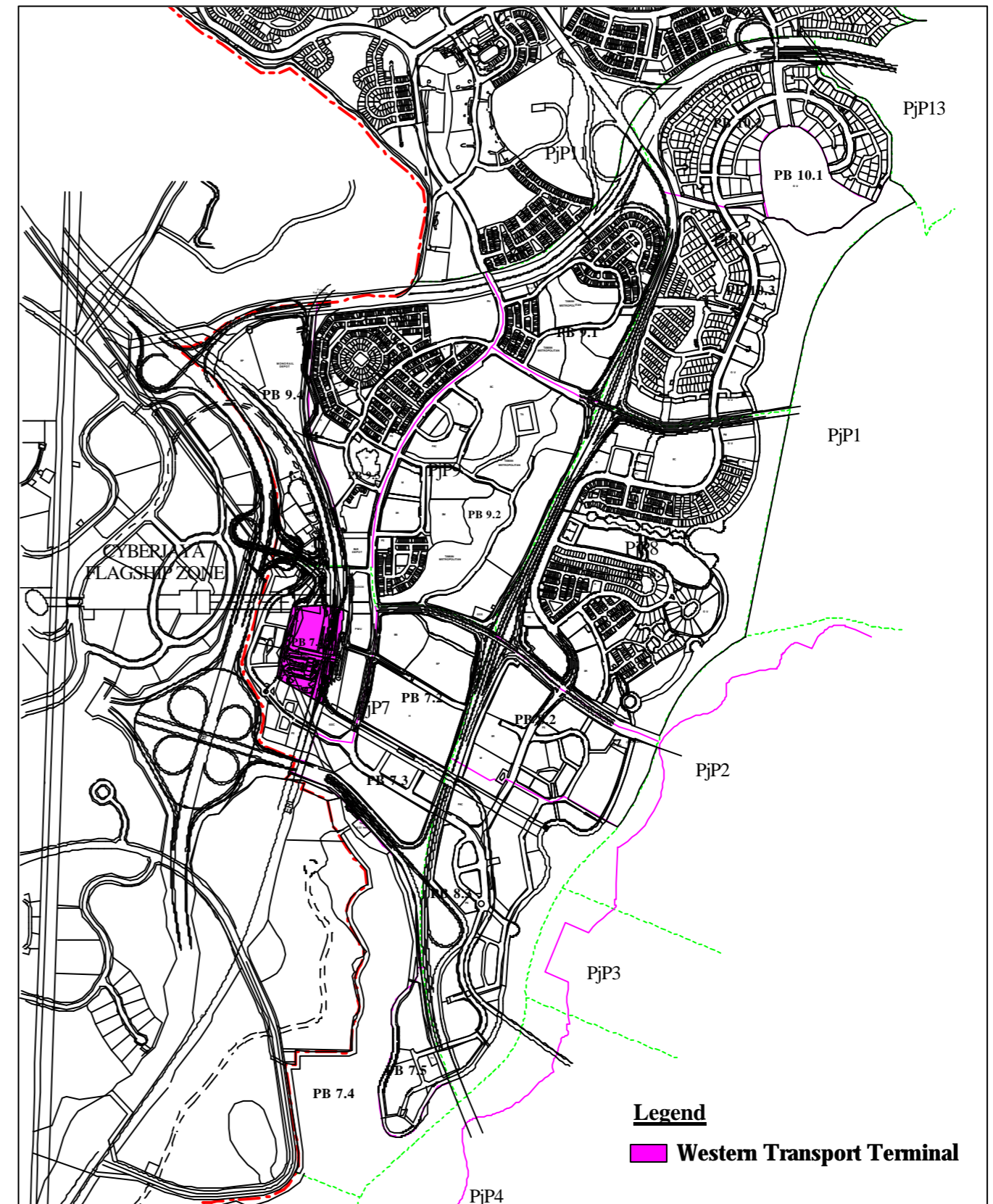
**Table 5.1 Putrajaya Ambient Lake Water Quality Standards and Standard for Discharge into Lake Area and Sewer**

Parameters	Unit	Putrajaya Ambient Lake Water Quality Standards	Standard For Discharge Into The Lake Area Or Onto Land	Standard For Discharge Into Sewer
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BOD	mg/l	3	10	400
COD	mg/l	25	30	1000
Suspended solids	mg/l	50	50	400
Mercury	mg/l	0.001	0.001	0.10
Cadmium	mg/l	0.005	0.01	1.0
Hexa-Chromium	mg/l	0.05	0.05	2.0
Arsenic	mg/l	0.05	0.05	2.0
Cyanide	mg/l	0.02	0.02	2.0
Lead	mg/l	0.05	0.05	2.0
Tri-Chromium	mg/l	-	0.20	10
Copper	mg/l	1.0	0.10	10
Manganese	mg/l	0.1	0.20	10
Nickel	mg/l	0.02	0.20	10
Tin	mg/l	0.05	0.20	10
Zinc	mg/l	5	1.0	10
Boron	mg/l	1	1.0	50
Iron	mg/l	0.3	1.0	2.0
Phenol	mg/l	0.01	0.001	2.0
Free Chlorine	mg/l	-	1.0	-
Sulphide	mg/l	-	0.5	2.0

## 6.0 WESTERN TRANSPORT TERMINAL (WTT)

### 6.1 USE

This guideline shall be used to guide the development of the Western Transport Terminal located in PB 7.1, Putrajaya. **Figure 6.1.**



**Figure 6.1**  
**Location of the Western Transport Terminal**

## 6.2 PHYSICAL PLANNING REQUIREMENTS

### 6.2.1 Size and Component

Western Transport Terminal is located on a 13.3-hectare site in PB

7.1. The main components of the WTT complex are: -

- Monorail Station
- Commuter Rail Services Station (CRS)
- Commuter and Local Bus Terminal
- Taxi Station
- Park and Ride Facility

Other components includes:-

- Retail and commercial outlets.
- Associated use related to operation of WTT such as infrastructure

**Plot Ratio** as defined by The Town and Country Planning Act, 1976, is the ratio of the total floor area of a building to the area of the building plot as measured between the survey boundary lines or, if there are no survey boundary lines, between the provisional boundary lines.

**Plinth Area** as defined by the Town and Country Planning Act 1972 is the proportion to be covered by building of the area of any lot.

**Open Space Coverage** is the portion of plot area outside plinth area. It may comprise of internal circulation, open space and both hard and soft landscape elements.

**Gross Floor Area (GFA)** is the sum of the plan areas of all floor levels (inclusive of the plan area of all walls, windows, columns, elevator shafts) and the plan area of all internal and external stairs, landing ramps, escalators, or other means of access between levels, or at each level in the building.

**Building Height** is the limit to the vertical extent of a building. It is measured as a number of storeys or floors from the ground level.

## PHYSICAL PLANNING REQUIREMENT

- Plot ratio, building heights, plinth area, gross floor area (GFA) for the Western Transport Terminal shall conform to the planning standard as indicated in **Table 6.1** and **Table 6.2**.

**Table 6.1 Development Components**

Development Components	Storey	Max Height (m)	Max GFA (m <sup>2</sup> )
Main Concourse	1 (elevated)	21	4080
Monorail Station	2 (elevated)	21	2800
ERL/CRS Station	2	21	2180
Commuter Bus Terminal	2	15	3400
Local Bus Terminal	2	15	3400
Taxi Drop-Off/Lay-By	-	-	750
Park & Ride	4	14	77690
Total GFA (Max)			94300

Source: Veritas Architect, LCP for the Western Transport Terminal, August 2000

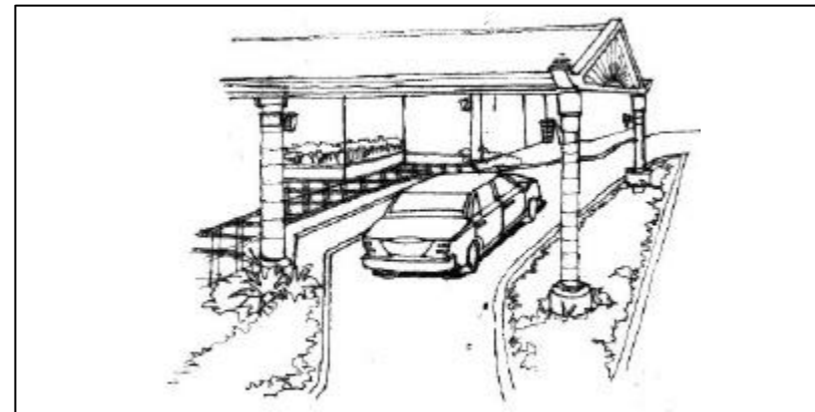
**Table 6.2 Plot Ratio, Plinth Area and Building Setback**

Plot Ratio	0.9
Max Plinth Area (%)	45
Max Gross Floor Area (m <sup>2</sup> )	95,000
Building Setbacks	
▪ Front	▪ 6m
▪ Side	▪ 6m

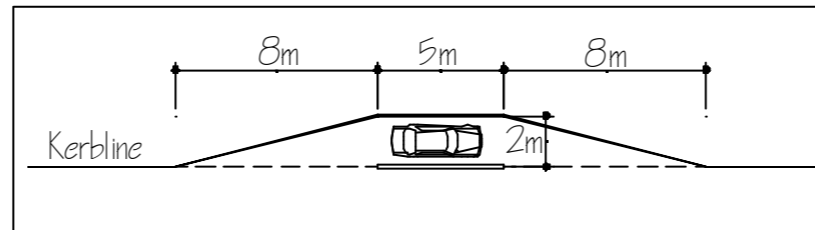
**6.3 Access and Parking**

**Access** refers to vehicular entrance and exit into development plot.

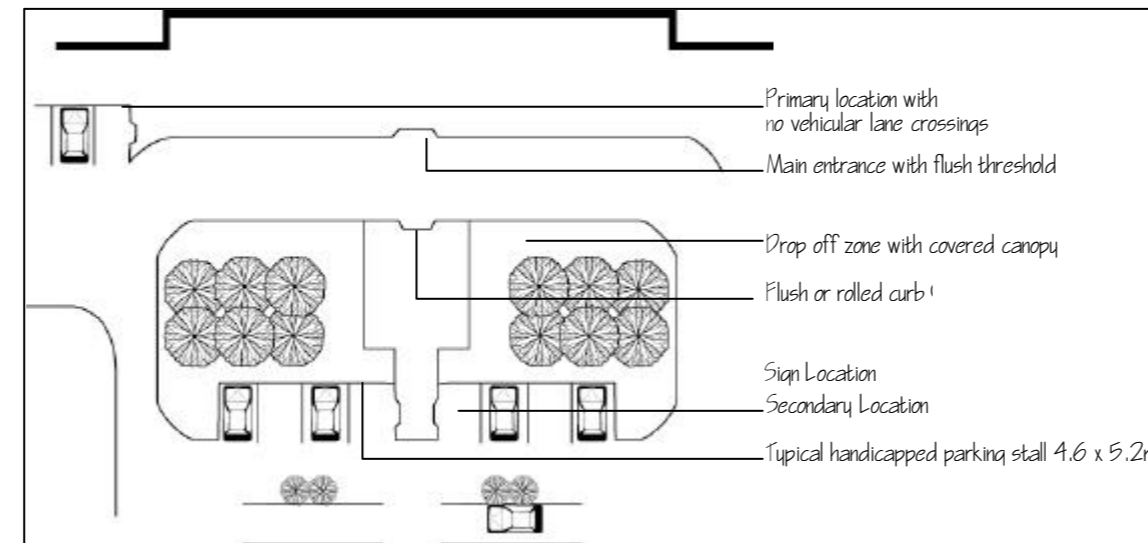
**Parking** is the manner of storage and accommodation of vehicles when not in use.



**Figure 6.2**  
**Drop Off**



**Figure 6.3**  
**Lay By For Taxi**



**Figure 6.4**  
**Parking For Disabled**

**PHSICAL PLANNING REQUIREMENT**

- A traffic management scheme shall be required within the transport terminal to prevent through movement of cars. Vehicular traffic must be controlled by an easily understood hierarchy of vehicles lanes.
- Main pedestrian route should be segregated from vehicles.
- Drop off area should be provided with amenities, plus links to other buildings with canopies to protect user from rain and sun.
- Entrance to the bus station should be controlled by bus priority signals. Other main junction on the site should be signal controlled with a pedestrian crossing phase. Signage shall conform to the requirements of the **Signage and Advertising Design Guidelines For Putrajaya, 1999**.
- Parking shall be provided in accordance to the following:-

**Table 6.3** Parking for WTT

Commuter Bus	Local Bus	Private Car	Motorcycle	Bicycle
		(Park and Ride)		
22	10	3000	100	5

- Short term parking for picking up and dropping off passengers should be provided near to the station concourse. Parking and lay by for taxis should be similarly provided.
- Additional parking shall be provided at strategic location grade/street level for emergency vehicles, police and handicapped.
- There should be convenient pedestrian connections to the other building spaces in the transport interchange. Provisions for handicapped shall also be incorporated.
- Adequate lighting, ventilation and fire security precautions must be provided which meet the best of international codes.

## 6.4 URBAN DESIGN

Buildings in the Transport Terminal Complex will provide the first impression of Putrajaya for a large proportion of visitors. The architectural design and materials should therefore emphasize on the quality and technologically advanced features of the city.

### VIEW AND VISTA

- Façade treatment should be of innovative design that reflect modern technology, transport architecture and modern local features.
- Monotonous and large plain facades should be avoided.
- Elevation of the terminal should be in scale and proportion with the overall composition of the area.
- The terminal should fit into its surroundings. Considerations that should be taken into account are:-
  - i. Appropriate massing, which complements but not compete with the towers in the Sub-Commercial Centre.
  - ii. The need for 'human scale' in space and façade treatment, especially at street level.
- Architectural design should be consistent throughout the area and compatible with the Sub-Commercial Centre. Suitable materials are stainless steel, glass, colour coated metals, natural or reconstructed stone.
- The block containing the concourse, the bus station, short term parking, LRT and ERL facilities should be of a unified architectural composition and theme. The complex should be easily identifiable by the public.
- Special elevation treatment and/or roof structures should emphasize key locations such as the station entrance when approached from the Sub-Commercial Centre, the vehicle approach from the expressway and the entrance to the retail/pedestrian hub.
- Multi storey parking structure should be bright and airy. Skylight or atria are encourage for these purposes, as well as providing a good sense of orientation.

**Sidewalk** is the layer of the streetscape dedicated exclusively to pedestrian activity and small-wheeled oriented vehicles. It is normally situated within the road reserve or within the setback area of a development plot.

**Clear Sidewalk Zone** is the zone within the streetscape where pedestrian flow is in continuity and uninterrupted by any structures such as columns or any landscape furniture such as trees, benches, kiosks and utility elements such as covers and gratings.

**Kerb** is the detailing of the edge of thoroughfare pavement separating the level of vehicular carriageway and sidewalk. There are two types as the following:-

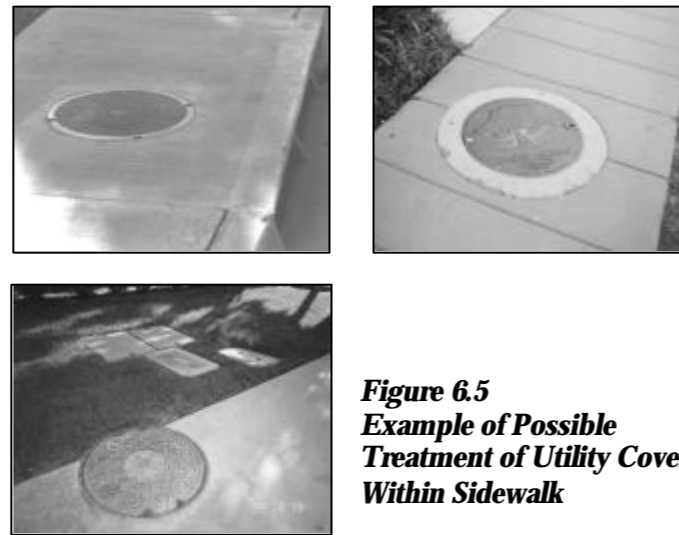
- i. Raised kerb
- ii. Flat bed kerb
- iii. Flat kerb
- iv. Drop kerb

**Raised Kerb** is a raised paving of the sidewalk where level is higher than the carriageway and is used to demarcate the limits of carriageway.

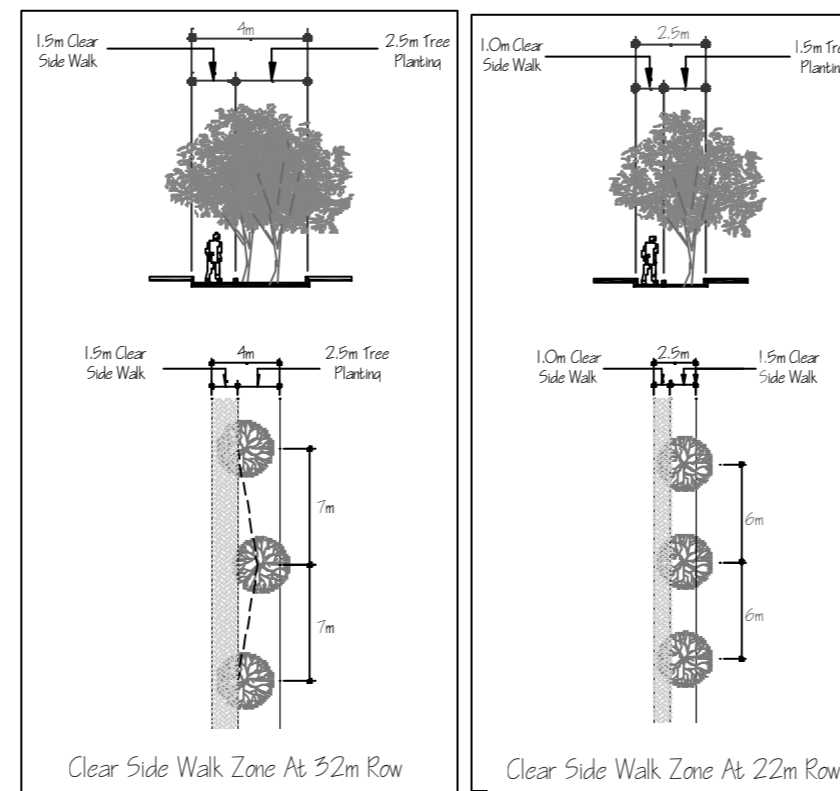
**Flat Bed Kerb** is the smooth transition paving differentiating two different materials of the sidewalk and the carriageway that is laid flush with the surface or shallow ramp. This type of kerb is typically used along kerb cut zones where provision of vehicular access or drop off is made.

**Flat Kerb** is the edge between sidewalk and carriageway where change of level is minimal and the domain between pedestrian and vehicular is normally demarcated by kerb barriers. Typically used at public spaces such as parks.

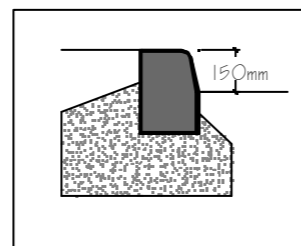
**Drop Kerb** is the area where kerb reduces in height at pedestrian crossings and kerb cut zones.



**Figure 6.5**  
**Example of Possible Treatment of Utility Covers Within Sidewalk**



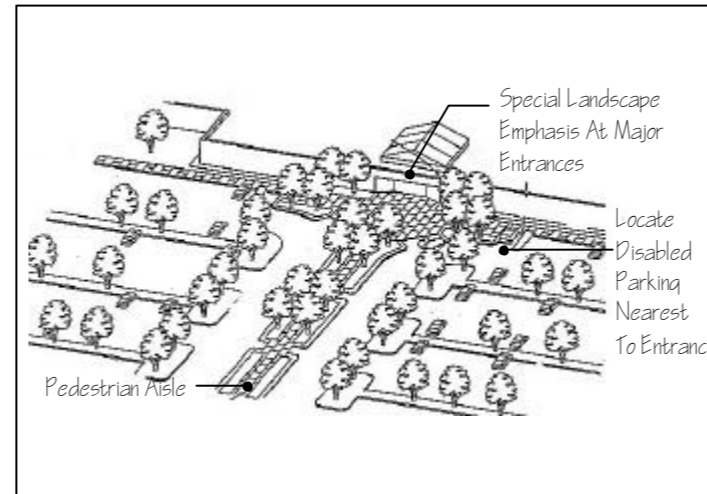
**Figure 6.6**  
**Clear Sidewalk Zone**



**Figure 6.7**  
**Raised Kerb**

## STREETSCAPE

- All sidewalks shall have a clear sidewalk zone where the sidewalk shall not be interrupted by any permanent or temporary structures including utility covers and gratings. Utility gratings and covers within the sidewalk shall be flush with the surface of the sidewalk.
- A minimum width of 1.5m shall be desirable to attain a clear sidewalk zone on all sidewalks.
- At the following locations, drop kerb should be used:-
  - i. Intersections with pedestrian crossing facilities
  - ii. Other pedestrian road crossings
  - iii. Service/access zone
  - iv. Parking Zone/parking access
  - v. Drop off zone
- The width of drop kerb crossing threshold shall be equal to the width of crossing demarcated on the thoroughfare surface. Kerb height at the crossing threshold shall be raised 15mm from the carriageway surface and shall have bull nose or chamfered edge profile.
- A band of 800mm tactile paving shall be positioned behind the crossing threshold and surface of crossing threshold shall be differentiated from the entire sidewalk pavement to facilitate sight-impaired pedestrians.
- Materials, colours and finishes for sidewalk should be durable, non-with minimal maintenance. Paving shall desirably be of interlocking pavers or concrete with design that create a unified pattern throughout a particular stretch of the sidewalk.
- Gradient along sidewalk shall be 5% maximum generally. Gradient up to 8% can be allowed only for short length sidewalk.
- Sidewalk surface shall accommodate for disabled users especially for the visually impaired and people on wheel chairs.
- Raised kerb should be more than 150mm in height measured from the finished road level to the finished sidewalk level.



**Figure 6.8**  
**Plantings Used to Soften the Environment**



**Figure 6.9**  
**Grasscrete Material**

## LANDSCAPE

- Buildings and generous landscape treatment should enclose parking and service areas particularly with regards to the view of the terminal from the expressway and from the approach from Sub-Commercial Centre.
- The car park and bus terminal should be adequately landscaped to soften their visual impact.. Grasscrete material should be used for the surface.
- Landscape in and around the terminal shall be visually impressive to signify 'gateway' entrance, welcoming visitors and pleasant.
- Signage shall be adequately provided along all pedestrian routes and shall conform in terms of design, scale, colour, material, position to the **Signage and Advertising Design Guidelines for Putrajaya, 1999**.

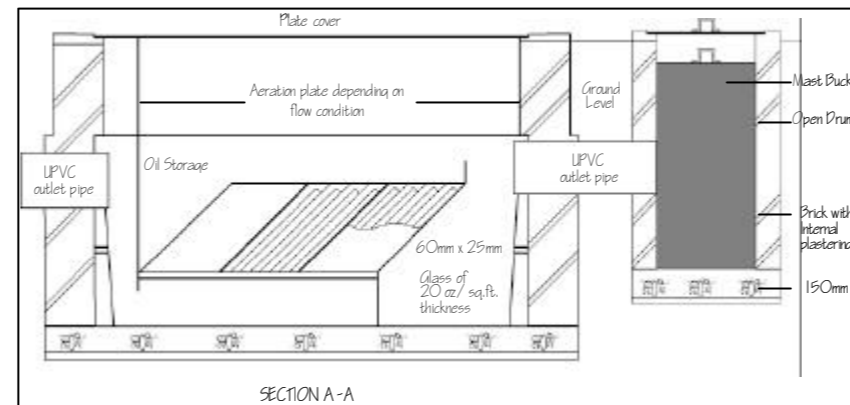
**6.5 ENVIRONMENTAL CONSIDERATION**

In order to minimize the impact of the terminal complex to the surrounding environment, it is paramount that the Environment Impact Assessment (EIA) Conditions of approval and Environment Management Plan (EMP) be complied throughout every phase of the development project.

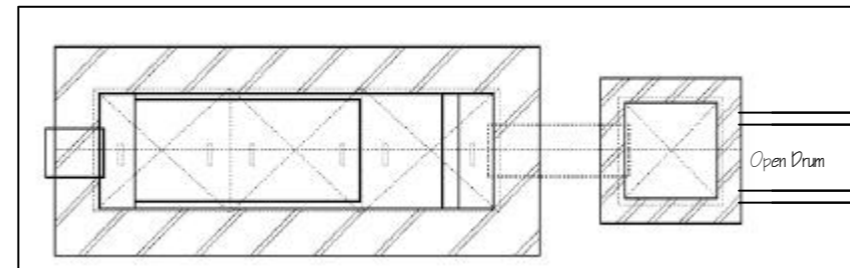
The Environment Management Plan (EMP) can be categorised into two category as indicated below:

- Environment during the construction phase
- Environment management during the operation phase

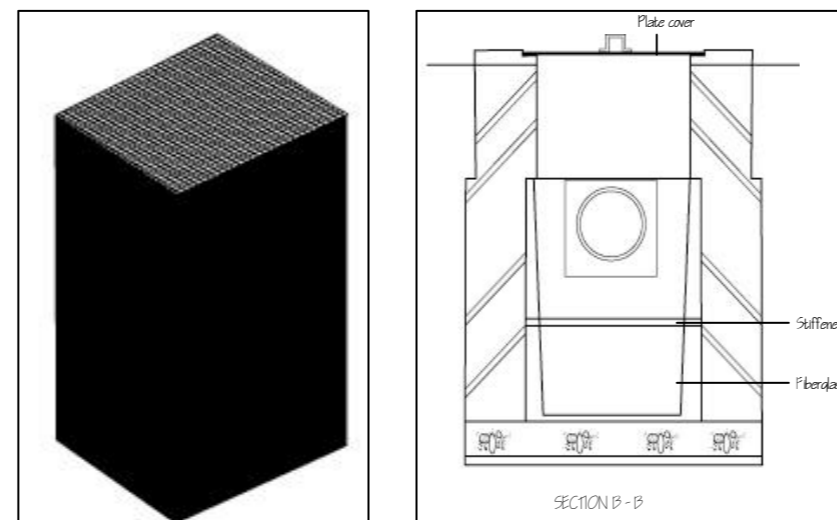
*EMP contains detailed description of practices to be followed and activities to be undertaken for the environmental management of the development area.*



Section



Plan



Isometric View Of Wire Mesh Bucket

Section

**Figure 6.10**  
**Typical Oil Separator and Interceptor**

**ENVIRONMENTAL CONSIDERATION**

- Development of WTT shall conform to The Environmental Planning Compliance Table as specified in the EMP (**Table 6.4 and 6.5**).
- Oil separator and interceptor shall be installed at drainage outlet before going into the main drainage system. Parking areas shall also be installed with oil, grease, and grit trap (OGGT).

**Table 6.4 Environmental Planning Compliance Table (Construction Phase)**

A. Impact on Physical Environment		
Environmental Concerns	Compliance Reference (EIA Approval Conditions)	Planning Design Compliance
Land Structure	12	<ul style="list-style-type: none"> <li>▪ Slopes have to be design and maintain in such a way to ensure their stability. Turfing and hydro seeding technique should be applied immediately after slope cut and fill formation is completed</li> </ul>
Topography	10	<ul style="list-style-type: none"> <li>▪ The natural topography has to be maintain wherever possible</li> </ul>
Natural streams/ ground water	23	<ul style="list-style-type: none"> <li>▪ Surface water flow from the project site to the detention pond need to be maintain (safeguard)</li> </ul>
Flora	Not Relevant	-
Fauna	Not Relevant	-
B. Impact on Air Quality		
Environmental Concerns	Compliance Reference (EIA Approval Conditions)	Planning Design Compliance
Land preparation activities	18,19,32	<ul style="list-style-type: none"> <li>▪ Roads in the construction site must be paved and kept clean</li> <li>▪ Exposed earth, need to be kept to avoid dust formation throughout the construction phase</li> <li>▪ No open burning are allowed</li> </ul>
Vehicle movement	20,25,40	<ul style="list-style-type: none"> <li>▪ Vehicles wheels need to be clean before entering public roads</li> <li>▪ Trucks load need to be entirely covered during transportation</li> </ul>

ENVIRONMENTAL CONSIDERATION

<b>C. Impact on Water Quality</b>		
<b>Environmental Concerns</b>	<b>Compliance Reference (EIA Approval Conditions)</b>	<b>Planning Design Compliance</b>
Surface run-off	5,13,16,17,22, 23	<ul style="list-style-type: none"> <li>▪ Silt trap should be constructed prior to commencement of earthwork and be maintain</li> <li>▪ Development activities should be monitored in order to minimised air pollution</li> <li>▪ Expose earth should be covered (revegetated) as soon as possible</li> </ul>
Liquid Effluent-Sewage	14,28	<ul style="list-style-type: none"> <li>▪ Proper drainage system need to be constructed</li> <li>▪ Temporary toilets need to meet the specification of Sewage Service Department</li> </ul>

**Table 6.5 Planning Compliance Table (Operation Phase)**

<b>A. Impact on Physical Environment</b>		
<b>Environmental Concerns</b>	<b>Compliance Reference (EIA Approval Conditions)</b>	<b>Planning Design Compliance</b>
Land Structure	Not Relevant	-
Topography	Not Relevant	-
Natural streams/ ground water	Not Relevant	-
Flora	Not Relevant	-
Fauna	Not Relevant	-
<b>B. Impact on Air Quality</b>		
<b>Environmental Concerns</b>	<b>Compliance Reference (EIA Approval Conditions)</b>	<b>Planning Design Compliance</b>
Vehicle Emmision	46	<ul style="list-style-type: none"> <li>▪ An area for air monitoring by Department of Environment need to be reserve</li> </ul>

ENVIRONMENTAL CONSIDERATION

**Table 6.5 Planning Compliance (Operation Phase) (cont.)**

<b>C. Impact on Water Quality</b>		
<b>Environmental Concerns</b>	<b>Compliance Reference (EIA Approval Conditions)</b>	<b>Planning Design Compliance</b>
Surface run-off	Not Relevant	
Liquid Effluent-Sewage	14,27	<ul style="list-style-type: none"> <li>▪ Proper channelling of effluent need to be establish</li> <li>▪ No sewage and sullage shall be release before going through proper treatment</li> </ul>
<b>C. Impact on Water Quality</b>		
<b>Environmental Concerns</b>	<b>Compliance Reference (EIA Approval Conditions)</b>	<b>Planning Design Compliance</b>
Surface run-off	Not Relevant	
Liquid Effluent-Sewage	14,27	<ul style="list-style-type: none"> <li>▪ Proper channelling of effluent need to be establish</li> <li>▪ No sewage and sullage shall be release before going through proper treatment</li> </ul>

- Additional control measure shall also be adopted during the construction and operational phase of the project to ensure minimal disturbance or pollution to the environment as indicated in **Table 6.6 and 6.7**

ENVIRONMENTAL CONSIDERATION

**Table 6.6 Environmental Planning Compliance (Construction Phase)**

Project Activities	Compliance Approval (EIA Approval Condition)	Control Measures
Earthwork	10,12,15,16,17,20,22	<ul style="list-style-type: none"> <li>▪ Natural topography should be maintain where possible</li> <li>▪ Slopes have to be designed in such a way to ensure their stability</li> <li>▪ Land clearance should be carried out only at the earthwork project site during the construction phase</li> <li>▪ Cleared areas should be protected and revegetated immediately</li> <li>▪ Construction vehicles wheels need to be clean before entering public roads</li> <li>▪ Detention pond should be build simultaneously with earth work</li> </ul>
Erosion, sedimentation and flood	13,17,22,23	<ul style="list-style-type: none"> <li>▪ Silt trap should be constructed prior to commencement of earthwork and be maintain throughout the construction phase</li> <li>▪ Cleared areas should be protected and revegetated immediately</li> <li>▪ Detention pond should be build simultaneously with earth work</li> <li>▪ Surface runoff to flood detention pond and tributaries of Langat River must be observe to prevent flooding</li> </ul>
Water Pollution	13,14,47	<ul style="list-style-type: none"> <li>▪ Silt trap should be constructed prior to commencement of earthwork and be maintain throughout the construction phase</li> <li>▪ Proper drainage system need to be constructed</li> <li>▪ Water quality monitoring need to be establish</li> </ul>

ENVIRONMENTAL CONSIDERATION

**Table 6.6 Environmental Planning Compliance (Construction Phase) (cont.)**

<b>Project Activities</b>	<b>Compliance Approval (EIA Approval Condition)</b>	<b>Control Measures</b>
Air Pollution	18,19,25,32,46	<ul style="list-style-type: none"> <li>▪ Roads in the construction site must be paved and kept clean</li> <li>▪ Exposed earth, need to be kept wet to avoid dust formation throughout the construction phase</li> <li>▪ Trucks load need to be entirely covered during transportation</li> <li>▪ No open burning are allowed</li> <li>▪ An area for air monitoring by Department of Environmental need to be reserved</li> </ul>
Noise Pollution	24,26,39,40	<ul style="list-style-type: none"> <li>▪ Construction vehicle route need to be planned to insure minimum disturbance</li> <li>▪ Vehicles and machinery should be maintain to avoid excessive noise</li> <li>▪ Nouse level need to be maintain at 65dB in the day time and 55dB at night time</li> </ul>
Liquid Waste (non-schedule)	14,27,28	<ul style="list-style-type: none"> <li>▪ Proper channelling of effluent need to be establish</li> <li>▪ No sewage and sullage shall be released before going through treatment</li> </ul>
Solid Waste (non-schedule)	36	<ul style="list-style-type: none"> <li>▪ Proper waste management system need to be establish</li> </ul>
Schedule Wastes	37	<ul style="list-style-type: none"> <li>▪ No schedule waste shall be release according to the Environmental Quality (Schedule Waste) Regulation, 1989</li> </ul>
Agrochemical	41,42,43	<ul style="list-style-type: none"> <li>▪ An integrated pest management concept using biological control should be adopted</li> <li>▪ The usage of pesticide and herbicide need to follow the guidelines by the Agriculture Department of Malaysia</li> <li>▪ Only slow release and easy to decompose organic fertilizer shall be used</li> </ul>
Health	44,45	<ul style="list-style-type: none"> <li>▪ Proper sanitation and regular monitoring of potential harmful organism such as E. coli should be practice</li> </ul>

ENVIRONMENTAL CONSIDERATION

**Table 6.7 Environmental Planning Compliance (Operation Phase)**

Project Activities	Compliance Approval (EIA Approval Condition)	Control Measures
Earthwork	Not Relevant	
Erosion, Sediment and flood	14	▪ Proper drainage system should be establish
Water pollution	14,47	▪ Water quality monitoring need to be establish
Air pollution	46	▪ An area for air monitoring by Department of Environment need to be reserve
Noise pollution	Not Relevant	
Liquid Waste (non-schedule)	27	▪ Proper Sewage Treatment System should be establish. No sewage and sullage shall be release before going through proper treatment
Solid Wastes	36	▪ Proper waste management system need to be establish
Schedule Waste	37	▪ No schedule waste shall be release according to the Environmental Quality (Schedule Waste) Regulation, 1889
Agrochemical	41,42,43	<ul style="list-style-type: none"> <li>▪ An integrated pest management concept using biological control should be adopted</li> <li>▪ The usage of pesticide and herbicide need to follow the guidelines by the Agricultural Department of Malaysia</li> <li>▪ Only slow release and easy to decompose organic fertilizer shall be used</li> </ul>
Health	44,45	▪ Proper sanitation and regular monitoring of potential harmful organism such as E. coli should be practice

## 7.0 PUBLIC AMENITIES

### 7.1 USE

This guideline shall be used for development of all public amenities located within the Local Plan area of Precinct 7, 8, 9 and 10, Putrajaya.

Public amenities under the provision of this Manual include the following: -

1. Education
2. Religious
3. Health Clinics
4. Emergency Services
5. Community Services

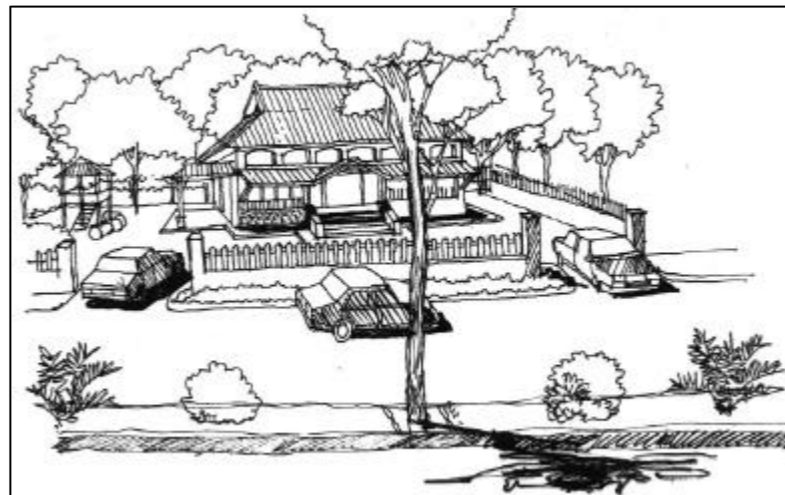
**7.2 EDUCATION**

Educational amenities are categorised in four types as the following:-

- i. Kindergarten/Taska
- ii. Primary School
- iii. Secondary School
- iv. School Complex

**7.2.1 Kindergarten/Taska**

**Kindergartens** are pre-school education facilities for children from ages of 3 to 6 years. It may sometimes be combined with nursery facilities for infants and toddlers within the same compound or area of a kindergarten.



**Figure 7.1**  
**Pick-up and drop-off point for kindergarten**

**KINDERGARTENS**

**Requirement for Provision**

- Provision of kindergarten site or space shall be calculated based on the criteria as shown in **Table 7.1**.

**Table 7.1 Provision Standard for Kindergarten**

		<b>Standard</b>
Provision Threshold		1 for every 500 units
Assumed Number of Kindergarten Going Children Per Family		0.6 child/Family
Number of Children/Classroom		15 Children/Classroom
Number of Classrooms		Min 2 classes @ 30 children
		Max 5 classes @ 75 children
Min. Kindergarten Size (if within building for strata residential development)	Min. Classroom Size	245m <sup>2</sup> / class
	Garden/ Play area	600m <sup>2</sup> (min)
	Total Floor Area	1090m <sup>2</sup>
Min. Lot Area (if free standing building)		0.20 hectare (min)

- Sites identified for kindergarten in the Proposal Map shall be developed as kindergarten only and shall not be subdivided further.

KINDERGARTENS

- Development of kindergarten building on free-standing site shall conform to the requirements as specified in **Table 7.2**.

**Table 7.2 Planning Standard For Kindergarten**

Plinth Area	30% (max)
Height	2 storey (max)
Setback from access road	12m (min)
Setback at side/rear	6m (min)
Parking	<ul style="list-style-type: none"> <li>1 CPS : 4 staffs</li> <li>min 3 car length for pick up and drop off point.</li> </ul>

Note: CPS – car parking space  
MPS – motorcycle parking space

- Kindergartens within apartment blocks should be located at ground floor level, or between adjacent blocks: as free standing buildings.
- Must be accessible by footpath from the dwelling units without having to cross any streets. If a street must be crossed, it shall only be a minor street.
- Building design shall provide bright open space with colourful and integrated play structure.
- Building shall incorporate low windows at child eye level.
- A for drop-off, pick-up, and waiting for parents shall be provided for a minimum length of 3 cars. This lay by area shall be provided within the land area allocated for the kindergarten and shall not be part of the public road reserve.
- Layout plan should indicate total gross net areas of indoor play, outdoor play, roofed shade and other outdoor shade areas.
- Play equipments that can nurture and enhance the children’s psychological development. Garden or play area should have a minimum area of 600 sq.m. Play equipments shall conform to SIRIM standards.

## KINDERGARTENS

- Play area should be physically segregated from other activities particularly vehicular circulation areas such as street and car parking areas. Plant species used as fencing shall be of 'child-friendly'. Guidelines as stated in **Putrajaya Fencing Design Guidelines Manual, 1999** should be adhered to.

**7.2.2 Primary School**

The primary school is one of the most important elements of a neighbourhood development. The primary school is for children from 7 years to 12 years and is planned complete with its own field and other necessary amenities.

**PRIMARY SCHOOL**

**Provision Requirement**

- Primary school shall be provided at location as indicated in Proposal Map and according to size as indicated in **Table 7.3**.

**Table 7.3 Provision of Primary School**

Planning Block	Unit	Size (min. hectare)
PB 8.1	1	2.43 (on site as indicated in Proposal Map)
PB 8.2	1	2.64 (on site as indicated in Proposal Map)
PB 9.2	1	2.42 (on site as indicated in Proposal Map)

**Planning Requirement**

- Schools shall be provided in accordance to requirements as specified in **Table 7.4**.

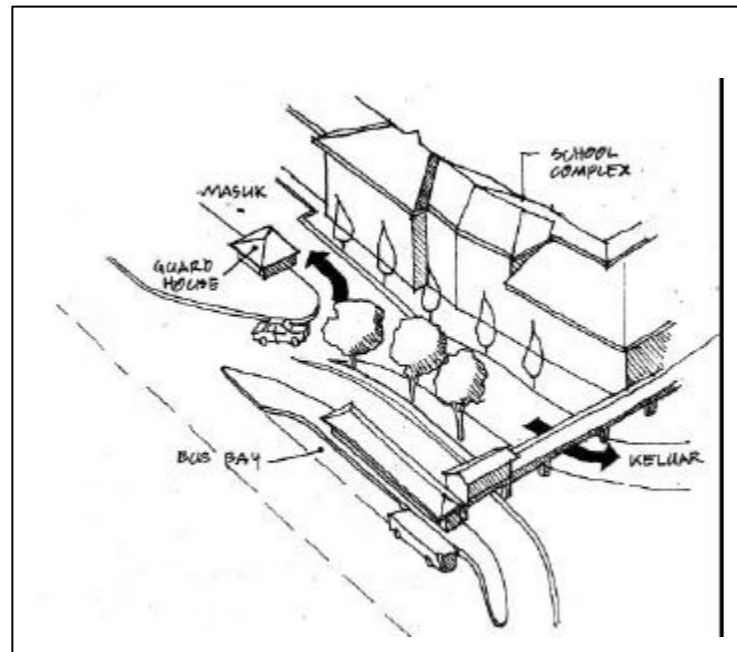
**Table 7.4 Planning Requirement for Provision of Primary School (Maximum)**

Threshold Provision	1 for every 10,800 people
Assumed Number of Primary School Going Children	13% of Population
No of Classroom	40 classes (max)
No of students/class	35 students (max)
Min Land Area	2 hectares.

- Development of primary school shall conform to the requirements as specified in **Table 7.5**

**Table 7.5 Planning Standard for Primary School**

Plinth Area	30% (max)
Height	4 storey (max)
Setback from access road	12m (min)
Setback at side/rear	6m (min)
Parking	1 car parking space : 8 staffs + 10% for visitors
	1 motorcycle parking space : 10 staffs
	1 bicycle rack : 50 students
	min 10 car lay-bys for drop off /pick up
	bus bay : min 3 bays
	Min. 2 handicapped parking spaces



**Figure 7.2**  
**Access Going To School Site**  
**Together With Lay-by for Bus**

## PRIMARY SCHOOL

### Building Massing

- Relate to Malaysian culture and its regional architecture to create a sense of national identity with distinctive character. Building shall also blend harmoniously with the adjacent architecture within the precinct/ locality
- Response to the surrounding open-space framework and create appropriate spatial enclosure within the site as well as linking it with the public spaces of the particular neighbourhood.
- Vary building heights and setbacks, so as to established frontages at a human scale adjacent to pedestrian areas.
- Establish the main building as a “landmark”.
- Incorporate verandahways in facades at street-level, with a minimum width 1.5m.

### Circulation and Parking

- Access to schools must be from a local access road. No direct access is permitted from local distributor road or higher category roads.
- Vehicular entry points from local access road shall be minimised. Main entrance into school compound shall be clearly identified through landscaping, landmarks or gateway. Clear separation between pedestrian and vehicular routes shall also be established. Traffic calming features and pedestrian crossing shall be introduced at strategic location.
- All major facilities or components shall be linked via covered walkways.
- Lay-by and drop-off zone shall be provided at strategic locations. The drop-offs/pick up bays and waiting areas should be sited away from the major routes. The lay bays can be outside the school gate but must be within the land area allocated as school reserve. They shall not be part of the public road reserve
- Parking spaces shall be provided in accordance to the requirement as specified in **Table 7.5**. Parking spaces for Bicycles rack and motorcycle parking shall be located to have clear visual surveillance.

**7.2.3 Secondary School**

The secondary school facilities are provided for children of ages 13 to 17 years old. The schools are sited at approximately 0.8-1.6 km of walking radius and has a population catchment of 17,500 people.

**SECONDARY SCHOOL**

**Provision Requirement**

- Secondary school shall be provided at location as indicated in proposal map and according to size as specified in **Table 7.6**.

**Table 7.6 Provision of Secondary School**

Planning Block	Unit	Min. Size
PB 9.2	1	3.26 hec (On site as indicated in Proposal Map)

**Planning Requirement**

- Secondary schools shall be provided accordance to requirements as specified in **Table 7.7**.

**Table 7.7 Planning Requirement For Provision of Secondary School**

Threshold Provision	1 for every 17,500 people
Number of Primary School Going Children	10% of population
No of Classroom	50 classes
No of students/class	35 students
Min Land area	3.0 hectare

- Development of secondary school shall conform to the requirements as specified in **Table 7.8**.

**Table 7.8 Planning Standard for Secondary School**

Plinth Area	30% (max)
Height	4 storey (max)
Setback from access road	12m (min)
Setback at side/rear	6m (min)
Parking	1 car parking space : 8 staffs + 10% for visitors
	1 motorcycle parking space : 10 staffs
	1 motorcycle parking space : 20 student (form 5 & 6)
	1 bicycle rack : 50 students
	min 10 car lay-bys for drop off /pick up
	bus bay : min 3 bays
	Min. 2 handicapped parking spaces

## SECONDARY SCHOOL

**Building Massing**

- Relate to Malaysian culture and its regional architecture to create a sense of national identity with distinctive character. Building shall also blend harmoniously with the adjacent architecture within the precinct/ locality.
- Response to the surrounding open-space framework and create appropriate spatial enclosure within the site as well as linking it with the public spaces of the particular neighbourhood.
- Vary building heights and setbacks, so as to established frontages at a human scale adjacent to pedestrian areas.
- Establish the main building as a “landmark”.
- Incorporate verandahways in facades at street-level, with a minimum width 1.5m.

**Circulation and Parking**

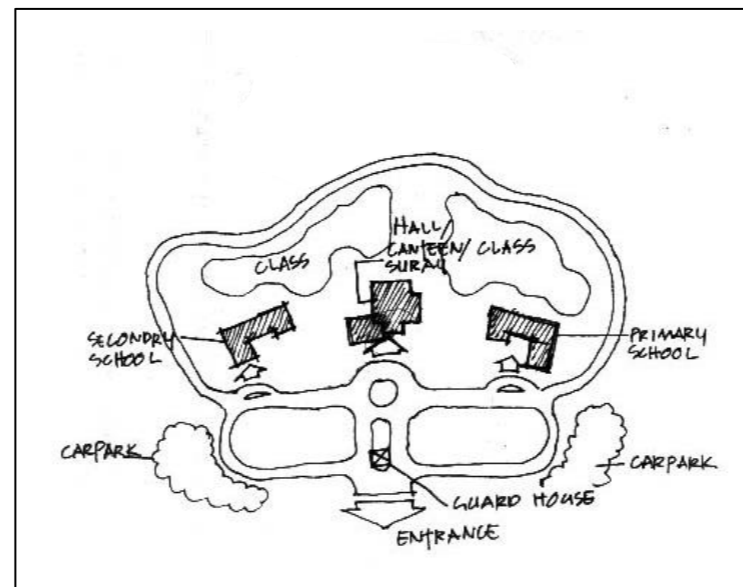
- Access to schools must be from a local access road. No direct access is permitted from local distributor road or higher category roads.
- Vehicular entry points from access road shall be minimised. Main entrance into school compound shall be clearly identified through landscaping, landmarks or gateway. Clear separation between pedestrian and vehicular routes shall also be established. Traffic calming features and pedestrian crossing shall be introduced at strategic location.
- All major facilities or components shall be linked via covered walkways.
- Lay-by and drop-off zone shall be provided at strategic locations. The drop-offs/pick up bays and waiting areas should be sited away from the major routes. The lay bays can be outside the school gate but must be within the land area allocated as school reserve. They shall not be part of the public road reserve
- Parking spaces shall be provided in accordance to the requirement as specified in **Table 7.9**. Bicycles rack and motorcycles parking shall be provided to have clear visual surveillance.

**7.2.3 School Complex**

**School complex** is an integrated school development that will house a primary and secondary school where some of the common facilities such as sports ground and multi-purpose hall can be shared between the two. The two schools also share common vehicular entrance and exit for better security.



**Figure 7.3**  
**Existing School Complex in Local Plan Area**



**Figure 7.4**  
**Illustration Showing Relationship of Primary and Secondary School in A School Complex**

**SCHOOL COMPLEX**

**Provision Requirement**

- School complex shall be provided at location as indicated in Proposal Map and according to size as specified in **Table 7.9**.

**Table 7.9 Provision of School Complex**

Planning Block	Unit	Min. Size
PB 8.1	1	6.00 hec (On site as indicated in Proposal Map)
PB 9.2	1	6.07 hec (On site as indicated in Proposal Map)

**Planning Requirement**

- Development of school complex shall conform to the requirements indicated in **Table 7.10** with regards to building setback, height, plinth area and parking provision.

**Table 7.10 Planning Standard For School Complex**

Plinth Area	30% (max)
Height	4 storey (max)
Setback from access road	12m (min)
Setback at side	6m (min)
Parking	1 car parking space : 8 staffs + 10% for visitors
	1 motorcycle parking space : 10 staffs
	1 motorcycle parking space : 20 student (form 5 & 6)
	1 bicycle rack : 50 students
	min 10 car lay-bys for drop off /pick up
	bus bay : min 6 bays

**Site and Design Consideration**

- Backyards to all buildings shall optimise visual surveillance; at both front and back allotments.
- Design and planning should reflect a progressive design image, allow for maximum visual integration of the indoors with the external landscape and views and provide interesting spaces for student interaction (within the school complex).

## SCHOOL COMPLEX

- The school may share indoor multi-purpose halls, playing fields and jogging tracks. Multi-purposes hall and outdoor sports area should be adjacent to one another. School field should be interposed between academic and busy road. These areas should be adaptable to after hours sharing.
- The circulation system within the complex should include a covered lobby or concourse; in linking the academic and non academic facilities where possible

**Building Massing**

- Relate to Malaysian culture and its regional architecture to create a sense of national identity with distinctive character. Building shall also blend harmoniously with the adjacent architecture within the precinct/ locality.
- Response to the surrounding open-space framework and create appropriate spatial enclosure within the site as well as linking it with the public spaces of the particular neighbourhood.
- Vary building heights and setbacks, so as to established frontages at a human scale adjacent to pedestrian areas.
- Establish the main building as a “landmark”.
- Incorporate verandahways in facades at street-level, with a minimum width 1.5m.

**Circulation and Parking**

- Access to schools must be from a local access road. No direct access is permitted from local distributor road or higher category roads.
- Vehicular entry points from access road shall be minimised. Main entrance into school compound shall be clearly identified through landscaping, landmarks or gateway. Clear separation between pedestrian and vehicular routes shall also be established. Traffic calming features and pedestrian crossing shall be introduced at strategic locations.
- All major facilities or components shall be linked via covered walkways.

SCHOOL COMPLEX

- Lay-by and drop-off zone shall be provided at strategic locations. The drop-offs/pick up bays and waiting areas should be sited away from the major routes. The lay bys can be outside the school gate but must be within the land area allocated as school reserve. They shall not be part of the public road reserve.
- Parking spaces shall be provided in accordance to the requirement as specified in **Table 7.10**. Bicycle rack and motorcycle parking shall be provided to have clear visual surveillance.

**7.3 Religious Facilities**

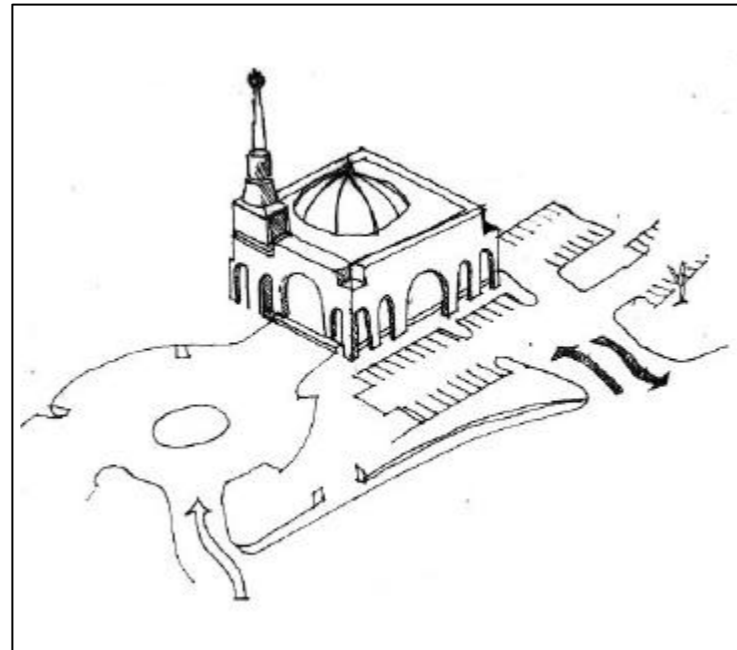
Religious facilities referred to within the Local Plan area are categorised into three types as the following:-

- i. Mosque
- ii. Surau
- iii. Religious Reserve

**7.3.1 Mosque**

**Mosque** refers to a dedicated building for where prayers including Friday prayers and other related Islamic religious activities could be undertaken.

Within the Local Plan area, there are two locations for the mosque i.e. in PB8.2 and PB9.2. The mosque in PB8.2 shall serve neighbourhood areas of Precinct 7 and 8 whilst mosque in PB9.2 shall serve Precinct 9 and 10.



**Figure 7.5**  
**Access into Mosque**

**MOSQUE**

**Provision Requirement**

- Mosque shall be provided at location as indicated in proposal map and according to size as specified in **Table 7.11**.

**Table 7.11 Requirement For Provision of Mosque**

Planning Block	No.	Size (min. hectare)
PB 8.2	1	1.82 (on site as indicated in Proposal Map)
PB 9.2	1	1.61 (on site as indicated in Proposal Map)

**Planning Requirement**

- Development of mosque shall conform to the requirements indicated in **Table 7.12** with regards to building setback, height, plinth area and parking provision.

**Table 7.12 Planning Standard For Mosque**

Mosque	
Lot Area	1.62 hectare (min.)
Plinth Area	50% (max)
Setback from access road	12m (min)
Setback at side/rear	6m (min)
Max. Capacity	8000 persons
Parking	1 car parking space : 150 GFA
	1 motorcycle parking space : 300 GFA
	Minimum 1 bicycle rack
	Min. 2 handicapped parking spaces or 1 % on top of the required provision whichever is higher

Note: GFA is in square meter.

**Circulation and Parking**

- Parking should be segregated from main pedestrian routes.
- Pedestrian accessibility into the mosque shall be maximised.

## MOSQUE

**Design consideration**

- Formal relationship with adjacent open spaces shall be established and pedestrian linkages provided.
- Prominent gateway into the mosque compound and leading it onto internal courtyard to achieve a progression of spatial and religious experience shall be provided.
- The main entrance should face the open space, with secondary entrances on the remaining side except for walls facing the Qiblat.
- Classes can be included as one of the component of the mosque.
- The mosque should be well ventilated, airy and well lighted.
- Colours and materials shall follow and conform to traditional Islamic standard and practice.

**Building Massing**

- The mosque shall establish itself as major landmark and a community node.
- The design of the mosque should incorporate the iconography of Malaysian building elements as well as the principles of traditional Islamic design.

**7.3.2 Surau**

**Surau** refers to a building or space within building where daily prayers and other daily religious activities such as learning of the Quran can be performed.

Within the Local Plan area, sites for suraus have been identified in the Proposal Map. In addition to the allocated suraus, surau shall also be provided within development of multi-dwelling units in accordance to the standard specified in this Manual. See also guidelines for Residential (Chapter 2.0).

**SURAU**

**Provision Requirement**

- Notwithstanding the threshold requirement for provision as shown in **Table 7.13**, sites identified for surau in Proposal Map shall be developed as surau and shall not be subdivided further.

**Planning Requirement**

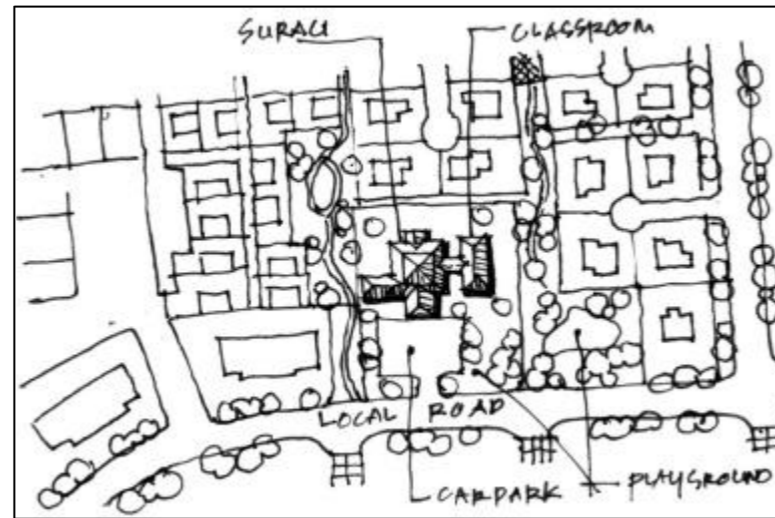
- Development of surau shall conform to the requirements indicated in **Table 7.13** concerning building setback, height, plinth area and parking provision.

**Table 7.13 Planning Standard for Surau**

Surau	
Threshold Provision	1: 500 dwellings
Land Area	0.25 hectare
Plinth Area	50% (max)
Height	2 storey (max)
Setback from access road	12m (min)
Setback at side	6m (min)
Parking	1 car parking space : 75 GFA Additional 2 CPS for surau with KAFA class
	1 motorcycle parking space : 150 GFA
	Minimum 1 bicycle rack 1 rack : 50 student for surau with KAFA class
	Min. 2 handicapped parking spaces or 1 % on top of the required provision whichever is higher

**Design consideration**

- Establish an integrated and formal relationship with other building in the neighbourhood.
- Surau on free-standing sites shall also accommodate for classroom to be used as religions school. Each classroom shall accommodate a maximum of 35 students and each surau shall accommodate for a maximum of 6 classrooms (for KAFA classes).
- Establish itself as a focal point ; to encourage a sense of identity for each neighbourhood.



**Figure 7.6**  
**Typical Concept for Surau**

## SURAU

- Be incorporated as part of the public space network and link in with key “green” areas which unify neighbourhood.

### Building Massing

- Surau should project an image compatible with character of the residential-neighbourhood within which it is set..
- The design of surau should, while maintaining its own distinctive, character, blend with the neighbourhood.
- The design of the surau should incorporate the iconography of Malaysian building elements; while recognising the heritage and principles of Islamic design.

### Circulation and Parking

- Main entrance should be clearly visible, identifiable and easily accessible to the public.
- Pedestrian linkage should be connected to public walkway to facilitate easy access.

**7.3.3 Other Religious Reserve**

*Other religious reserves refer to land areas reserved for use as places of worship for other religions such as Buddha, Hinduism and Christianity.*

In the Local Plan area, these reserves are located in PB9.3 and PB 9.4, as shown in the Proposal Map.

**OTHER RELIGIOUS RESERVES**

**Provision Requirement**

- Religious reserve shall be provided at locations as indicated in Proposal Map and **Table 7.14**.

**Table 7.14 Requirement For Provision of Religious Reserve**

Planning Block	No.	Size (min. hectare)
PB 9.3	1	0.41 (on site as indicated in Proposal Map)
PB 9.4	1	0.40 (on site as indicated in Proposal Map)

**Planning Requirement**

- Development of place of worship on the religious reserve shall conform to the requirements indicated in **Table 7.15**.

**Table 7.15 Planning Standard for Place of Worship on Religious Reserve**

Other Religions Reserve	
Plinth Area	50% (max)
Setback from access road	12m (min)
Setback at side/rear	6m (min)
Max. height	1 storey
Parking	1 car parking space : 75 GFA
	1 motorcycle parking space : 150 GFA
	Minimum 1 bicycle rack
	Min. 2 handicapped parking spaces

Note: GFA is in square meter.

**Design consideration**

- The proposed place of worship should respect adjacent development.
- The building, while reflecting their respective religions and cultures shall, at the same time, be able to blend in the overall context of their respective sites.

**Circulation and Parking**

- Parking should be set apart from main pedestrian routes and within the component of the religious reserve.
- Pedestrian accessibility into these places of worship shall be optimised.

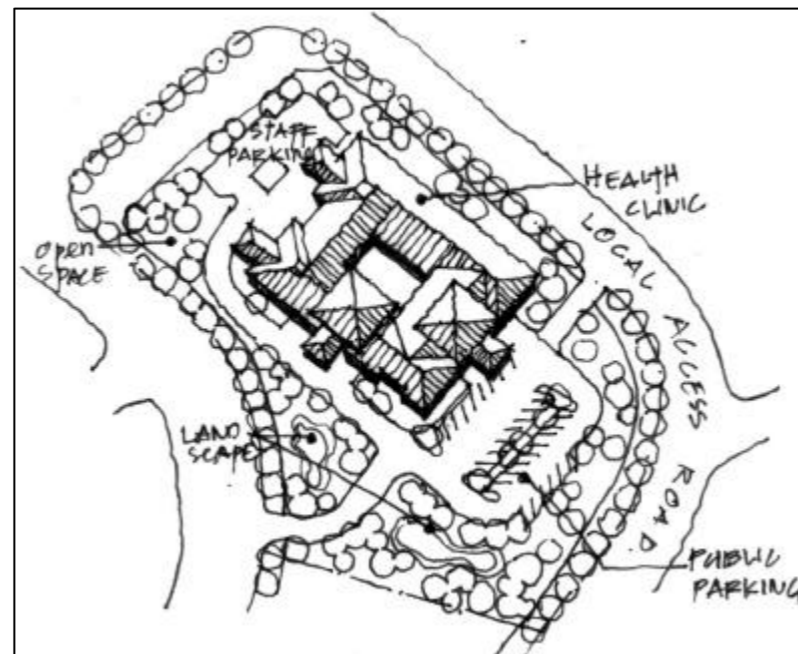
**7.4 HEALTH SERVICES**

Health services within the local plan area are categorised in two tiers as the following:-

- i. Clinic
- ii. Hospital

**7.4.1 Clinic**

The proposed health clinic is to provide an adequate health service within neighbourhood. The 1.5 hectares land in PB 9.2 (as shown in Proposal Map) will offer outpatient medical services mainly for the residents of Precinct 9 and 10, Putrajaya.



**Figure 7.7**  
**Typical Concept for Clinic**

**CLINIC**

- Health clinic shall be provided at location as indicated in Proposal Map and in **Table 7.16**.

**Table 7.16 Health Clinic**

Planning Block	Unit	Size (min. hectare)
PB 9.2	1	1.51 (on site as indicated in Proposal Map)

**Planning Requirement**

- Development of clinic shall conform to the requirements indicated in **Table 7.17** with regards to building setback, height, plinth area and parking provision.

**Table 7.17 Planning Standard for Clinic**

Lot Area	1.5 hectare
Plinth Area	30% (max)
Height	4 storey (max)
Setback from access road	12m (min)
Setback at side/rear	6m (min)
Parking	1 car parking space : 75 GFA + 10% for visitors
	1 motorcycle parking space : 100 GFA + 10 for visitors
	1% on top of the total parking requirement or min. 2 handicapped parking space; whichever is more.

Note: GFA is in square meter

- Clinic should comprise the following elements:
  - a. Out-patient clinic
  - b. Diagnosis and treatment department
  - c. Medical support services department
  - d. Non-medical support services department

## CLINIC

**Circulation and Parking**

- Main entrance should be clearly visible, identifiable, and easily accessible to the public.
- Where possible vehicular access to the clinic should not cross main pedestrian routes.
- Adequate space for easy manoeuvring of ambulances should be provided.
- Parking spaces shall be provided in accordance to the requirement as specified in **Table 7.17**.

**Building Massing**

- The design should respond to the natural topography and geomorphology of the site.
- The building image projected should not imitate and perpetuate the traditional “standard design” of medical facilities buildings.

**7.4.2 Hospital**

The Hospital in the Local Plan area is located on a 11.013 hectare site in PB 7.2 as indicated in the Proposal Map.

The hospital will be a ‘Centre of Excellence’ in health services in Malaysia. It is estimated that the hospital will cater about 140,000 outpatients and 35,000 inpatient when fully completed.

**HOSPITAL**

- Hospital shall be provided at location as indicated in Proposal Map.
- The provision for the hospital shall be provided accordingly as set out in **Table 7.18**.
- Development of hospital building or space shall conform to standard as indicated in **Table 7.19**.

**Table 7.18 Hospital**

Planning Block	No.	Size (min. hectare)
PB 7.2	1	11.013 (on site as indicated in Proposal Map)

**Table 7.19 Planning Standard for Hospital**

Hospital	
Lot Area	11 hectare
Plinth Area	16%
Plot Ratio	0.35%
Height	5 storey
Setback from access road	12m (min)
Setback at side/rear	6m (min)
Parking	1 car parking space : 5 beds + 10% for visitors
	1 motorcycle parking space : 10 beds + 10 % for visitors
	1% on top of the total parking requirement or min. 2 handicapped parking spaces whichever is more.

Note: GFA is in square meter

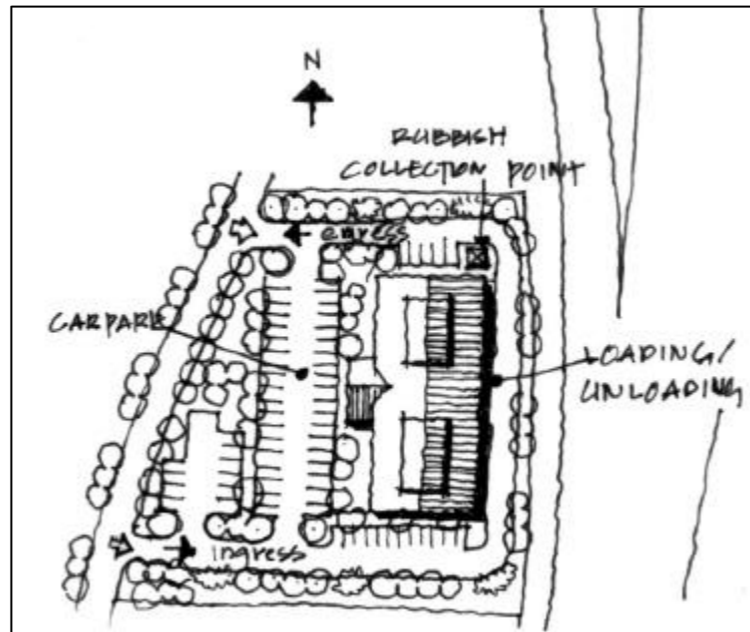
**7.5 Community Services**

The type of community services included in this manual are:-

- i. Market
- ii. Food Court
- iii. Community Hall/ Public Amenities Centre

**7.5.1 Market**

Market in the Local Plan Area is located in PB 8.1 as indicated in the Proposal Map.



**Figure 7.8**  
**Typical Concept for Market**

**MARKET**

**Provision Requirement**

- Market shall be provided at location as indicated in Proposal Map and **Table 7.20**

**Table 7.20 Provision of Market**

Planning Block	Unit	Size (min. hectare)
PB 8.1	1	0.42 (on site as indicated in Proposal Map)

**Planning Requirement**

- Development of market facilities shall conform to the requirements indicated in **Table 7.21** with regards to building setback, height and plinth area.

**Table 7.21 Planning Standard for Market**

Markets	
Plinth Area	40% (max) of site coverage
Height	2 storey (max)
Setback from access road	12m (min)
Setback at side/rear	6m (min)
Parking	1 car parking space : 35 GFA
	1 motorcycle parking space : 160 GFA
	1% on top of the total parking requirement or min. 2 handicapped parking spaces whichever is more.
	Minimum 1 bicycle rack

Note: GFA is in square meter

**Circulation and Parking**

- Public access should be segregated from service access entrances.
- A sufficient number of service-vehicles bays shall be provided for loading and unloading; and also for waiting service vehicles.

## MARKET

- Sufficient public car parking space shall be provided in accordance to requirement in **Table 7.21**.
- Adequate space must be allowed for the turning movement of service vehicle; (including refuse collection vehicles) without the need for any vehicles to back out onto public roads.

**Design consideration**

- The design should be as open as possible to attract shoppers and facilitate the selling of fruit, vegetable and other commodities and shall preferably have more than one street frontage.
- Distinct separation between areas allocated for fish, meat, vegetable, fruits, sundry and convenience goods shall be established. There will be further separation of halal and non-halal goods/food-stuff.
- Distinct separation between customer areas and seller areas.
- Good toilets facilities shall be located away from activities area.
- Central rubbish collection centre shall be located within walking distance. Bins areas and collection areas shall be screened, and provided with good wash-down facilities.
- Docking area for loading and unloading activities shall be provided away from main activity area.
- Management office should also be provided.

**Building Massing**

- The building should project a bright clean and hygienic image.
- The choice of building material to facilitate the maintenance of appropriate hygiene. Externally, the choice of material and roof-form should blend with adjacent residential areas and /or other buildings in the neighbourhood.

MARKET

- Building should be rectilinear plan with double height space (atrium) over the central area. A wide verendah/circulation space shall be provided at second-storey level to give full and uncluttered access to the convenience shop located at this level. The roof should be double-pitched with skylights designed and fitted to provide good natural through-ventilation and light.

**Floor and Wall Finishes**

- Robust and low-maintenance materials should be used extensively in the building (externally and internally) and as the following: -

**Table 7.22 Detail of Finishes**

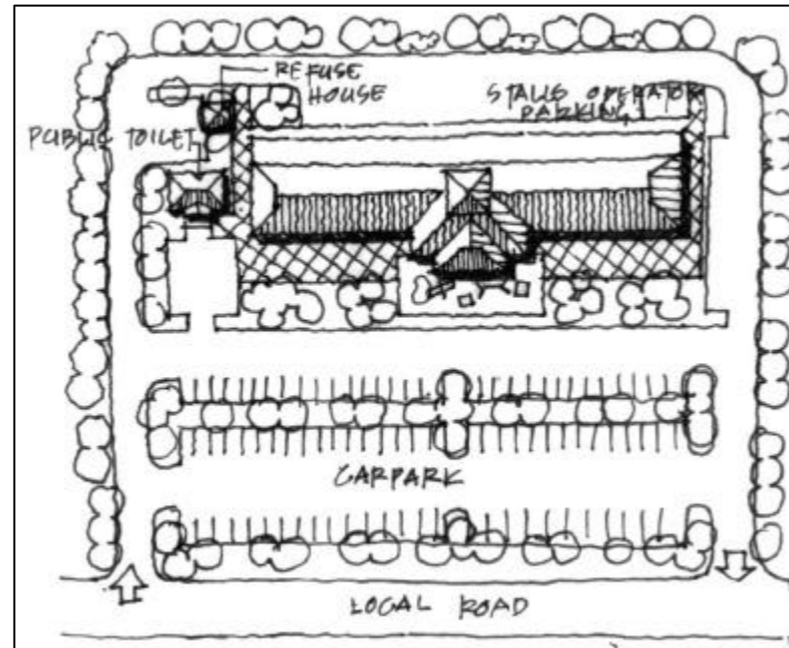
Item	Description/Material/Finishes
Internal Wall	Tile or smooth, impervious and coloured finishes
Floor	Durable, hard wearing, non-slip, washable and substantially low maintenance
Customer aisles	Elevated to maintain dry walkway
Work-tops	Easy maintenance
Solid Waste	Stainless steel basket for trapping the waste

**Provision For Garbage Truck**

- Garbage truck will generally utilize the normal standard roads to access residential, commercial and public amenities area. The normal standard road is not a major concern for garbage trucks; however, internal circulation system for multi-stories facilities and complexes should incorporate certain provision for garbage trucks.
- Issues that need to be examined at an early stage in the design should include the following:-
  - To maintain a minimum height clearance of 4.1 meters, wherever the path for the garbage trucks have been identified;
  - To maintain a minimum slope of 1:12 for the design of access road for garbage trucks; and
  - Provision for “ 3 point turns” or “Cul-de-Sac” should be incorporated wherever necessary.

**7.5.2 Food Court**

Food Courts in the Local Plan Area are located in PB 8.1 and PB 9.2 as indicated in the Proposal Map. These are the free-standing buildings on independent sites.



**Figure 7.9**  
*Typical Concept for Food Court*

**FOOD COURT**

**Provision Requirement**

- Food court shall be provided at locations as indicated in Proposal Map and **Table 7.23**.

**Table 7.23 Requirement for Provision of Food Court**

Planning Block	No.	Size (min. hectare)
PB 8.1	1	0.20 (on site as indicated in Proposal Map)
PB 9.2	1	0.44 (on site as indicated in Proposal Map)

**Planning Requirement**

- Development of food court shall conform to the requirements indicated in **Table 7.24** with regards to building setback, height, plinth area and parking provision.

**Table 7.24 Planning Standard for Food Court**

Food Court (stand-alone)	
Min. size	0.2 hectare
Plinth Area	30% (max)
Height	2 storey (max)
Setback from access road	12m (min)
Setback at side/rear	6m (min)
Parking	1 car parking space : 20 GFA
	1 motorcycle parking space : 70 GFA
	Minimum 1 bicycle rack
	1% on top of the total parking requirement or min. 2 handicapped parking spaces whichever is more.

- Service road must cater for turning radii for all service vehicles including refuse trucks.

**Design consideration**

- All area to be well ventilated and lit. Natural ventilation and daylight should be optimised.
- Adequate provision for service areas are necessary and must be screened from public view.

## FOOD COURT

- Kitchen work-tops, hygiene and fire safety shall conform to health and safety standards and Building By-Law.
- All signage must conform to **Signage and Advertisement Design Guidelines for Putrajaya, 1999**.
- Ample covered cooking area (min 15m<sup>2</sup>) and dining areas (min 20m<sup>2</sup>) must be provided for each stall.
- A minimum of one refuse house/chamber must be provided, and concealed from dining/public view.

**Building Massing**

- Massing of building should respect the general scale of the site and the context of its surrounding.
- Design should incorporate appropriate low-maintenance building materials such as stainless steel work-tops and sinks, metal or clay/concrete tile roofs and non slip floor tiles.

**Provision For Garbage Truck**

- Garbage truck will generally utilize the normal standard roads to access residential, commercial and public amenities area. The normal standard road is not a major concern for garbage trucks; however, internal circulation system for multi-stories facilities and complexes should incorporate certain provision for garbage trucks.
- Issues that need to be examined at an early stage in the design should include the following:-
  - i. To maintain a minimum height clearance of 4.1 meters, wherever the path for the garbage trucks have been identified;
  - ii. To maintain a minimum slope of 1:12 for the design of access road for garbage trucks; and
  - iii. Provision for “ 3 point turns” or “Cul-de-Sac” should be incorporated wherever necessary.

7.5.3 Community Hall/Public Amenity Centre (PAC)

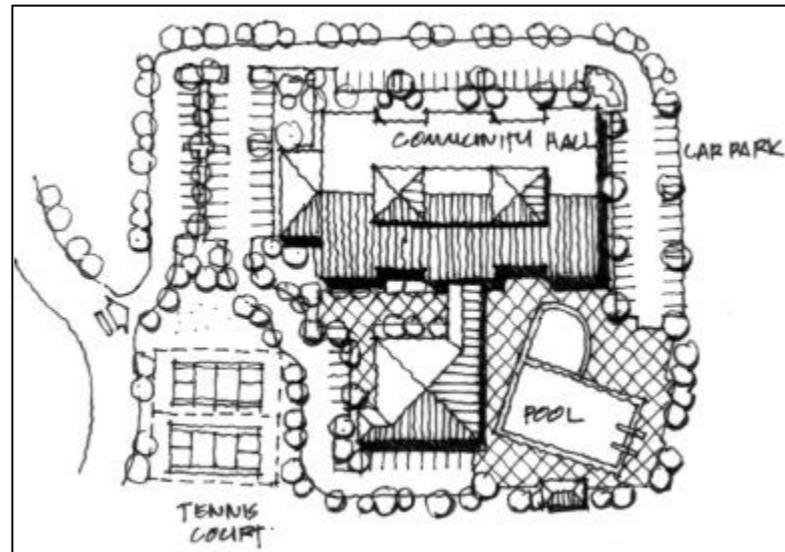


Figure 7.10  
Typical Concept for Community Hall

COMMUNITY HALL/PAC

Provision Requirement

- Community hall/PAC shall be provided at location as indicated in proposal map and as specified in **Table 7.25**.

Table 7.25 Requirement for Provision of Community Hall/PAC

Planning Block	No.	Min. Size (hectare)
PB 8.1	1	0.80 (on site as indicated in Proposal Map)
PB8.3	1	1.62 (on site as indicated in Proposal Map)
PB 9.2	1	2.32 (on site as indicated in Proposal Map)

Planning Requirement

- Development of community hall/PAC shall conform to the requirements indicated in **Table 7.26** below.

Table 7.26 Planning Standard for Community Hall/PAC

Community Hall/PAC	
Lot Area	0.8 hectare or more
Plinth Area	30% (max)
Height	3 storey (max)
Setback from access road	12m (min)
Setback at side/rear	6m (min)
Capacity	300 person (max)
Parking	1 car parking space : 5 seats
	1 motorcycle parking space : 10 seats
	Minimum 1 bicycle rack
	1% on top of the total parking requirement or min. 2 handicapped parking spaces whichever is more.

## COMMUNITY HALL

**Design consideration**

- Community hall/PAC should provide/incorporate the following:-
  - a. Sports and recreation facilities
  - b. Badminton court
  - c. Swimming pool
  - d. Outdoor plying activities
  - e. Squash court
  - f. Table tennis
  - g. Hall of ceremonies, communal gatherings etc
  - h. Recourse and information centre
  - i. Toilets and other facilities
  - j. Facilities for handicapped
  - k. Library
  - l. Food Court
  - m. Service centre for Perbadanan Putrajaya

**Circulation and Parking**

- Shall be accessible to the public, with pedestrian linkages to the local neighbourhood parks and other amenities.
- Shall ensure distinct segregation of pedestrian and cycle routes for user of community hall.
- Public access from service areas shall be segregated.

## 8.0 OPEN SPACE

### 8.1 USE

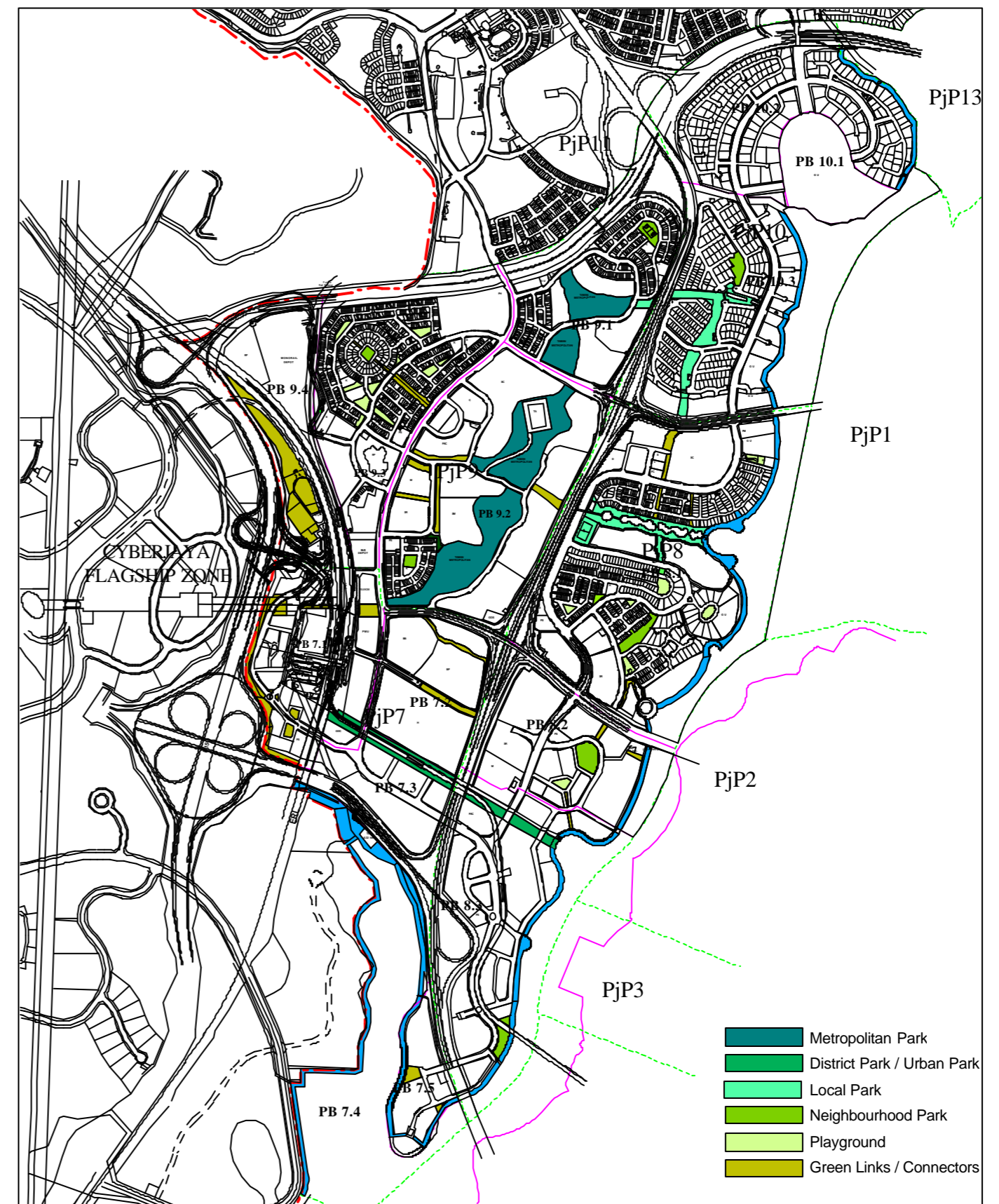
This guideline shall be used for all open space developments in the Local Plan area for Precincts 7, 8, 9 and 10, Putrajaya.

### 8.2 CLASSIFICATION

Open space can be classified into eight major categories as stated below and as shown in **Figure 8.1**:

- Metropolitan Park
- District Park (Urban Park)
- Local Park
- Neighbourhood Park
- Playground
- Green Links/Connectors
- Promenade and Lake Edge
- Water Bodies

The guideline in this manual however shall only cover Metropolitan Park to Green Links/Connectors but shall not cover Promenade, Lake Edge and Water Bodies, which shall be covered separately under another section within this manual.



**Figure 8.1**  
**Category of Open Spaces**

### 8.3 Metropolitan Park

**Metropolitan Park** is a green space designated to cater for recreational and knowledge needs for the population of the Local Plan Area of Precincts 7, 8, 9 and 10 as well as other areas of Putrajaya as a whole.

#### 8.3.1 Location and Catchments Area

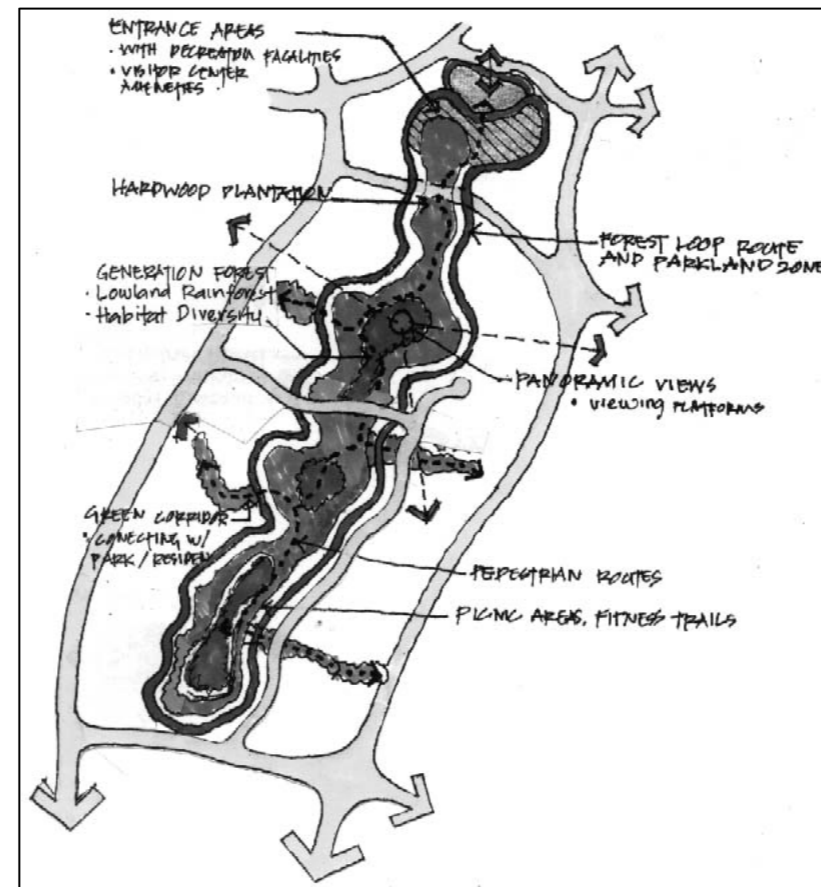
Metropolitan Park, which is also known as the Ridge Line Park, stretches north south on high land in the middle of PB9.1 and PB9.2. It covers a total area of 21.498 hectares and serves catchments population of 50,000 people or more.

#### 8.3.2 Function

The Metropolitan Park is the highest hierarchy of open space serving the Local Plan Area of Precincts 7, 8, 9, and 10. The functional emphasis of the park shall be as open air, informal education facilities with concentration on rainforest and wildlife environment.

#### 8.3.3 Character

Park character shall be naturalistic or woodlands with broad variety of lowland rain forest species and robust or heavy-duty hard landscape elements.



**Figure 8.2**  
**Concept of Metropolitan Park**



**Figure 8.3**  
**Adventure Children Playground Using Natural Materials**



**Figure 8.4**  
**Use of Natural Materials such as Pebble/Gravel Footpath and Timber Boardwalks**

## METROPOLITAN PARK

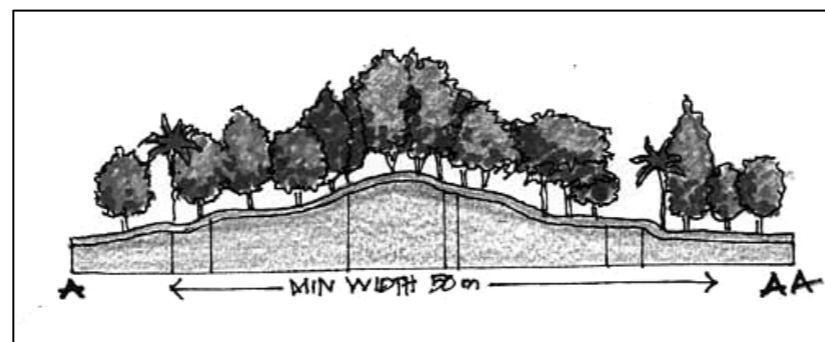
### 1. Facilities

- Facilities shall consist of the following, which are minimum provisions required to ensure the realisation of the overall naturalistic character of the Metropolitan Park in future detail design: -
  - i. Interpretative centre
  - ii. Open air classroom
  - iii. Nature trail/canopy walk explaining the vegetation and wildlife relevant to the specific topic
  - iv. Active recreation facilities
  - v. Picnic facilities
  - vi. Adventure playground
  - vii. Specialised garden
  - viii. Associated amenities

### 2. Linkage and Circulation

- The park shall be connected to other adjacent open spaces within the Local Plan Area by Green Corridors.
- Internal circulation within the park shall be through informal network of trail/footpath and segregated cycle path.
- Circulation shall be clear and well signed with the use of views and hierarchy of routes providing orientation. Location and design of signboards shall complement to the overall character of the park as well as to the provisions of the **Signage and Advertisement Design Guidelines for Putrajaya, 1999**.
- Access such as ramps for the handicapped shall be provided at all parts and facilities within the park.
- Car parking area shall be provided in pockets and shall be located adjacent to main entrances and other highly concentrated areas such as picnic areas, visitor centres, etc. Parking shall be provided in accordance to the following ratio: -

Parking	1 car parking space : 0.1 hectare
	1 motorcycle parking space : 0.35 hectare
	1 bicycle rack : 5hectares
	Minimum 4 bus parking spaces



**Figure 8.5**  
**Section Showing Planting Across Metropolitan Park**

## METROPOLITAN PARK

- Surface of the parking area shall use pervious materials and surface run-offs shall be discharged in accordance to the guidelines and recommendations specified in the **Manual Saliran Mesra Alam (MaSMA, 2000)** by the Jabatan Pengairan & Saliran (JPS).

### 3. View Corridors

- Look out points shall be provided and focused on specific views corridors. Specific views to be encouraged shall be those towards the lake and the Core Area of Putrajaya.

### 4. Topography

- Existing natural topography shall be retained, fully maximised and integrated with the new landscape features.
- Cut and fill shall be minimised.

### 5. Vegetation

- Planting shall be in 3 layers as the following: -

**Table 8.1 Layers of Planting for Metropolitan Park**

Layer	Location	Planting
Core	Top of the ridge	Lowland rainforest
Intermediate	In between core and periphery	Hardwood plantation
Periphery	Lowest boundary of the park	Ethno-Botanic parkland

- Existing palm oil trees shall be retained initially and later followed by reforestation. Drought tolerant species are encouraged to reduce demand for water for irrigation purposes. Recommendations with regard to irrigation of the park as highlighted in **Irrigation Master Plan for Putrajaya, 2001** shall be taken into consideration. Refer **Irrigation Master Plan for Putrajaya, 2001** for list of drought tolerant species.
- Buffer vegetation shall be provided between parks and the adjacent built form land use and roads.
- Recommended species shall be as in **Table 8.2**.



***Ficus Benjamina***



***Millettia Atropurpurea***



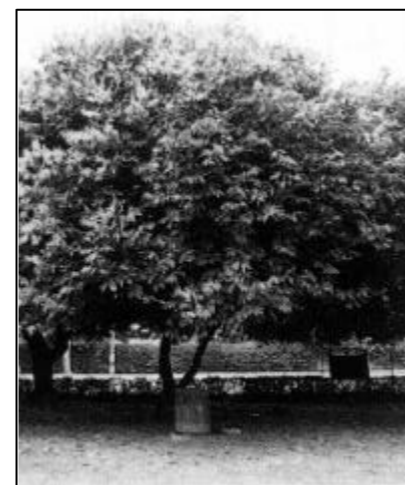
***Eugenia Polyantha***



***Tamarindus Indica***



***Terminalia Catappa***



***Cinnamomun Iners***

**Figure 8.6**  
**Example of Plant Species for Metropolitan Park**

**METROPOLITAN PARK**

**Table 8.2 Recommended Plant Species For Metropolitan Park**

<b>Species</b>	<b>Common Name</b>
Dryobalanops Aromatica	Kapur Kuda
Dipterocarpus Baudii	Keruing Bulu
Shorea Parvifolia	Meranti Sarang
Dyera Costulata	Jelutong
Hopea Odorata	Merawan
Shorea Curtisii	Seraya
Vatica Spp	Resak
Intsia Palembangica	Merbau
Koompassia Excelsa	Tualang
Tectona Grandis	Jati
Chikrassia Tabularis	Surion Batu
Shorea Macroptera	Meranti Melantai
Pometia Pinnata	Kasai
Dillenia Indica	Simpong Gajah
Millettia Atropurpurea	Tulang Daing
Alstonia Angustiloba	Pulai
Elateriospermum Tapos	Perah
Ficus Benjamina	Beringin
Eugenia Polyantha	Salam
Messua Ferrea	Ironwood Tree
Ficus Elastica	Indian Rubber Tree
Tamarindus Indica	Asam Jawa
Pithecellobium Jiringa	Jering
Terminalia Catappa	Katapang
Canarium Vulgare	Java Almond
Peltophorum Pterocarpum	Batai Laut
Cinnamomun Iners	Kayu Manis
Gardenia Carinata	Chempaka Hutan

## METROPOLITAN PARK

**6. Landscape Elements**

- Application and design of landscape elements and facilities shall conform to requirement in **Table 8.3**.

**Table 8.3 Design Style of Landscape Elements for Metropolitan Park**

Elements	Use/ Location	Design Style	Materials
Paving, Walls and Steps	Various location	Informal, sculptural	Clay brick, large pebbles gravel, tarmac
	Car park	Informal	Logs, stone grasscrete, gravel clay
	Cycle route	Smooth and informal	Block
	Nature trail through the woodland	Informal, natural	Tarmac, cut logs, pebbles, gravel
	Walls	Informal, texture	
	Public areas with heavy use	Formal	Random pebble finish clay blocks
Site Furniture	Picnic tables, bar-be-que pits, litter bins	Cotemporary, robust, informal	Sustainable hardwoods, concrete
Lighting	Lights for educational facilities, entry and exit nodes at pedestrian footpaths, viewing areas and access routes and car parks	Simple, robust	Aluminium, steel
Drainage	Swales in natural areas running primarily parallel to the contours	Swales	Rock boulders and stone
Structures and Shelters	Shade structures for seating, pavilions for viewing, entry gates	Natural, simple, informal and traditional	Sustainable hardwood, clay tiles

## METROPOLITAN PARK

**Table 8.3 Design Style of Landscape Elements for Metropolitan Park (cont.)**

Elements	Use/ Location	Design Style	Materials
Play Features	Adventurous facility located in the forest	Robust, adventurous	Conform to SIRIM standard, sustainable hardwood
Sport Features	Trim trails, canopy walks, jogging tracks, cycle track	Solid, innovative, natural	Sustainable hardwood concrete bases
Bridges and Boardwalks	Viewing platforms, water crossing	Natural, robust, informal	Sustainable hardwood concrete bases
Signage	Entrance, educational guides	Natural, informal	Sustainable hardwood
Fences, Gates and Barriers	Separates children from vehicles, viewing platform railings	Cotemporary. Natural, informal	Sustainable hardwood
Water Features	Educational pond and wetland but mostly for drainage purposes	Naturalistic, informal	Natural rock, puddle clay
Art in the Environment	Incidental and located along a trail	Natural	Earth, wood, leaves

Source: Putrajaya Federal Government Administrative Centre Peripheral Areas: Urban Design Analysis and Strategy, Volume 3, Part 5(b): Landscape, 1 Dec 1998.



## 8.4 District Park (Urban Park)

**District Park or Urban Park** is a public outdoor space located in the Sub-commercial Centre intended as an activity focus at the heart of intensive urban area.

### 8.4.1 Location and Catchments Area

District Park or Urban Park with a total area of 3.64 hectares is located at PB7.3 and PB8.3. The park is 1.1 km long and 60m wide, lies east west within the sub-commercial centre of the Local Plan Area. It serves a catchments population of 50,000 people.

### 8.4.2 Function

The park, which shall also be known as 'Peoples Park", shall serve the Local Plan area of Precincts 7, 8, 9, and 10. It shall function as an urban park within a major commercial centre of the Local Plan area.

### 8.4.3 Character

In contrast to the Metropolitan Park, the Urban Park shall be predominantly urban in character suitable to its location within a sub-commercial centre. It will cater for all walks and ages of life and be integrated with the surrounding commercial activities within the sub-commercial centre.

It is divided into 7 activity zones with different character and theme as indicated below: -

- Waterfront Plaza
- Festival Square
- Civic Places
- Kiddies Park
- Station Plaza
- Sanctuary Garden
- Adventure Plaza

## DISTRICT PARK/URBAN PARK

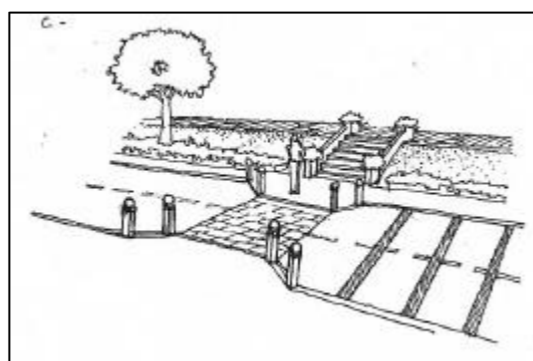
### 1. Facilities

- Facilities within each section of the Urban Park shall contribute towards achieving the intended character and activities as highlighted in **Table 8.4**: -

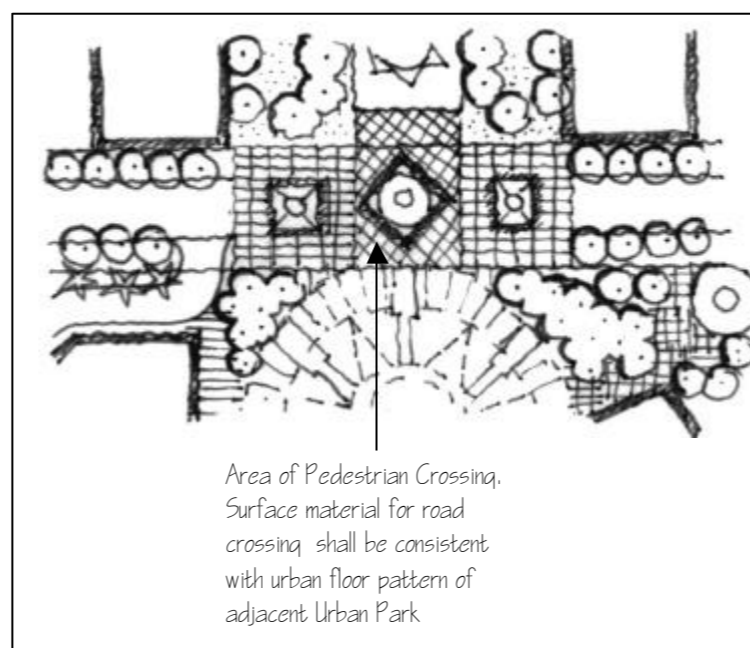
**Table 8.4 Major Facilities Within Urban Park**

Section of Urban Park	Character	Major Activities	Facilities (Min. Provision)
Waterfront Plaza	Hard, colourful, playful	Leisure	Synchronise Fountain, Benches, Jetty To Water Taxi
Festival Square	Hard, colourful, festive	Leisure, eating area, exhibition space	Grass Seating, Outdoor Table/Benches, Tensile Canopy For Shades
Civic Places	Hard and soft, active culture, colourful	Active, traditional games	Sepaktakraw Court, Dam Haji, Congkak, Gelanggang Gasing, Cakar Ayam
Kiddies park	Soft, active, noisy	Playing, adventure	Children Playground, Maze, Water Play, Benches
Station Plaza	Hard and soft, movement, interactive	Passenger boarding and getting down the monorail, waiting area and meeting place	Kiosks, News-stand, Info Board, Vehicle Lay-By, Seating Area
Sanctuary Garden	Soft, quite, calm	Relaxing, walking and resting area	Manicure Garden, Benches, Playground
Adventure Plaza	Soft, active, shady	Physical activity, exercise, gathering area for passengers arriving at Western Transport Terminal	Flying Fox, Hanging Bridge, Toilet Facilities

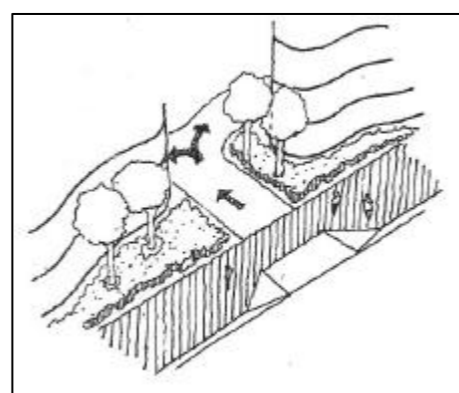
**Drop Kerb** is the area where kerb reduces in height at pedestrian crossings and kerb cut zones.



**Figure 8.7  
Pedestrian  
Crossing  
Facilities at  
Places Where  
Urban Park  
Meets Road**



**Figure 8.8  
Change of Road Treatment to Indicate  
Pedestrian Crossing**



**Figure 8.9  
Drop Kerb At  
Pedestrian Crossing**

**DISTRICT PARK/URBAN PARK**

**2. Linkage and Circulation**

- In principle connections into the park from adjacent public realm such as commercial open spaces, plaza, courtyards, and pedestrian mall shall ideally be at grade or minimal change in level and barrier free.
- Internal circulation within the park shall be determined by individual designer. However, all major desire lines and linkages to other pedestrian routes shall be accommodated within the park.
- Where a road needs to be crossed to reach any segment of the urban park, designated controlled crossing points shall be identified by a change in material and other pedestrian crossing facilities. The material for crossing points shall be consistent with the floor material proposed within the urban park.
- Drop kerb shall be used at all pedestrian crossings.
- Circulation shall be clear and well signed with the use of views and hierarchy of routes providing orientation. Guidelines specified in **Signage and Advertisement Design Guidelines for Putrajaya, 1999** should be adhered.
- All changes in level shall accommodate adequate ramp or barrier free access for handicapped and semi ambulant people. Parking shall be provided in accordance to the following:-

Parking	1 car parking space : 0.05 hectare
	1 motorcycle parking space : 0.15 hectare
	Minimum 1 bicycle rack

**3. View Corridors**

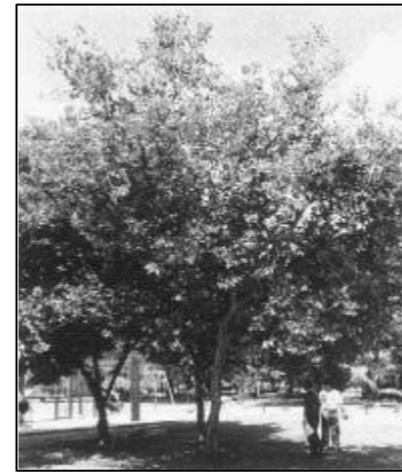
- At locations where section of Urban Park terminate vistas and visual lines, features within the landscape shall be used to act as focal point, physically and visually.



***Khaya Senegalensis***



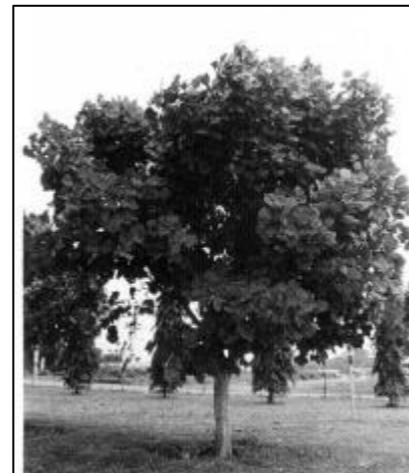
***Bauhinia Purpurea***



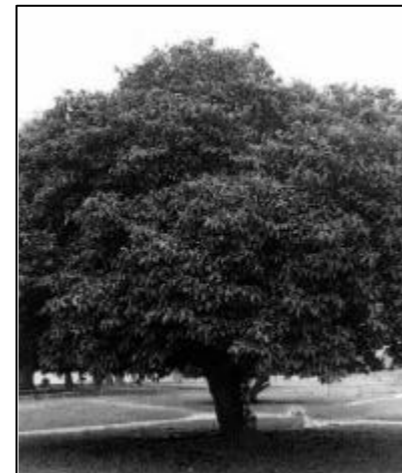
***Cassia Fistula***



***Delonix Regia***



***Erythrina Galli***



***Mimosup Elengi***

**Figure 8.10**  
**Example of Plant Species for Metropolitan Park**

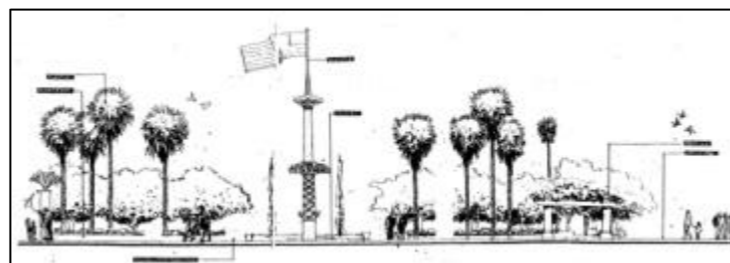
**URBAN PARK**

**4. Vegetation**

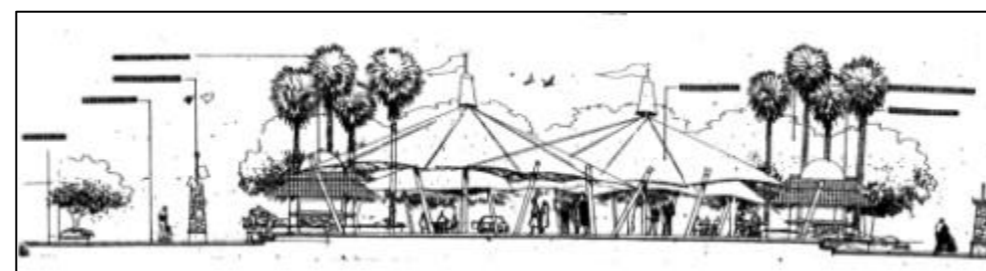
- Colourful flowering trees and shrubs shall be selected to add colour and interest into the urban form.
- Colourful shrubs and seasonal flowers planted in pots shall be used sparingly to highlight entry or focal points.
- Recommended plant species shall be as indicated in **Table 8.5**.

**Table 8.5 Recommended Plant Species For Urban Park**

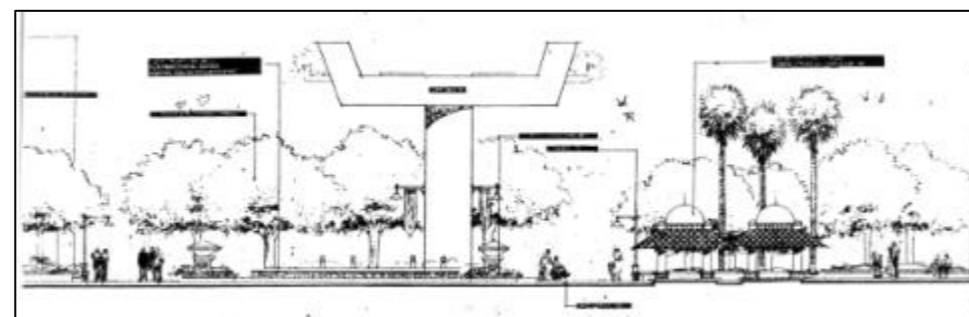
<b>Species</b>	<b>Common Name</b>
Bauhinia Purpurea	Tapak Kuda
Cassia Fistula	Golden Shower
Casuarina Fistula	Rhu
Delonix Regia	Semarak Api
Entorobilium Samans	Rain Tree
Erythrina Galli	Dedap
Lagerstromea Flos Reginea	Bungor
Khaya Senegalensis	Khaya
Mimosup Elengi	Tanjung
Tabebula Pentaphylla	Tecoma
Cryptoctachys Lakka	Palma Merah
Crysalicarpus Lutencens	Yellow Palm
Livistonia Rotundifolia	Serdang Daun Bulat
Ptychosperma Macarturi	Ptychosperma
Roystonea Oleraceae	Cabbage Tree



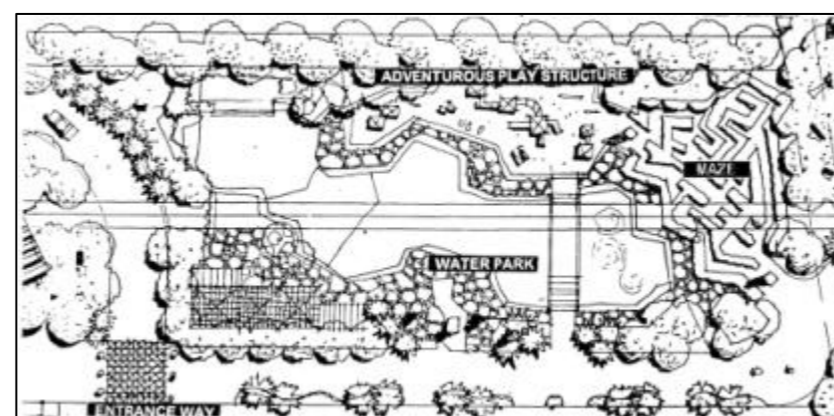
**Figure 8.11**  
**Typical Section of Waterfront**



**Figure 8.12**  
**Typical Section of Festival**



**Figure 8.13**  
**Typical Section of Civic**



**Figure 8.14**  
**Typical Plan of Kiddies Park**

## URBAN PARK

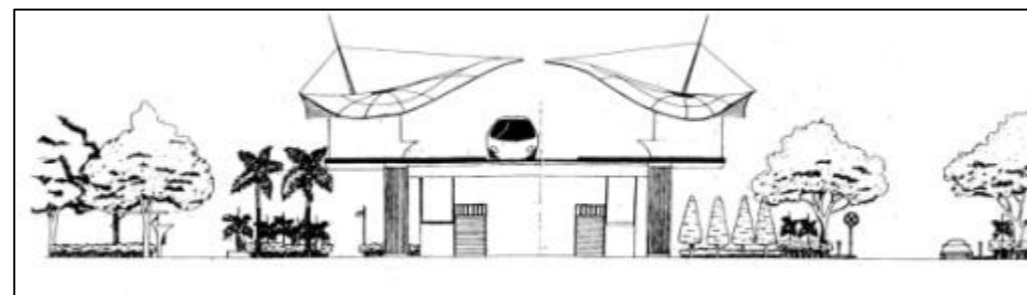
### 5. Landscape Elements

- Facilities planned shall cater for the promotion of performing arts, busking, street artist and other public facilities that create a vibrant and lively atmosphere within the space.
- Landscape furniture within the park shall have a coordinated design vocabulary common to each section of the park. Street furniture shall be durable, robust and aesthetically pleasing.
- Type, design and detailing of landscape elements and facilities shall be consistent with the intended character of each section of the Urban Park as highlighted in **Table 8.6**.

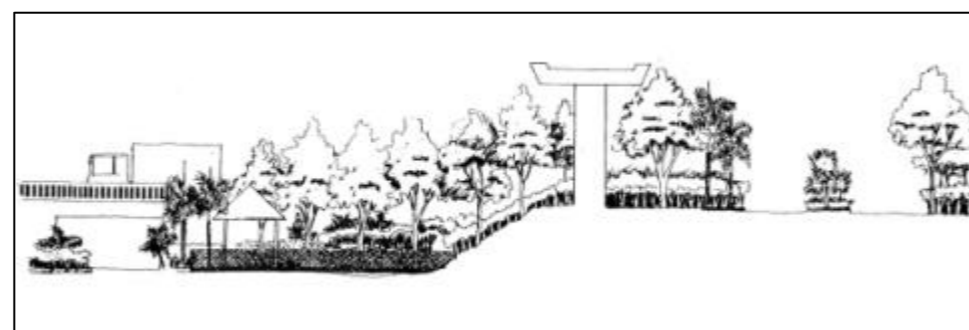
**Table 8.6** Design Style of Landscape Elements within District Park/Urban Park

Elements	Use/ Location	Design Style	Materials
Paving, Walls and Steps	Various locations, large paved areas for clear circulation	Expansive, formal, geometric	Stone, clay brick, tiles
	Professional ground	Formal, linear	Stone
Site Furniture	Regularly laid out to reinforce the geometry	Decorative, traditional	Sustainable hardwood, tiles
Lighting	Spedally designed lighting columns, regularly laid out to reinforce the geometry	Traditional, formal, large scale	Aluminium, steel
Drainage	Enclosed drainage in paved areas located away from the focus of attention	Enclosed drainage	Stone finish to match paving
Decorative Accessories	Symmetrically and formally arranged pots and ornament	Decorative, traditional	Stone, clay
Structures and Shelters	Shade structure for seating, possible pavilion	Traditional	Metal, tiles to concrete
Signage	Entrance feature and only where absolutely when necessary	Decorative and subtle	Engraved stone and metal
Fences, Gates and Barriers	To form entrance features	Traditional	Formed concrete with patterns
Water Features	Main feature of the park	Expansive, calm, symmetrical	Stone, tiles, patterning
Art in the Environment	Secondary feature not in competition with the pool	Symbolic, large scale	Natural materials

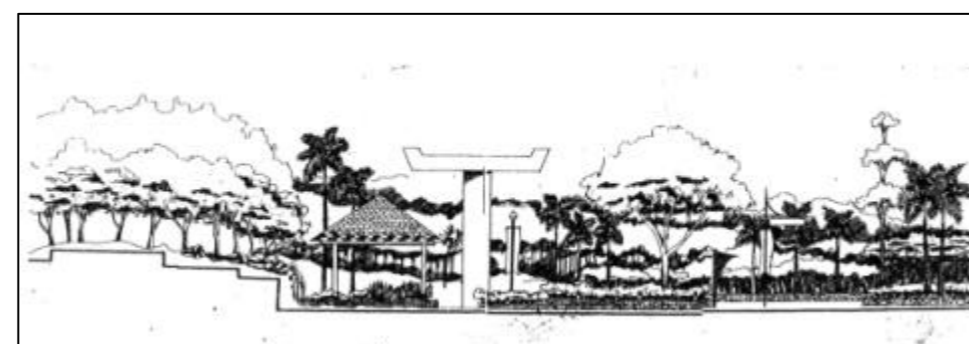
Source: Putrajaya Federal Government Administrative Centre Peripheral Areas: Urban Design Analysis and Strategy, Volume 3, Part 5(b): Landscape, 1 Dec 1998.



**Figure 8.15**  
**Typical Section of Station Plaza**



**Figure 8.16**  
**Typical Section of Sanctuary Garden**



**Figure 8.17**  
**Typical Section of Adventure Plaza**

## URBAN PARK

- Light levels shall be adequate enough to provide a safe public environment within the park.
- The quality of materials, finish and design should be of a superior quality to enhance the overall atmosphere of the civic space and maintain and up lift civic pride
- Composition of soft and hard landscape within each part shall conform to the requirements as indicated in **Table 8.7**.

**Table 8.7 Composition of Soft and Hard Landscape Within District Park/Urban Park**

Section Of Urban Park	Softscape	Hardscape
Waterfront Plaza	20%	80%
Festival Square	50%	50%
Civic Plaza	50%	50%
Kiddies Park	70%	30%
Station Plaza	40%	60%
Sanctuary Garden	20%	80%
Adventure Plaza	60%	40%

**8.7 Local Park**

*Local Park is an open space that provides short distance recreational facilities for local population of various Planning Blocks within the Local Plan Area.*

**8.5.1 Location and Size**

Local Parks within the Local Plan Area are located in PB8.1, PB9.1 and PB10.3.

**8.5.2 Function**

As Local Park, these parks shall serve to provide recreational open spaces for local population living within its catchments area, namely several Planning Blocks in the Local Plan Area. The recreational facilities shall be more towards community recreational facilities of a lower hierarchy than Metropolitan Park and Urban Park.

**8.5.3 Character**

Local Park shall generally provide outdoor and active recreational facilities within an informal environment.

**LOCAL PARK**

**1. Facilities**

- Facilities for local park shall include: -
- i. Active recreational facilities such as numerous ball courts and pitches
- ii. Children play area/equipment
- iii. Footpath
- iv. Exercise Stations
- v. Associated amenities

**2. Linkage and Circulation**

- The park shall be connected directly via the Green Connectors.
- A minimum of one through pedestrian route shall be fully accessible to the handicapped.
- Internal circulation shall be limited to avoid damage or disturbance to the wildlife. Circulation shall comprise of boardwalks slightly raised above the wet ground level and shall be accessible to the handicapped.
- Parking spaces shall be provided in accordance to the following:-

Parking	1 car parking space : 0.05 hectare
	1 motorcycle parking space : 0.15 hectare
	Minimum 1 bicycle rack

**3. View Corridors**

- Filtered views shall be provided in Lake Valley Park towards Putrajaya Lake.

## LOCAL PARK

**4. Vegetation**

- Thick screening vegetation shall be located on the periphery of the Lake Valley and Riparian Parks.
- The dominant vegetation type shall be suitable for wetland habitats. Drought tolerant species are also encouraged to reduce demand for water for irrigation purposes. Recommendations with regard to irrigation of the park as highlighted in **Irrigation Master Plan for Putrajaya** shall be taken into consideration. Refer **Irrigation Master Plan for Putrajaya** for list of drought tolerant species.
- Recommended plant species shall be as indicated in **Table 8.8**.

**Table 8.8 Recommended Plant Species For Local Park**

Species	Common Name
Adenantha Pavnina	Saga
Alstonia Spatulata	Pulai Paya
Andira Inermis	Cabbage Tree
Cananga Odorata	Kenanga
Cassia Fistula	Golden Shower
Cassia Grandis	Horse Cassia
Cassia Spectabilis	Cassia
Cinnamomuniners	Kayu Manis
Cratoxylum Formosum	Pink Memphat
Eleocarpus Spp	Pinang Pergam
Eugenia Polyantha	Salam
Feliciium Decipiens	Fern Tree
Gardenia Carinata	Chempaka Utan
Lagerstroemia Speciosa	Bungor
Meleleuca Leucadendron	Gelam
Michelia Alba	Chempaka Putih
Peltophorum Pterocarpum	Batai Laut
Planchonella Obovata	Menasi
Pongamia Pinnata	Mempari
Saraca Thaipingensis	Gapis
Sterculia Parviflora	Kelumpang Burong
Sterculia Foetida	Kelumpang Jari
Barringtonia Asiatica	Putat Laut
Cratoxylum Cochinchinese	Kayu Arang
Ficus Benjamina	Beringin
Fragrea Fragrans	Tembusu
Terminalia Catappa	Ketapang
Tristania Sumatrana	Palawan
Dipterocarpus Oblongifolius	Neram

## 8.6 NEIGHBOURHOOD PARK

**Neighbourhood Park** is an open space designated for neighbourhood sports and passive recreational facilities/activities of the residential population of each neighbourhood.

### 8.6.1 Location and Catchments Area

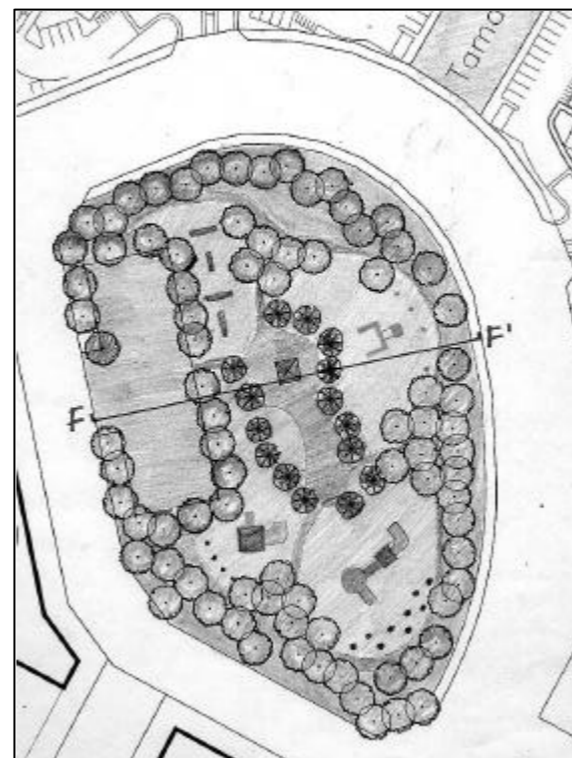
The Neighbourhood Parks in the Local Plan Area are located in PB8.1, PB8.2, PB8.3, PB9.1, PB9.2, PB9.3 and PB10.3. The size of each neighbourhood park varies from the smallest of 0.24 hectares to the biggest of approximately 1hectare. Each neighbourhood park shall cover a catchment's population of approximately 3000 people.

### 8.6.2 Function

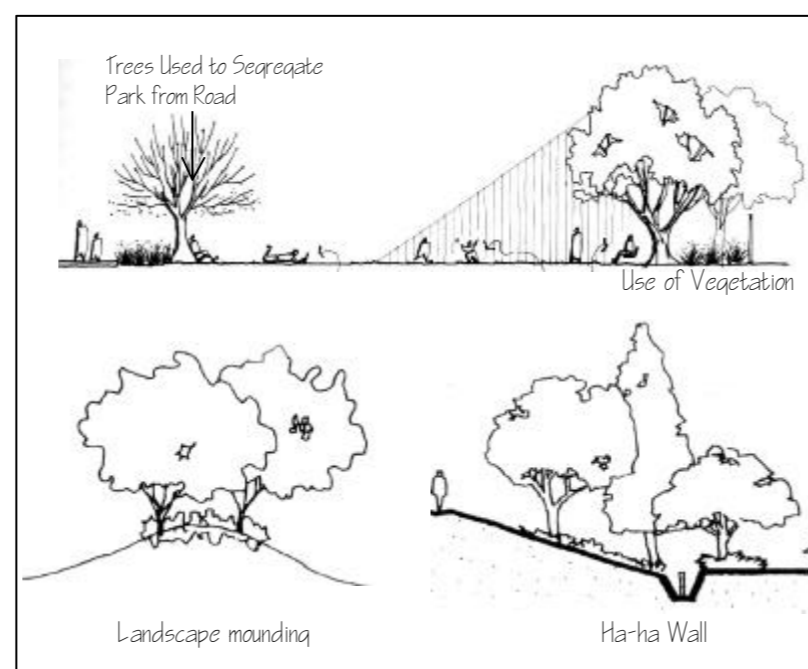
The neighbourhood park shall function as an active outdoor recreational open space for various age groups of the neighbourhood residential populations where variety of recreational interest and needs are provided for. Community facilities, such as children's play area and small-scale active recreation facilities shall be associated with these park.

### 8.6.3 Character

The character of the park shall be closely related to the character of the surrounding residential areas and shall be carefully related to the site topography and existing landscape features.



**Figure 8.18**  
**Typical Plan of Neighbourhood Park**



**Figure 8.19**  
**Possible Solution to Fencing or Boundary Demarcation**

## NEIGHBOURHOOD PARK

### 1. Facilities

- A range of community activities, such as separate children's play areas for different age groups, small scale active recreation facilities such as jogging and cycle track shall be provided for all neighbourhood parks.
- Areas for children's play equipments shall be located on a flat surface with maximum slope of not more than 15%. It shall be well-drained with appropriately designed sub-soil drainage system especially around football fields.

### 2. Linkage and Circulation

- The neighbourhood park shall be easily accessible for residents and shall be inter-connected with each other by a series of green corridors providing cycle and pedestrian routes. These pedestrian routes shall be fully accessible to the handicapped.
- Vehicular access roads shall be provided around the periphery of the park. The internal pedestrian footpaths shall reflect the site natural topography.

- Parking shall be provided in accordance to the following:-

Parking	1 car parking space : 0.05 hectare
	1 motorcycle parking space : 0.15 hectare
	Minimum 1 bicycle rack

### 3. Topography

- The existing topography shall be maintained and enhanced where applicable. The use of swale type drains shall be maximised to blend into the existing topography.

### 4. Vegetation and Landscaping

- Landscaping measures such as earth moulding, change in levels, ha-ha walls, trees and other devices such as bollards and benches, logs can be used to demarcate boundary and to physically segregate park area from roads and drains. Requirements in the **Putrajaya Fencing Design Guideline Manual, 1999** shall be adhered.

## NEIGHBOURHOOD PARK

- Drought tolerant species are encouraged to reduce demand for water for irrigation purposes. Recommendations with regard to irrigation of the park as highlighted in **Irrigation Master Plan for Putrajaya, 2001** shall be taken into consideration. Refer **Irrigation Master Plan for Putrajaya, 2001** for list of drought tolerant species

### 5. Landscape Elements

- Type, design and detailing of landscape elements and facilities shall be consistent with the intended character of each section of the Neighbourhood Park as highlighted in **Table 8.9**.

**Table 8.9 Design Style of Landscape Elements for Neighbourhood Park**

Elements	Use/ Location	Design Style	Materials
Paving, Walls and Steps	Footpath, cycletracks, stone entrance feature paving, edging, change in level, concrete block car park	Informal, Robust Reflect character of adjacent neighbourhood	Gravel, stone, timber, concrete blocks grasscrete
Site Furniture	Seating, litter bins, bollards	Robust, minimal, informal Reflect character of adjacent neighbourhood	Timber, metal, stone concrete
Lighting	Footpath, cycle track, car park, low level entrance, high level entrance	Robust, minimal Reflect character of adjacent neighbourhood	Metal, timber
Drainage	Away from paving and at lowest level	Natural swales	Stone
Structures and Shelters	Wakaf, shade, shelter, picnic, viewing tower, public convenience	Informal, minimal robust Reflect character of adjacent neighbourhood	Timber, metal, stone
Play Features	Children play areas for all age groups	Integrated, robust, minimal	Timber, conform to SIRIM standard
Sport Features	Kick around areas, jogging, bicycle track, games court	Informal, minimal, robust	Grass, gravel
Bridges and Boardwalks	Water courses	Informal, minimal, robust	Timber, concrete, stone
Decorative Accessories	Entrance gate, flag pole	Informal, minimal robust Reflect character of adjacent neighbourhood	Timber, metal, stone
Water Features	At viewing point, seating area	Informal, natural	Boulders and stone
Art in the Environment	At viewing point, focal point, seating area, path intersections	Informal, natural, minimal art features	Stone, timber, earth, sculpture

## 8.7 PLAYGROUND

**Playground** is an open space area allocated for daily recreational facilities of school age children and toddlers living within the vicinity of respective housing areas/smaller neighbourhoods. It shall form part of the ten percent requirement of provision of open space within each development project.

Typically, playground can be categorised into two types: -

- i. Playground for all children within the residential neighbourhoods. This playground shall ideally be centrally located for easy access of all children within the area or near other community facilities within the development.
- ii. Play lot or tot lot for smaller children (i.e. toddlers). This shall be located normally on smaller area than the playground and closer to dwelling units for easier supervisions. There can be several play lot scattered within any particular development.

### 8.7.1 Location and Catchments Area

Playground shall be centrally located within each housing scheme or within walking distance of not more than 1.5km of residential dwellings. It shall cover a catchments area of between 1,000 to 3,000 populations.

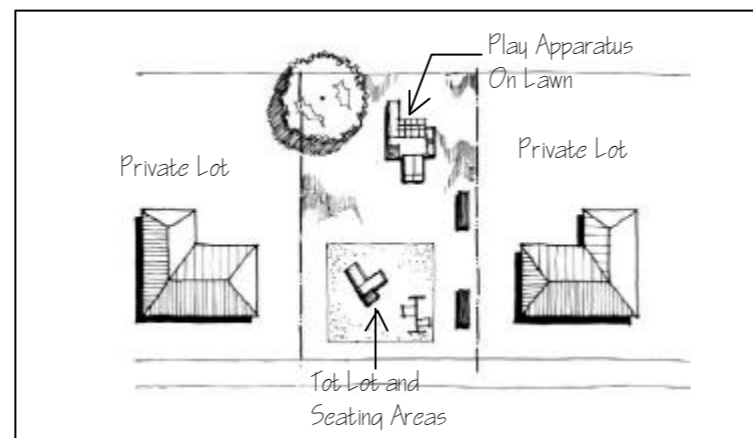
The minimum size of playgrounds shall be sufficient to accommodate for facilities as indicated in the guideline of this Manual. Playground shall be of minimum size of 0.6 hectare for every 1,000 people or 0.6 square metre per person.

### 8.7.2 Function

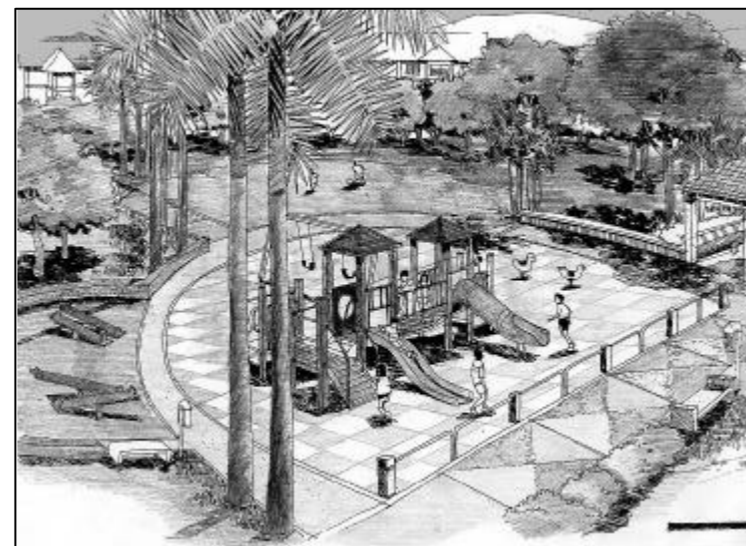
Playground shall function to cater for recreational needs of children living within the immediate vicinity of the residential area.

### 8.7.3 Character

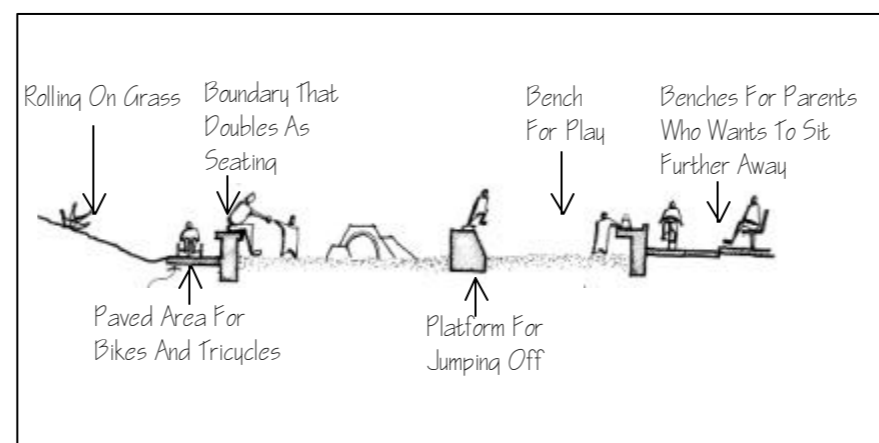
Its character shall relate to the residential surrounding and shall be sensitive to its potential users, which are school age children and toddlers.



**Figure 8.20**  
**Typical Location of Playground**



**Figure 8.21**  
**Typical Images Of Playground**



**Figure 8.22**  
**Typical Facilities at Playground**

## PLAYGROUND

### 1. Provision Requirement

- Playground shall be provided for all residential developments.
- A minimum size of 0.6 hectare shall be provided for playground or at the ratio of 0.6 square metres per person.

### 2. Facilities

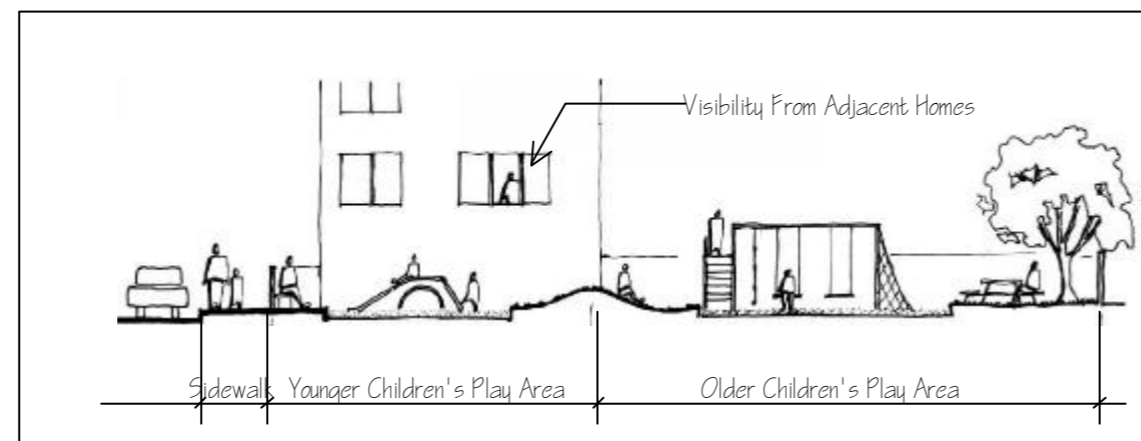
- Planning and design of the playground/play lot shall provide variety of activities and serve the needs of different ages and the handicapped.

- Playground should incorporate spaces for the following: -
  - i. Play equipments
  - ii. Open space for running, jumping and informal play
  - iii. Court and field games area such badminton, sepaktakraw etc.
  - iv. An area for quiet games such as checkers, hobbies, etc
  - v. Landscape planting, benches.

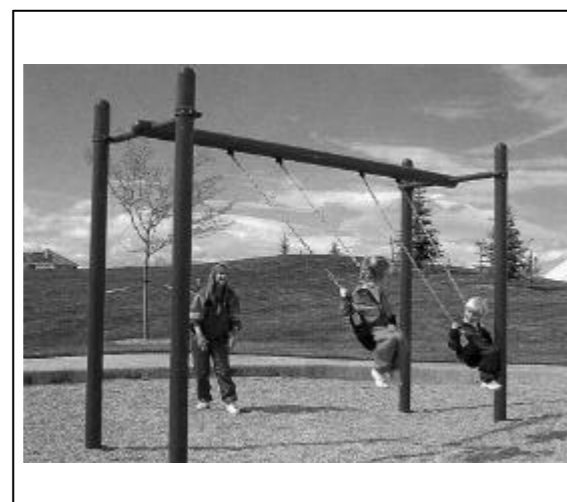
- For smaller play lot, space for the following should be incorporated: --

- i. Play equipment
- ii. Turfed area for running and active play
- iii. Shade area for quiet activities
- iv. Landscape planting, benches etc.

- The minimum facilities required for both playground and play lots shall be as indicated in **Table 8.10**. However, if space permits, more choices of play equipments and activities shall be provided.



**Figure 8.23**  
**Section Showing Separation between Play Areas for Younger and Older Children**



**Figure 8.24**  
**Typical Junior Swing Set**



**Figure 8.25**  
**Typical See Saw**



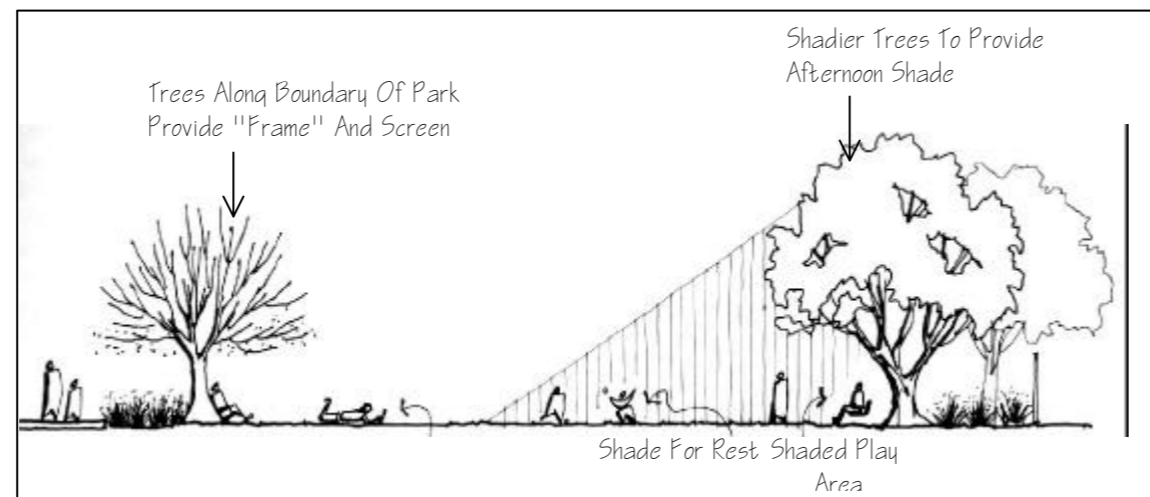
**Figure 8.26**  
**Typical Integrated Play Structure**

**PLAYGROUND**

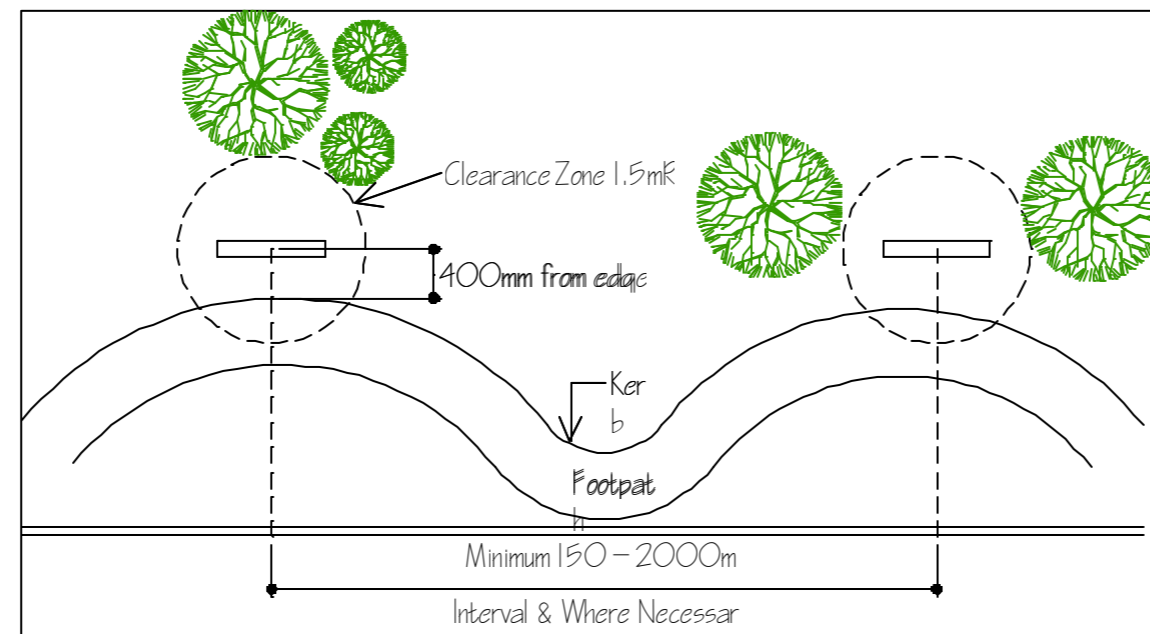
**Table 8.10 Minimum Requirement for Play Equipments at Playground and Play Lot**

Playground			Play Lot		
Play Equipment	No. of Pieces	Min. Space Requirement	Play Equipment	No. of Pieces	Min. Space Requirement
Senior Swing Set	1	125sm	Junior Swing Set	1	47sm
Junior Swing Set	1	47sm	See Saw	1	20sm
Integrated Play Structure	1	97sm	Slide	1	39sm
See Saw	2	41sm	-	-	-
Area for Circulation and Landscape	50% of total space requirement	155sm	Area for Circulation and Landscaping	50% of total space requirement	53sm
Total Min. Space Requirement	-	465sm	Total Min. Space Requirement	-	159sm

- Play lot shall be surrounded by a low enclosure with supplement planting.
- Surface area shall be from seamless rubber flooring or rubber mat. Sand shall not be permitted.
- Equipment shall be carefully selected and arranged for the safety of the children. All the equipment shall conform to the standard specification for playground for, park, school and domestic use (MS 966: 1985/86 or approved by SIRIM QAS Sdn. Bhd.) to ensure safety and quality.
- The design of the play equipment shall be in colourful and beautiful manner so that it can create a creative atmosphere for the children.
- Appropriate signage for direction and information shall be provided at various locations within the playground in accordance to specification and requirements set out in **Signage and Advertising Design Guideline for Putrajaya, 1999.**



**Figure 8.27**  
**Use of Planting for Shades and Boundary**



**Figure 8.28**  
**Position of Signboards along Pedestrian Route**  
**Source: Signage and Advertisement Design Guideline For Putrajaya, 1999**

## PLAYGROUND

### 2. Linkage and Circulation

- Each playground or play lot shall be linked to residential units or apartment blocks through segregated footpath and cycle path and shall not be in conflict with vehicular access. If footpath needs to cross any roads, priority shall be given to pedestrian and cyclists through the use of drop kerbs and different surface materials at the crossing points.
- Circulation within the playground shall provide safe movement and in orderly manner. Pedestrian footpath within and around the playground/play lot shall be at a minimum distance of 1.5m away from any moving objects such as swings.
- Ramps shall be provided for the handicapped to come to the playground.

### 3. Vegetation

- All plant materials used should be potential resources for children. Plants can be labelled to encourage learning by children. Climbable trees are also good for exploration and discovery as they provide opportunity for variety of challenges and levels of skill development. However, if low-branching trees are provided where children can climb, it is necessary to provide shock-absorbent surfacing under the tree.
- Trees must be located to provide shaded sitting areas on both benches and green areas. Trees shall also be used to define edge and mark clear but permeable separation between areas for example between play lot for toddlers and school age children.
- Planting shall also be used to define boundaries of playground from adjoining land and shall conform to **Putrajaya Fencing Design Guidelines, 1999**.
- All plant materials must be tough, impervious to trampling, fast growing and not poisonous. Species chosen shall be those requiring less maintenance, or the park will likely become unkempt. Species with thorn should be avoided to ensure safety of children while using the playground/play lot.

## 8.8 GREEN CONNECTORS

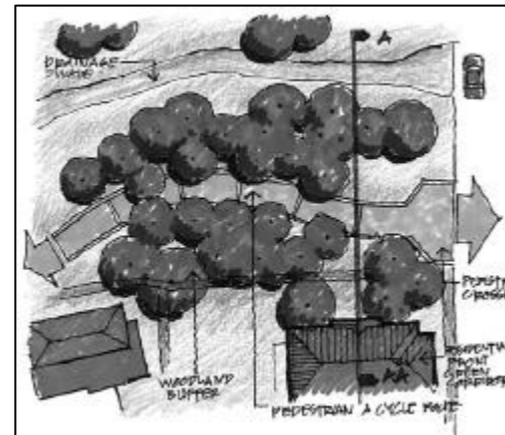
**Green Connectors** are green spaces, which shall provide pedestrian and cycleway linkages between the metropolitan, local and neighbourhood open spaces. The green corridors are intended as a secondary level of access formed from either cycle and pedestrian routes or solely pedestrian routes.

### 8.8.1 Function

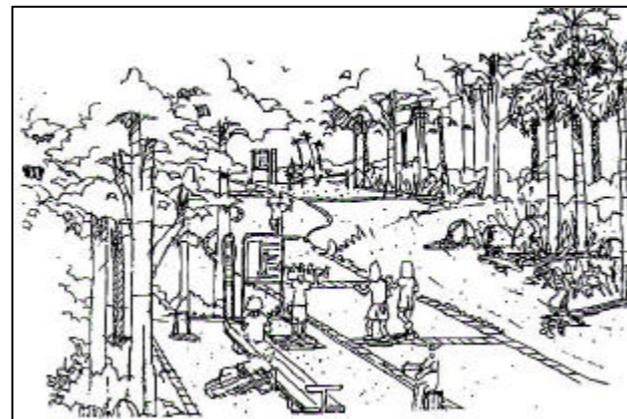
Green connectors are amenity space which shall primarily provide pedestrian and cycle-way linkages between the metropolitan, district and local open spaces. The green corridors shall also serve as links to the other precincts of the local plan area as well as acts as a drainage reserve system serving the development.

### 8.8.2 Character

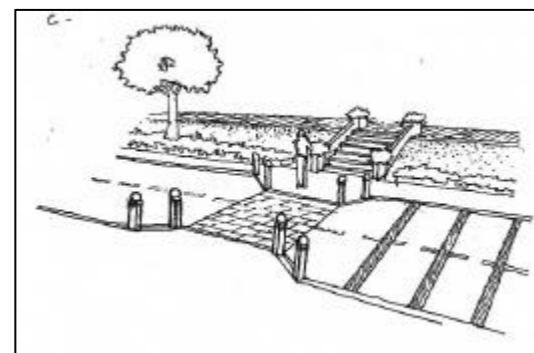
Green corridors shall be of informal character with natural materials and simple lines. Gateway features to identify entrance to green corridors should be emphasize and be distinct to encourage use.



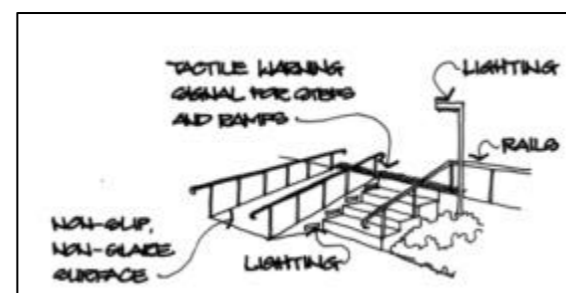
**Figure 8.29**  
**Typical Concept of Green Connectors**



**Figure 8.30**  
**Pedestrian Footpath and Fitness Equipment Within Green Connectors**



**Figure 8.31**  
**Road Crossing along Green Connectors**



**Figure 8.32**  
**Provision of Ramp along Green Connectors**

## GREEN CONNECTORS

### 1. Facilities

- Green connectors shall provide for the following: -
  - i. Space for pedestrian footpath and cycle lane.
  - ii. Boundary and landscape buffer to adjacent land uses.
  - iii. Shaded areas

- The optimal width of the cycle lane and pedestrian route shall be 3 meters (minimum width 2 meters). A minimum of 50% of the route shall be of the optimum width. The optimum width of pedestrian route shall also be 3 meters.

- The boundary of the green connectors shall be formed by the adjacent land use however the boundary treatment shall not create a closed in feeling. The boundary treatment shall use landscape planting and shall be of maximum height of 1.8 meters as stipulated in the **Putrajaya Fencing Design Guidelines Manual, 1999**. See **Putrajaya Fencing Design Guidelines Manual, 1999**.

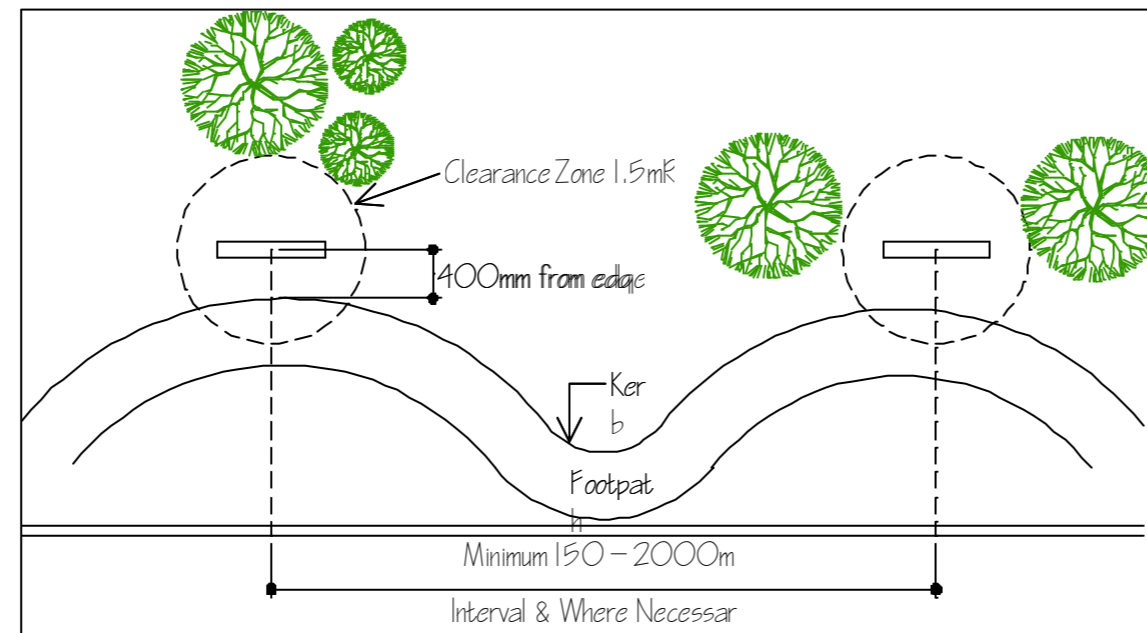
- The green connectors shall be well lit for safety.

### 2. Linkage and Connections

- Green connectors shall provide links from park to park and from park to residential areas as well as between the residential areas to the roads providing alternative routes from those used by vehicles and providing permeability to the Local Plan Area.

- Green connectors should be continuous and where it is interrupted by roads, appropriate crossing shall be provided. Where green connectors meet roads, drop kerb and separate material for road surface at the crossing points such as interlocking pavers shall be applied. Crossing to highways shall be grade separated using underpasses, particularly where natural valleys occur, and footbridges. Crossings to distributor and collector roads shall be at grade using pedestrian priority crossings.

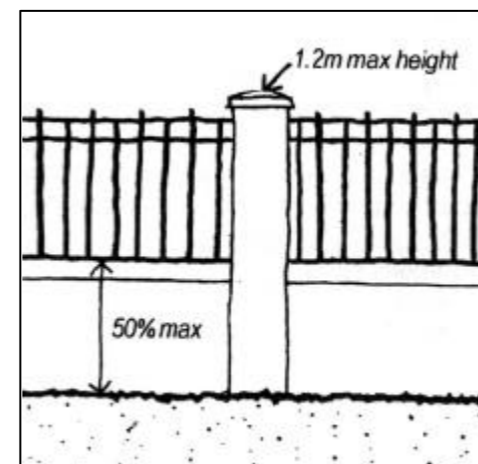
- Handicapped, partially sighted and wheel chair users are to be considered in the location and treatment of the green connectors. The routes shall provide short cuts to those that would otherwise be provided by the road which may reduce travel time for the partially sighted and slopes no steeper than 1:17 shall assist the wheelchair bound users.



**Figure 8.33**

**Position of Signboards along Green Connectors**

**Source: Signage and Advertisement Design Guideline For Putrajaya, 1999**



**Figure 8.34**  
**Fencing of Adjacent Property**  
**along Green Connectors**

## GREEN CORRIDORS

- Entrance to the green corridors shall be well marked. Clear information as to what the green connectors is and where it is going shall be provided at the entrances. Signage shall conform to requirements as stipulated in the Signage And Advertisement Design Guidelines For Putrajaya. See **Signage And Advertisement Design Guidelines For Putrajaya, Part B1: Landscape and Placement, 1999.**

- Entrances to the green connectors shall be safe. Entrances shall be a minimum of 5 meters wide at road junctions to allow for an area for people to gather prior to crossing the road. All other entrances shall be a minimum of 3 meters wide.

### 3. Vegetation

- Trees and shrubs shall provide screening and shades.
- Vegetation to form the boundary treatment shall provide a sense of security as well as variety of interest.

### 4. View Corridors

- Visual linkages shall assist orientation and provide a sense of safety. There shall be no abrupt changes of direction along the route and only gentle curves shall be provided.

### 5. Lot Boundary Treatment Of Adjacent Property

- The adjacent lot boundary treatment shall be primarily vegetative. The boundaries of the lots shall have a varied character utilising a combination of hedges grown either independently or with an informal open fences of no more than 1.2 meters high. Where security fencing is required, open or infill panel or landscape fences up to a height of 1.8m. See **Putrajaya Fencing Design Guidelines Manual, 1999.**

## GREEN CORRIDORS

**5. Landscape Elements**

- Type, design and detailing of landscape elements and facilities shall be as highlighted in **Table 8.11**.

**Table 8.11 Design Style of Landscape Elements for Green Corridors**

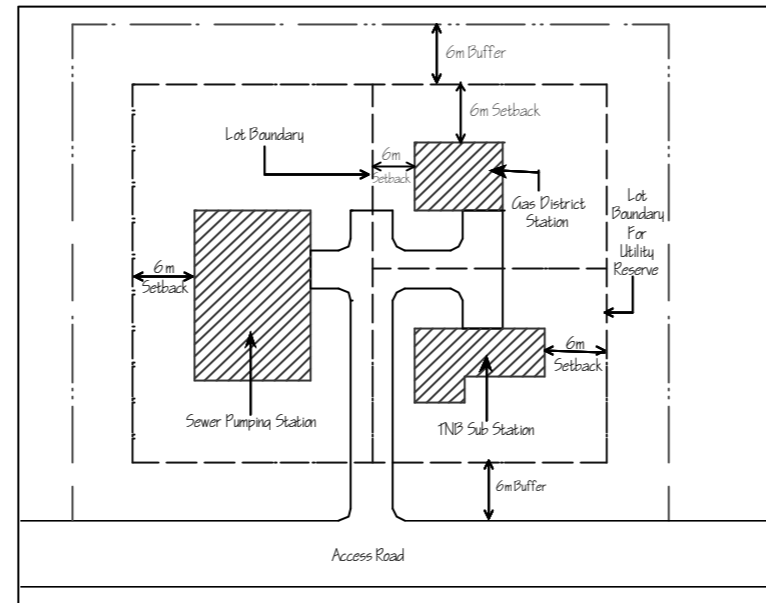
Design Style	Materials	Use/ Location
Paving, Walls and Steps		
Informal, natural, simple	Stone, concrete pavers, timber edgings, tarmac	Various location
Smooth, simple	Tarmac	Cycle ways to be segregated from pedestrian routes at junctions
Patterned vernacular	Concrete pavers	Entrance to the routes to be marked with a varied paving pattern
Site Furniture		
Cotemporary, simple	Sustainable hardwood	Located at the entrances and the centre of long runs
Lighting		
Simple	Steel	Mixtures of bollards and pole tops
Drainage		
Swales	Stone boulders and pebbles	Along the route of the green corridor
Structures and Shelters		
Informal, natural	Sustainable hardwood	Shade structures seating areas
Signage		
Solid, formal	Steel, stone, timber	Functional and at key points e.g., entrances
Fences, Gates and Barriers		
Simple	Sustainable hardwood	Entrance feature
Art in the Environment		
Vernacular, simple	Sustainable hardwood, stone	Small scale use for occasional interest

# 9.0 INFRASTRUCTURE AND UTILITIES

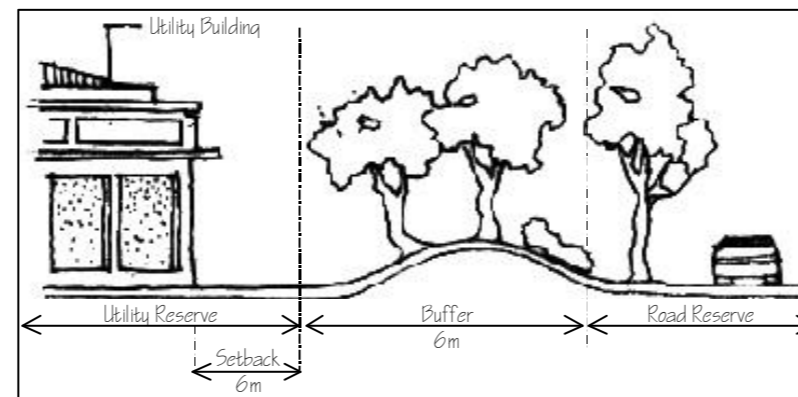
## 9.1 USE

This guideline shall be used for all infrastructure and utilities projects located within the Local Plan area. They are: -.

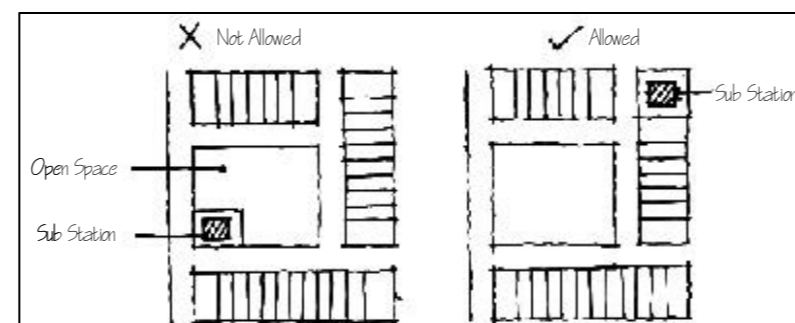
- i. Electricity
- ii. Water Supply
- iii. Telecommunications
- iv. Gas Supply
- v. District Cooling
- vi. Solid Waste
- vii. Drainage
- viii. Sewerage



**Figure 9.1**  
**Typical Concept Of Grouping Infrastructure And Utility Reserves In One Area**



**Figure 9.2**  
**Use of Earth Moulding To Demarcate Boundary**



**Figure 9.3**  
**Location of Sub-Stations**

## GENERAL REQUIREMENTS

- It is desirable that all reserves for infrastructure and utility services are grouped closely together with adjoining land area so that common access and landscaping buffer can be shared.
- The building should be designed to blend with adjacent developments. Corporate logos and signage for utility company can be allowed within the utility compound, but must comply with **Signage and Advertising Design Guidelines for Putrajaya, 1999**.
- Fencing of utility reserves shall conform to **Putrajaya Fencing Design Guidelines, 1999**
- In addition, the visual impact should be minimised by external landscaping treatments in a 6m margin all around. These landscaping treatments such as in the form of earth moulding or change in levels can also act as boundary demarcation and screen public views into the utility reserves.
- Location of utility reserves such electric sub-stations adjoining neighbourhood parks and playgrounds shall not be allowed.

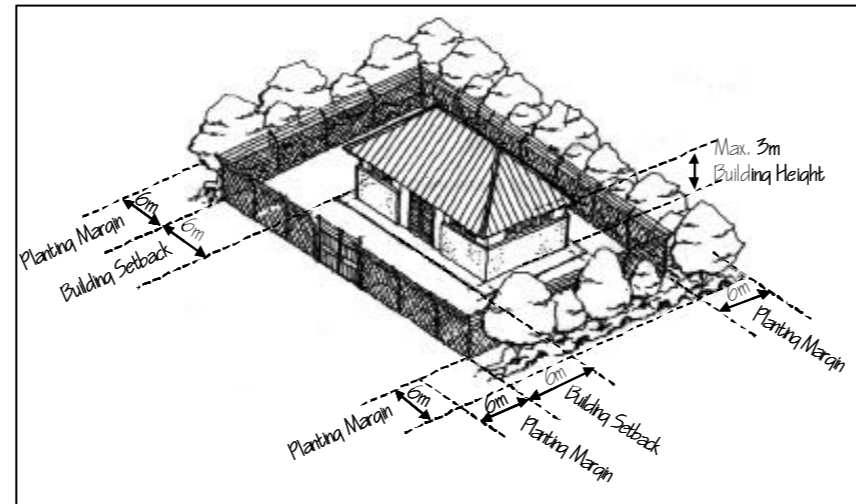
## 9.2 ELECTRICITY

Infrastructure for electricity supply is categorised into the following levels depending on catchments and supply load: -

- i. Main intake station (PMU – Pencawang Masuk Utama)
- ii. Main distribution Station (PPU – Pencawang Pembahagian Utama)
- iii. Substation

The locations of PMU and PPU have been determined in the Proposal Map of the Local Plan. Substations however will depend on individual layout and building submissions.

**Feeder Pillar** is an electrical distribution board for street lighting supply fed from TNB substations or looping from another feeder pillar.



**Figure 9.4**  
**Typical Substation Building with Landscaping As Buffer**

## ELECTRICITY

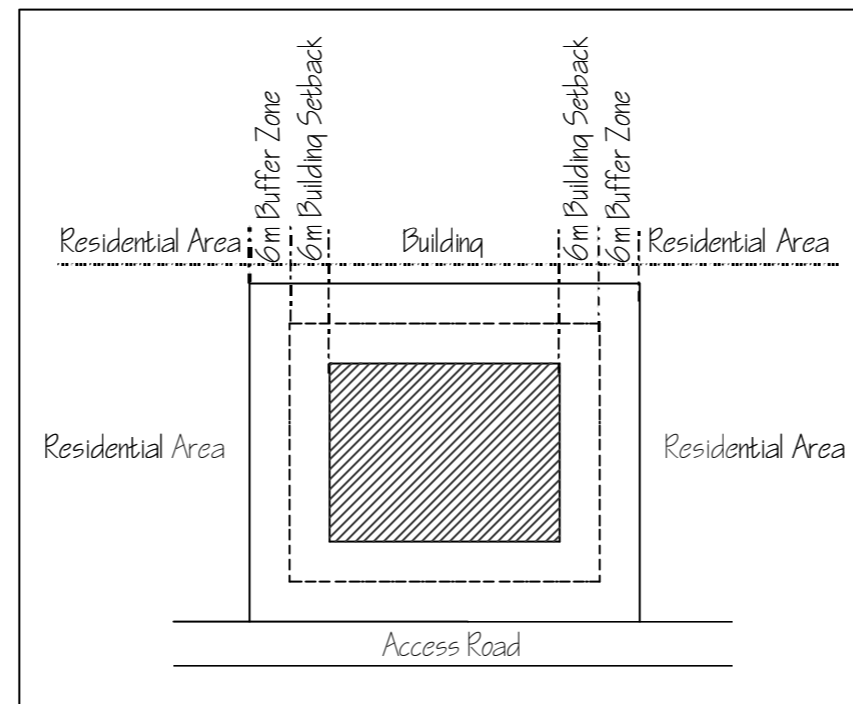
### Planning Standard

- Provision of reserves for electricity requirements shall conform to minimum specification as indicated in **Table 9.1**.

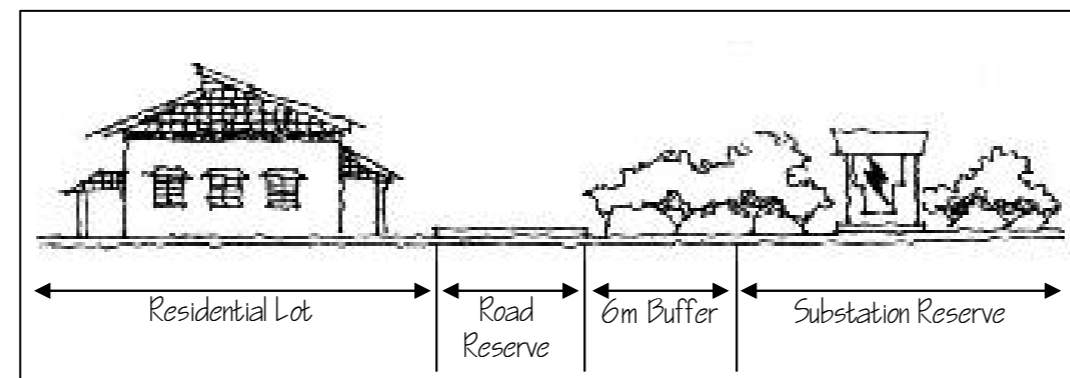
**Table 9.1** Requirements For Electricity Reserves

Type	Threshold	Min. Size	Note
Main intake station (PMU)	Depending on total load and subject to TNB's decision	1.6 hectare	<ul style="list-style-type: none"> <li>▪ 6m buffer is to be provided around the TNB reserve.</li> <li>▪ Service road is to be provided</li> </ul>
Main Distribution station (PPU)	Depending on total load and subject to TNB's decision	45m x 45m	
Substation (SS)	<ul style="list-style-type: none"> <li>▪ 1 : 100 dwellings for residential development</li> <li>▪ 1 : 30 shops for commercial developments</li> </ul>	<ul style="list-style-type: none"> <li>▪ 16.5m x 13.5m (Single chamber)</li> <li>▪ 20m x 13.5 (Double chamber)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Final decisions on sizes are subject to Tenaga Nasional Berhad.</li> <li>▪ Substations are not allowed to be located near or on open spaces.</li> </ul>

- Within commercial, or other large scale developments, the location and size of these substations should be established during the preliminary design stage and, where ever possible, they should be fully integrated within the development: either at ground floor or basement level, rather than as separate independent structure.
- Stand-by facilities, for main power supply for public buildings, are advisable. Sub-stations should be sited along the rear or side elevations of high-rise or commercial buildings, to avoid intruding upon commercial and retail frontages.
- In residential areas, the location of these sub-stations should be determined during the preliminary layout stage, and they should be either fully integrated within the development or stand-alone.



**Figure 9.5**  
**Setback for Sub-station Building**



**Figure 9.6**  
**Buffer For Substation**

## ELECTRICITY

### **Setback and Buffer Requirements**

- Road green corridors or buffer shall separate substation reserve from adjacent lot/land
- Buffer of 6m shall be provided outside substation reserve. The buffer shall be used as planting margin that screen of the utility building from public view.
- Sub-station building shall be setback to a minimum of 6m from the boundary line.

### **Access Road**

- Direct access from local road shall be provided for management and services for the substation.

### **Design Consideration**

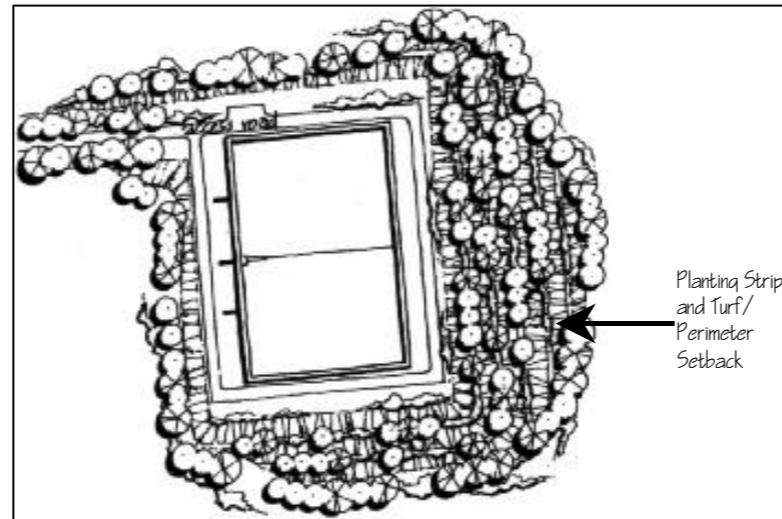
- The building should be designed to blend with adjacent developments. Substations located in or adjacent in to neighbourhoods and should be designed to invoke a residential character in both scale and materials.

### **Feeder Pillar**

- Feeder Pillar for street lighting shall be located within the utility routing of the road reserves. These however shall not be located within the clear sidewalk zone to ensure continuous and undisturbed pedestrian flow on the sidewalk.
- A plinth of 1800mm x 1000mm shall be required for feeder pillar and shall be located together with other utilities such as Fiber Distribution House, telephone kiosks, bus stops and gazebos to share common access and landscaping buffer.

### 9.3 WATER SUPPLY

Water tank/reservoir to supply water to the Local Plan area is located in PB9.2 near the Metropolitan Park. Total area allocated is 1.48 hectares.



**Figure 9.7**  
**Typical Layout of Water Reservoir**

## WATER SUPPLY

### **Access**

- The access road should be aligned to closely follow the existing topography.

### **Design Consideration**

- To reduce the visual impact it is recommended that: -
  - i. The perimeter setbacks of minimum 15m
  - ii. The reservoirs should be set entirely below ground and should, on completion, be covered over: with only the vents visible.
- Design criteria of water tank and its distribution network shall conform to guidelines specified by the Malaysian Water Association (MWA) and the Jabatan Bekalan Air, Selangor.

## 9.4 TELECOMMUNICATION

Telecommunication services and facilities within the Local Plan area shall be used for telephone, telex, facsimile, data transmission and other services such as video and entertainment.

Reserves for telecommunication services within the Local Plan area are categorised into two as the following: -

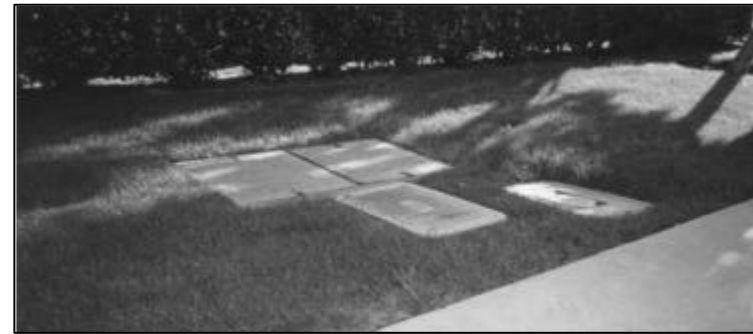
- i. Telephone Exchange
- ii. Fibre Distribution House (FDH)

Telephone exchange shall be located in PB7.1 on an area of 0.915 hectares. The first phase of development will include a Telephone Exchange Building and associated car parking. Whilst future development will consist of a second Exchange Building and Administration Building.

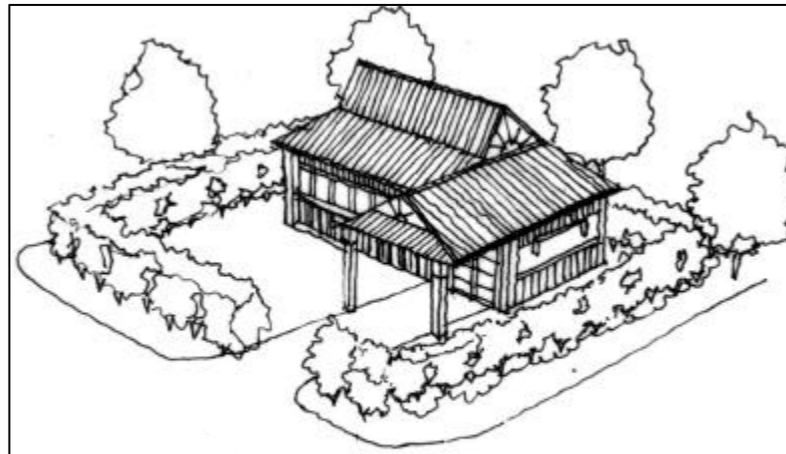
FDH however shall be determined based on individual detail layout proposal.



**Figure 9.8**  
**Artist Image of Telephone Exchange Building**



**Figure 9.9**  
**Location of Manhole Within Road Reserve**



**Figure 9.10**  
**Fibre Distribution House Concept**

## TELECOMMUNICATION

### **Provision Requirement**

- Site for Fibre Distribution House (FDH) shall be provided for every 500 dwellings on a minimum area of 0.02 hectare. The final decision however will be subject to Telecom Malaysia Berhad.
- Ducting and inter-linking manhole shall be by way of network and shall be placed along the utility reserves within the road reserves. Locations of manhole shall not be within the clear sidewalk zone of the sidewalk to ensure smooth pedestrian access along the sidewalk.

### **Setback**

- FDH buildings shall have a minimum setback of 6 meters from the boundary and landscape treatment shall be applied at the perimeter.

### **Access Road**

- Direct access from local road shall be provided for management and services of the telephone exchange and the FDH.

### **Design Consideration**

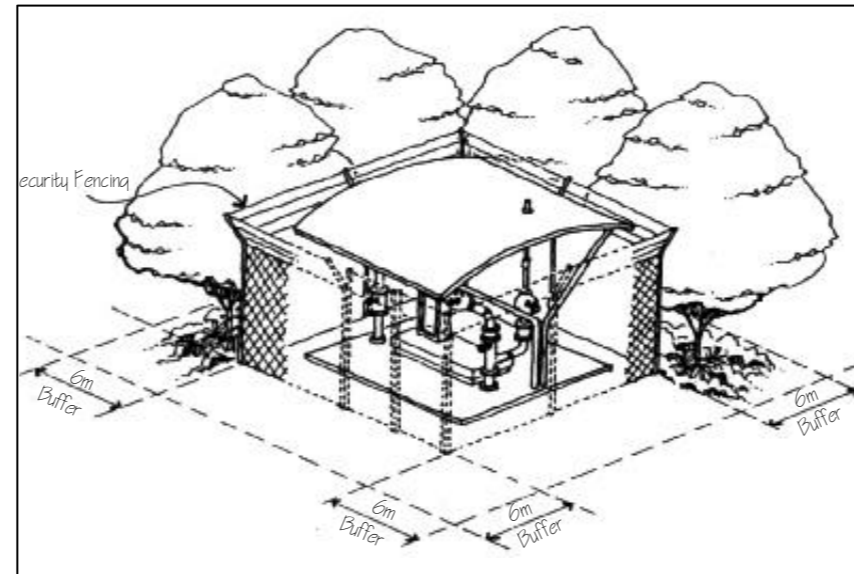
- Design of exchange building in terms of colour scheme and construction materials should be carefully selected to ensure an aesthetic quality consistent with that of a major public building and compatible with the built environment in which they are sited.
- The building should compliment other buildings in adjacent areas. Roofscape design shall also be carefully considered.

**9.5 GAS SUPPLY**

Gas supply within the Local Plan area shall be served by Gas District Stations, Public/Private Natural Gas Vehicles (NGV) outlets and Area Stations via high-pressure feeder pipelines. All the gas supply will be provided by Gas Malaysia Sdn. Bhd. (GMSB).

**Gas District Station** is where a high-pressure gas line is regulated to medium pressure and fed to the Gas Area Stations.

**Gas Area Station** is where the medium pressure gas line is regulated to low pressure 300mm H<sub>2</sub>O for residential use.



**Figure 9.11**  
**Gas District Station Concept**

**GAS DISTRICT STATION/GAS AREA STATION**

- The gas district station shall be divided by road, side lane or green corridor from the nearest residential buildings.
- Site for gas district station shall be surrounded by a 6m buffer and the buffer shall be planted all around for safety and aesthetic reasons. Fencing for the gas district station building shall conform **Putrajaya Fencing Design Guideline Manual, 1999**.
- The size of Gas District Stations / Gas Area Stations shall be as indicated in **Table 9.2**.

**Table 9.2**     **Sizes of Gas District Stations/Gas Area Stations**

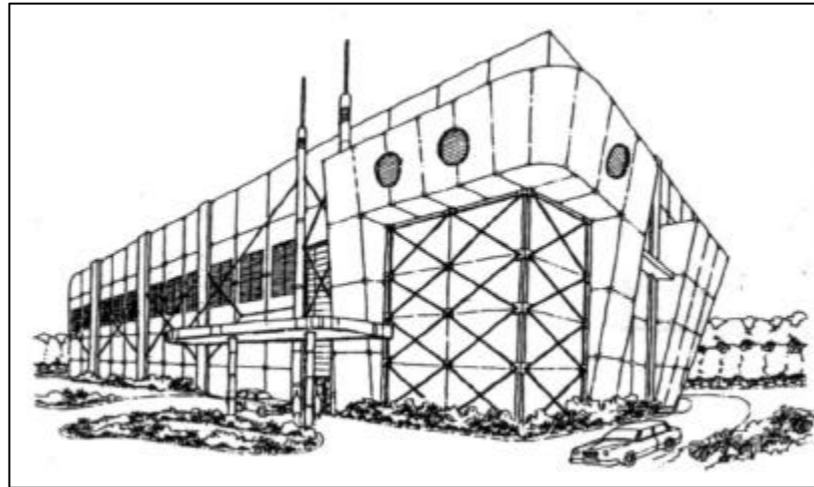
Gas District Stations	13m x 5m
Gas Area Stations	10m x 10m

- To reduce the visual impact of these installations, it is recommended that walls with adequate ventilation should be used. Alternatively, these facilities could be totally screened by landscaping.

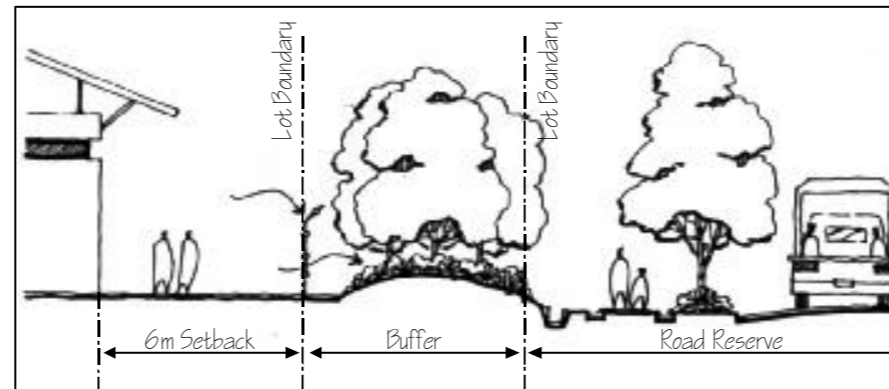
## 9.6 GAS DISTRICT COOLING

**Gas District Cooling Plant** is a centralised chiller plant using gas as the fuel to supply chilled water to mainly commercial buildings.

Gas District Cooling Plant in the Local Plan Area shall be located in PB7.1 near the Sub-Commercial Centre and the Western Transport Terminal.



**Figure 9.12**  
**District Cooling Centre Building**



**Figure 9.13**  
**Infrastructure and Utility Area**

### GAS DISTRICT COOLING

#### **Setback and Buffer**

- Plant building shall have a minimum setback of 6 meters from the boundary line.
- A 6m buffer outside the GDC reserve shall also be provided.

#### **Design Consideration**

- Design of building shall have commercial influence on the façade. Gas turbine and cooling towers shall be innovatively concealed as part of building design.

#### **Fencing**

- Fencing of District Cooling Building shall conform to requirements as specified in the **Putrajaya Fencing Design Guidelines, 1999**.

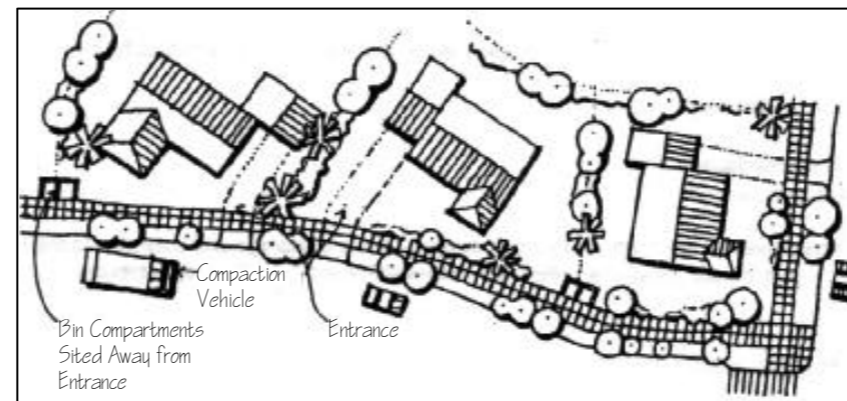
#### **Environmental Considerations**

- The plant will have significant quantity of diesel fuel and therefore the storage tank area should be bunded to contain any spillage. There should be no connections to the drainage or the sewerage system within the bunded area.
- The plant in particular the gas turbine and the cooling towers, should be designed so that the noise-level at the site boundary will be at maximum of approximately 66dB(A).
- The temperature of the fuel gas from the HRSG (Heat Recovery Steam Generators) or the gas-fired boilers shall not exceed 210°C, and the NO<sub>2</sub> density shall not exceed 150 ppm.

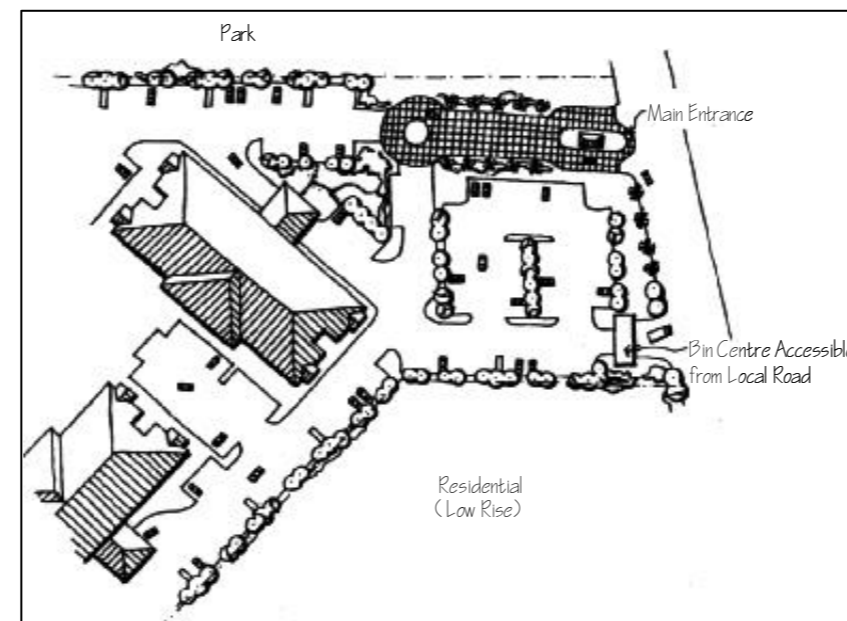
## 9.7 SOLID WASTE

The consideration for solid waste covered in this Manual shall be only related to storage and collection facilities by individual developments such as residential and commercial. The solid waste storage and collection in peripheral are grouped according to building types as the followings: -

Development Type	Storage and Collection Facilities
<b>Residential</b>	
▪ Bungalows/ Semi-D/Terrace (landed property)	Bins
▪ High-rise apartment/flats/condominiums/cluster houses	Refuse chambers/compactors/refuse house
<b>Commercial</b>	
▪ Shop houses/shop offices	Bin centres
▪ Shopping complexes/supermarkets	Refuse chambers/compactors/refuse house
<b>Institutional</b>	
▪ 1-2 storey office lots	Bin centres
▪ High-rise offices	Refuse chambers/compactors/refuse house
<b>Recreational/Public Spaces</b>	
▪ Parks, plazas, open spaces	Bins/ Bins Centre/ compactors/ Drop-off points (as appropriate)



**Figure 9.14**  
**Typical of Kerb Side Pickup**



**Figure 9.15**  
**Location of Bin Centre in High Rise Residential**

## SOLID WASTE

### **Bins**

- In residential areas especially for landed residential units, kerb-side pick-up should be made available, preferably with bin compartments. These bin compartments should be: -
  - i. Appropriately located at the front but away from the main entrance of the house.
  - ii. Conveniently accessible to garbage collectors/refuse vehicles.
  - iii. Well-ventilated but enclosed to protect from rain and stray animals.
  - iv. Screened from public view.

### **Bins Centres**

- In a small apartment cluster or shop houses, at least one bin centre should be provided at an appropriate location as follows: -
  - i. Convenient accessible to collector and refuse vehicle.
  - ii. The bin centre should be well-ventilated but enclosed to protect from rain, stray animals and vandals.
  - iii. The centre should be strategically located on site (e.g. a corner or parking area) away from public view but readily accessible to tenants / residents.

### **Refuse Chambers**

- Refuse chambers apply to larger or high-rise buildings. Their sizes and number depends on the scale of the building. They should be located at the basement or ground floor near loading bays. They may be with or without compactors. Design considerations include: -
  - i. Good ventilation and lighting level (daylight and artificial).
  - ii. White glazed wall and impervious ceramic floor or similar.
  - iii. Proper drainage for access water/liquid away from public area/walkways.
  - iv. Fully screened from public view. Strong louvered metal doors are encouraged.

### **Refuse House/Station Compactors**

- Refuse house refers to stand alone building or shed to accommodate large communal bins or compactor. Design criteria include: -
  - i. Appropriately located on site, preferably at a corner in car park areas away from main entrance or public spaces.
  - ii. The building form should blend in with the surrounding.
  - iii. Recycling bins should be placed just outside the refuse house.
  - iv. All other criteria are the same as refuse chambers.

## SOLID WASTE

### **Access for Garbage Collection**

- Garbage truck will generally utilize the normal standard roads to access residential, commercial and public amenities area. The normal standard road is not a major concern for garbage trucks; however, internal circulation system for multi-stories facilities and complexes should incorporate certain provision for garbage trucks.
- Issues that need to be examined at an early stage in the design should include the following: -
  - i. To maintain a minimum height clearance of 4.1 meters, wherever the path for the garbage trucks have been identified.
  - ii. To maintain a minimum slope of 1:12 for the design of access road for garbage trucks.
  - iii. Provision for “ 3 point turns” or “cul-de-Sac” should be incorporated wherever necessary.

### **Environmental Considerations**

- Biodegradable waste should be disposed at an approved dumping site as soon as possible.
- Contractor approved by the respective authority shall undertake collection and transportation of domestic and commercial waste.

## 9.9 DRAINAGE

Design of drainage system for all developments within the Local Plan Area shall conform to guidelines and requirements set out in various documents as the following: -

- i. Putrajaya Stormwater Management Design Guidelines, 1998
- ii. Urban Stormwater Management Manual for Malaysia, (MaSMA, 2000)

### DRAINAGE

- The proposed stormwater drainage network is to be presented in a series of drawings showing the proposed routes of the stormwater minor drainage system and the stormwater major drainage system.
- In formulating the layout of the stormwater drainage system, every effort should be made to adopt an approach that allows the multiple objectives of stormwater management to be address. The 'rapid discharge' approach of utilising highly efficient flow conveyance systems of pipes and concrete lined channels should be avoided wherever possible. 'Zero discharge' as specified by the **Urban Stormwater Management Manual for Malaysia, (MaSMA, 2000)** should be aimed at. Refer **Urban Stormwater Management Manual for Malaysia, (MaSMA, 2000)**.
- An underground drainage system should be provided to safely convey stormwater of frequent events without causing disruption to urban activities.
- Design standard for minor drainage system shall be as follows:-
  - i. Commercial area - 100 year ARI event
  - ii. Residential area - 5 year ARI event
- Design standard for major drainage system shall be 100 year ARI event.
- It is necessary to provide adequate number and location of stormwater entry pits. The number required shall be based on inlet capacities of these pits which needs to be compatible with the runoff rate generated from the local street catchments for the design event.
- Engineers designing and submitting drawings for drainage system should refer to the following documents: -
  - i. **Putrajaya Stormwater Management Design Guidelines, 1998**
  - ii. **Urban Stormwater Management Manual for Malaysia, (MaSMA, 2000)**
- Gross Pollutant Traps (GPTs) shall be constructed on waterways prior to entering the Putrajaya Lake.

## 9.10 SEWERAGE

A centralised sewerage treatment system has been provided for the whole of Putrajaya. As such, design of sewerage system for the individual precincts within the Local Plan area is only confined to sub-catchments area design where wastewater from the development is conveyed to the main reticulation systems and finally to the sewerage treatment plant before effluent is discharged.

### SEWERAGE

- The design of the sewerage reticulation system for any development within the Local Plan Area shall be based on the principle and guidelines set out in **MS1228: 1991 – Code of Practice of Design and Installation of Sewerage System**.
- The recommended population equivalent is based on the type of premise or establishment proposed as set out in **Guideline for Developers – Sewerage Treatment Plant Design, 1998. (Table 9.3)**.

**Table 9.3 Recommended Population Equivalent (PE)**

TYPE OF PREMISE/ ESTABLISHMENT	POPULATION EQUIVALENT (recommended)
Residential	5 per house
Commercial; (including offices, shopping complex, entertainment/recreation centres, restaurants, cafeteria, theatres)	3 per 100m <sup>2</sup> gross area
Schools/Educational Institutions: <ul style="list-style-type: none"> <li>▪ Day schools/institutions</li> <li>▪ Fully residential</li> <li>▪ Partial residential</li> </ul>	0.2 per student 1 per student 0.2 per student for non residential student and 1 per student for residential student
Hospitals	4 per bed
Hotels (with dining and laundry)	4 per room
Factories (excluding process water)	0.3 staff
Market (wet type)	3 per stall
Market (dry type)	1 per stall
Petrol Kiosks/Service stations	18 per service bay
Bus terminal	4 per bus bay
Taxi terminal	4 per taxi bay
Mosque	0.5 person
Church/Temple	0.2 person
Stadium	0.2 person
Swimming Pool/Sports Complex	0.5 person
Public Toilet	16 per wc
Laundry	10 per machine

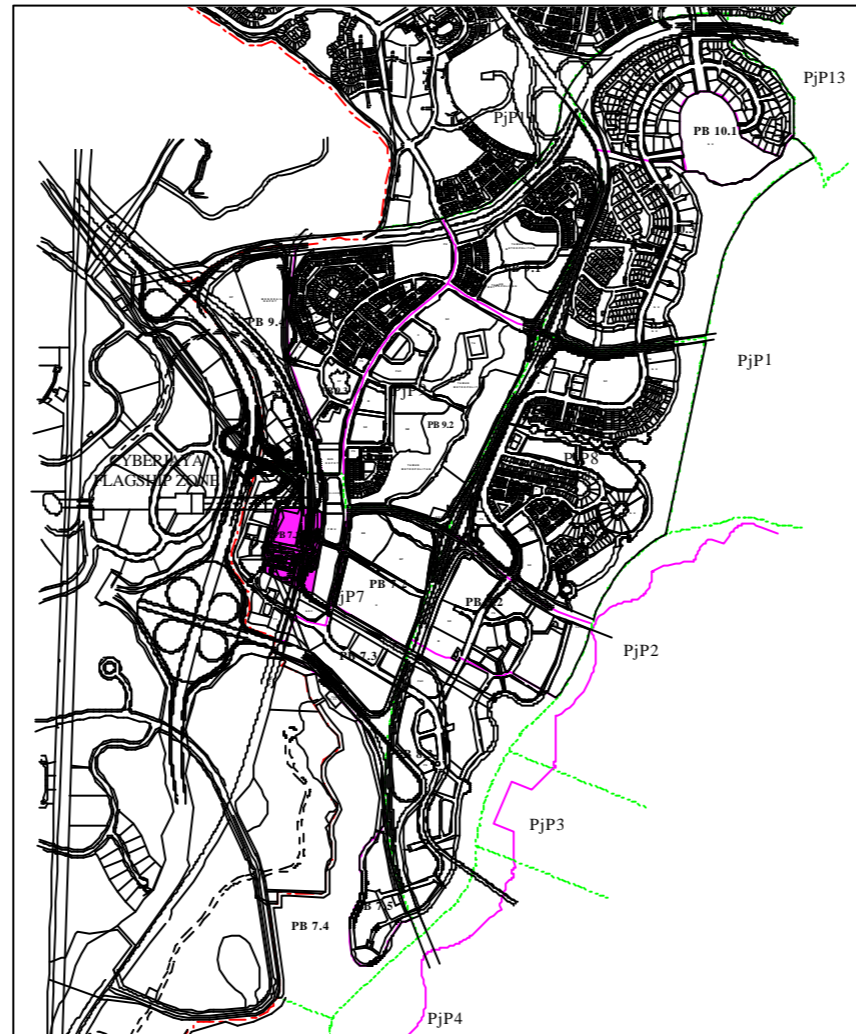
- The sewerage reticulation systems shall be designed based on gravity flow. Pump stations shall only be introduced where topographical constraints are encountered or where the depth of sewer or manhole exceeds 7 metres.
- Locations of manhole shall not be within the clear sidewalk zone of the sidewalk to ensure smooth pedestrian access along the sidewalk.

## 9.11 PARK AND RIDE

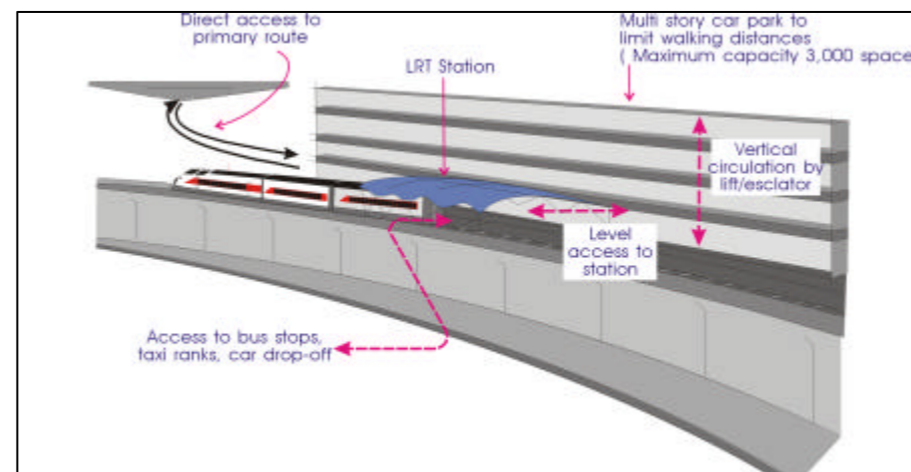
**Park and Ride** refers to facilities that provide common location for individuals to transfer from a low-occupancy travel mode to a high-occupancy travel mode. It is oriented towards providing parking spaces for automobiles connected with bus or rail stations and frequent transit services.

The primary purpose of a Park-And-Ride within the Local Plan area is to provide transfers between car users to LRT for trips to and from the core-precincts because of the Putrajaya car restraints policy.

This guidelines shall be used for all Park-And-Ride located within the Local Plan area as indicated by the Proposal Map. Two Park-and-Ride sites have been identified as shown in **Figure 9.16**. The first Park-and-Ride is located next to the Western Transport Terminal and the second Park-and-Ride facility is situated south of Persiaran Utara, hemmed in between the ERL corridor and Precinct 9.



**Figure 9.16**  
**Location of Park and Ride**



**Figure 9.17**  
**Typical Layout of Park and Ride Facility**

## PARK AND RIDE

### CIRCULATION

- The Park-and-Ride facilities would comprise peripheral car parks with direct access to and from the primary road network and linked into the proposed LRT stations.
- The total number of Car Parking spaces shall not exceed 3000 spaces, otherwise delays become disincentive to the driver.
- In addition, because of the high traffic volumes and parking facilities, these facilities require a very large area per passenger. The basic principles governing the design are: -
  - i. Priority in convenience of access should be given to modes in this sequence: pedestrians; feeder transit; bicyclist, taxis, Park-And-Ride.
  - ii. Maximum possible separation of all modes is desirable.
  - iii. The pedestrian walk between access modes and the station platform should be safe, convenient and as short as possible.
  - iv. Adequate capacity, easy orientation and smooth traffic flow should be provided for each mode.
- Pedestrian access from all streets and parking areas requires walkways, which should be at least 1.5 m wide. Design of pedestrians access should use lowered curb, mild gradients and convenient doors to allow access to stations by the handicapped on wheelchairs.
- A strategy for driver information and management will be needed to ensure demand and capacity is matched at individual park-and-ride sites.
- A high-quality loading and unloading facilities should be provided for both cars and bus passengers, the latter including feeder and longer-distance buses.
- Parking layout within Park and Ride Station should consider pedestrian safety and circulation for people with disabilities (PWD). PWD car parks should be located near to the exit points.

## PARK AND RIDE

### **DESIGN CONSIDERATION**

- Façade treatment should be of innovative design that reflect modern technology, transport architecture and modern local features.
- Monotonous and large plain facades should be avoided. Blank façade should be avoided or camouflaged with planting.
- The park and ride facility should fit into its surroundings. Considerations that should be taken into account are:-
  - i. Appropriate massing, which complements the surrounding developments
  - ii. The need for 'human scale' in space and façade treatment, especially at street level.
- Special elevation treatment and/or roof structures should emphasize key locations such as the station entrance.
- Multi storey parking structure should be bright and airy. Skylight or atria are encourage for these purposes, as well as providing a good sense of orientation.

# 10.0 PROMENADE, LAKE EDGE & WATER BODIES

## 10.1 USE

This guideline shall be used for all adjoining lake and Promenade frontage developments in **PB 7.4, PB 7.5, PB 8.3, PB8.2, PB8.1, and PB10.3.**

## 10.2 USE CLASS ORDER

Activities permissible on the promenade area and lake fronting the promenade shall conform to Use Class Orders as stipulated in Volume 1 of the Local Plan, which have been formulated to conform to requirements set out by the **Putrajaya Lake Use And Navigation Master Plan And Lake And Wetland Emergency Response Plan<sup>1</sup>**.

*Use Class Order is the prescribed activity for the use of land or building. It is categorised into classes where change from one class to the other shall be deemed to constitute development and therefore shall require planning approval. Change within the same class however shall not require planning approval under the provision of the Local Plan*

<sup>1</sup> Perbadanan Putrajaya, "Putrajaya Lake Use And Navigation Master Plan And Lake And Wetland Emergency Response Plan, Final Report, May 2001.

## USE CLASS ORDER

- Permissible activities within the promenade area and the adjacent water bodies shall conform to the general activities as highlighted in **Table 10.1**.

**Table 10.1 Permissible Activities on Promenade and Water Bodies**

Planning Block	Water Body Zone	Permissible Activities	Reference Use Class Table In Volume 1 of Local Plan Report
PB7.4	Zone 5	<ul style="list-style-type: none"> <li>Promenade</li> <li>Pedestrian and cycle path</li> <li>Viewing deck</li> <li>Sports rowing, paddling training and events</li> <li>Model sailing and power boating within designated area</li> <li>Pedal powered leisure craft hire within designated areas</li> <li>Ferry, tour and cruise boating</li> <li>Junior sports racing for special events</li> <li>Sailing within designated areas</li> <li>Canoeing, kayaking, rowing skiffs</li> <li>Water skiing within designated areas</li> <li>Parasailing and towed ride within designated areas</li> <li>Jet ski or boating racing for special events</li> <li>Permanent water display features within designated areas</li> <li>Special advertised sporting, public display and festivity events by permit.</li> <li>Marina berthing</li> <li>Foreshore fishing and fishing from boats within designated areas.</li> <li>Lake maintenance vessels</li> </ul>	Table 4.3, Page 4-14

USE CLASS ORDER

**Table 10.1 Permissible Activities On Promenade and Water Bodies (cont.)**

<b>Planning Block</b>	<b>Water Body Zone</b>	<b>Permissible Activities</b>	<b>Reference Use Class Table In Volume 1 of Local Plan Report</b>
PB7.4 (cont.)	Zone 6	<ul style="list-style-type: none"> <li>▪ Promenade</li> <li>▪ Pedestrian and cycle path</li> <li>▪ Viewing deck</li> <li>▪ Designated Fish Habitats sector</li> <li>▪ Leisure canoeing, kayaking and row boating</li> <li>▪ Sports rowing and paddling training</li> <li>▪ Small powered hire boating</li> <li>▪ Powered leisure boating</li> <li>▪ Fishing from boats</li> <li>▪ Foreshore fishing within designated areas</li> <li>▪ Special fishing competitions</li> <li>▪ Lake maintenance vessels</li> </ul>	Table 4.3, Page 4-14
PB7.5	Zone 5	<ul style="list-style-type: none"> <li>▪ Promenade</li> <li>▪ Pedestrian and cycle path</li> <li>▪ Sports rowing, paddling training and events</li> <li>▪ Model sailing and power boating within designated area</li> <li>▪ Pedal powered leisure craft hire within designated areas</li> <li>▪ Ferry, tour and cruise boating</li> <li>▪ Junior sports racing for special events</li> <li>▪ Sailing within designated areas</li> <li>▪ Parasailing and towed ride within designated areas</li> <li>▪ Jet ski or boating racing for special events</li> <li>▪ Permanent water display features within designated areas</li> </ul>	Table 4.3, Page 4-14

USE CLASS ORDER

**Table 10.1 Permissible Activities On Promenade and Water Bodies (cont.)**

PB7.5 (cont.)	Zone 5	<ul style="list-style-type: none"> <li>▪ Special advertised sporting, public display and festivity events by permit.</li> <li>▪ Marina berthing</li> <li>▪ Foreshore fishing and fishing from boats within designated areas.</li> <li>▪ Lake maintenance vessels</li> </ul>	Table 4.3, Page 4-14
PB8.3	Zone 4	<ul style="list-style-type: none"> <li>▪ Promenade</li> <li>▪ Pedestrian and cycle path</li> <li>▪ Viewing deck</li> <li>▪ Wakaf</li> <li>▪ Public amenity space</li> <li>▪ Children Play Area</li> <li>▪ Alfresco Dining</li> <li>▪ Sports rowing, paddling training and events</li> <li>▪ Powered leisure boating and small powered hire boating</li> <li>▪ Ferry, tour and cruise boating</li> <li>▪ Junior sports racing for special events</li> <li>▪ Foreshore fishing within designated location</li> <li>▪ Special advertised sporting, public display and festivity events by permit.</li> <li>▪ Canoeing, kayaking, rowing skiffs and dragon boats for club activities and sports events</li> <li>▪ Jet ski for special events</li> <li>▪ Lake maintenance vessels.</li> </ul>	Table 4.4, Page 4-17

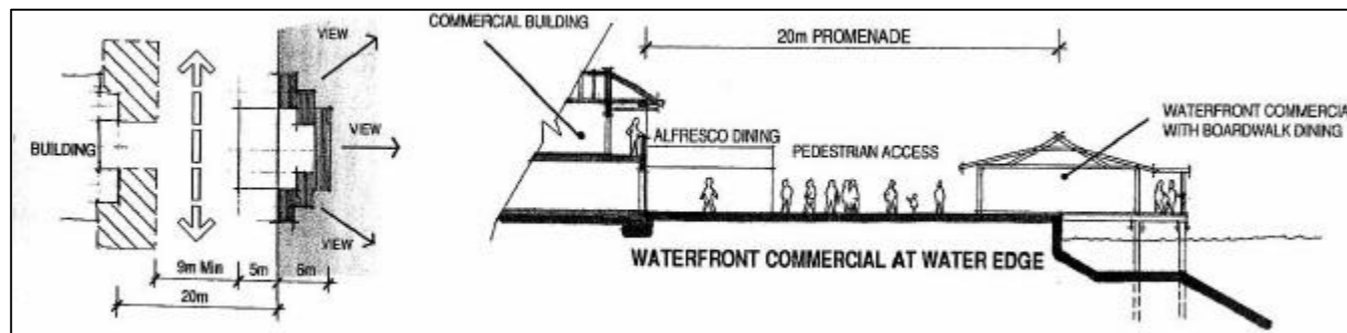
USE CLASS ORDER

**Table 10.1 Permissible Activities On Promenade and Water Bodies (cont.)**

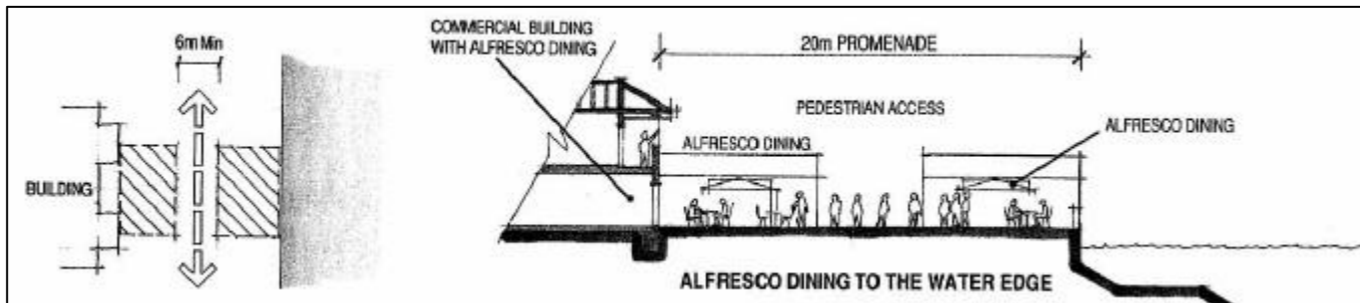
PB8.2	Zone 4	<ul style="list-style-type: none"> <li>▪ Promenade</li> <li>▪ Pedestrian and cycle path</li> <li>▪ Viewing deck</li> <li>▪ Wakaf</li> <li>▪ Public amenity space</li> <li>▪ Children Play Area</li> <li>▪ Sports rowing, paddling training and events</li> <li>▪ Powered leisure boating and small powered hire boating</li> <li>▪ Ferry, tour and cruise boating</li> <li>▪ Junior sports racing for special events</li> <li>▪ Foreshore fishing within designated location</li> <li>▪ Special advertised sporting, public display and festivity events by permit.</li> <li>▪ Canoeing, kayaking, rowing skiffs and dragon boats for club activities and sports events</li> <li>▪ Jet ski for special events</li> <li>▪ Lake maintenance vessels.</li> </ul>	Table 4.4, Page 4-16
PB8.1	Zone 4	<ul style="list-style-type: none"> <li>▪ Promenade</li> <li>▪ Pedestrian and cycle path</li> <li>▪ Viewing deck</li> <li>▪ Wakaf</li> <li>▪ Public amenity space</li> <li>▪ Children Play Area</li> <li>▪ Sports rowing, paddling training and events</li> <li>▪ Powered leisure boating and small powered hire boating</li> <li>▪ Ferry, tour and cruise boating</li> </ul>	Table 4.4, Page 4-15

**Alfresco Dining** refers to outdoor dining associated with restaurant activities on commercial development located next to promenade.

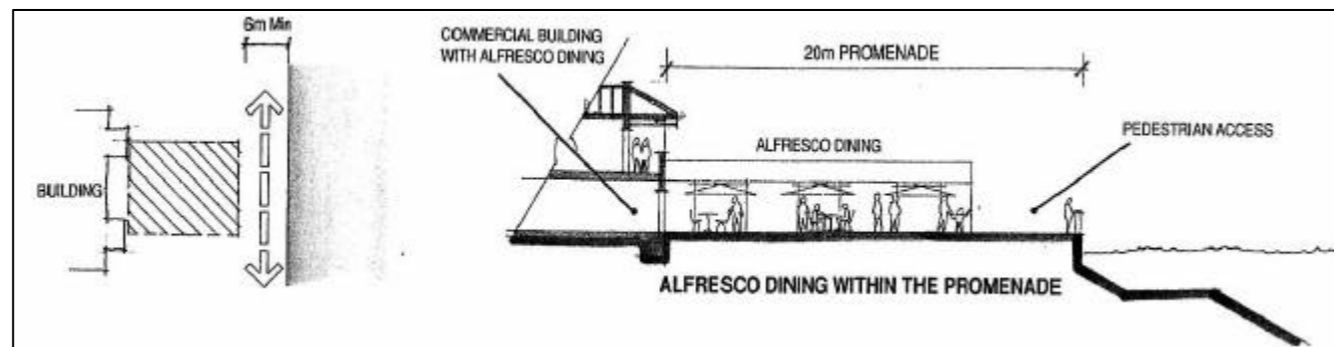
**Clear Sidewalk Zone** is the zone within the streetscape where pedestrian flow is in continuity and uninterrupted by any structures such as columns or any landscape furniture such as trees, benches, kiosks and utility elements such as covers and gratings.



**Figure 10.1**  
**Alfresco Dining within the Promenade**



**Figure 10.2**  
**Alfresco Dining to the Water Edge**



**Figure 10.3**  
**Waterfront Commercial at Water Edge**

## USE CLASS ORDER

**Table 10.1 Permissible Activities On Promenade and Water Bodies (cont.)**

PB8.1 (cont.)	Zone 4	<ul style="list-style-type: none"> <li>Junior sports racing for special events</li> <li>Foreshore fishing within designated location</li> <li>Special advertised sporting, public display and festivity events by permit.</li> <li>Canoeing, kayaking, rowing skiffs and dragon boats for club activities and sports events</li> <li>Jet ski for special events</li> <li>Lake maintenance vessels.</li> </ul>	Table 4.4, Page 4-15
PB10.3	Zone 3	<ul style="list-style-type: none"> <li>Promenade</li> <li>Pedestrian and cycle path</li> <li>Viewing deck</li> <li>Wakaf</li> <li>Public amenity space</li> <li>Children Play Area</li> <li>Aquatic sporting events</li> <li>Tour and cruise boating</li> <li>Foreshore fishing within designated location</li> <li>Canoeing, kayaking, rowing skiffs and dragon boats for sports events</li> <li>Lake maintenance vessels.</li> </ul>	Table 4.6, Page 4-22
PB10.1		<ul style="list-style-type: none"> <li>Promenade</li> <li>Pedestrian and cycle path</li> <li>Viewing deck</li> <li>Wakaf</li> <li>Public amenity space</li> <li>Children Play Area</li> </ul>	Table 4.6, Page 4-21

- Alfresco dining on the promenade is permissible in **PB8.3** and shall be of temporary structures. A minimum clearance of 6m shall be ensured at all time to allow for clear sidewalk zone and service access for maintenance vehicles (**Figure 10.1 to 10.3**).

### 10.3 PROMENADE TYPE

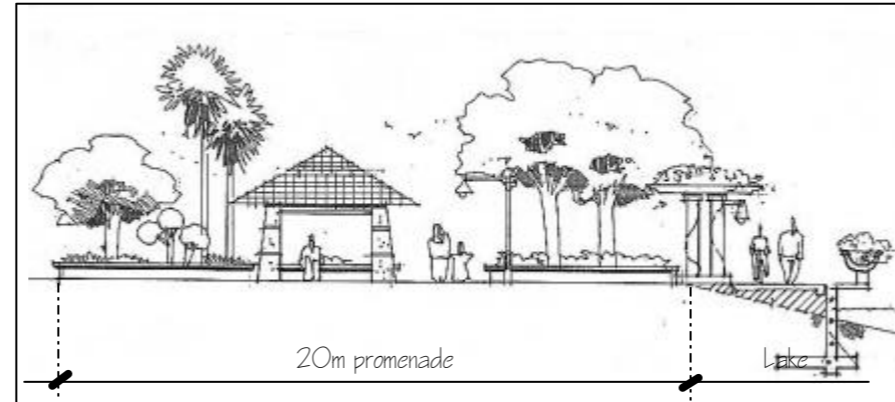
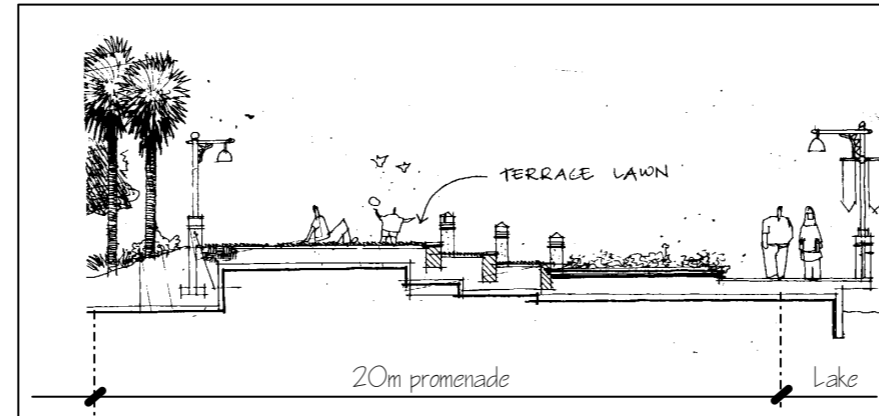
**Promenade** refers to strip of land area located between the Putrajaya Lake and individual land parcels next to it, the width of which shall be 20m measured from the top of slope of the lake edge.

**Promenade Type** is associated with adjacent landuse and lake edge treatments to the shoreline. Typically characterised as formal, semi formal and natural.

**Formal Promenade** refers to promenade area characterised by hard paving with handrails where pedestrian access to the edge of the promenade immediately before the water is maximised. This type is normally associated with very urban ambience particularly commercial areas and public realms.

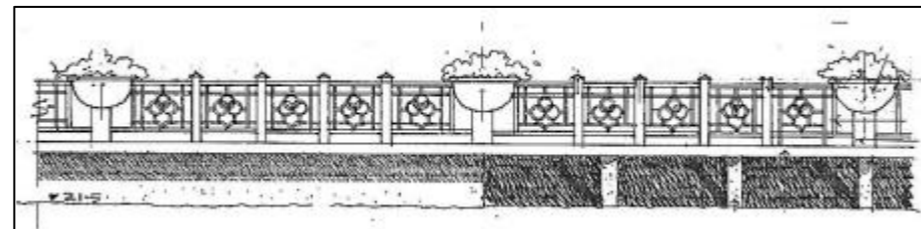
**Semi-formal Promenade** refers to promenade area where the predominant character shall be of park land with naturalistic plantings intermingled with series of events or activity points. Pedestrian access to the water edge shall typically through boardwalks. This type is typically associated with residential character on the adjoining land.

**Natural Promenade** refers to promenade area where the lake edge shall be screened using dense woodland and vegetation. Typically associated with parks and areas where public access to the waterfront and its adjoining landuse is restricted.



**Figure 10.4**

**Typical Character of Formal Promenade**



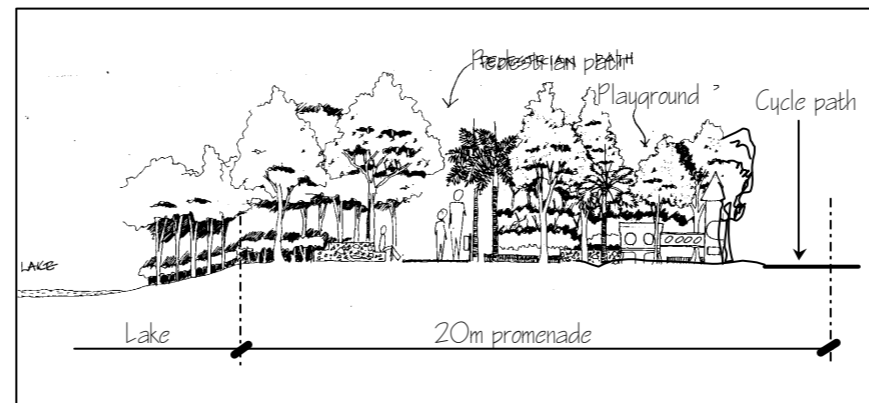
**Figure 10.5**

**Typical Front Elevation of Formal Promenade**

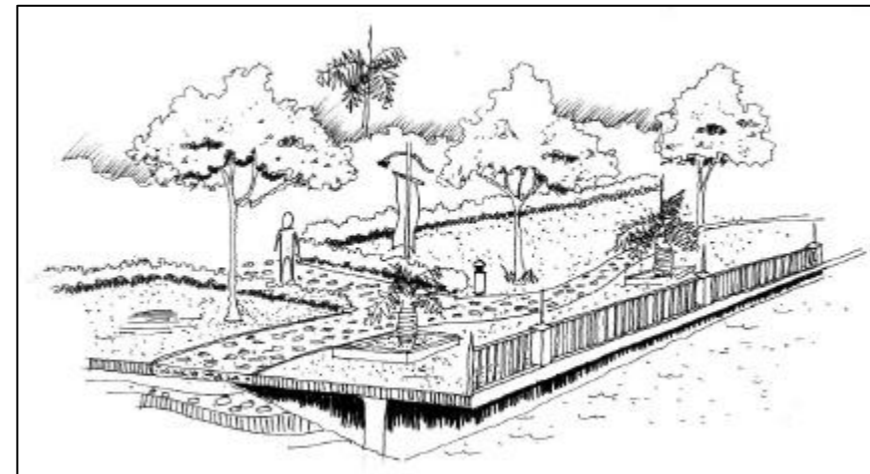
### PROMENADE TYPE

#### 1. Formal Promenade

- The water edge shall have a promenade character and shall consist of hard paving with handrails, attractive lighting and ornamental and shady trees.
- Pedestrian access to the waterfront shall be ensured at all times along the promenade and a minimum clearance for clear sidewalk zone of 6m shall be provided.
- Service access for lake maintenance vehicles shall be allowed for at designated locations. Service access of minimum width of 3.0m to the promenade area shall be provided at interval of 800 meter away from the nearest public right of way.
- Pedestrian footpath and cycle path along promenade nearest to the water edge shall be provided subject to the following minimum requirements: -
  - i. Segregated Pedestrian Footpath - 1.5m
  - ii. Segregated Cycle Path - 2m
  - iii. Dual Use Path - 3m
- Occasional semi-permanent structures such as kiosks, public toilets etc. can be located on the promenade and shall occupy no more than 800 square metres of space on the promenade for each structure.
- Lake edge treatment to the shoreline shall conform to designation and requirements as specified in this Manual. See **Lake Edge Treatment**



**Figure 10.6**  
**Typical Section of Semi-Formal Promenade**



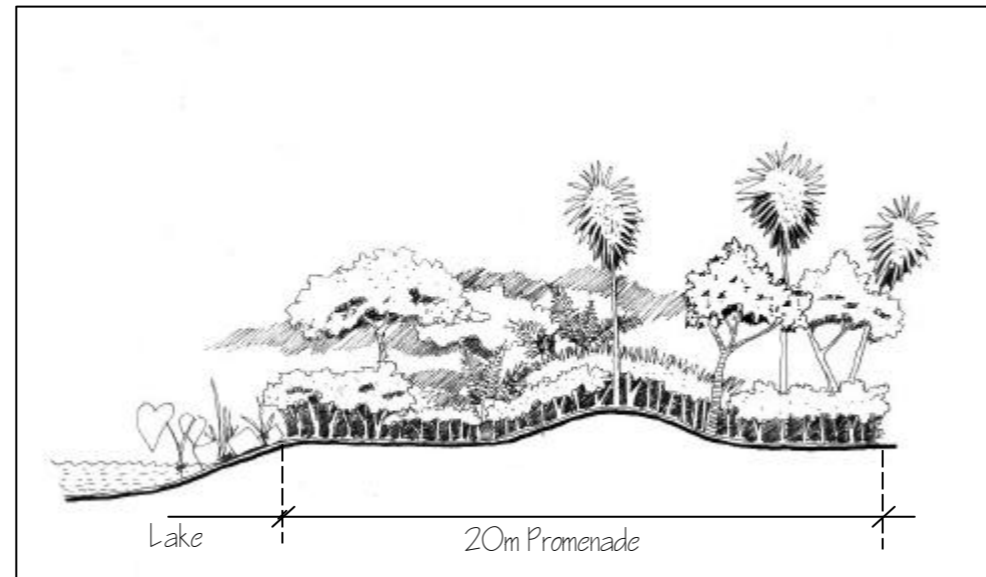
**Figure 10.7**  
**Boardwalk for Pedestrian Access within Promenade Area**

## PROMENADE TYPE

### 2. Semi-Formal Promenade

- The character shall be that of a park with naturalistic planting, framed views, winding path and series of activities along the route.
- Pedestrian access along the waterfront shall be through boardwalks and direct access to the water edge can be provided at designated locations, also via boardwalks.
- Service access of minimum width of 3.0m to the promenade area shall be provided at interval of 800 metres away from the nearest public right of way.
- Pedestrian footpath and cycle path along promenade nearest to the water edge shall be provided subject to the following minimum requirements: -
 

i. Segregated Pedestrian Footpath	-	1.5m
ii. Segregated Cycle Path	-	2m
iii. Dual Use Path	-	3m
- Occasional activity points or events such as picnic areas, bird feeding platform, wildlife observation hides, children play area etc. can be located along the promenade and shall be concentrated at designated locations of a minimum size of 150m and maximum 300m.
- Lake edge treatment to the shoreline shall conform to designation and requirements as specified in this Manual. **See Lake Edge Treatment**



**Figure 10.8**  
**Typical Section of Natural Promenade**

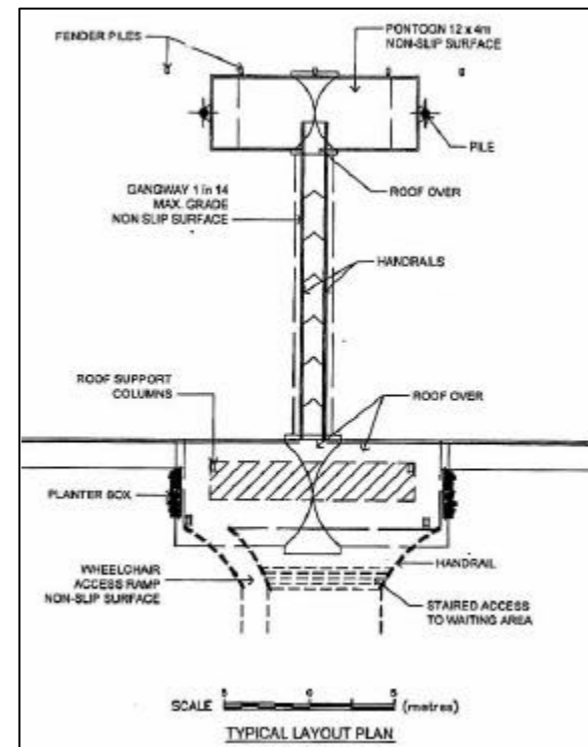
## PROMENADE TYPE

### 3. Natural Promenade

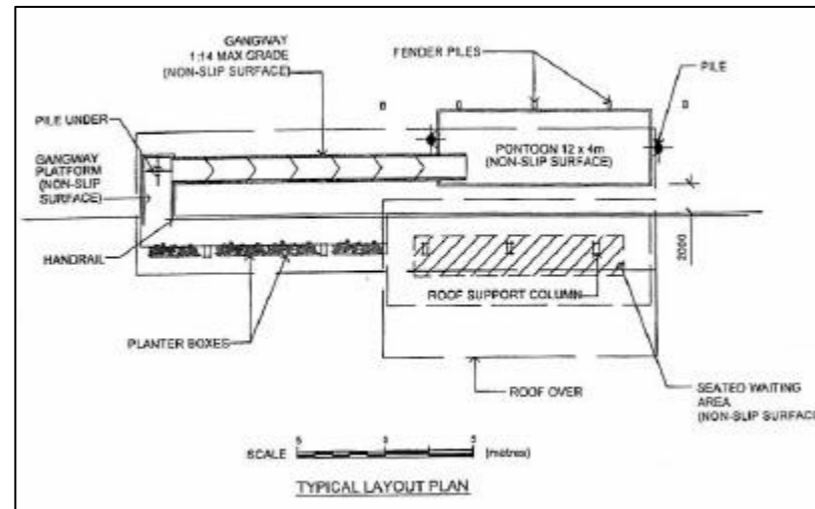
- The character shall be that of a naturalistic wetland where dense tree vegetation will form a green backdrop.
- Pedestrian access of minimum 1.5m to the water edge shall be only at designated locations where water is shallow and through natural boardwalks.
- Service access of minimum width of 3.0m to the promenade area shall be provided at interval of 800 meters away from the nearest public right of way.
- Lake edge treatment to the shoreline shall conform to designation and requirements as specified in this Manual. See **Lake Edge Treatment**.

## 10.4 TRANSPORTATION AND ACCESS

The Putrajaya Lake has been planned to cater for multi-functional uses, including water transport, recreation, fishing and water sports. Water transport will be in the form of ferry services and other licensed private boats.



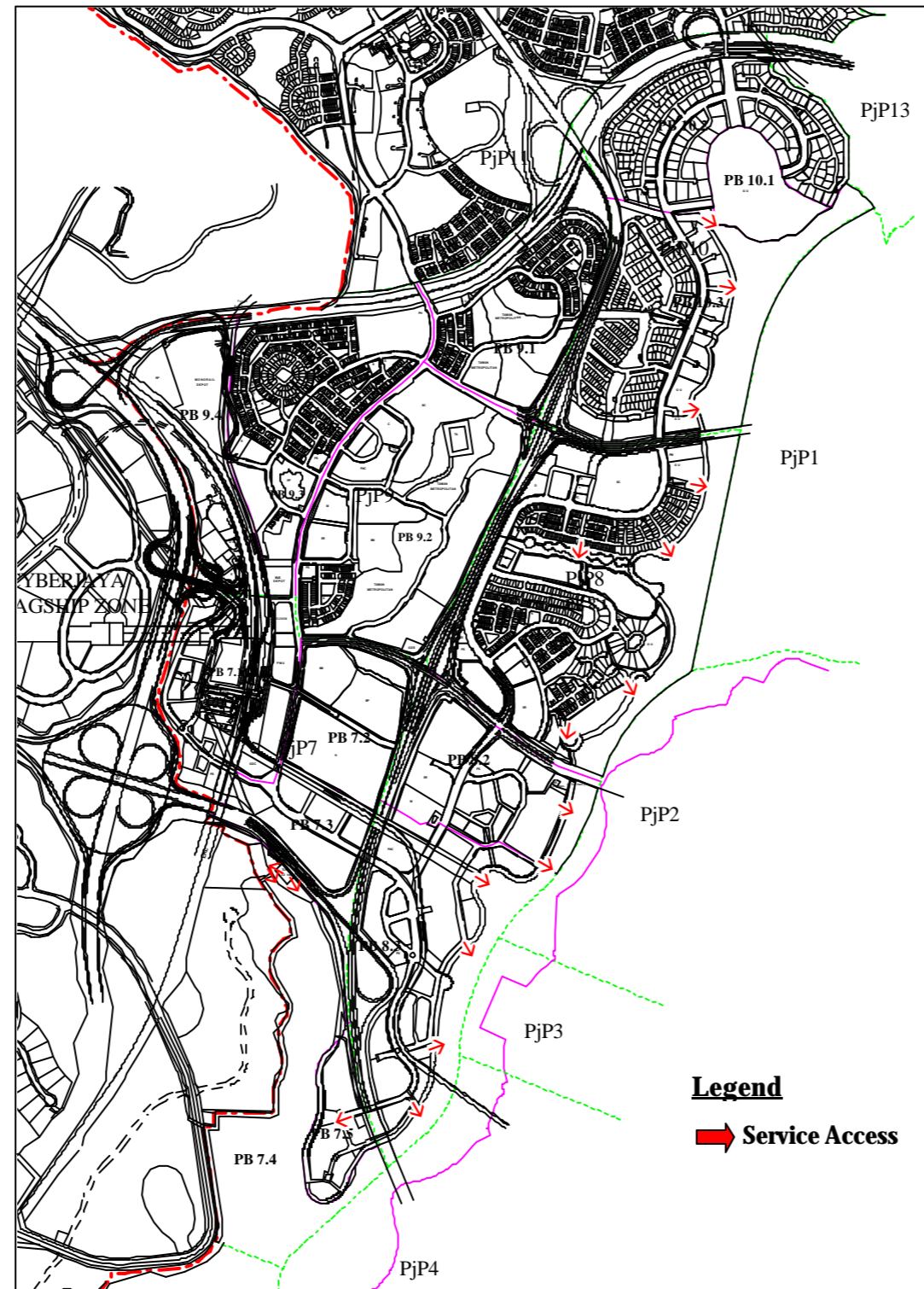
**Figure 10.9**  
**Typical Layout Plan for Type One Ferry and Tour Boat Terminal**



**Figure 10.10**  
**Typical Layout Plan for Type Two Ferry and Tour Boat Terminal**

## TRANSPORTATION

- Type One ferry and tour boat as indicated in the Putrajaya Lake Use and Navigation Master Plan and Lake and Wetland Emergency Response Plan, 2001 (Figure 10.9) is preferred.
- All pedestrian ramps and gangways around the terminal shall be designed to satisfy criteria applicable to wheelchair access.
- Provision for a bus stop, taxi rank, drop off and pick up zone and limited short and long-term parking shall be made for ferry terminal in PB8.1. See Lake Use and Navigation Master Plan and Lake and Wetland Emergency Response Plan, 2001.



**Figure 10.11**  
**Indicative Locations of Service Access for Promenade**  
**and Lake Maintenance Vehicles**

## SERVICE ACCESS

- Service access on the promenade of minimum width of 3.0m shall be provided at interval of 800 meters away from the nearest public right of way. Indicative locations of the service access are as shown in **Figure 10.11**.

## 10.5 LAKE EDGE TREATMENT

**Lake Edge Treatment** refers to the treatment of the embankment of lake or the lake shoreline from the promenade boundary.

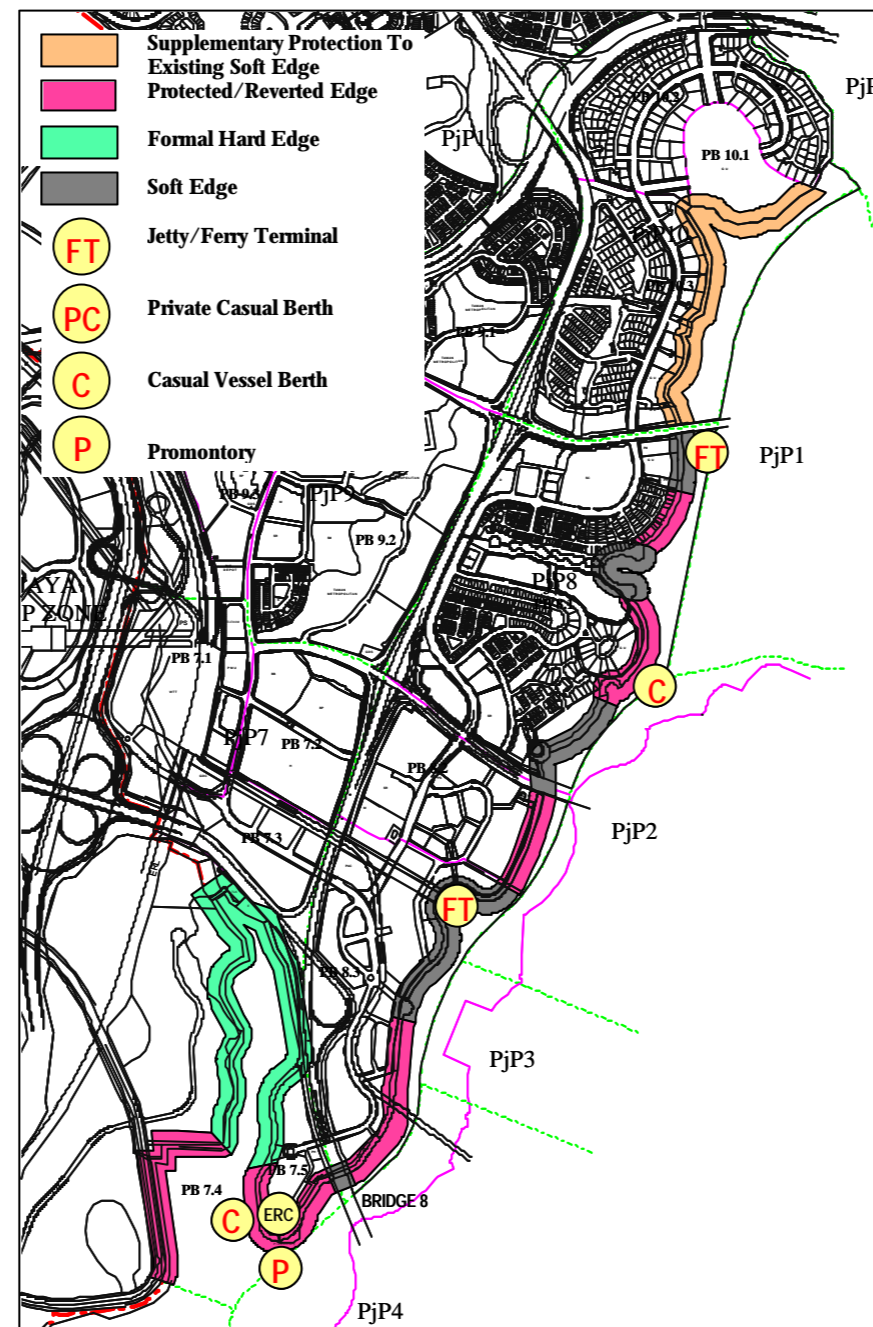
As defined by the **Putrajaya Lake Use And Navigation Master Plan And Lake And Wetland Emergency Response Plan**, there are three types of lake edge treatments, defined as follows; -

**Formal Hard Edges** refer to vertical or battered formed walls that have a profiled or decorative applied surface treatment. The main structural component of these walls will typically be reinforced concrete.

**Protected or Reverted Edges** refer to edges formed by loose laid and freestanding natural materials such as boulders, quarry stones, gabions, bakau piles or rock. A reverted edge shall be the minimal required treatment for this type of edge protection.

**Soft Edges** refer to natural soil edge where the slope profile runs into the water with no protective barrier into the water with no protective barrier for wash and wave action.

**Promontory** refers to localised variations in the shoreline that allow the promenade to extend onto the 5m wide submerged bench. It is to facilitate for additional edge variation and to allow better access to deeper water for fishing.



**Figure 10.12**  
**Lake Edge Designation**

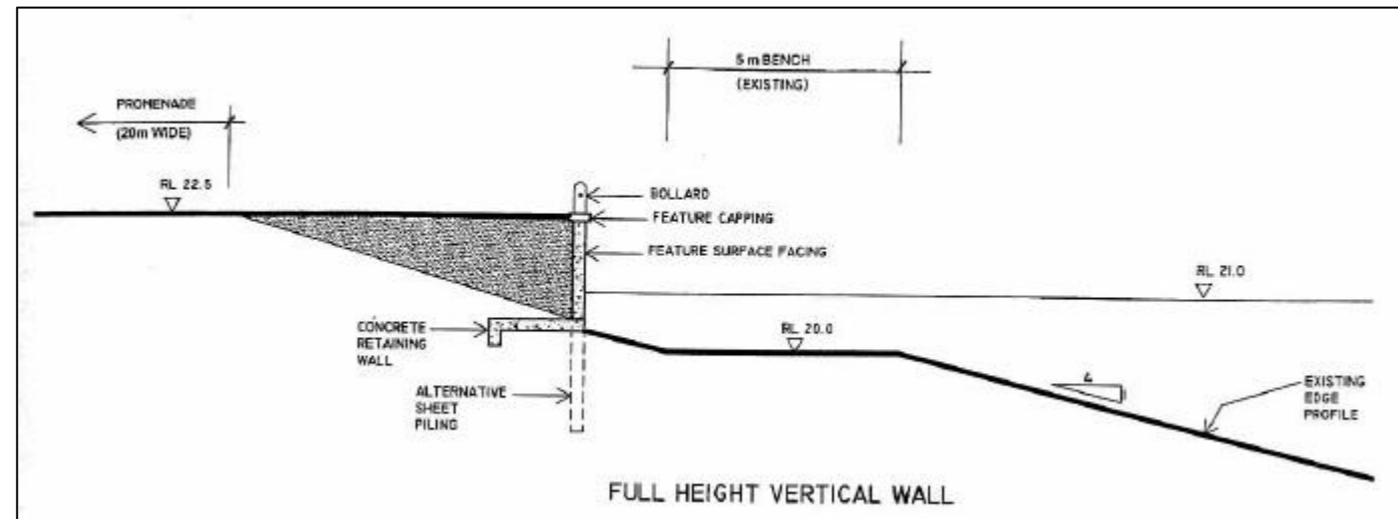
## LAKE EDGE TREATMENT

- Edge treatment of the promenade shoreline shall conform to specific edge designations as shown in **Figure 10.12**.

## FORMAL EDGE TREATMENT

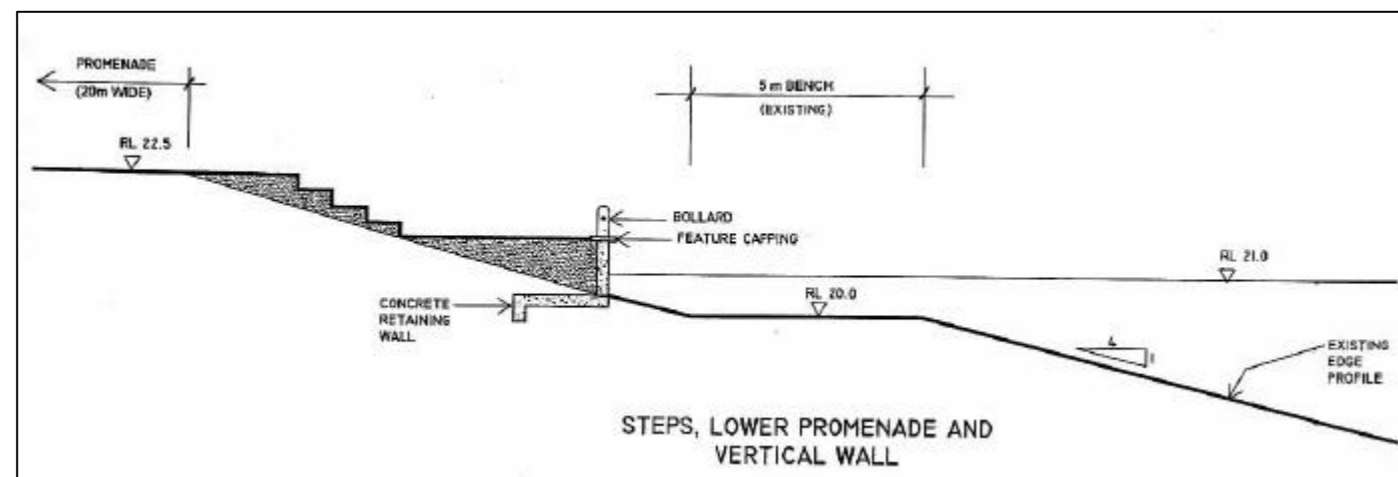
- Where Formal Hard Edges are designated, the any of the following shall be applied: -

- i. Full height vertical edge walls, (**Figure 10.13**)
- ii. Low height formal edge walls, (**Figure 10.14**)
- iii. Stepped and terrace edge walls, or (**Figure 10.16**)
- iv. Particular vertical wall requirements applicable to ferry, tour boat, cruise boat and casual moorings.



**Figure 10.13**

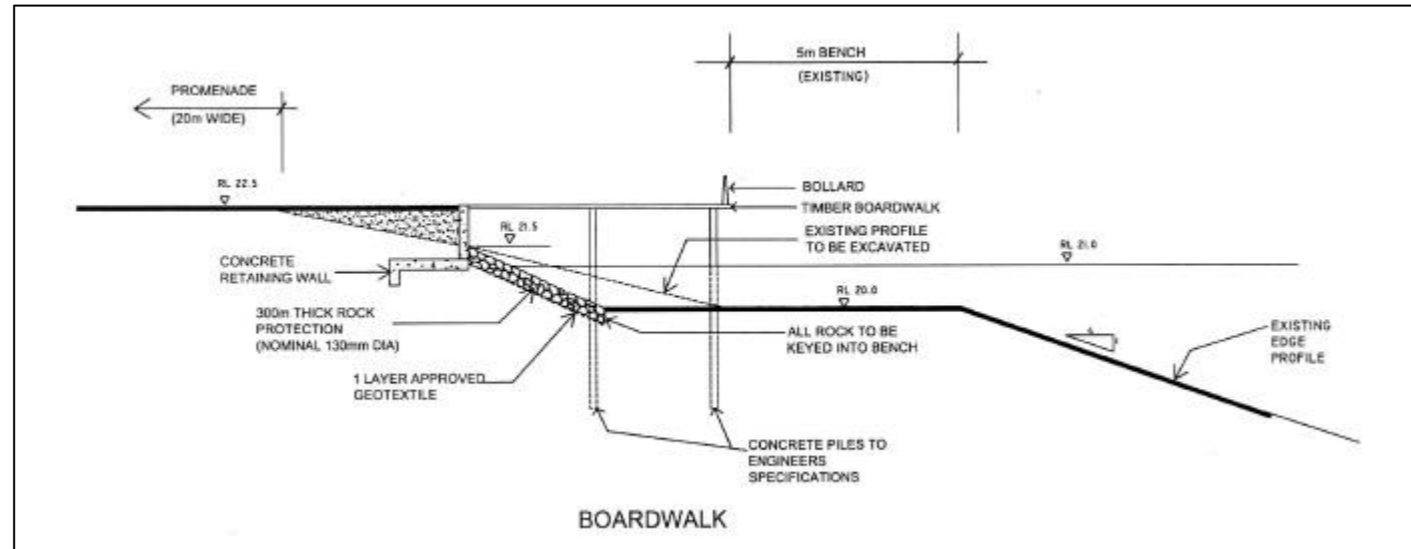
**Typical Formal Edge Treatment - Full Height Vertical Wall**



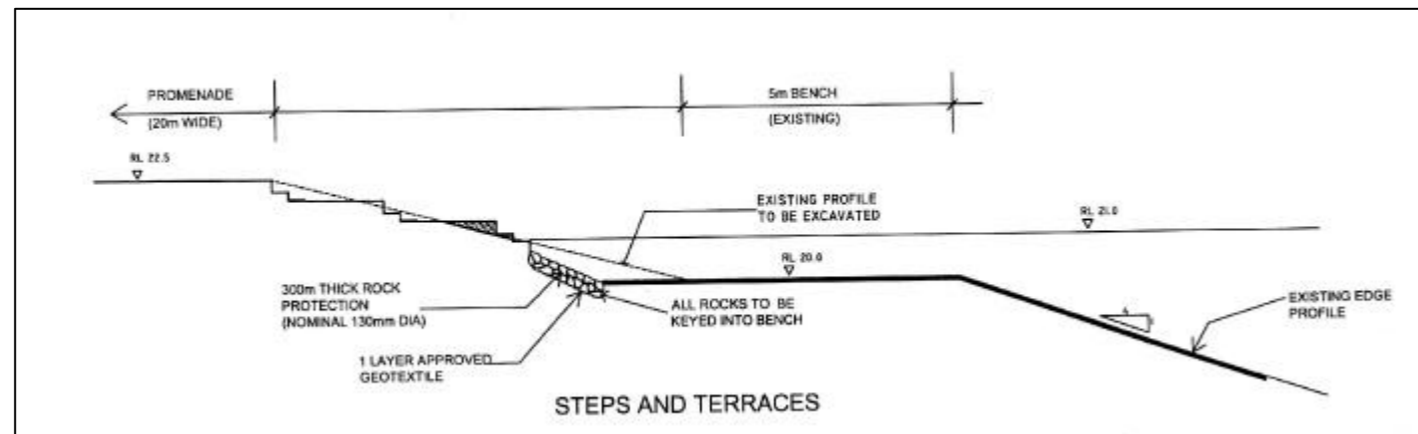
**Figure 10.14**

**Typical Formal Edge Treatment - Steps, Lower Promenade and Vertical Wall**

## FORMAL EDGE TREATMENT

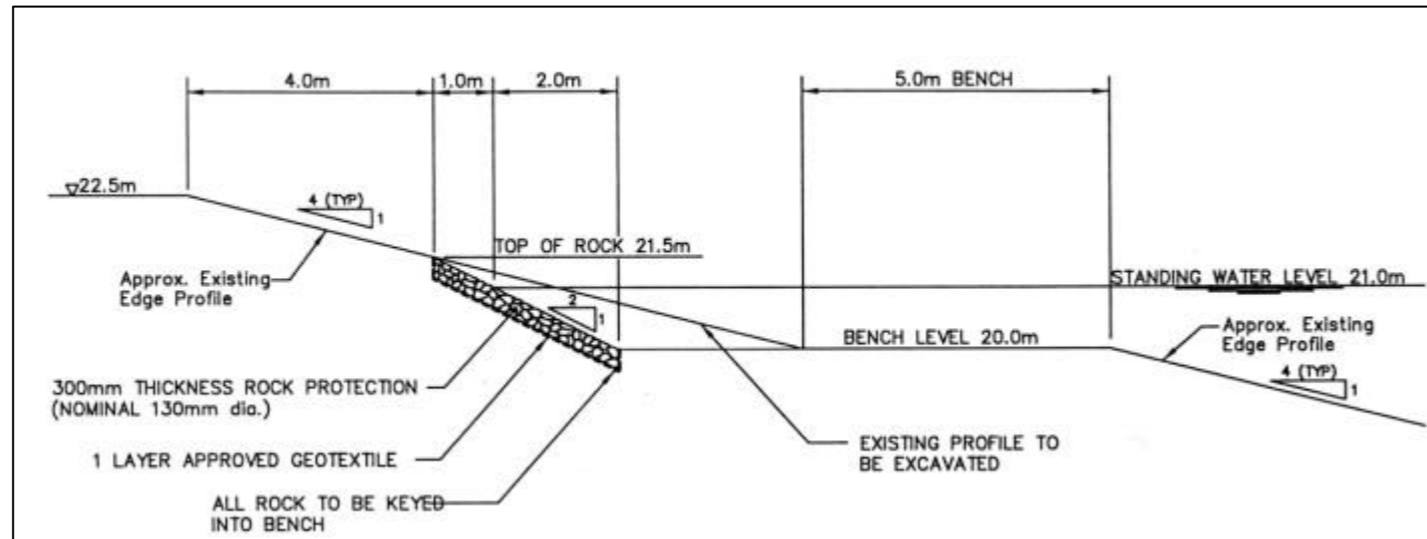


**Figure 10.15**  
**Typical Formal Edge Treatment – Boardwalk**

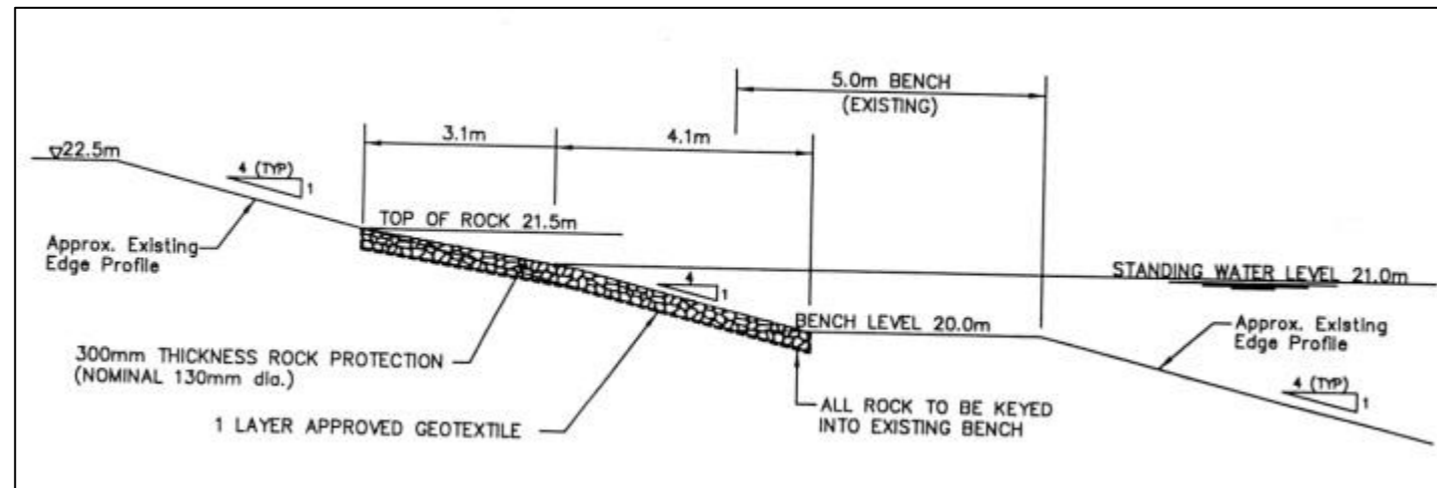


**Figure 10.16**  
**Typical Formal Edge Treatment – Steps and Terraces**

## LAKE EDGE ROCK REVETMENT

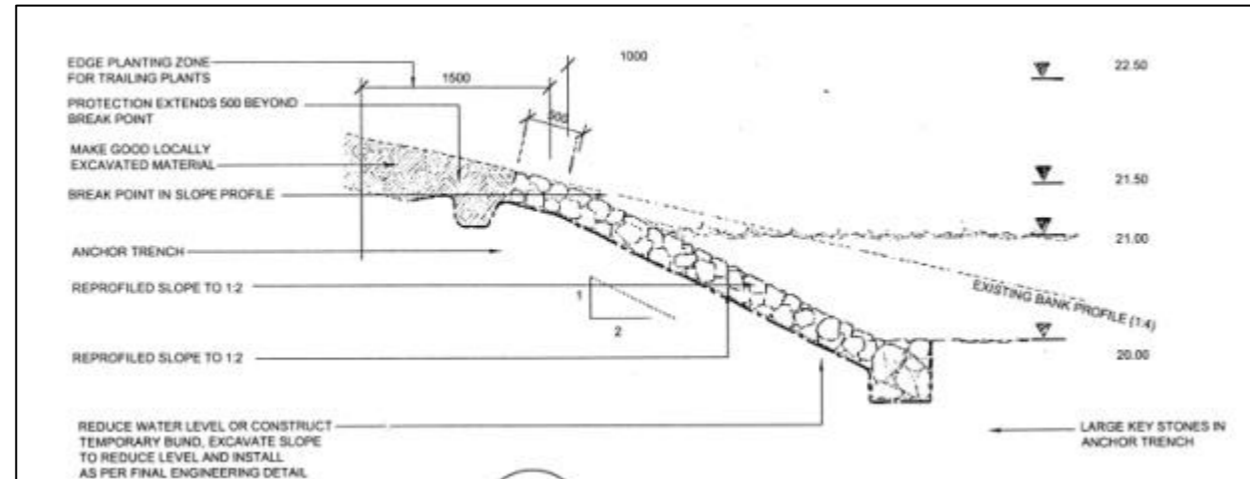


**Figure 10.17**  
**Typical Basic Rock Revetment Profile - Type A**

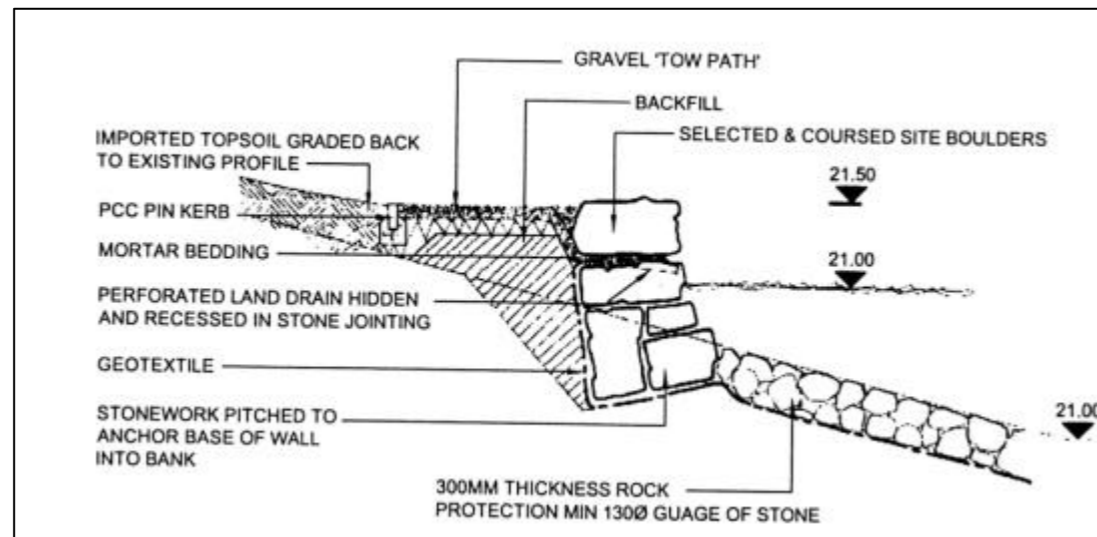


**Figure 10.18**  
**Typical Basic Rock Revetment Profile - Type B**

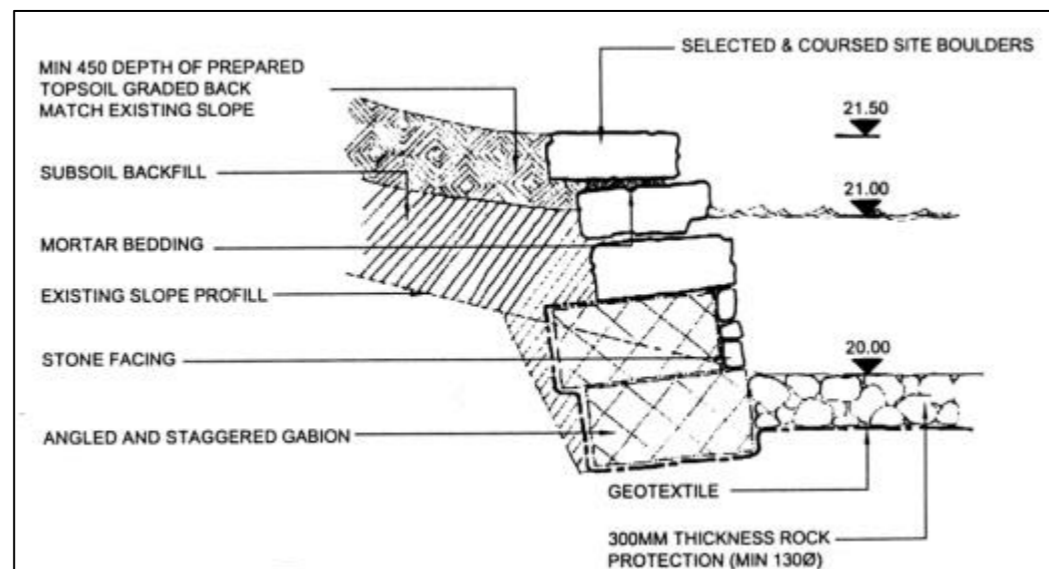
- Type A is the preferred rock revetment profile. It is planned as an economical solution that minimizes horizontal and lateral visual impact of the exposed revetment surface.
- Reverted slope gradients flatter than 1:2 to the maximum allowable Type B profile may be considered where dictated by site conditions and construction economics. See **Putrajaya Lake Use and Navigation Master Plan and Lake and Wetland Emergency Response Plan** for details.



**Figure 10.19**  
**Protected Edge - Minimum Standard Treatment**

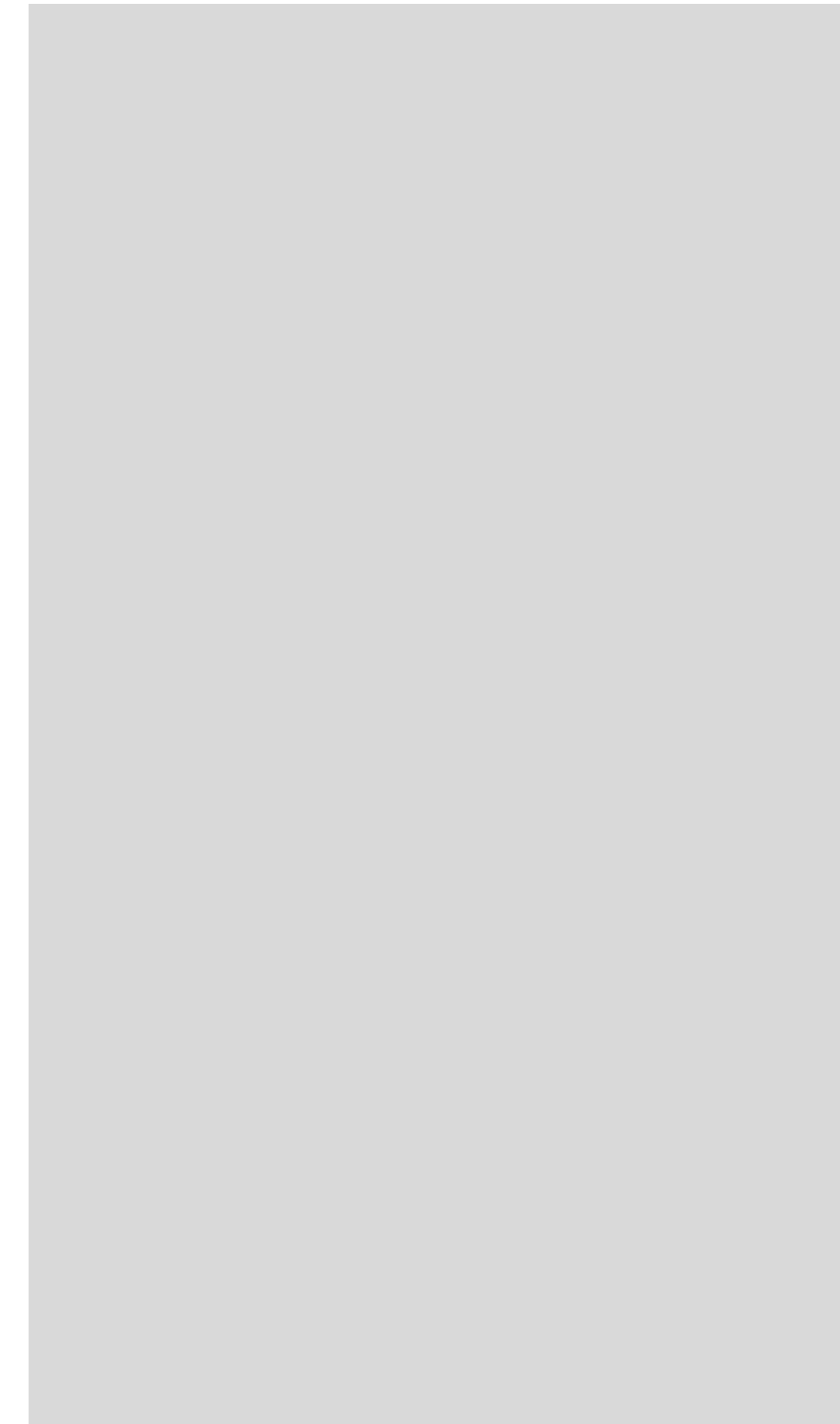


**Figure 10.20**  
**Protected Edge - Localised Variation 1**



**Figure 10.21**  
**Protected Edge - Localised Variation 2**

PROTECTED EDGE



SOFT EDGE

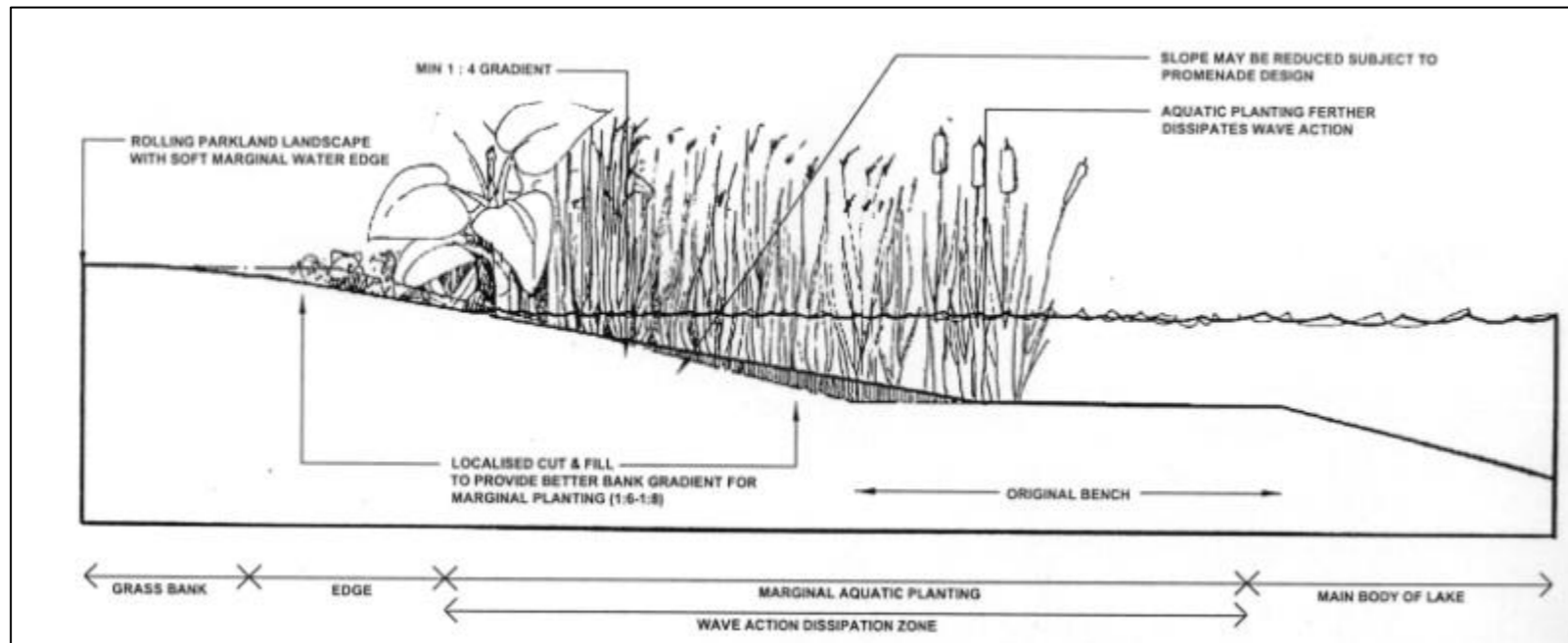


Figure 10.22  
Soft Edge - New Edge Construction

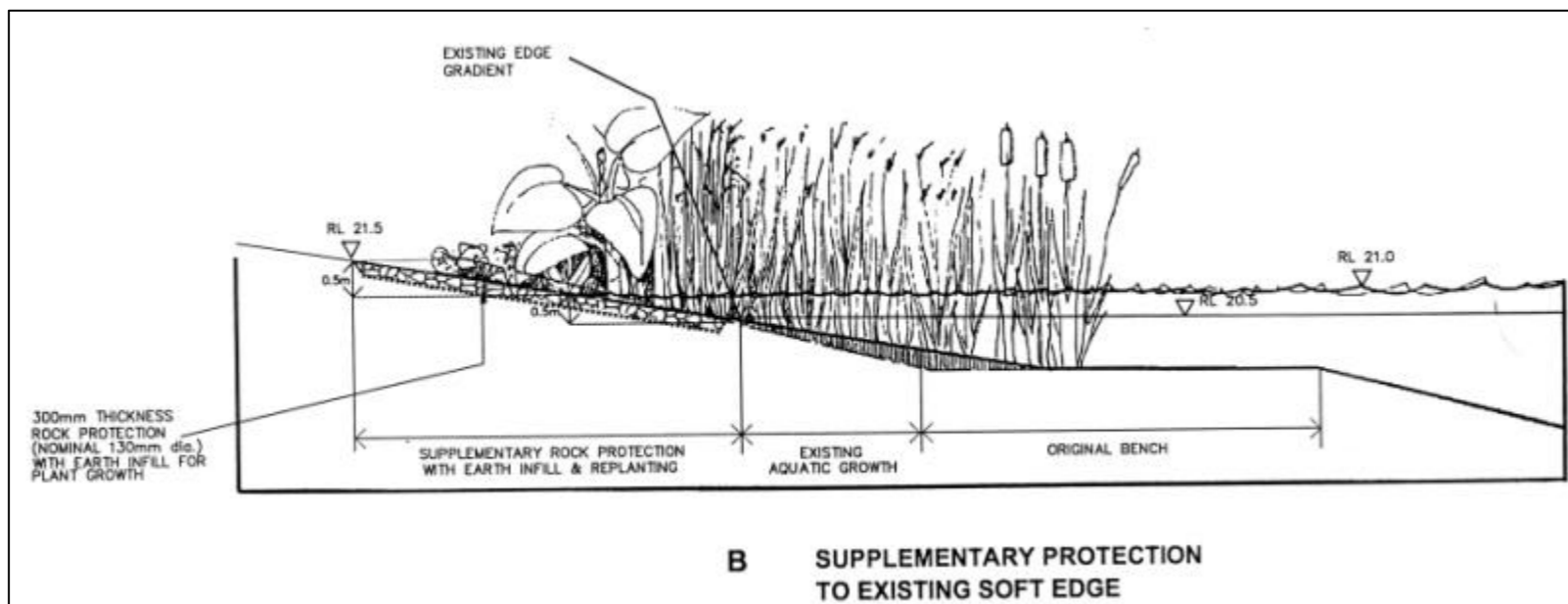
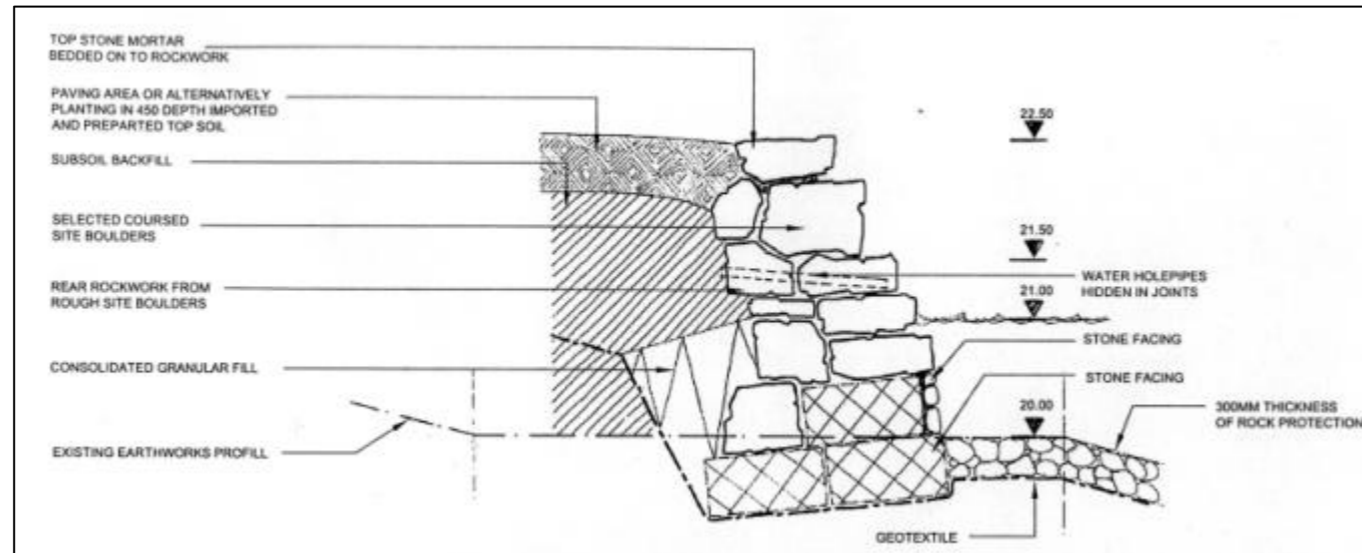
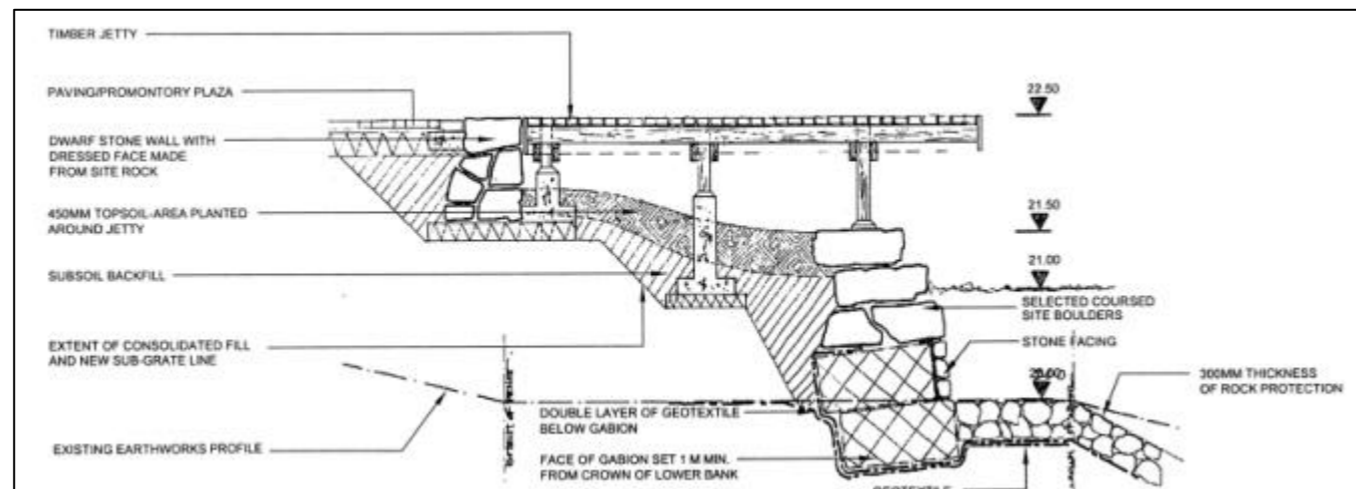


Figure 10.23  
Soft Edge - Supplementary Protection To Existing Soft Edge

## PROMONTORY



**Figure 10.24**  
**Promontory**



**Figure 10.25**  
**Promontory - Fishing Jetty**

## 10.5 ENVIRONMENTAL CONSIDERATIONS

Environmental consideration with regard to promenade, lake edge and water bodies are related closely to activities on the promenade and in the Putrajaya Lake, which is considered as one of the environmental sensitive areas within the Local Plan area.

Activities in and around the lake should conform to the guidelines set out in this Manual and other guidelines or regulations already in existence as follows: -

- i. Putrajaya Lake Use and Navigation Master Plan and Lake and Wetland Emergency Response Plan, 2001
- ii. Putrajaya Stormwater Management Design Guidelines, 1998
- iii. Irrigation Master Plan for Putrajaya, 2001
- iv. Manual Saliran Mesra Alam (MaSMA, 2000)
- v. Environmental Quality (Perbadanan Putrajaya)(Water Pollution Control) Regulations, 1998
- vi. Environmental Quality (Control of Emissions From Diesel Engines) Regulations 1996
- vii. Environmental Quality (Control of Emissions From Petrol Engines) Regulations 1996.

## ENVIRONMENTAL CONSIDERATIONS

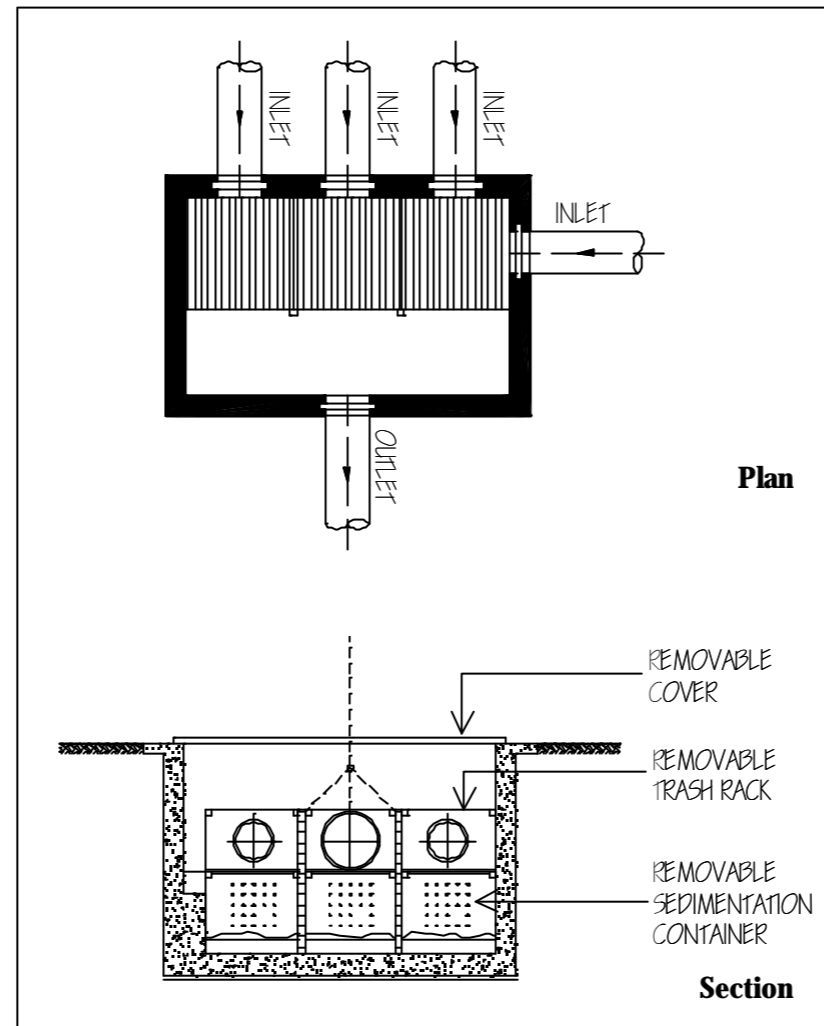
### **Discharge into Putrajaya Lake**

- Discharges into the Putrajaya Lake from land or water based activities should comply to the Environmental Quality (Perbadanan Putrajaya)(Water Pollution Control) Regulations, 1998 and comply with standards as indicated in **Table 10.1**.

**Table 10.2 Putrajaya Lake Ambient Water Quality Standards and Standard for Discharge into Lake Area**

Parameters	Unit	Putrajaya Ambient Lake Water Quality Standards	Standard for discharge into the lake area or onto land
<b>Temperature</b>	°C		<b>38</b>
pH		6.5-9.0	6.0-9.0
BOD	mg/l	3	10
COD	mg/l	25	30
Suspended solids	mg/l	50	50
Mercury	mg/l	0.001	0.001
Cadmium	mg/l	0.005	0.01
Hexa-Chromium	mg/l	0.05	0.05
Arsenic	mg/l	0.05	0.05
Cyanide	mg/l	0.02	0.02
Lead	mg/l	0.05	0.05
Tri-Chromium	mg/l	-	0.20
Copper	mg/l	1.0	0.10
Manganese	mg/l	0.1	0.20
Nickel	mg/l	0.02	0.20
Tin	mg/l	0.05	0.20
Zinc	mg/l	5	1.0
Boron	mg/l	1	1.0
Iron	mg/l	0.3	1.0
Phenol	mg/l	0.01	0.001
Free Chlorine	mg/l	-	1.0
Sulphide	mg/l	-	0.5

- Input into the lake shall be controlled through direct measures such as structures or traps and also through indirect measures using landscape features.



**Figure 10.26**  
**Typical Example of GPT**

## ENVIRONMENTAL CONSIDERATIONS

- Gross Pollutant Trap (GPT) shall be installed at locations as specified in the Local Plan to trap floating materials in the water before entering the lake.
- No discharge of any substances such as organic or inorganic solvents refuse, garbage or solid waste shall be allowed into the lake.

### **Noise Control**

- Noise generated from boating activities in the lake shall not disturb the peace of the public and residents around the lake. Noise from boats should be measured and limited as follows:-
  - i. Maximum allowable offshore noise is 75 dB(A) measured at any distance from the shoreline.
  - ii. Maximum idling noise, measured between 1 to 2 metres from the boat, should not exceed 88 dB(A).
  - iii. An approved sound level meter should be used to measure the boat noise levels.
- Boats should adopt noise reduction design features such as:-
  - i. Mufflers fabricated from marine materials for exhaust noise
  - ii. Air cleaners in conjunction with intake mufflers for intake noise.
  - iii. Use of enclosure to confine engine noise.
  - iv. Use of damping materials to treat mechanical noise.
  - v. All access panels and plumbing must be properly gasketed and secured.
  - vi. All vents must be provided with acoustical traps for maximum effectiveness.

### **Air Quality**

- Emissions from marine engines should comply with the standards of air emissions for diesel and petrol engines as prescribed in the **Environmental Quality (Control of Emissions From Diesel Engines) Regulations 1996** and the **Environmental Quality (Control of Emissions From Petrol Engines) Regulations 1996**

# 11.0 CIRCULATION

## 11.0 USE

This guideline shall be used for all developments located within the Local Plan area of Precincts 7, 8, 9 and 10, Putrajaya.

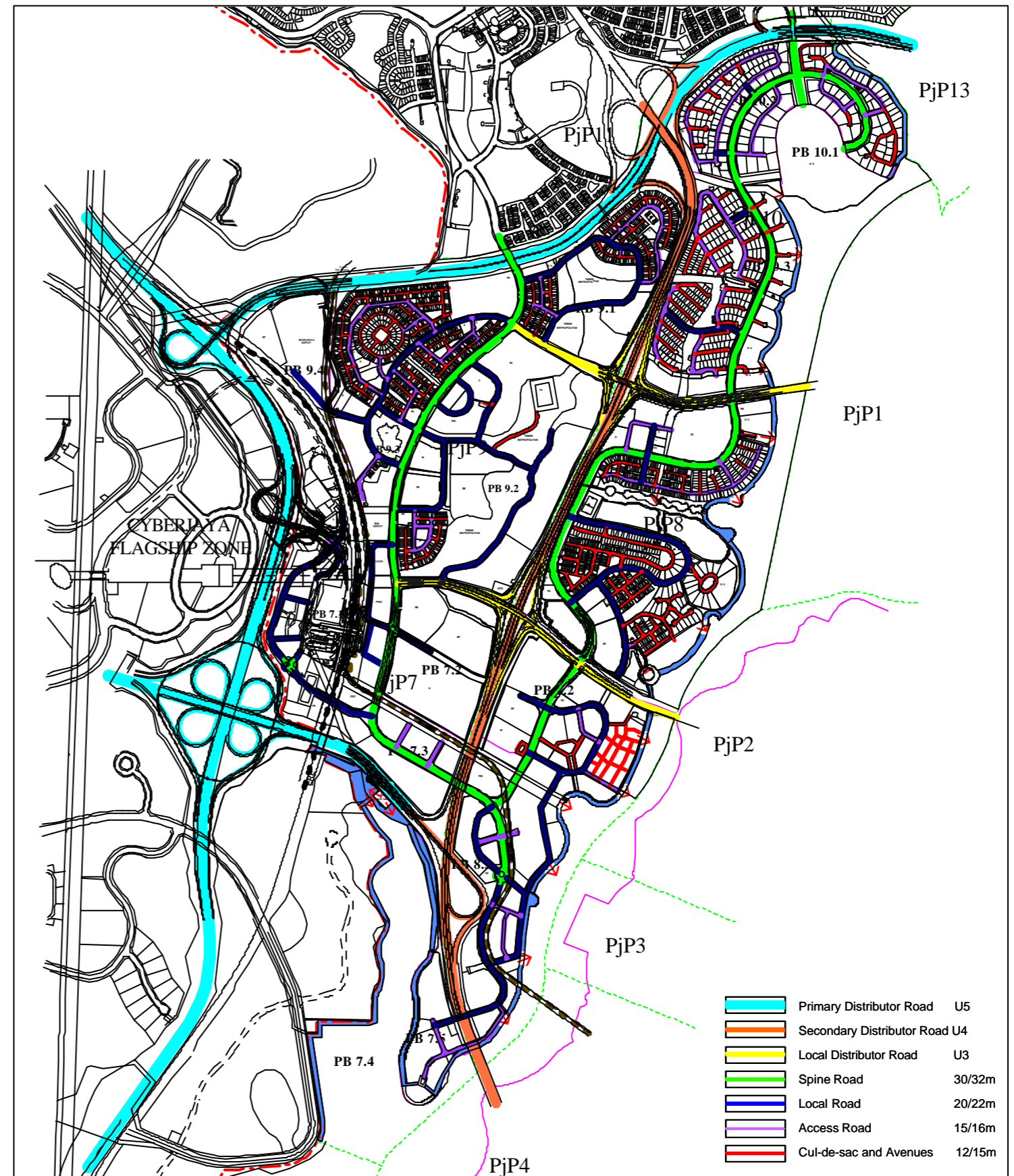
## 11.1 ROADS

### 11.1.1 Road Hierarchy

**Hierarchy** is the organization of a road system into higher and lower ranks.

Within the Local Plan area, the road hierarchy is organized as the following: -

- Primary Distributor Road
- Secondary Distributor Road
- Local Distributor Road
- Spine Road
- Local Road
- Access Road
- Avenues And Cul-De-Sacs



**Figure 11.1**  
**Road Hierarchy**

**Primary Distributor** is the highest hierarchy of road in the Local Plan area. Its primary function is to provide strategic linkage between longer distant urban area or from expressway to urban area. This is a dual carriageway road with a 70 meters road reserve. This is the only road where provision for motorcycle lane is required.

**Secondary Distributor** is the third ranking road after Expressways and Primary Distributor in terms of hierarchy in the Putrajaya Road Network. It is a 6 lane highway with a road reserve of 65 metres. It distributes traffic from other primary routes within Putrajaya to precincts in the Local Plan area.

**Local Distributor** is the fourth ranking road classification in terms of hierarchy in the Putrajaya Road Network. It is a 6-lane highway with reserve of 50 metres. It provides link into local road network.

**Spine Road** is the fifth ranking road classification in terms of hierarchy in the Putrajaya road network. It is the main route serving neighbourhoods and normally be used as the main route for bus services. It is a dual two lane carriageway road with reserve of 32 metres.

**Local Road** is the sixth ranking road in the Putrajaya Road Network. It has a reserve of 22 metres and serves to connect spine road to access and service roads.

**Access Road** is road that provides circulation to residential area or other developments and normally carries traffic from local road into individual development pockets.

An **avenue** is road that is used outside the building lots to enter, drop off and pick up as well as parking. It provides circulation within residential estates or other developments and normally handles low traffic volume.

**Cul-de-sac** is road that provides access to individual buildings and does not normally carry through traffic. It normally creates a relatively secure and safe environment particularly if located within residential areas.

The primary distributor, also known as The Putra Link is located to the west of Local Plan area where it links to the upgraded B15 road.

The secondary distributor runs north-south and dissect at the middle of the Local Plan area.

Spine road provides linkages between Precincts 7, 8, 9 and 10 and brings local residents to the higher level of roads and access to the other Precincts.

## ROAD HIERARCHY

- Road network of individual development schemes within the Local Plan area shall be planned and developed to follow the road hierarchy as indicated in **Figure 11.1**. At design stage, it is important that designers and developers take note of this hierarchy to ensure that the correct road type is selected for specific location and that adequate reserve as well as other technical and design requirements are provided for.

**11.1.2 Road Network**

Road network within the Local Plan area are categorised into two types; the Strategic Network and the Local Network.

**i. Strategic Network**

These are the long distance inter-precinct road such as expressway, primary distributor, secondary distributor and local distributor. Planning, design and development of these strategic networks shall follow JKR standard and conform to specific requirements as adopted in **Transport Design Guide for Putrajaya, 1998**.

**ii. Local Network**

These are the roads serving a more localised catchments such as residential and commercial. These roads are spine road, local road, access road, avenues and cul-de-sac; the detailed guideline of which will be covered in this manual.

STRATEGIC ROAD

- Design and development of strategic roads shall conform to specific requirement as specified in the **Transport Design Guide for Putrajaya, 1998** Refer Transport Design Guide for Putrajaya, 1998.

**Table 11.1 Typical Character of Strategic Road**

Hierarchy	Reserve	No of Lanes	Carriageway	Median	Walkway, Drain and Utility Reserve
Primary Distributor	70m	6	10.5m	4m	19m
Secondary Distributor	55m	6	10.5m	3m	13m
Local Distributor	50m	6	10.5m	2.5m	11m

## 11.1.3 Road Character

**Character** is the suitability of a road as a setting for pedestrian activities and as a location for a variety of building types. It is physically manifested by associated buildings and frontages that align a particular section of the road. The associated terminology for character is **streetscape**. See also streetscape.

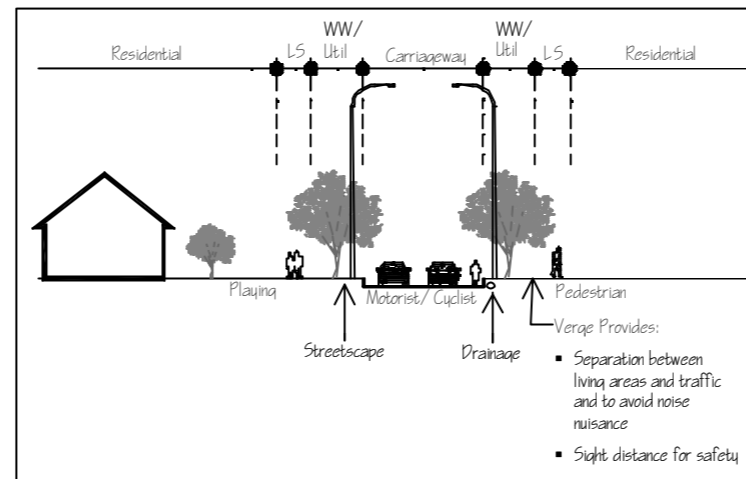
Road character depends on the area it serves. For the purpose of this manual the character of roads are divided into :-

- Residential Street
- Commercial Road

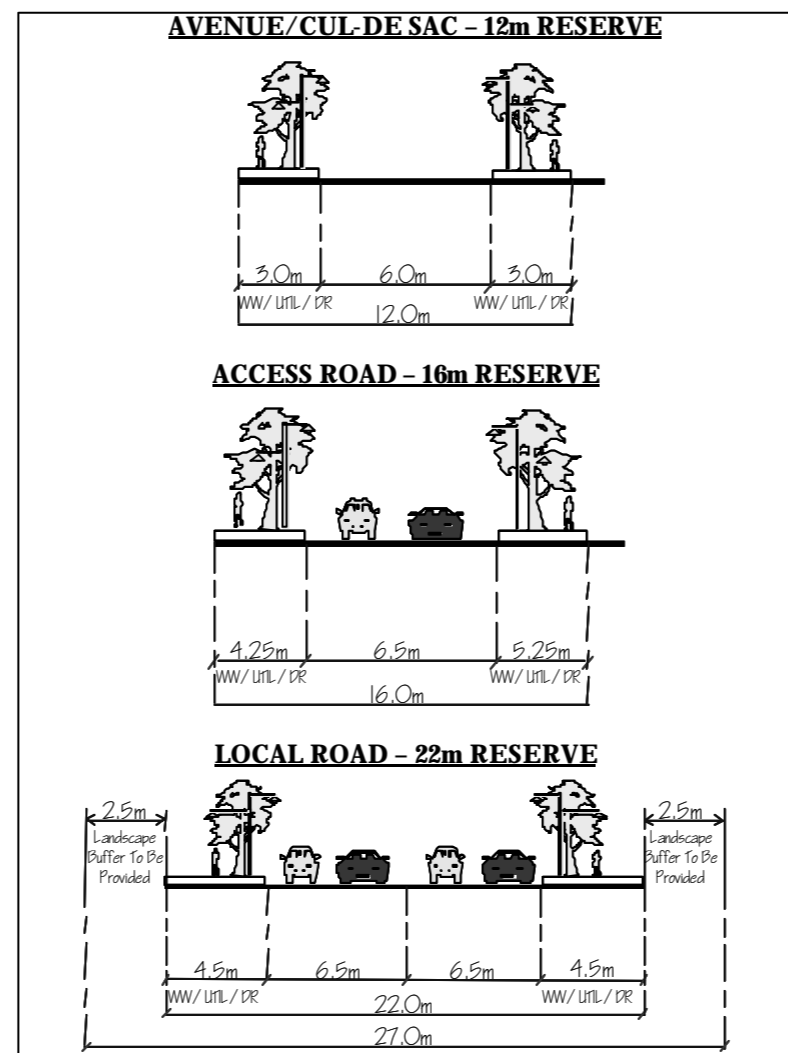
### i. Residential Street

**Residential streets** are streets in residential areas which serve a number of functions :-

- Access to residences
- Parking for visitors vehicles and overspill of residents vehicles
- Social and activity space for neighbours to interact and children to play
- Setting and approach for residences located on it, desirably with high aesthetic and amenity quality
- Stormwater drainage path
- Service location for utility to residences



**Figure 11.2**  
**Function of A Residential Street**



**Figure 11.3**  
**Typical Section of Residential Streets**  
Source: Transport Design Guide For Putrajaya, 1998

## RESIDENTIAL STREET

- Planning for street within the residential area shall aim to establish a street network that provides convenient linkages to activity centres and local facilities either within or adjoining the development.
- The design of residential street shall aim for the following:-
  - Fulfil their designated functions within the street network and hierarchy
  - Accommodate public utility services and drainage system
  - Provide acceptable level of safety and convenience for all street users in residential areas
  - Minimising the negative impact of through-traffic
- Design of residential street shall provide for requirements and criteria as shown in **Table 11.2**. Traffic on these streets should be subservient, speed and volume are low, and pedestrian and cyclist movements are facilitated. Vehicle speed should be controlled by manoeuvring the street alignments and avoiding through traffic and employing various traffic calming devices.

**Table 11.2** Typical Character of Residential Streets

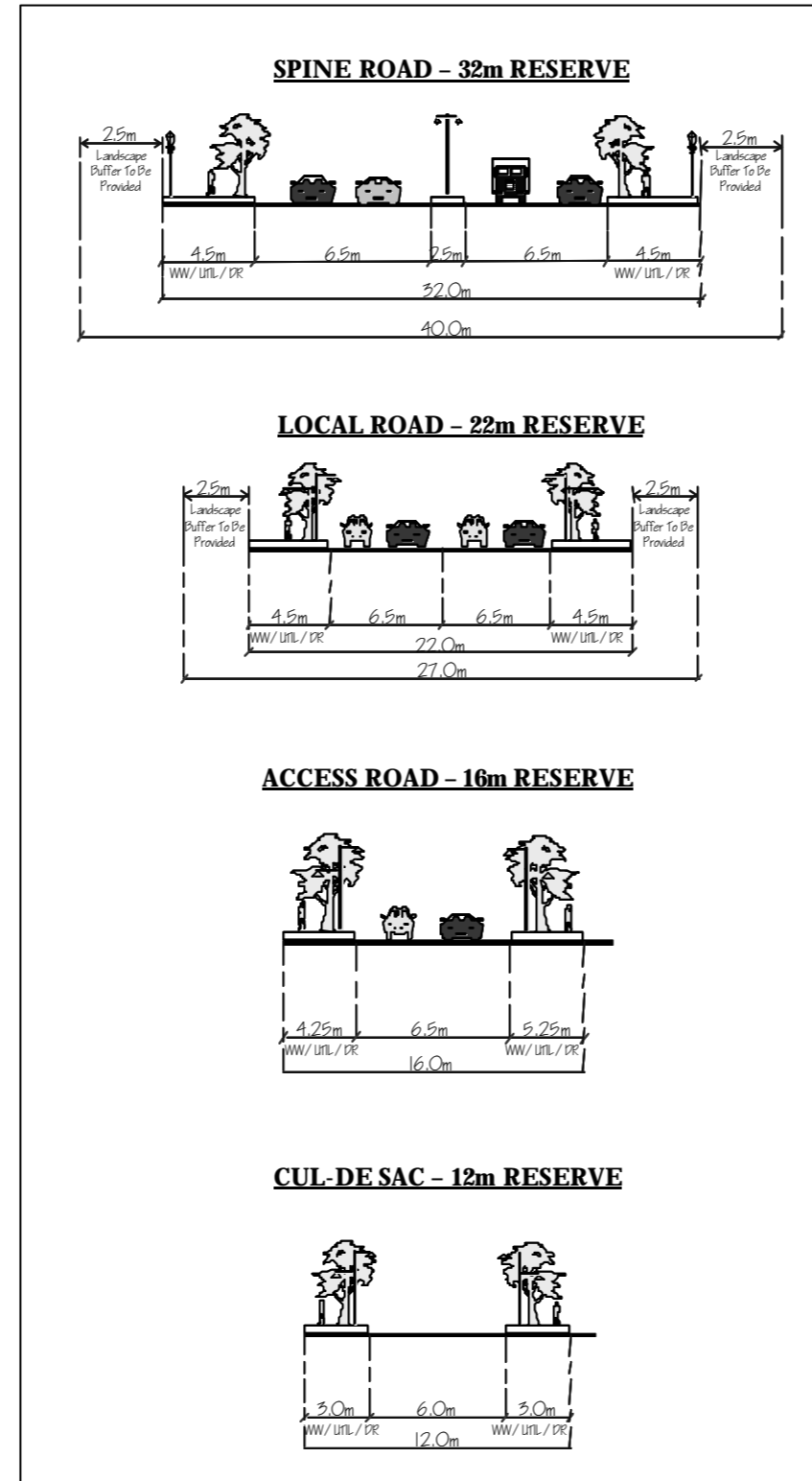
Hierarchy	Reserve	No. of Lanes	Carriageway	Median	Walkway, Drain and Utility Reserve
Local Road*	22m	4	6.5m	-	4.50m
Access Road	16m	2	6.5m	-	4.75m
Cul-de-sac and Avenues	12m	2	6.0m	-	3.0m

\* 2.5 Landscape buffer shall be provided on both sides

## ii. Commercial Road

**Commercial Roads** are roads that serve traffic within commercial areas.

In the context of Precinct 7, 8, 9, & 10 Local Plan areas, these roads are to be adopted for **PB7.1, PB7.3 and PB8.3**. They normally carry higher volumes of traffic.



**Figure 11.4**  
**Typical Section of Commercial Roads**  
Source: Transport Design Guide For Putrajaya, 1998

## COMMERCIAL ROAD

- Roads located within **PB7.1, PB7.3 and PB8.3** in the Local Plan area shall typically be constructed to have the characteristics as indicated in **Table 11.3** below.

**Table 11.3** Typical Character of Commercial Roads

Hierarchy	Reserve	No of Lane	Carriage way	Road Divider/ Median	Walkway, Drain and Utility Reserve
Spine road	32m	4	7.0m	2.5m	7.75m
Local Road	22m	4	6.5m	-	4.5m
Access Road	16m	2	6.5m	-	4.75m
Avenue	12m	2	6.0m	-	3.0m
Service Road	6m	2	6.0m	-	0.6m
Back lane/ Side Lane	6m	2	6.0m	-	0.6m

#### 11.1.4 Junctions

A **junction** or intersection is formed when two or more roads, cross or meet. Junctions or intersections can be classified as grade separated or at-grade or partially grade separated.

Grade separated or partially grade separated junctions are normally reserved for strategic roads (i.e. Expressways, Primary Distributors, and Secondary Distributors), while at-grade or partially grade separated are normally for lower tier road (i.e. Local Distributor, Spine Road, Local Road and Access Road).

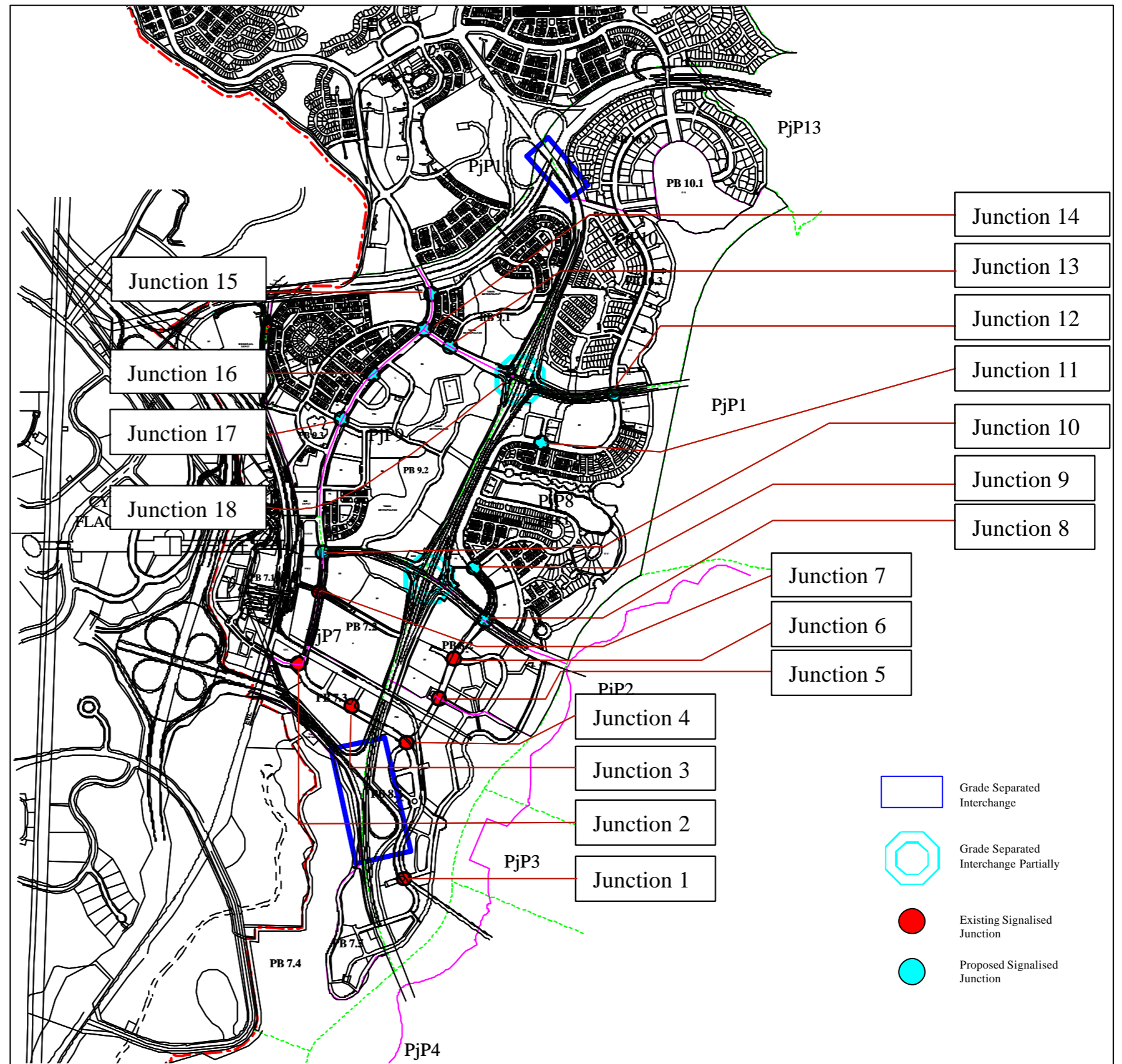
Further classification for at-grade junctions or partially grade separated junctions can be categorised as follows:-

- a. Signalised Junctions;
- b. Roundabouts; and
- c. Priority Junctions.

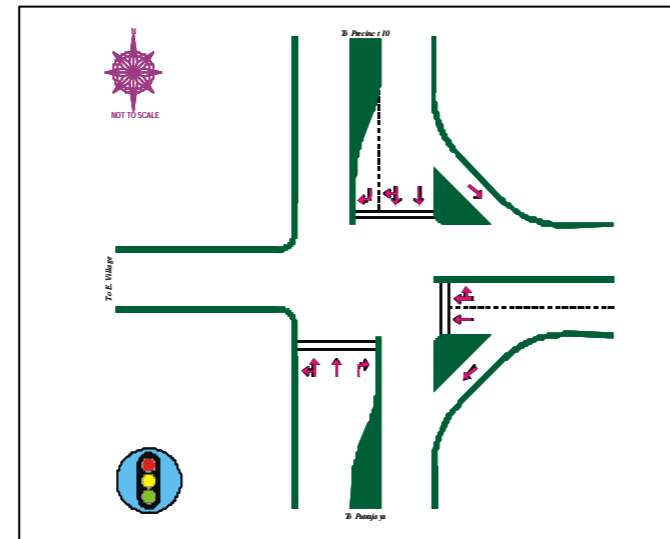
Proper junction design is important in any road scheme, as the performance of the junctions will determine the efficiency of the surrounding road network. Various factors such as traffic volume, road type, environmental constraints including topography and nature of developments are involved in the design of junctions. In addition, cycle and pedestrians should also be considered in the design of junctions.

## JUNCTIONS

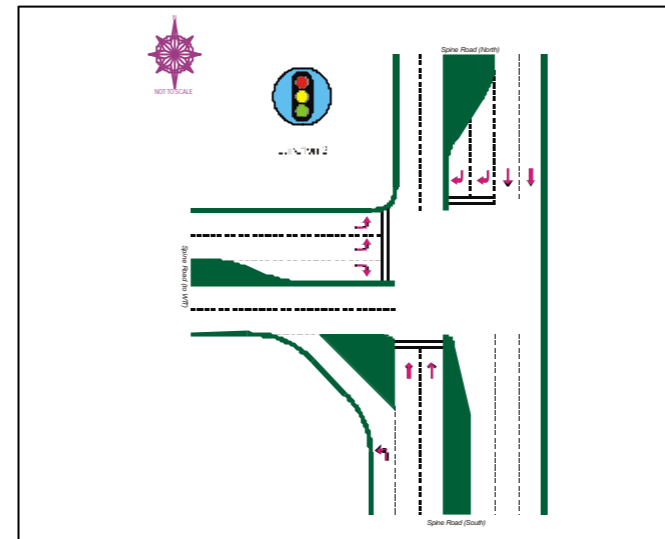
- The type of junction or form of control for a junction should be determined early in the design process, as this may have an influence on its land requirements. Normally, for the strategic roads, type of junctions are confirmed during a Masterplan Study whilst for the lower tier roads a Traffic Impact Assessment (T.I.A) study will look into the type of junction control in the study area.
- Junctions for roads located within the local plan area shall conform to types as indicated in **Figure 11.13 and Figure 11.14.**



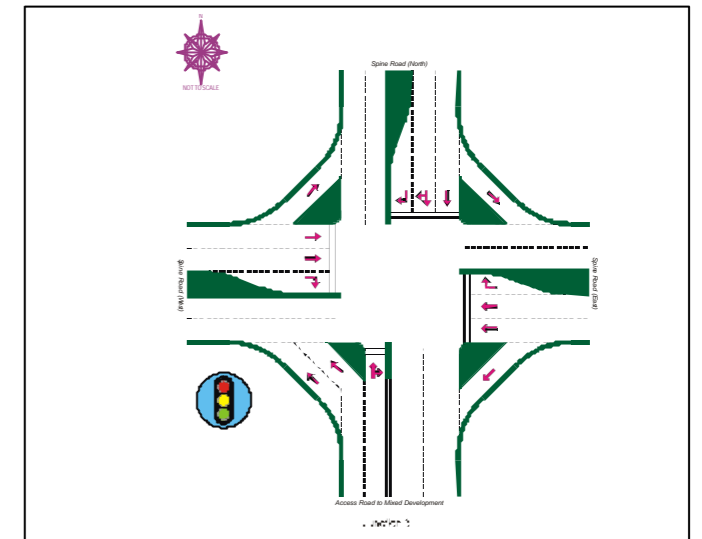
**Figure 11.5**  
**Key Plan For Junction Control Within Local Plan Area**



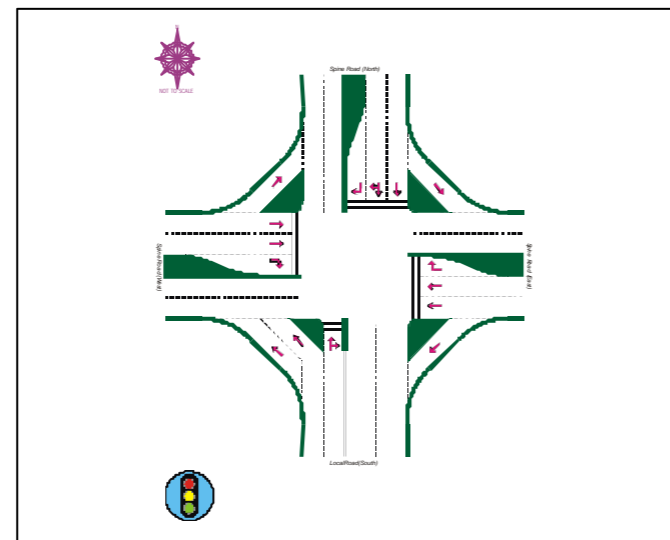
**Junction Control 1**



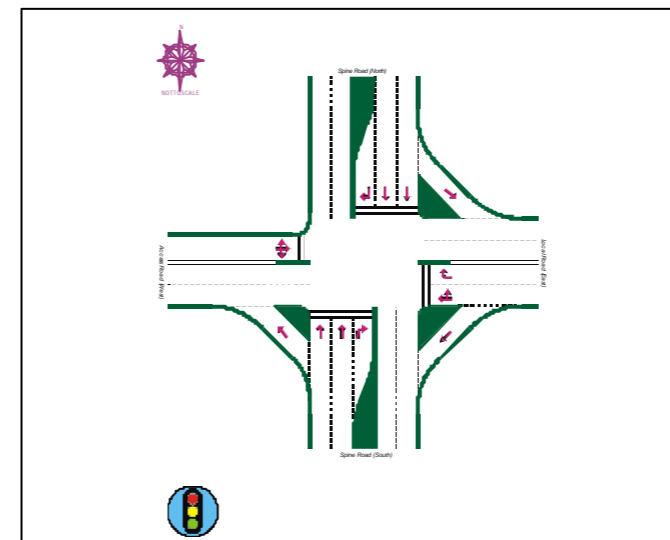
**Junction Control 2**



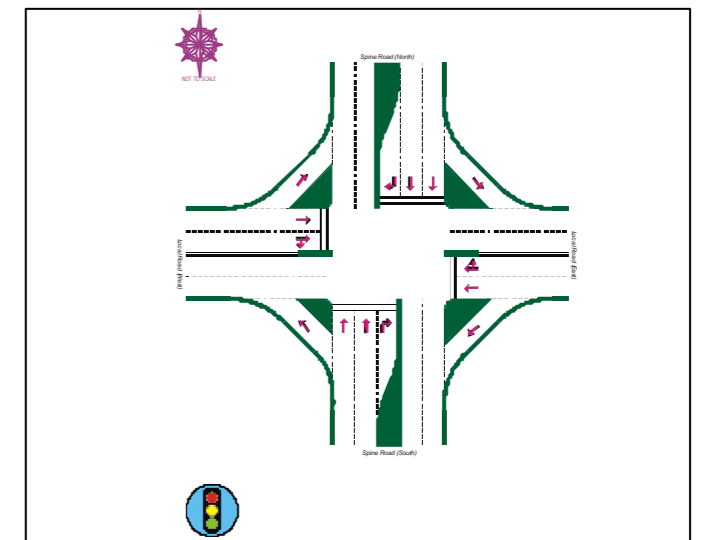
**Junction Control 3**



**Junction Control 4**

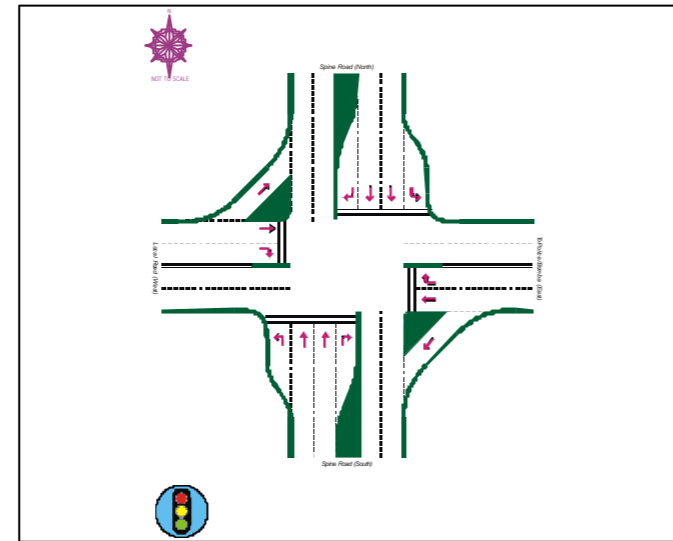


**Junction Control 5**

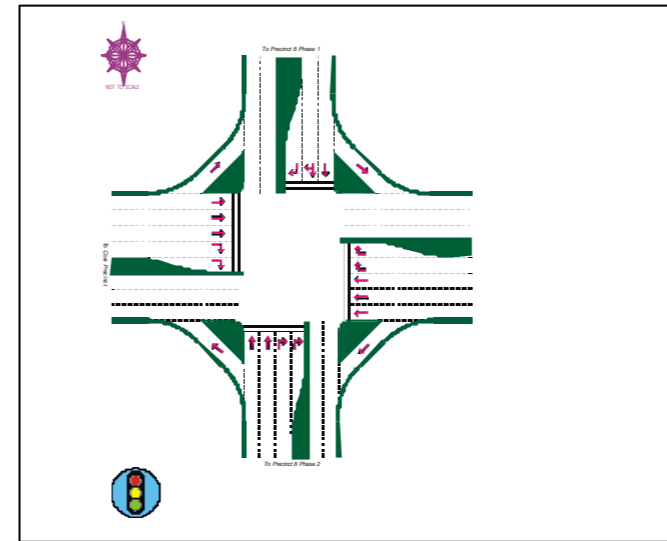


**Junction Control 6**

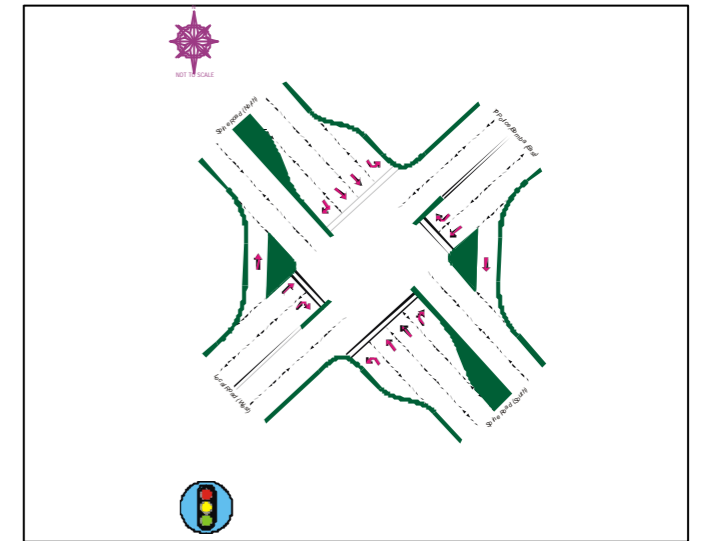
**Figure 11.6**  
**Junction Controls within Local Plan Area**



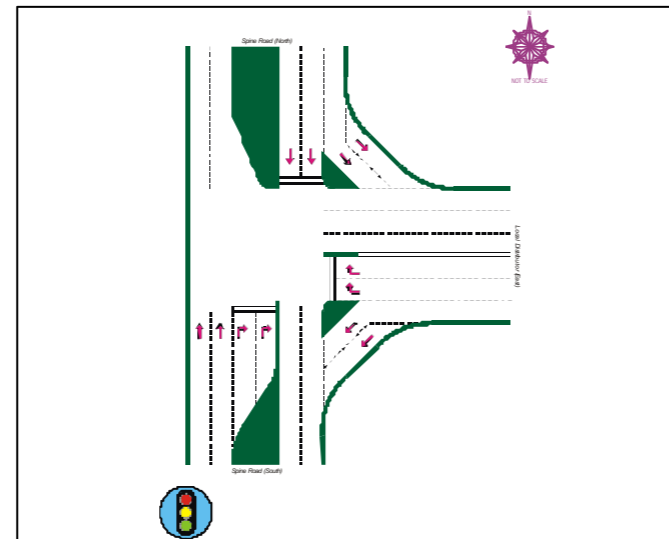
**Junction Control 7**



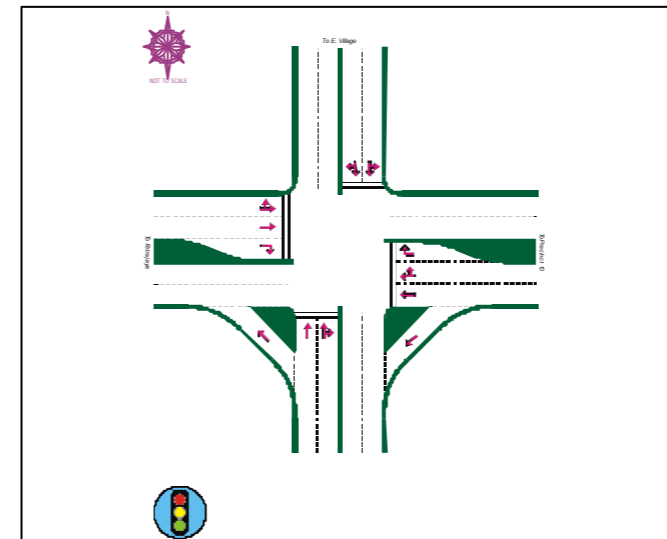
**Junction Control 8**



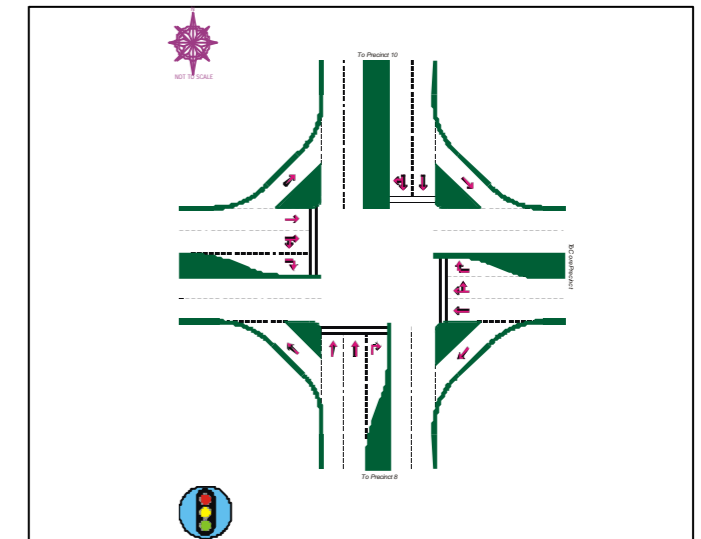
**Junction Control 9**



**Junction Control 10**

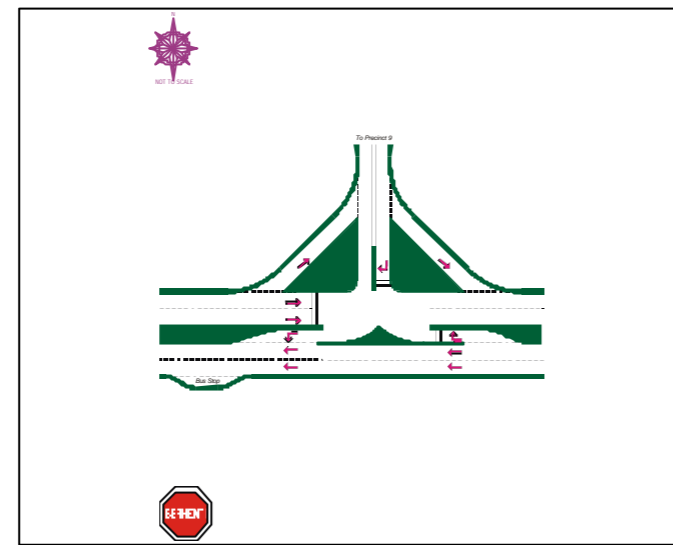


**Junction Control 11**

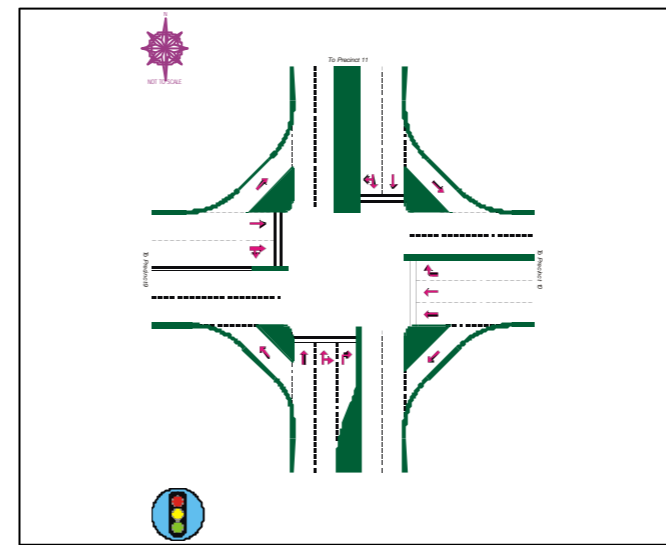


**Junction Control 12**

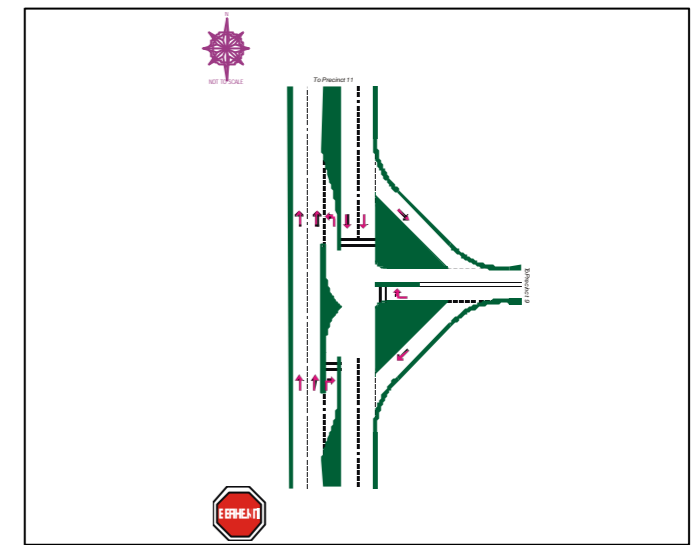
**Figure 11.6**  
**Junction Controls within Local Plan Area (Cont.)**



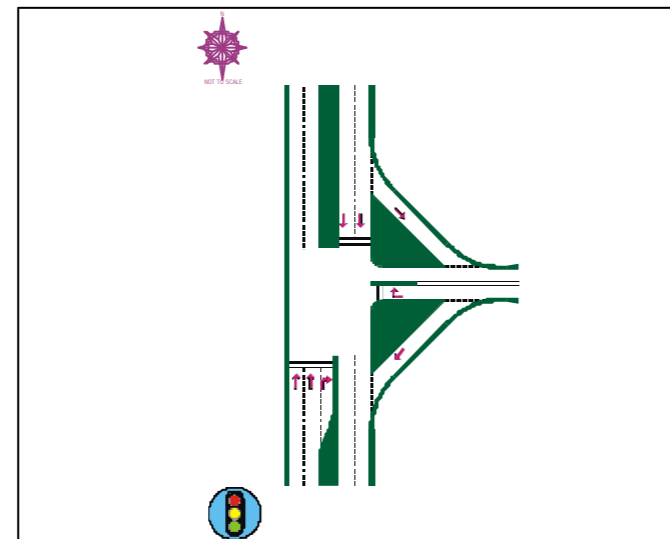
**Junction Control 13**



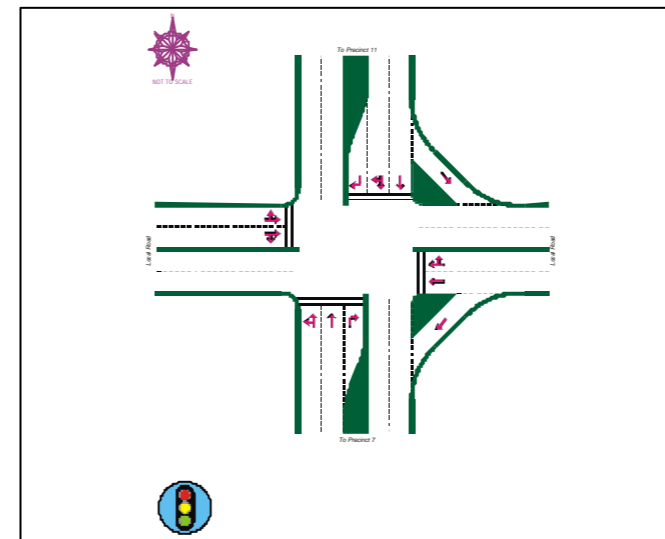
**Junction Control 14**



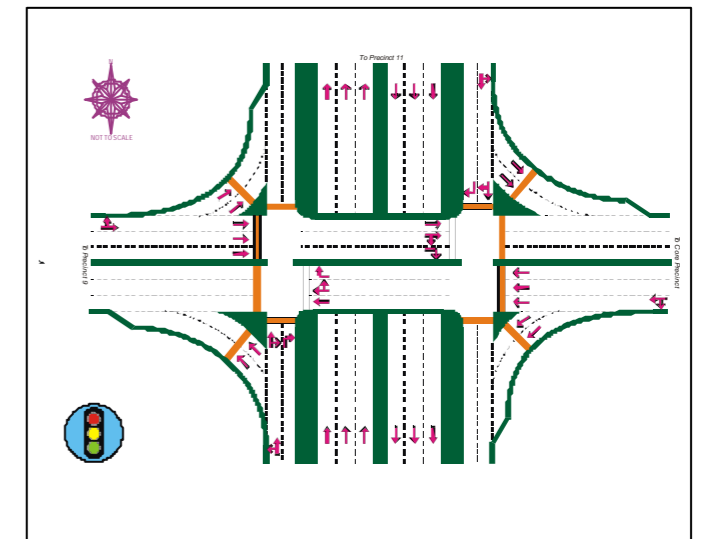
**Junction Control 15**



**Junction Control 16**



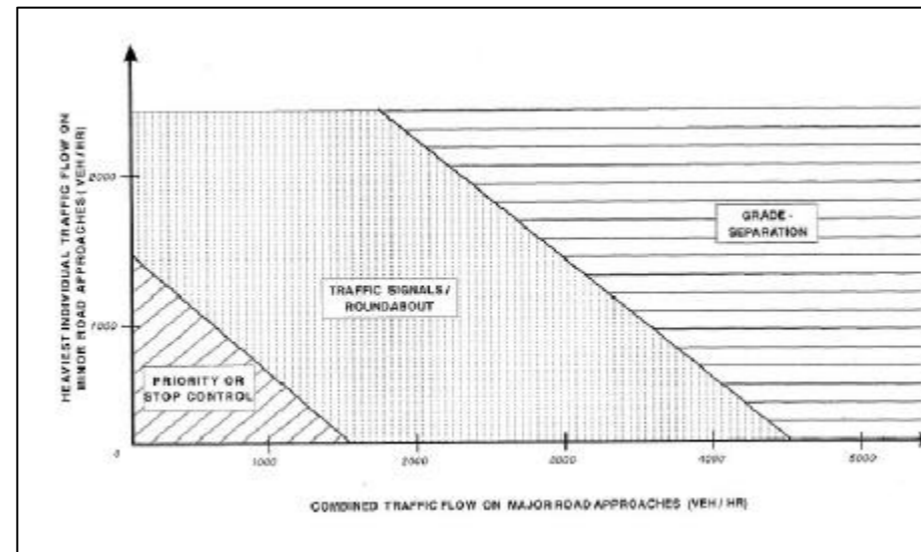
**Junction Control 17**



**Junction Control 18**

**Figure 11.6**  
**Junction Controls within Local Plan Area (Cont.)**

JUNCTIONS



**Figure 11.7**  
**Warrant For Junction Control Diagram**  
 Source: *Transport Design Guide for Putrajaya, 1998.*

- For road sections where junction type is not determined in this Manual, a detailed junction analysis is required to confirm the type of junction control, particularly the choice between signals and roundabouts and the design the junction layout itself (**Figure 11.16**).
- The following considerations should be taken into account during the design process.
  - a. The selection of junction type should follow **JKR Arahan Teknik 11/87 (Table 2-2A Selection of Intersection Type)**
  - b. Traffic signals should incorporate pedestrian crossing phasing wherever there is high volume of pedestrians that is expected to cross the junctions.
  - c. Roundabouts may be suitable where flows are relatively low and the approaches all have similar priority or where U-turning is required.
  - d. Priority control is only adequate at low traffic volume
- The detailed analysis and design of junctions should be undertaken using appropriate software packages such as, SIDRA (**S**ignalised and **U**nsignalised **I**ntersection **D**esign and **R**esearch **A**id), the TESS suite of softwares (ARCADY, PICADY, and OSCADY) produced by UK Transport Research laboratory (TRL). The results of the individual junction analyses should be reported in the Traffic Impact Assessment (TIA) report.

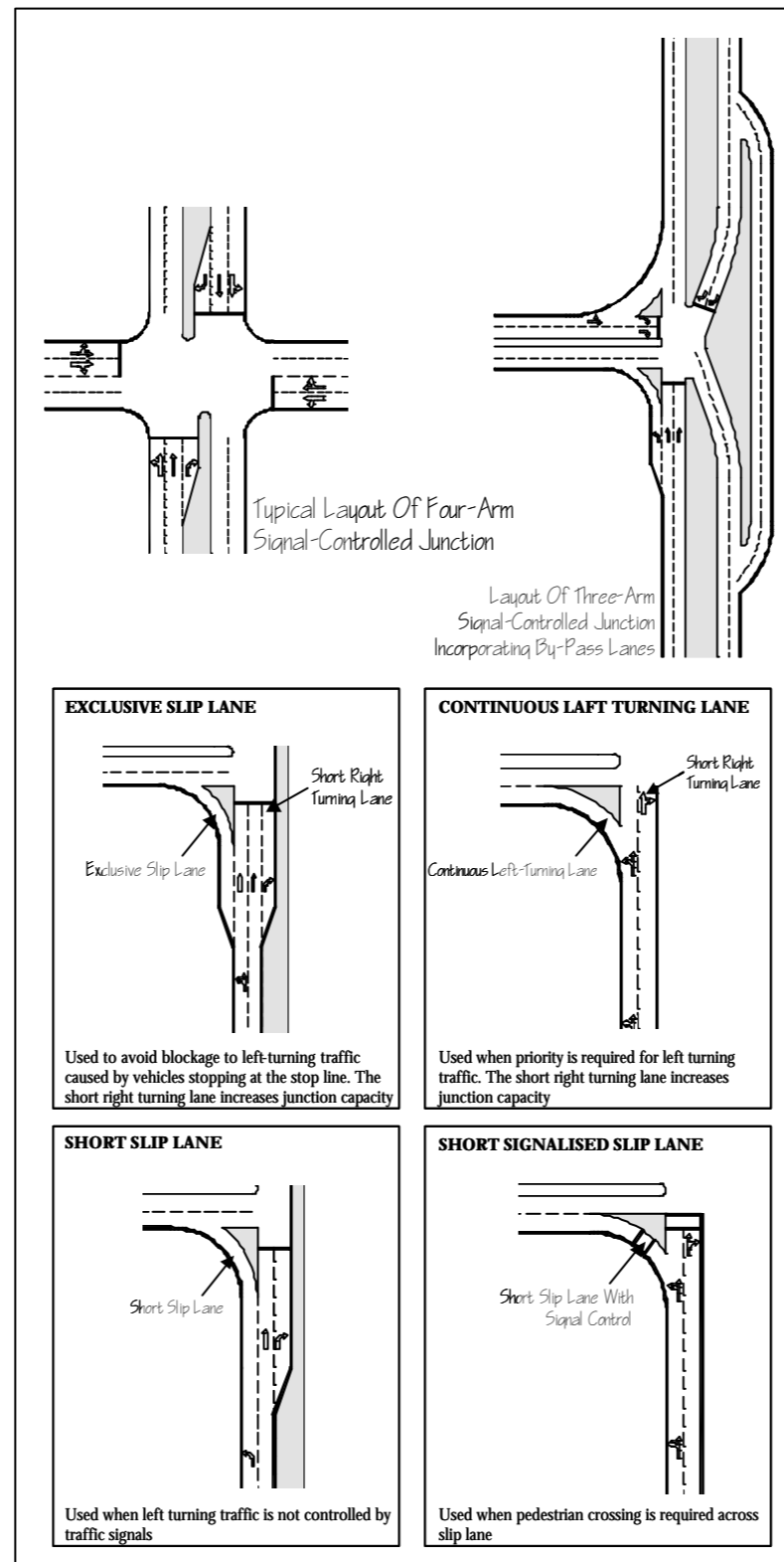
**11.1.5 Signalised Junction**

**Signalised Junctions** are three or four arm junctions managed and controlled by traffic signals. The newer signalised junctions are computer controlled and linked to operate at a optimum level of efficiency.

Traffic signals allow positive control of junction flows in a safe and efficient manner and are widely adopted in urban areas where the road network is likely to be subject to high peak hour loadings. Signals can reduced congestion, improve safety for motorists, cyclist and pedestrians and support the following types of traffic management strategy:-

- Reinforce route hierarchy;
- Priority treatment for public transport;
- Provision for pedestrian and cycle crossings;
- To limit traffic flows;
- To manage queues;
- To improve safety; and
- To give priority to emergency vehicles or VIP movements.

Traffic signals offer a high degree of flexibility, particularly where they are demand-actuated, to deal with changes in the volumes and peak directions of traffic flow or to accommodate controlled pedestrian crossings. Good design and maintenance of signal layouts and timing plan is however essential to avoid the creation of unnecessary delays and subsequent abuse by motorist.



**Figure 11.8**  
**Typical Signalised Junction**

Source: *Transport Design Guide for Putrajaya, 1998.*

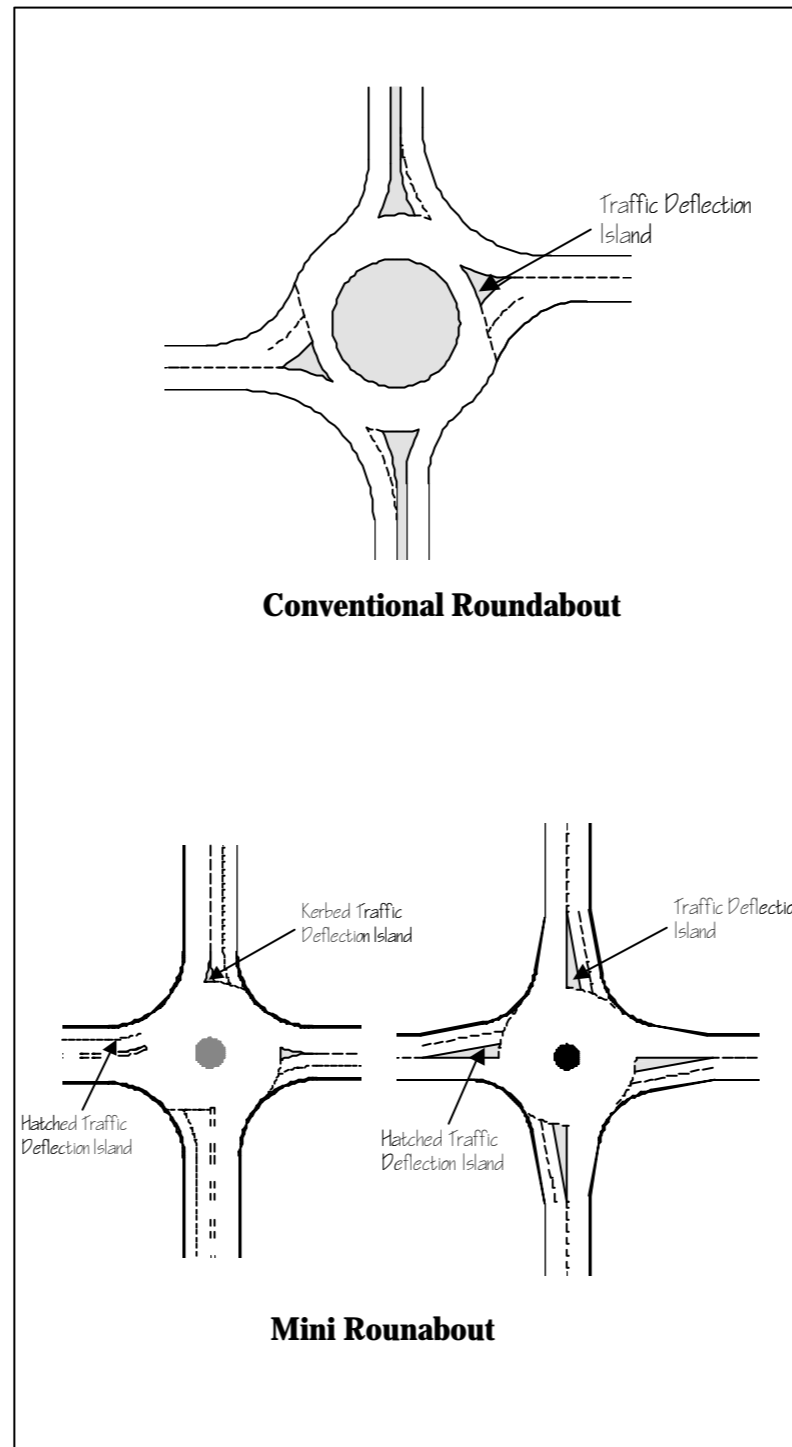
**SIGNALISED JUNCTIONS**

- The type of signalised junctions to be adopted should be identified early in the design process as they may influence the overall layout, the required land take and the siting of pedestrian crossings. Additional lanes may be required on the approaches to signal-controlled junctions, for left and right turning traffic.
- The requirements for pedestrian crossings shall also be taken into consideration in the design and choice of signalised junction to ensure that all pedestrian movements are made under direct signal control.

**11.1.6 Roundabout**

**Roundabout** is a central space at intersections, which makes vehicles to circle it instead of straight across. It acts as 'slow point' on all intersecting thoroughfares. It allows more than two thoroughfares to converge at a single point and at acute angles and all thoroughfares are considered as of equal traffic significance. It operates in a one-way clockwise direction. Roundabout presents excellent opportunities to improve streetscape and incorporate green spaces into development proposals.

Roundabouts (or rotary junctions) may be appropriate at certain locations, particularly where U-turning is required or, for example where change in direction is to be made to a road. However, they are less safe for cyclist and pedestrians compared to traffic signals.



**Conventional Roundabout**

**Mini Roundabout**

**Figure 11.9**  
**Typical Roundabout Design**  
Source: Transport Design Guide for Putrajaya, 1998.

**ROUNDABOUTS**

- The choice of roundabout shall depend on location and use together with capacity of the roads. The types of roundabouts that can be employed by any new development shall be based on characteristic as indicated in **Table 11.5**.

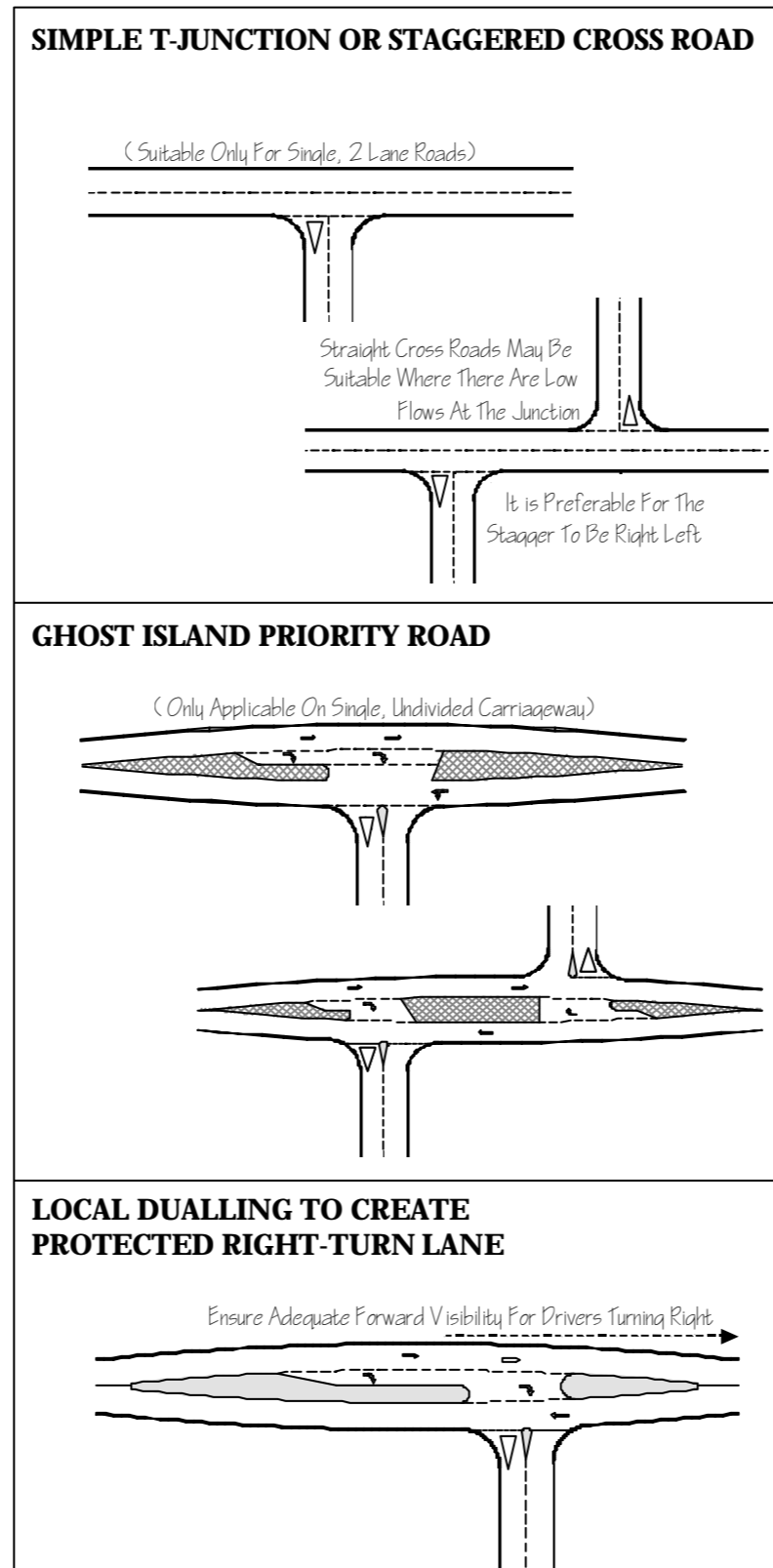
**Table 11.5 Types of Roundabouts and Their Applications**

Roundabout Type	Description	Typical Use/Location
Conventional	<ul style="list-style-type: none"> <li>Kerbed island with diameter greater than or equal to 4m.</li> <li>Flared approaches to allow multiple entry lanes.</li> </ul>	<ul style="list-style-type: none"> <li>New development and construction.</li> <li>Junctions within or at end of dual carriageways</li> <li>To change direction of a new road at a junction.</li> </ul>
Mini	<ul style="list-style-type: none"> <li>Flush or slightly raised central island less than 4 m. diameter.</li> <li>Road markings indicate pattern of movement.</li> <li>No street furniture on central island in order to allow long vehicles to overrun.</li> </ul>	<ul style="list-style-type: none"> <li>To improved the performance of existing junctions where space is severely constraint.</li> <li>Mainly as conversion from other type of roundabout and junction types.</li> <li>At site subject to a 50kph or less speed of.</li> </ul>

- The efficiency and safety of a roundabout is dependent on good design, based on a clear understanding of traffic behaviour. The treatment of approach arm layout and geometry is therefore of critical importance. Enhancements, such as segregated left-turn lanes or bus and cycle lane approaches, may be also incorporated in certain cases.

**11.7 Priority Junction**

**Priority Junction** is road junction that does not have any form of control except to the Highway Code to access and cross-junction. It is suitable at junction where traffic flows are relatively low, particularly where the flow on minor road is small and can feed into major road traffic stream using natural breaks in the flow.



**Figure 11.10**  
**Typical Priority Junctions**  
 Source: Transport Design Guide for Putrajaya, 1998.

**PRIORITY JUNCTIONS**

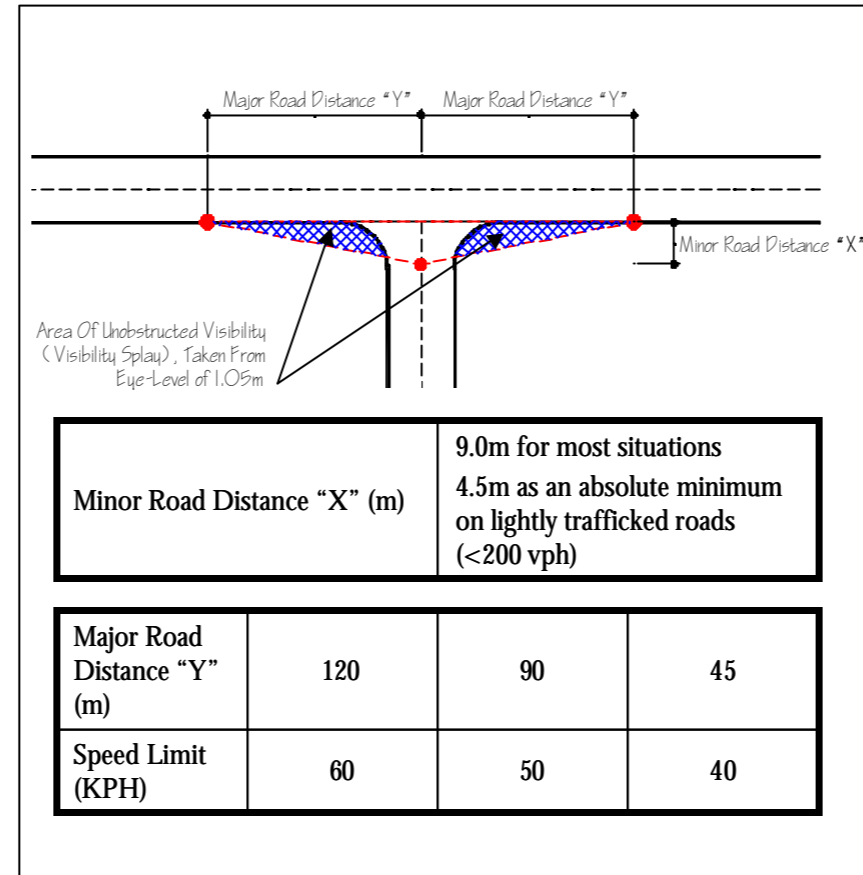
- The use of priority-controlled junctions should be limited to 2-lane carriageway roads where traffic flows are relatively low. Guidance on the application and suitability of various priority junctions for different locations is given in **Table 11.6**.

**Table 11.6 Selection of Priority Junction Type**

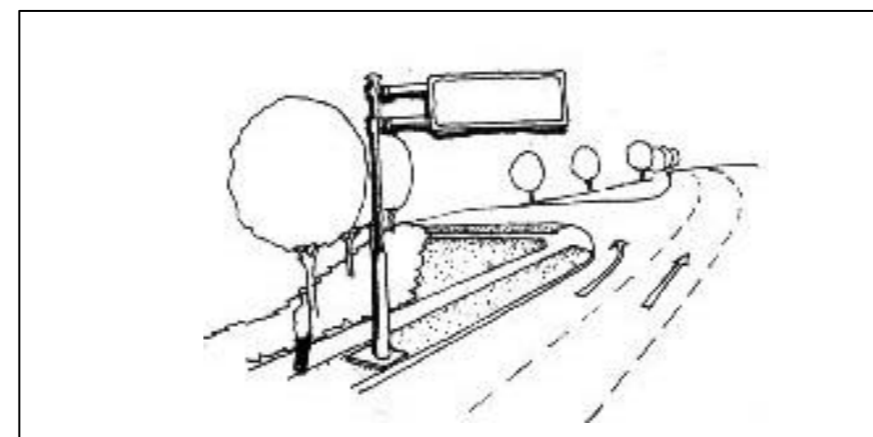
Road Type	Priority Junction Type								
	Simple			Ghost Island			Local Duelling		
	T-junction	Staggered Cross-Roads	Straight Cross-Roads	T-junction	Staggered Cross-Roads	Straight Cross-Roads	T-junction	Staggered Cross-Roads	Straight Cross-Roads
Single 2-lane	✓	✓	Maybe	✓	✓	X	✓	✓	X
Single 4-lane	X	X	X	✓	✓	X	✓	✓	X
Dual 2-lane	X	X	X	X	X	X	✓	✓	X
Dual 3-lane	X	X	X	X	X	X	X	X	X

- Layout and design of priority junction should achieve adequate standard of visibility. Sight distances should take account of the speed of the traffic on the major road.

**Visibility Cone/Splay** is the unobstructed clear sight distance required to on-coming and on-going traffic from an intersection. Adequate sight distance will permit drivers entering an intersection to see approaching traffic from a long enough distance to allow them to decide when to enter or accelerate in advance of the approaching traffic.



**Figure 11.11**  
**Visibility Standard For Priority Junctions**  
Source: Transport Design Guide for Putrajaya, 1998.



**Figure 11.12**  
**Planting Within Visibility Splay**

VISIBILITY SPLAY

- The standards for providing clear visibility for minor road traffic are set out in **Figure 11.19**. The standards vary according to speed of traffic on the major road to allow for increased stopping distances at high speeds. The drivers view from the minor road is always measured from a standard height of 1.05m.
- Visibility splays shall be generally clear of trees and shall not be obstructed by any planting or fixed objects higher than 450mm and any vertical objects (excluding street lighting) with a diameter or sectional profile greater than 200mm.

**11.1.8 Parking**

**Parking** is the manner of storage and accommodation of vehicles when not in use.

**Parking Standard** is a requirement for provision of parking spaces based on number of dwelling units for residential development and on gross floor area for commercial and other developments

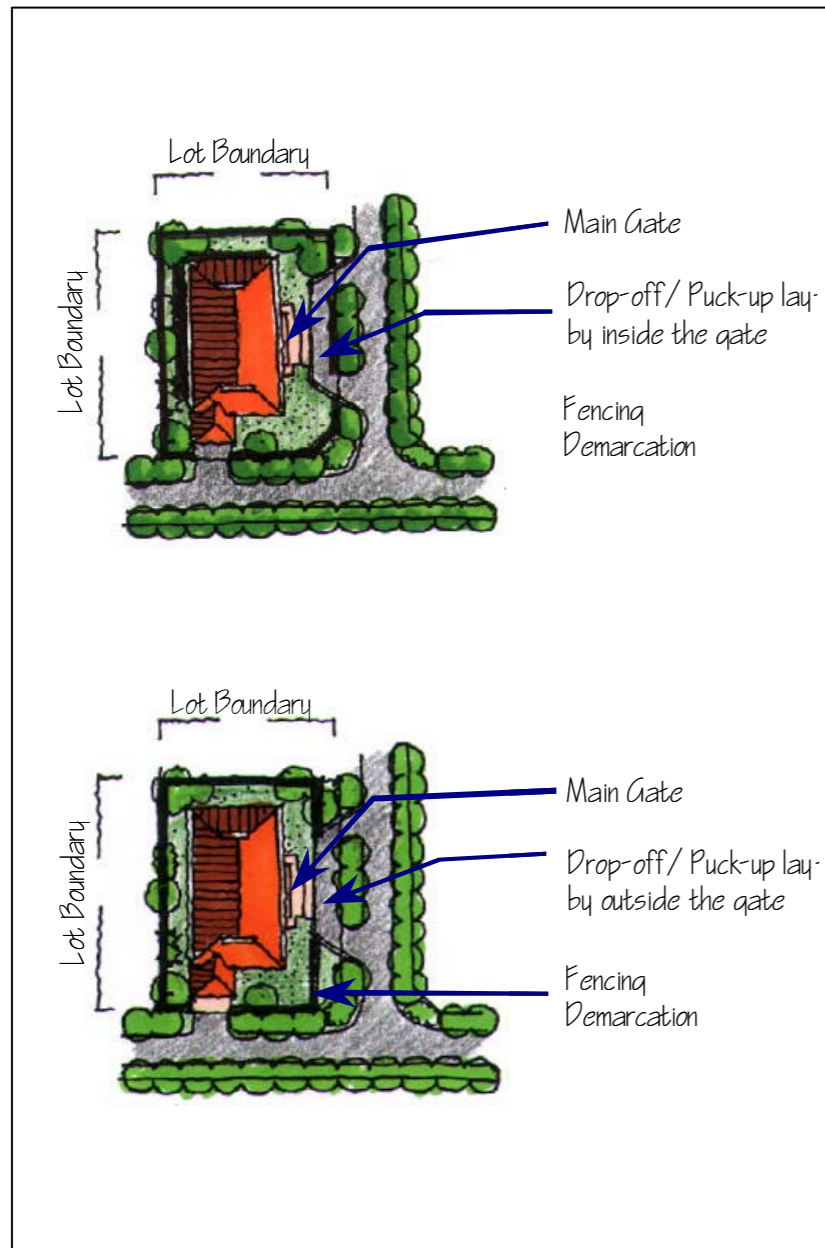
**PARKING**

▪ **Parking** is to be provided according to the following parking standards as indicated in **Table 11.7**.

**Table 11.7 Parking Standards**

Type of Development	Number of Car Parking Spaces (CPS)	Number of Motorcycle Parking Spaces (MPS)	Number of Bicycle Parking Spaces (BPS)	Others	
<b>RESIDENTIAL (Strata)</b>					
Affordable Homes	1 CPS : 1.5 units + 10% for visitors	50% of the total housing units	1rack : 50 housing units	▪ Handicapped parking – 1% on top of the required parking provision or minimum 2 parking spaces whichever is higher.	
Apartment	1 CPS : 1 units + 10% for visitors	50% of the total housing units	1rack : 50 housing units		
Condominium	2 CPS : 1 units + 10% for visitors	50% of the total housing units	1rack : 50 housing units		
Town House	1 CPS : 1 units	-	-	-	
<b>RESIDENTIAL (Landed)</b>					
Terrace	1 CPS : 1 units	-	-	-	
Semi-D	2 CPS : 1 units	-	-	-	
Bungalow	2 CPS : 1 units	-	-	-	
<b>COMMERCIAL</b>					
Office	1 CPS : 70 GFA.	1 MPS : 150 GFA.	-	▪ Handicapped parking – 1% on top of the required parking provision or minimum 2 parking spaces whichever is higher.	
Office (within 200m of monorail stations)	1 CPS : 85 GFA	1 MPS : 200 GFA	-		
Hotel	Bedrooms	1 CPS : 5 Bedrooms + 10% for visitors	1 MPS : 10 Bedrooms	-	▪ Handicapped parking – 1% on top of the required parking provision or minimum 2 parking spaces whichever is higher. ▪ min 2 coach bays for hotel with at least 100 rooms
	Shopping arcades/mall & Commercial Office	1 CPS : 60 GFA	1 MPS : 200 GFA	-	
	Restaurants, Dining areas, Night Clubs/ Discotheques, Public Bars, cocktail Lounges, Supper Clubs, Cafeterias, Grill Rooms	1 CPS : 20 GFA	1 MPS : 165 GFA	-	
	Conference Halls, Auditoriums, Seminar Rooms, Theatrettes, Ballrooms Exhibition Halls, Display Galleries	1 CPS : 8 Seats.	1 MPS : 20 Seats	-	

Note: CPS - Car Parking Space  
MPS- Motorcycle Parking Space  
GFA- Is in Square Meter  
1 Rack Can Accomodate 10 Bicycle Parking Spaces



**Figure 11.13**  
**Typical Layout of Lay-by for Tadika/Kindergarten**

PARKING

**Table 11.7 Parking Standards**

Type of Development	Number of Car Parking Spaces (CPS)	Number of Motorcycle Parking Spaces (MPS)	Number of Bicycle Parking Spaces (BPS)	Others
Superstores/Hypermarket	1 CPS : 60 GFA	1 MPS : 160 GFA	-	<ul style="list-style-type: none"> <li>Handicapped parking – 1% on top of the required parking provision or minimum 2 parking spaces whichever is higher.</li> </ul>
Retail	1 CPS : 70 GFA	1 MPS : 200 GFA.	See note below	
Shop Office	1 CPS : 70 GFA	1 MPS : 150 GFA	See note below	
Shopping Arcade	1 CPS : 60 GFA	1 MPS : 160 GFA	-	
Restaurants	1 CPS : 20 GFA.	1 MPS : 160 GFA	See note below	
Cinema & Theatres	1 CPS : 5 seats	1 MPS : 3 seats	-	
Nightclubs/ Discos/ Dance Hall/Cabarets	1 CPS : 25 GFA	1 MPS : 160sq.m.	-	
Bowling	2 CPS : 1 Lane	1 MPS : 1 Lane	-	
Other Amusement and Entertaining Services	1 CPS : 70 GFA.	1 MPS : 200 GFA	-	
Conference	1 CPS : 8 Seats	1 MPS : 20 Seats	-	
Showroom	1 CPS : 70 GFA	1 MPS : 100 GFA.	-	
Market	1 CPS : 35 GFA	1 MPS : 160 GFA	-	
Food Court	1 CPS : 20 GFA	1 MPS : 70 GFA	See note below	
<b>EDUCATION</b>				
Day Care Centre (Taska)	1 CPS : 4 Staff	-	-	<ul style="list-style-type: none"> <li>Min. of 3 car length for pick-up and drop-off</li> </ul>
Kindergarten (Tadika)	1 CPS : 4 Staff	-	-	<ul style="list-style-type: none"> <li>3 lay-by for bus + 10 car lay-by for pick-up and drop-off (must not be in road reserve)</li> </ul>
Primary School	1 CPS : 8 Staff	1 MPS : 10 Staff	1 Rack : 50 student	
Secondary School	1 CPS : 8 Staff	1 MPS : 10 Staff 1 : 20 Student (Form 5 & 6)	1 Rack : 50 student	<ul style="list-style-type: none"> <li>6 lay-by for bus + 10 car lay-by for pick-up and drop-off (must not be in road reserve)</li> </ul>
School Complex (Primary & Secondary)	1 CPS : 8 Staff	1 MPS : 10 Staff 1 : 20 Student (Form 5 & 6)	1 Rack : 50 student	
Public Colleges	1 CPS : 2 Staff 1 CPS : 25 student	1 MPS : 10 Staff 1 MPS : 5 student	1 Rack : 50 student	<ul style="list-style-type: none"> <li>Handicapped parking – 1% on top of the required parking provision or minimum 2 parking spaces whichever is higher.</li> </ul>
Public University				
Special School	1 CPS : 4 Staff + 20% for visitors	1 MPS : 5 Staff	-	<ul style="list-style-type: none"> <li>min 1 bus bays</li> </ul>

Note: CPS - Car Parking Space  
MPS- Motorcycle Parking Space  
GFA- Is in Square Meter  
1 Rack Can Accomodate 10 Bicycle Parking Spaces  
If located in local or neighbourhood commercial centre a minimum of 1 bicycle rack is to be provided



**Figure 11.14**  
**Example of Bicycle Parking Space**



**Figure 11.15**  
**Example of Motorcycle Space**

**PARKING**

**Table 11.7 Parking Standards**

Type of Development	Number of Car Parking Spaces (CPS)	Number of Motorcycle Parking Spaces (MPS)	Number of Bicycle Parking Spaces (BPS)	Others
<b>HEALTH</b>				
Hospital	1 CPS : 5 Beds + 10 % for visitors	1 MPS : 10 Beds + 10 % for visitors	-	▪ Handicapped parking – 1% on top of the required parking provision or minimum 2 parking spaces whichever is higher.
Health Clinic	1 : 75 GFA + 10 % for visitors	1 MPS : 100 GFA + 10 % for visitors	-	
Handicapped Centre (Government, NGO)	1 CPS : 4 Staff + 20% for visitors	1 MPS : 5 Staff	-	
<b>EMERGENCY AND SECURITY SERVICES</b>				
Police Headquarters	1 : 75 GFA + 10 % for visitors	1 MPS : 100 GFA + 10 % for visitors	-	▪ Handicapped parking – 1% on top of the required parking provision or minimum 2 parking spaces whichever is higher.
Police Station	1 : 75 GFA + 10 % for visitors	1 MPS : 100 GFA + 10 % for visitors	-	
Fire Station	1 : 75 GFA + 10 % for visitors	1 MPS : 100 GFA + 10 % for visitors	-	
<b>RELIGIOUS USE</b>				
Mosque	1 CPS : 150GFA	1 MPS : 300 GFA	Min. 1 Rack	▪ Min. 1 Bus Parking Space ▪ Handicapped parking – 1% on top of the required parking provision or minimum 2 parking spaces whichever is higher.
Surau	1 CPS : 75GFA Add 2 CPS for surau with KAFA class	1 MPS : 150GFA	Min. 1 Rack 1 Rack : 50 Students for surau with KAFA class	▪ Handicapped parking – 1% on top of the required parking provision or minimum 2 parking spaces whichever is higher.
Other Religious (Church/Chapel, Chinese Temple, Hindu Temple, others)	1 CPS : 75GFA	1 MPS : 150GFA	Min. 1 Rack	

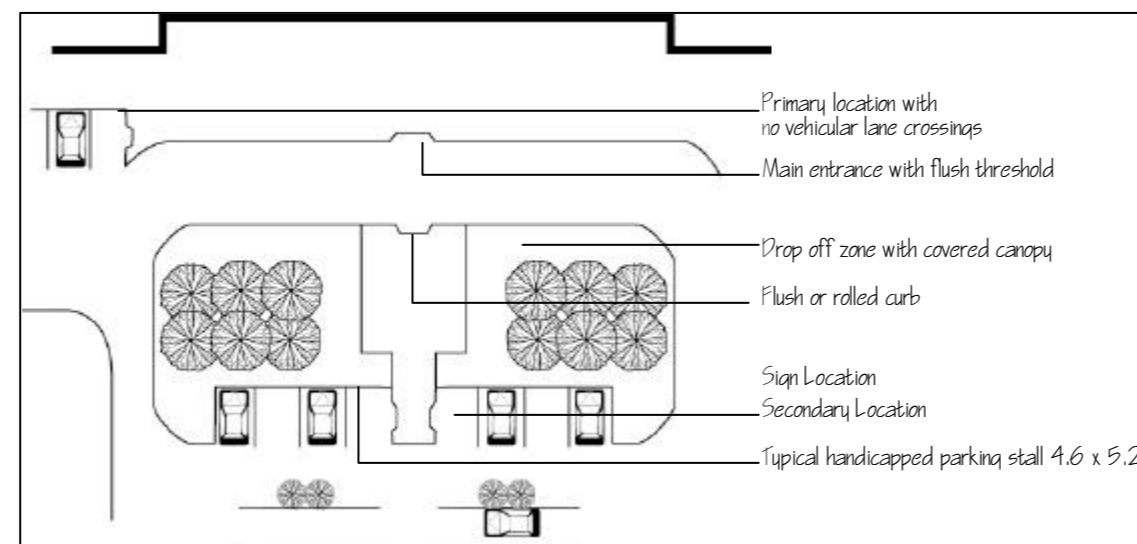
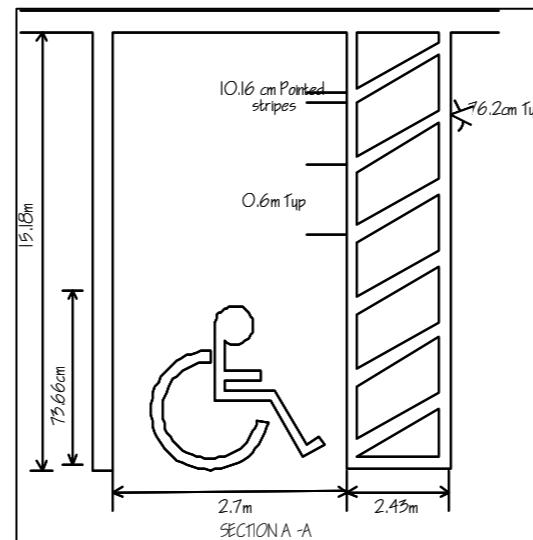
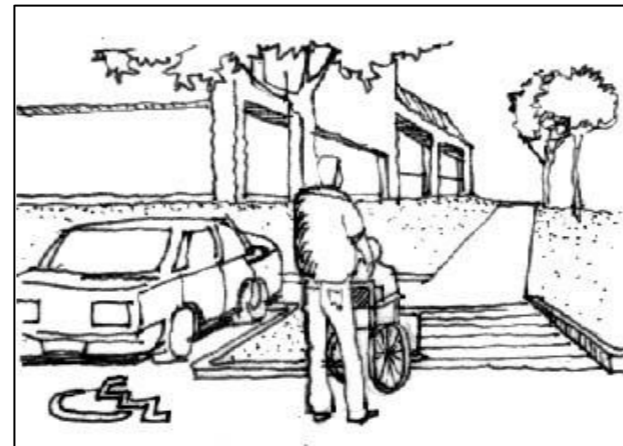
Note: CPS - Car Parking Space  
MPS- Motorcycle Parking Space  
GFA- Is in Square Meter  
1 Rack Can Accomodate 10 Bicycle Parking Spaces

PARKING

**Table 11.7 Parking Standards**

Type of Development	Number of Car Parking Spaces (CPS)	Number of Motorcycle Parking Spaces (MPS)	Number of Bicycle Parking Spaces (BPS)	Others
<b>PUBLIC AMENITIES CENTRE / OTHER AMENITIES</b>				
Community Hall	1 CPS : 5 Seats	1 MPS : 10 Seats	Min. 1 Rack	<ul style="list-style-type: none"> <li>Handicapped parking – 1% on top of the required parking provision or minimum 2 parking spaces whichever is higher.</li> </ul>
Multi-Purpose hall	1 CPS : 5 Seats	1 MPS : 10 Seats	Min. 1 Rack	
Civic & Cultural Activities	1 CPS : 5 Seats	1 MPS : 10 Seats	Min. 1 Rack	
Information Centre	1 CPS : 100 GFA	1 MPS : 130 GFA	Min. 1 Rack	
Library	1 CPS : 100 GFA	1 MPS : 130 GFA	Min. 1 Rack	
Mini Sport Complex	1 CPS : 5 Seats	1 MPS : 10 Seats	Min. 1 Rack	
Public Recreation Club (Swimming Pool, Gymnasium, etc)	1 CPS : 30 GFA	1 MPS : 60 Seats	Min. 1 Rack	
Cinema/Cineplex	1 CPS : 5 Seats	1 MPS : 20 Seats	Min. 1 Rack	
Bowling	2 CPS : 1 Lane	1 MPS : 1 Lane	Min. 1 Rack	
Food Court	1 CPS : 20 GFA	1 MPS : 70 GFA	Min. 1 Rack	
Market	1 CPS : 30 GFA	1 MPS : 160 GFA	Min. 1 Rack	
<b>WELFARE HOMES</b>				
Orphanage Homes	1 CPS : 160 GFA	1 MPS : 260 GFA	-	<ul style="list-style-type: none"> <li>Handicapped parking – 1% on top of the required parking provision or minimum 2 parking spaces whichever is higher.</li> </ul>
Elderly homes	1 CPS : 160 GFA	1 MPS : 260 GFA	-	
Other Special Care Homes	1 CPS : 160 GFA	1 MPS : 260 GFA	-	
<b>OPEN SPACE</b>				
Metropolitan Park	1 CPS : 0.1 Hectare	1 MPS : 0.35 Hectare	1 Rack : 5 Hectare	Min. 4 Bus Parking
District Park	1 CPS : 0.05 Hectare	1 MPS : 0.15 Hectare	Min. 1 rack	-
Local Park	1 CPS : 0.05 Hectare	1 MPS : 0.15 Hectare	Min. 1 rack	-
Neighbourhood Park	1 CPS : 0.05 Hectare	1 MPS : 0.15 Hectare	Min. 1 rack	-
Playground	-	-	Min. 1 rack	-
<b>OTHERS</b>				
Monorail Station at SCC/Commercial	5 CPS	-	-	<ul style="list-style-type: none"> <li>Handicapped parking – 1% on top of the required parking provision or minimum 2 parking spaces whichever is higher.</li> </ul>
Monorail Station at Residential Area	Max. 20 CPS	5 MPS	1 Rack	
Park and Ride	3000 CPS	Min. 10 MPS	-	
Ferry Terminal	17 CPS for pick-up and drop-of 20 CPS for Long Term Parking	5 MPS	1 Rack	<ul style="list-style-type: none"> <li>3 CPS for Handicapped</li> </ul>
Petrol Station	1 CPS : 150 GFA	-	-	

Note: CPS - Car Parking Space  
MPS- Motorcycle Parking Space  
GFA- Is in Square Meter  
1 Rack Can Accomodate 10 Bicycle Parking Spaces



**Figure 11.16**  
**Disable Parking Spaces**

**PARKING**

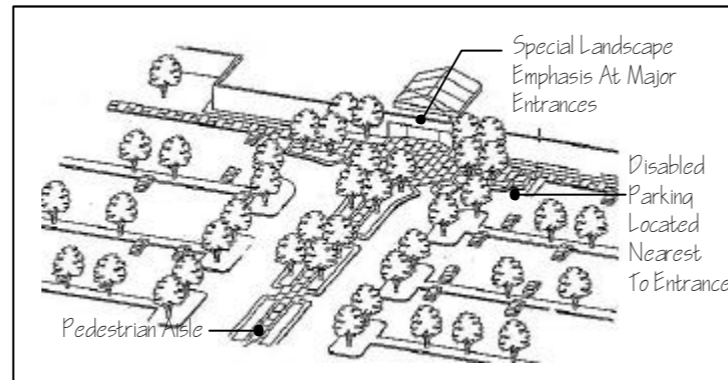
- The design parameter for parking shall be based on **Table 11.8**

**Table 11.8 Design Parameters for Parking**

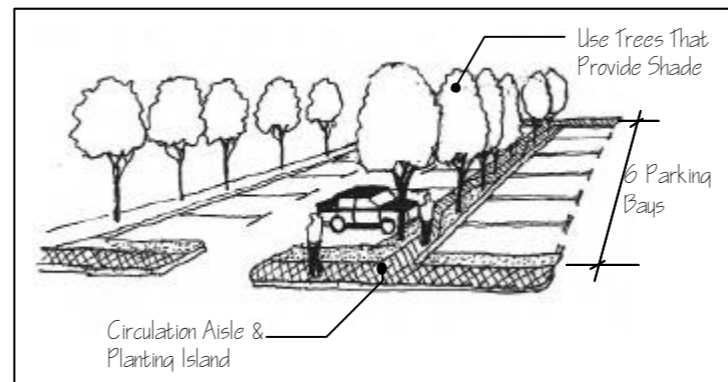
Design Item	Type	Design Parameter
<b>Car Parking Space</b>		
Width	Long-stay (commuters)	2.3m
	General parking	2.4m
	Short-stay (shoppers)	2.5m
Length	Disabled users	3.2-3.6m
	Angled parking	4.75 – 5.0m
	Parallel parking	6.0m
<b>Circulation Aisle Width</b>		
90° Parking	One-way circulation	6.0m
	Two-way circulation	6.75 – 7.3m
60° Parking	One-way circulation	4.8m
	Two-way circulation	6.7m
45° Parking	One-way circulation	4.2m
	Two-way circulation	
Circulation Routes/Ramp	Straight	3.0m (min)
	Curved	3.7m (min)
Min. Inner Kerb Radius		4.6m
Ramp Gradient (on centre line)	Straight	14% max 10% preferred
	Circular	12% max 8% preferred
Two-way ramp	Kerb width	0.23m
	Kerb height	0.15m

- Parking spaces for the handicapped shall be located in the closest possible proximity to the intended destination.
- Handicapped parking shall be clearly indicated to differentiate it from the rest of the parking spaces.

**Surface parking** is parking area at grade adjacent to building either at its rear, side or front. It provides convenient pedestrian access from the parking area to destination of the trip.



**Figure 11.17**  
**Surface Parking**



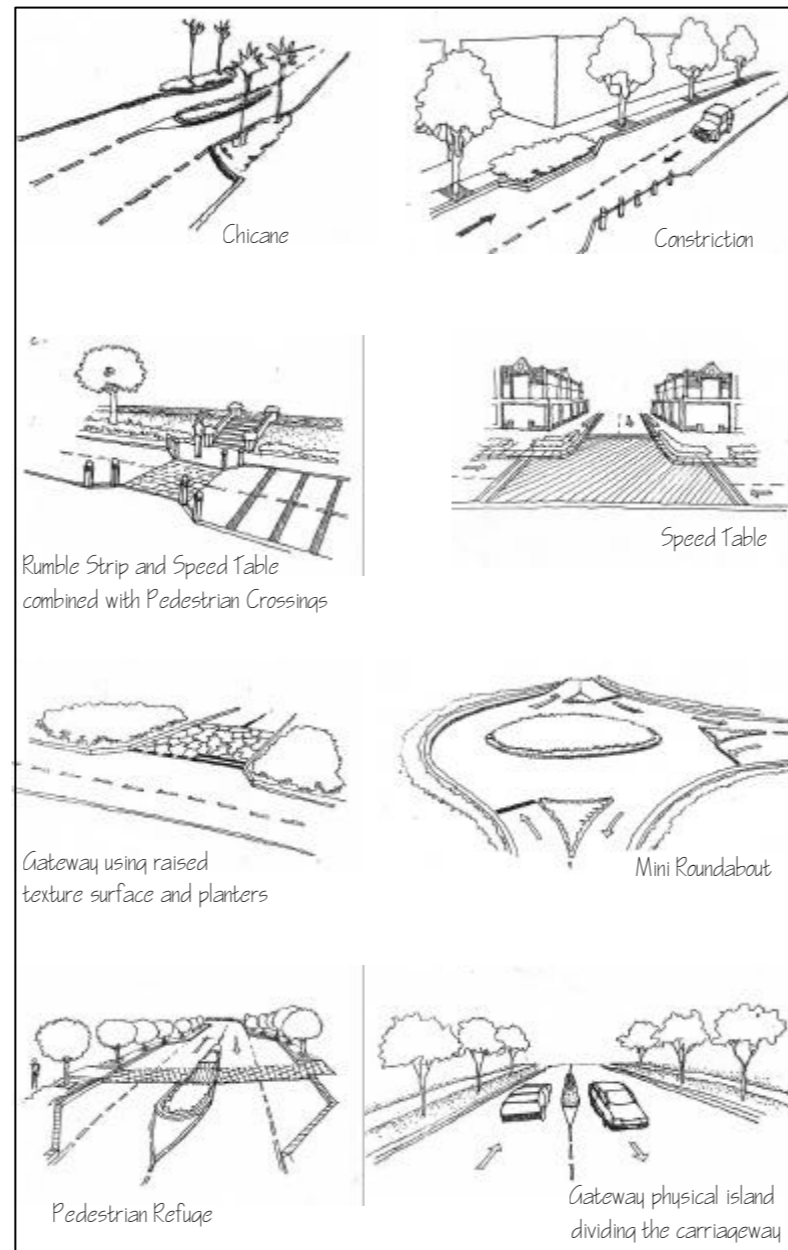
**Figure 11.18**  
**Planting Island**

## PARKING

- Surface parking shall be located in pockets and as near to the pedestrian entry. Access for pedestrians via walkway and ramps where required shall be provided.
- Landscape features shall be used to soften hard surface of parking courts, intersections, pedestrian crossing and islands. Linear rows of car parking bays shall be avoided and shades shall be provided. Planting island of 1m shall be incorporated for every 6 parking bays.

**11.1.6 Traffic Calming**

**Traffic Calming** is a series of measures to deliberately slow traffic in a commercial or neighbourhood. Typical measures are streets with different riding surface, non-linear streets, a typical parking layout and introduction of junctions.



**Figure 11.19**  
**Example of Traffic Calming Devices**

TRAFFIC CALMING

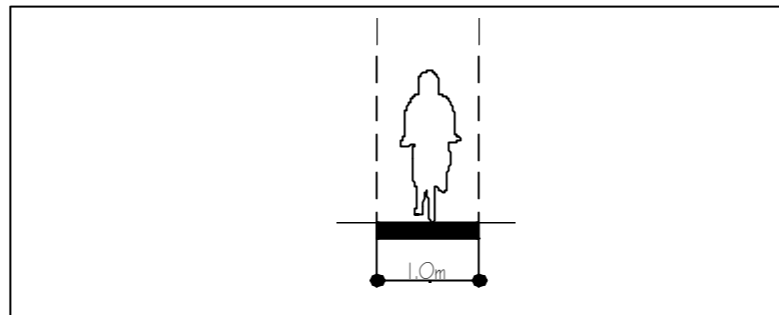
- Speed control devices should be included as part of traffic management programme especially within residential development to achieve the targeted speed for which the road was designed for.
- Any slow points including road narrowing should be designed to take account the need of cyclists, either by ensuring speed compatibility, adequate space for concurrent passage or by off-street diversions.

**11.2 Pedestrians and Cyclists**

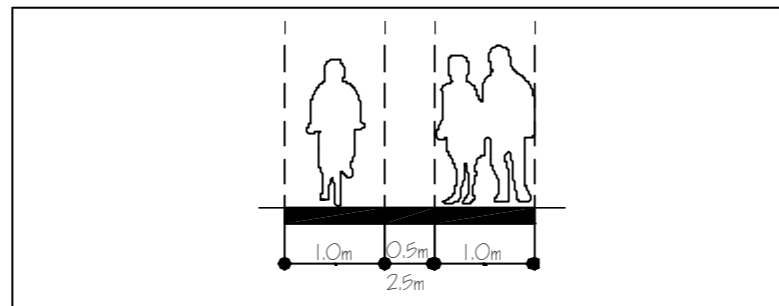
**Pedestrian network** is a comprehensive system of walkways and linkages dedicated for pedestrian. It is a separate walkway network from the vehicular carriageway but includes the roadside walkway. Its function is to provide the pedestrians an alternative way of moving around.

**Segregated Cycle Path** is a dedicated lane for cyclist.

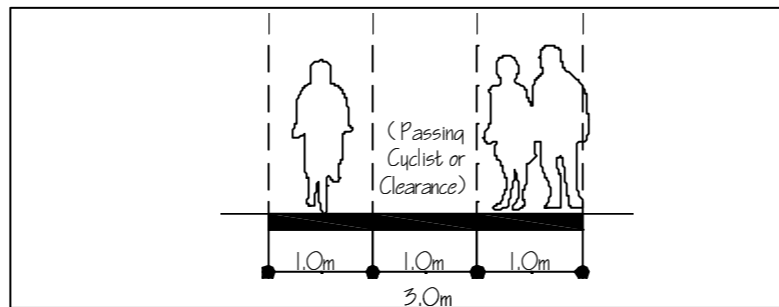
**Dual-use Path** is footpath whose right of way is shared by both pedestrian and cyclist within the same lane.



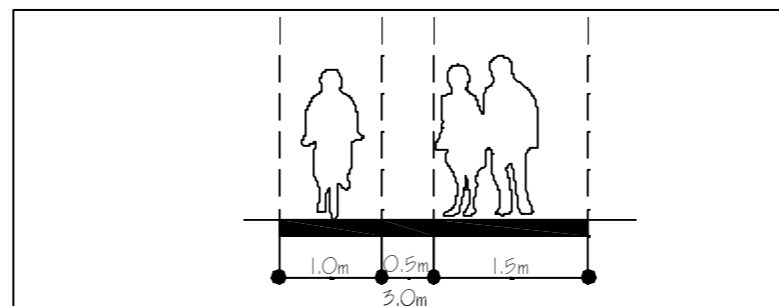
**Figure 11.20**  
**Desirable Minimum Width of Cycle Path**



**Figure 11.21**  
**Minimum Width of Dual-use Path**



**Figure 11.22**  
**Desirable Width of Dual-use Path**



**Figure 11.23**  
**Desirable Width of Dual-use Path Along Waterfront Promenade and Pedestrian Greenway**

PEDESTRIAN & CYCLIST

- At locations where dedicated cycle path have been identified, the minimum width of the cycle path shall be 1.0m. For dual-use path, the minimum width should be 2m and desirably shall be 3.0m
- Along all Waterfront Promenade and District Park in the Sub-commercial Centre, dual-use path should desirably be 3.0m wide.
- Design of footpath shall desirably follow the recommended standard as set out in **Table 11.9**.

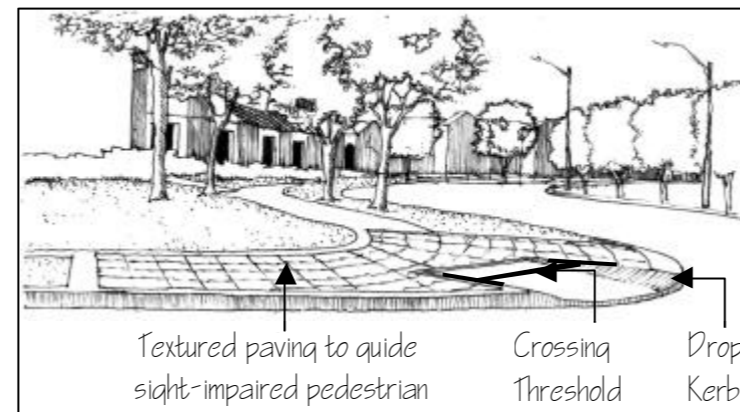
**Table 11.9 Recommended Footpath Standard**

Footpath Element	Minimum Recommended Standard
Footpath Width	<ul style="list-style-type: none"> <li>3m clear where identified as primary linkages</li> <li>3.3m in enclosed area, such as subways or under buildings</li> <li>2m minimum to allow for wheelchair access</li> </ul>
Headroom	<ul style="list-style-type: none"> <li>3m</li> </ul>
Gradients	<ul style="list-style-type: none"> <li>5% maximum generally but up to 8% for short length. Handrails to be provided on the steeper sections</li> </ul>

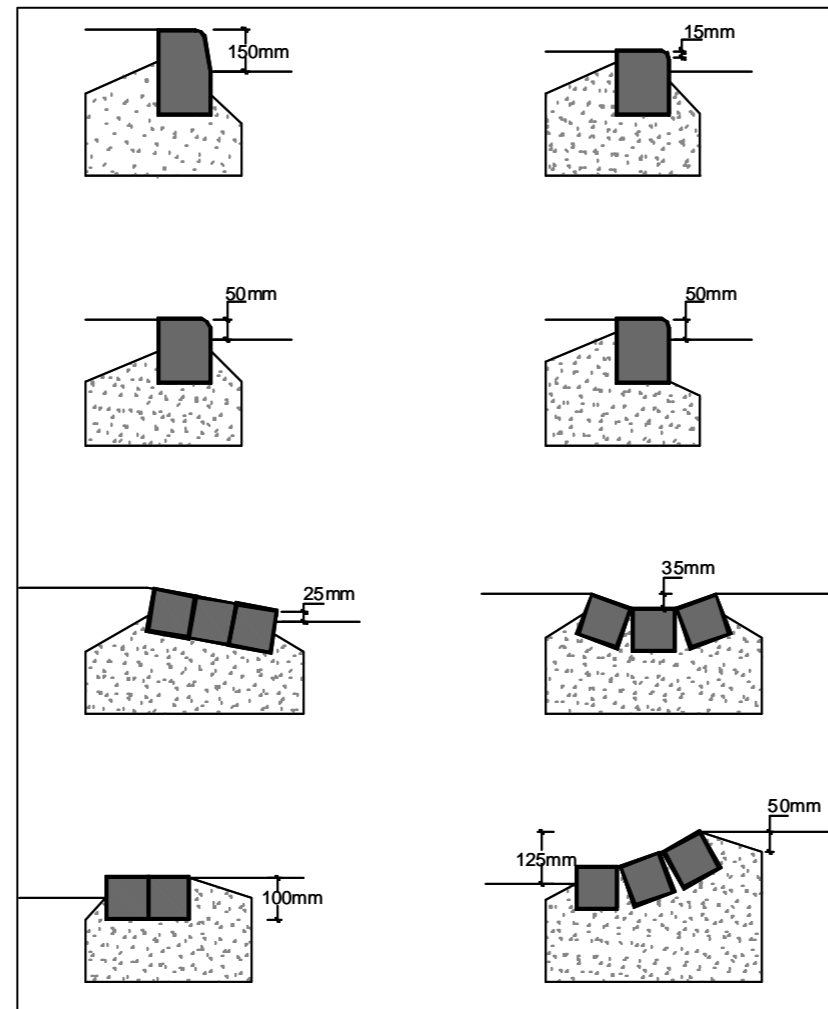
- Footpath and dual-use path shall have durable, non-skid surface with tactile paving at bus/taxi stops and traffic signals and at any other road crossing points to assist the visually impaired. It should also be well lit and well drained.

**Pedestrian Crossing** is a controlled point within the streetscape dedicated for pedestrian to cross the carriageway. It provides a barrier free transition within the public realm. There are two type of crossings; signalised and unsignalised.

**Drop Kerb** is the area where kerb reduces in height at pedestrian crossings and kerb cut zones..



**Figure 11.24**  
**Drop Kerb**

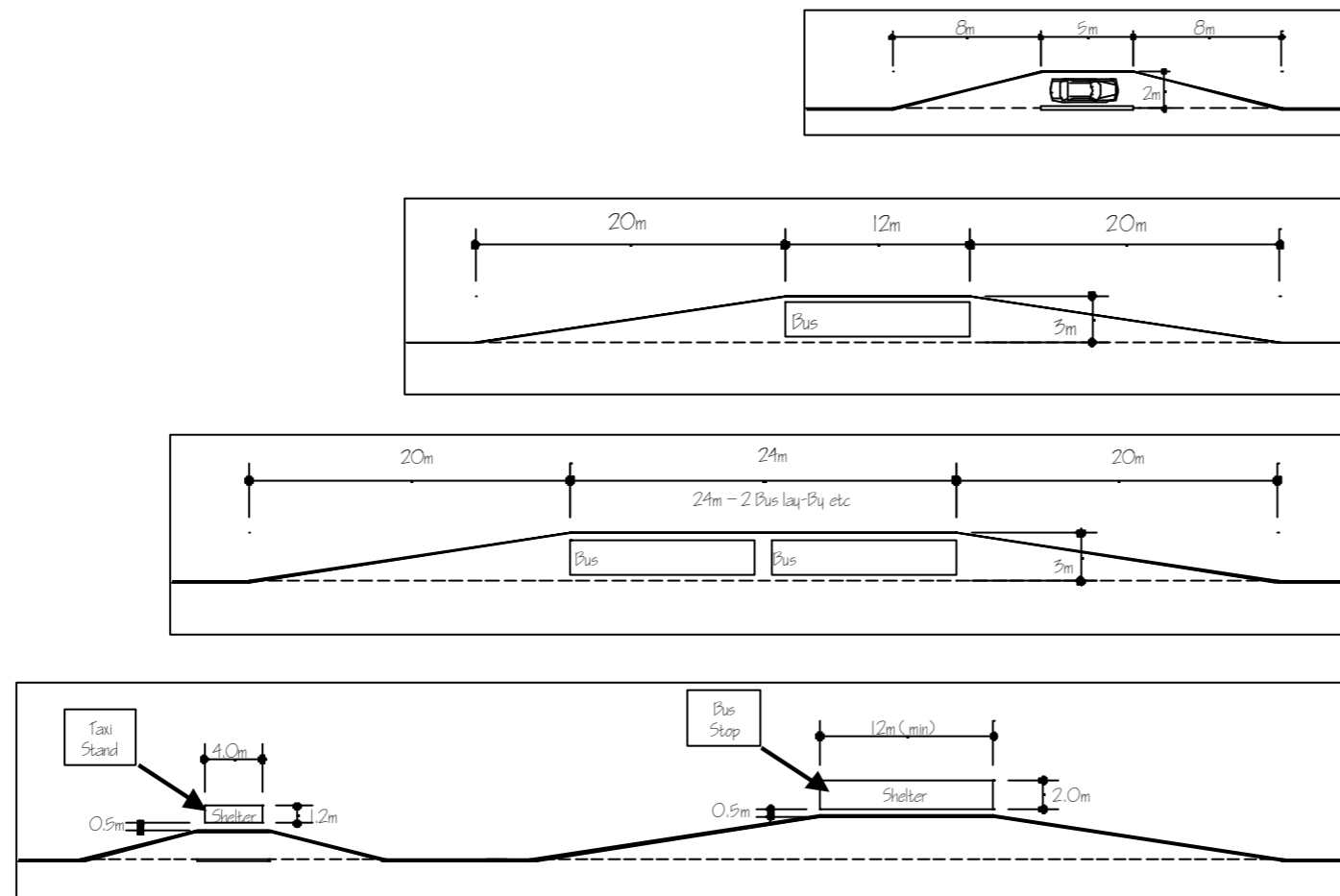


**Figure 11.25**  
**Specification for Kerb**

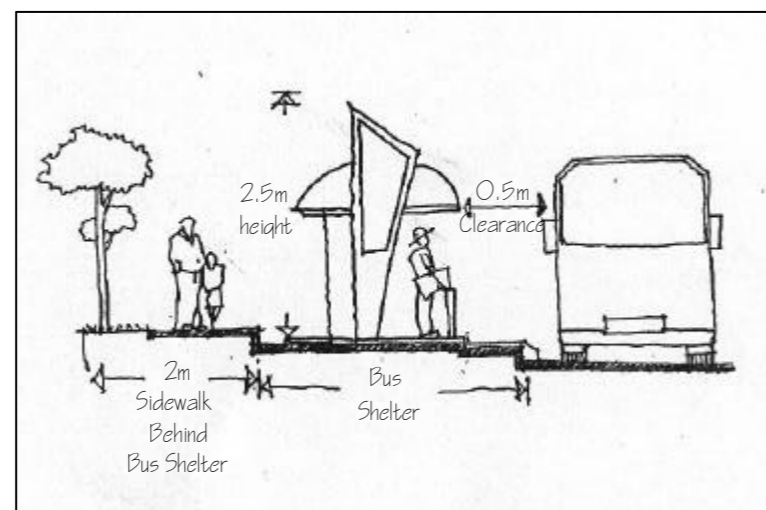
PEDESTRIAN CROSSING

- Raised kerb should be of maximum length of 150mm.
- Where footpaths/cycle paths cross roads, drop kerb shall be provided to ease crossings by pedestrians, bicycles, wheelchairs, baby carriages and other wheeled vehicles. Safety devices such as signs, signals and painted crosswalks should also be used.
- Drop kerb shall be used at every pedestrian crossing. The width of drop kerb crossing threshold shall be equal to the width of crossing demarcated on the road surface.
- A band of 800mm tactile paving shall be positioned behind the crossing threshold and surface of crossing threshold shall be differentiated from the entire sidewalk pavement to facilitate sight impaired pedestrians.

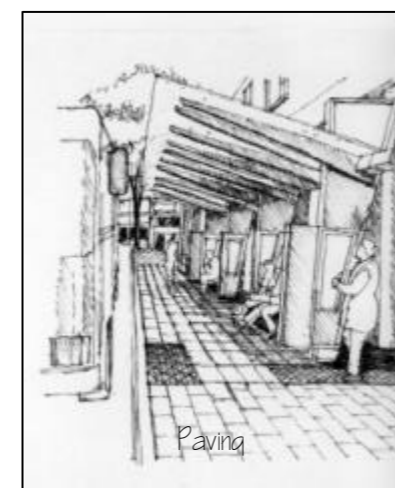
## 11.3 Public Transport



**Figure 11.26**  
**Bus and Taxi Lay-By**



**Figure 11.27**  
**Bus Stop**



**Figure 11.28**  
**Tactile Paving At Bus Stop To Assist the Visually Impaired**

## PUBLIC TRANSPORT

- Bus stops shall be located to serve walkable catchments at an average spacing of 300-400m.
- Locations of bus stops shall be at potential destinations including shopping area, mosque, and schools. It shall not obstruct or impede the movement of other vehicles. Taxi stops shall be sited adjacent to bus stop to enable commuters to switch modes.
- Provision should be made in the detailed design for sufficient verge width within the road reserve to accommodate possible indented bus lay-bys and passenger shelters.
- Shelters should be positioned well clear of visibility splay at junctions, site entries, and pedestrian crossings.
- Bus/taxi stop should comprise the following: -
  - a. A shelter (12m long and 2 m wide) with a balustrade on the roadside and loading and unloading points. Clearance from the kerb should allow 0.5m for the bus overhang.
  - b. A clear height of 2.5m
  - c. A clear footpath width of not less than 2m passing behind or in front of the shelter.
  - d. Design of shelter should aim to provide shade and full protection from wind and rain. It should also incorporate simple robust bench seating, illuminated service indicators, lighting, trash bin, advertising and service information panels, public telephone facility, and facilities for the disabled.
- Bus/taxi stops shall incorporate simple, elegant, uncluttered design with modular system for easy extension and be made of materials requiring minimum maintenance.
- Signage indicating routes and services as well as advertising boards shall be incorporated into the design and shall follow strictly to **Signage and Advertisement Design Guidelines for Putrajaya Part A Control Guidelines, 1999**.

**11.4 Environment Consideration**

ENVIRONMENT CONSIDERATION

**Noise Level**

- Noise levels along the main roads shall be within 50-80 dBA.
- Adequate buffer zones of at least 20m shall be provided to mitigate noise level between main road and residential areas / hospitals.
- Adequate buffer zone of at least 30m shall be provided between rail lines and residential areas / schools.
- Adequate buffer zone of at least 50m shall be provided between ERL lines and residential areas / schools.

**Air Quality**

- Buffer areas between road and residential areas shall also be planted with tall trees to minimise noise and air pollution.

**Provision For Garbage Truck**

- Garbage truck will generally utilize the normal standard roads to access residential, commercial and public amenities area. The normal standard road is not a major concern for garbage trucks; however, internal circulation system for multi-stories facilities and complexes should incorporate certain provision for garbage trucks.
- Issues that need to be examined at an early stage in the design should include the following:-
  - i. To maintain a minimum height clearance of 4.1 meters, wherever the path for the garbage trucks have been identified;
  - ii. To maintain a minimum slope of 1:12 for the design of access road for garbage trucks; and
  - iii. Provision for “ 3 point turns” or “Cul-de-Sac” should be incorporated wherever necessary.

FINAL DRAFT

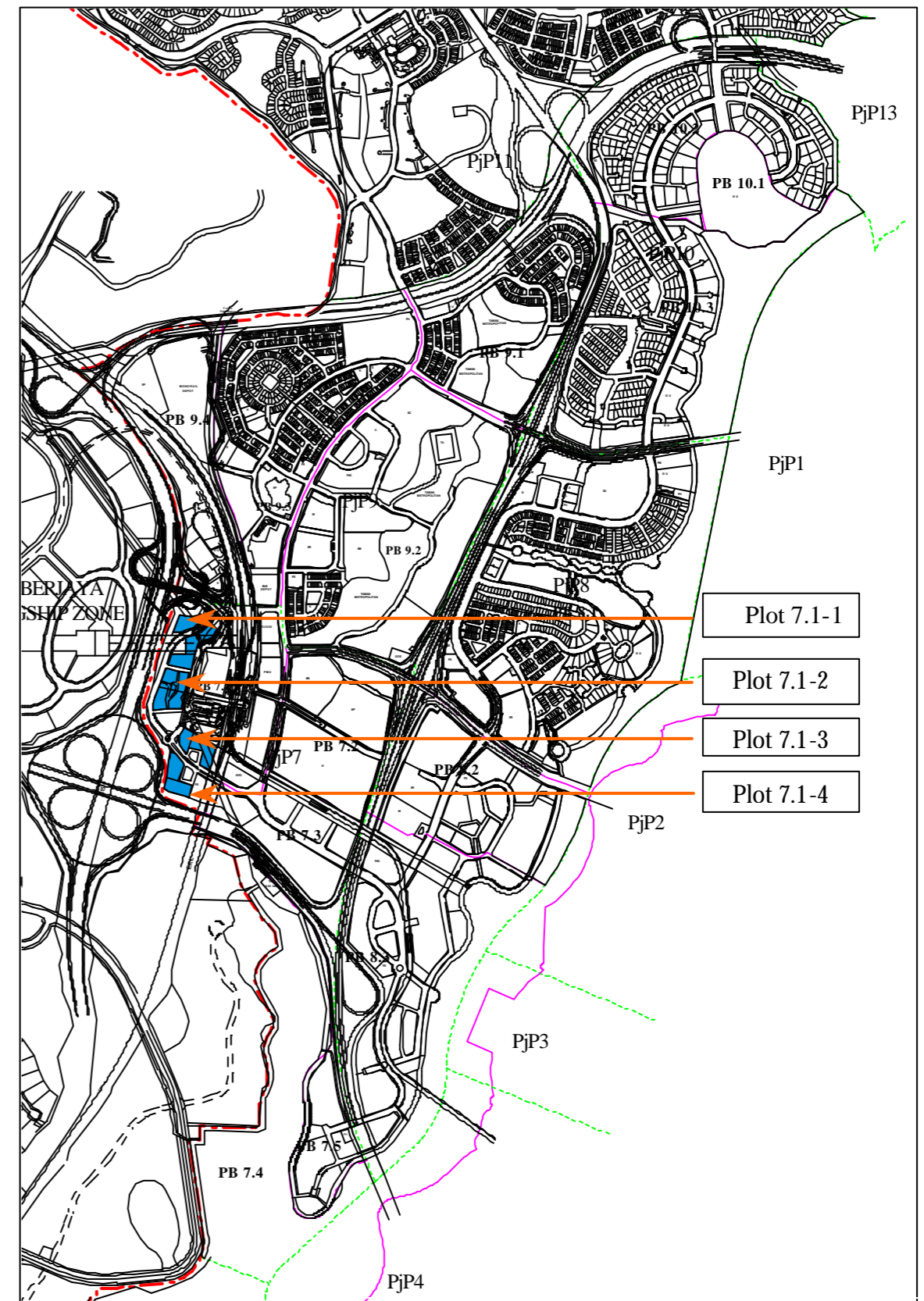


## 12.0 MIXED USE

### 12.1 USE OF GUIDELINE

This guideline shall be used for all developments located within the mixed use zone, namely in PB7.1 as indicated in the Proposal Map of the Local Plan for Precincts 7, 8, 9 and 10, Putrajaya (Figure 12.1).

**Mixed Use Development** is development located within the mixed-use zone of the Local Plan where it involves more than one activity on the same lot, such as dwelling, working or shopping, taking place in close and compatible proximity. Uses may mix horizontally on the same plot and/or vertically in the buildings but shall comply with the use class order specified under the Local Plan.

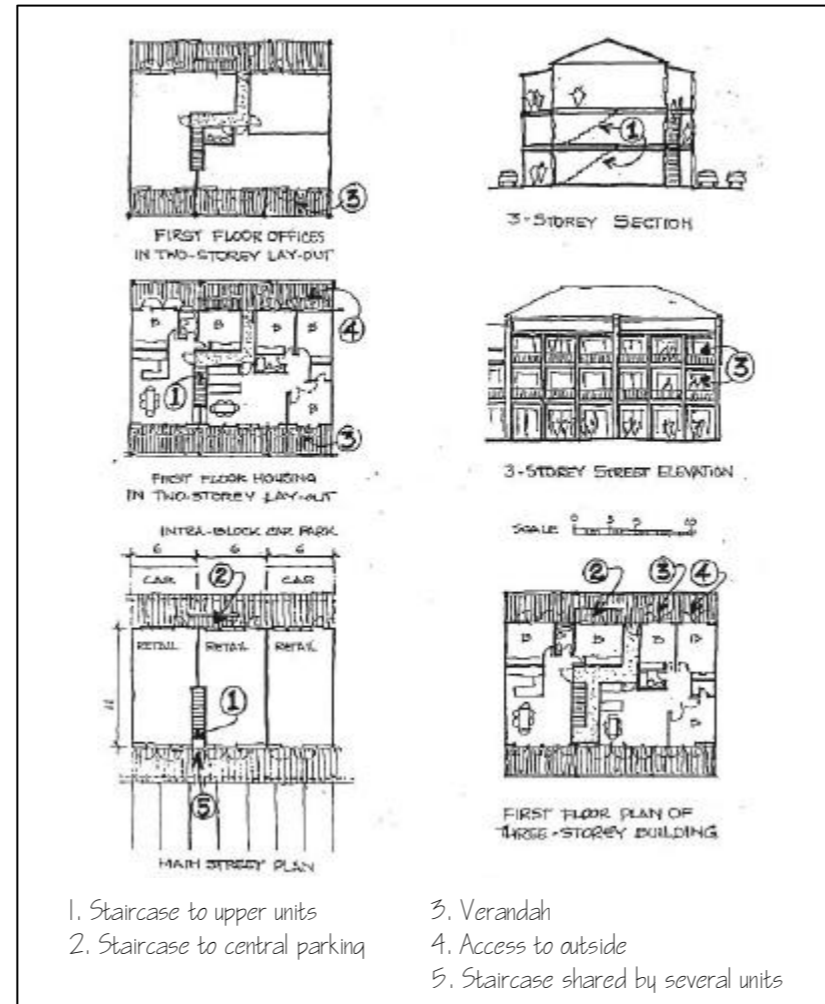


**Figure 12.1**  
Location of Mixed Use Zone within Local Plan Area

## 12.2 DEVELOPMENT MIX

**Plot Ratio** as defined by The Town and Country Planning Act, 1976, is the ratio of the total floor area of a building to the area of the building plot as measured between the surveys boundary lines or, if there are no survey boundary lines, between the provisional boundary lines.

**Shop Office Home Office (SOHO)** refers to a premise designed in such a way to accommodate a mixed activity of office and home.



**Figure 12.2**  
**Typical Concept of SOHO**



**Figure 12.3**  
**Typical Example of SOHO Developments**

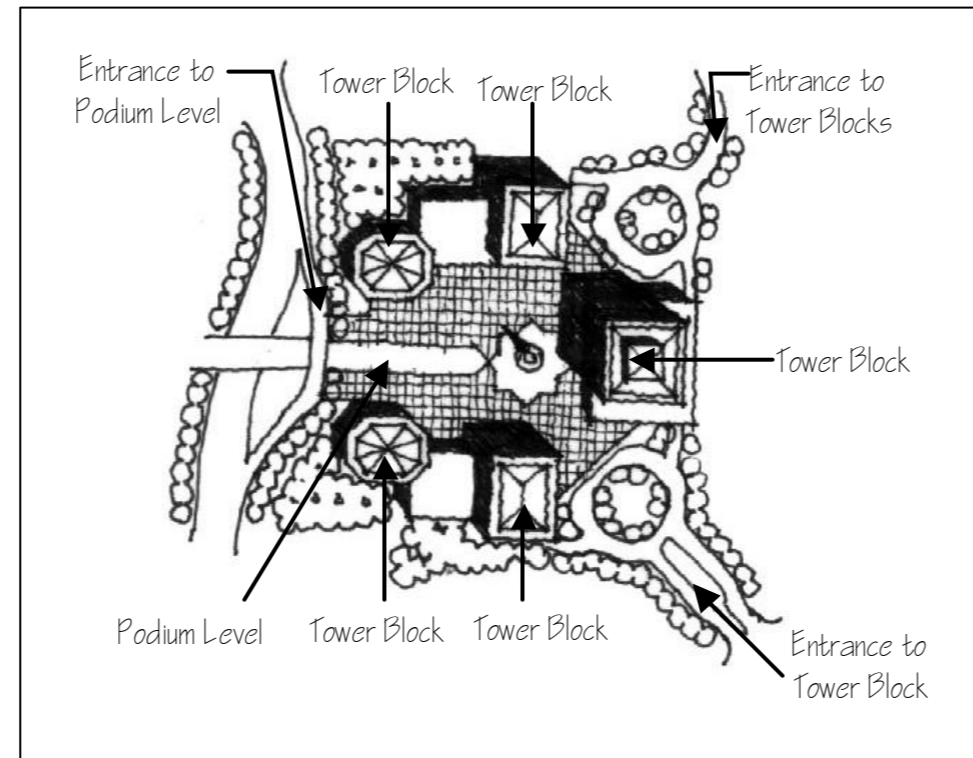
## DEVELOPMENT MIX

- All plots within the mixed-use zone shall contain a minimum amount of core commercial and residential uses. The mix of commercial and residential on one plot shall be as follows: -  
Commercial – 60%  
Residential – 40%
- The total plot ratio of the proposed development shall not exceed the maximum as indicated in **Table 12.1** below. This maximum plot ratio is the total for both commercial and residential components of the proposed development.

**Table 12.1 Maximum Plot Ratio for Mixed Development Plots**

Plot	Maximum Plot Ratio	Maximum Height
Plot P7.1-1	1.5	2
Plot P7.1-2	2.0	6
Plot P7.1-3	1.5	3
Plot P7.1-4	1.5	3

- Commercial uses especially retail are encouraged to be located on the ground floor fronting main streets whereas residential should be for upstairs levels and/or fronting secondary streets. Allowable activities within the plot shall conform to use class orders as specified in the Local Plan. Shop-office-home office (SOHO) concepts shall be considered as commercial use.
- Entries from the street to upper levels should be clearly identifiable. Entries for residential uses should also be separated from commercial uses to allow for privacy for residents.



**Figure 12.4**  
**Typical Integrated Mixed Development**

## DEVELOPMENT MIX

- Retail use should have appropriate delivery and garbage collection access, and related noise impacts on residents from early morning movements should be mitigated.
- Possible late night noise from restaurant activities should be contained so it does not impact nearby residents. The restaurants should be appropriately ventilated to minimise negative impact of cooking smells on upper storey occupants.
- Integrated mixed development where commercial and residential are on separate blocks within the same plot, should be well connected either at podium or atrium level. Each of these blocks should have its own servicing area and entrances.

12.3 URBAN DESIGN

12.3.1 Streetscape

**Streetscape** is the urban character of the public realm that is made up of an assemblage of landscape, walks and curbs between the lot line and the vehicular lanes. Its physical character and ambiance is further defined by building frontages aligning the public right of way.

**Clear Sidewalk Zone** is the zone within the streetscape where pedestrian flow is in continuity and uninterrupted by any structures such as columns or any landscape furniture such as trees, benches, kiosks and utility elements such as covers and gratings.

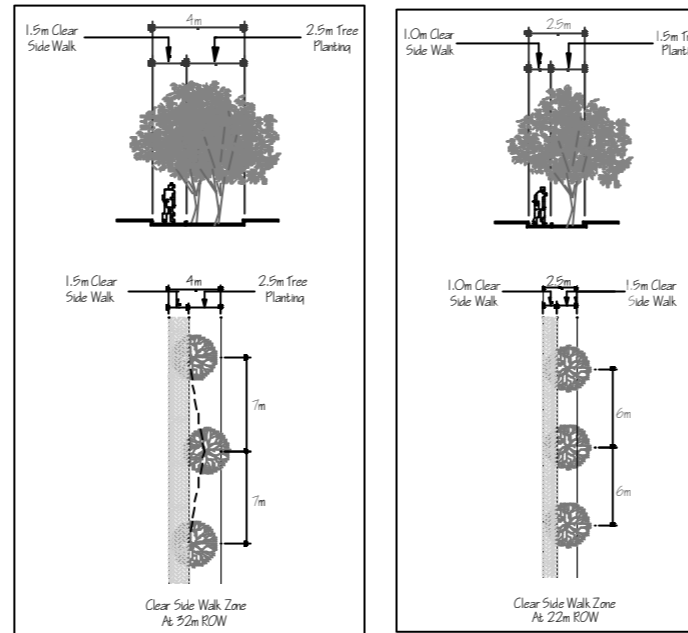


Figure 12.5  
Clear Sidewalk Zone

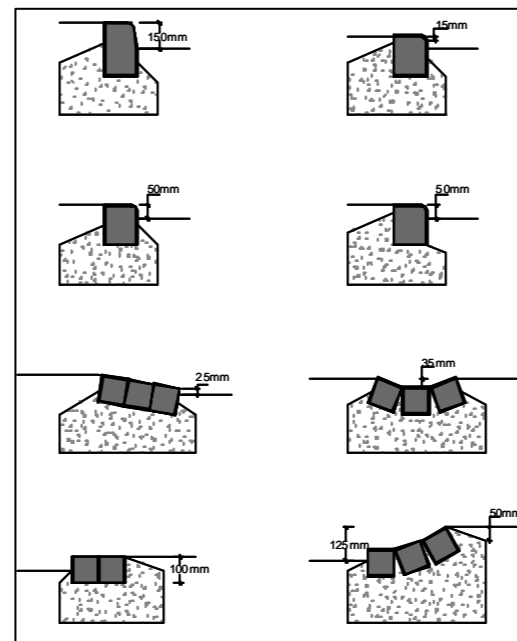


Figure 12.6  
Kerb

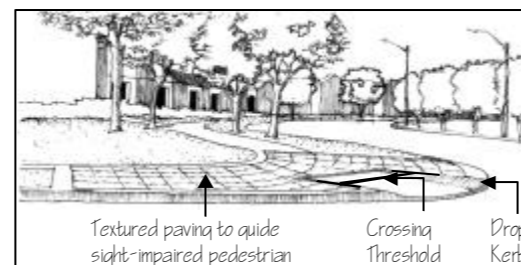


Figure 12.7  
Drop Kerb

STREETSCAPE

- Clear sidewalk zone shall be ensured along all 32m and 22m roads according to the following minimum width (Figure 3.16). The clear sidewalk zone shall not be interrupted by any permanent or temporary structures including trees, utility covers and gratings.
 

32m roads	-	minimum 1.5m
22m roads	-	minimum 1.0m
- The design of each street should convey to the user its primary function, character and identity, and encourage appropriate driver behaviour.
- Raised kerb should be of maximum height of 150mm.
- The inner edge of the flat bed kerb (next to the carriageway) shall be generally flush with the adjacent pavement. However, a 15mm chamfer is permissible where vehicular and pedestrian areas have to be differentiated. Gradient of flat bed kerb shall not exceed 1:10 (vertical: horizontal).
- Drop kerb shall be used at every pedestrian crossing. The width of drop kerb crossing threshold shall be equal to the width of crossing demarcated on the thoroughfare surface. Gradient of the drop kerb shall have a maximum grade of 1:12.
- A band of 800mm tactile paving shall be positioned behind the crossing threshold and surface of crossing threshold shall be differentiated from the entire sidewalk pavement to facilitate sight-impaired pedestrians.
- Continuous sidewalk shall be maintained along kerb cut zone and level changes on footpath zone shall be avoided where possible to ensure smooth pedestrian movement.
- Materials used shall of high durability, easily maintained and consistent with other kerb materials but may be selected to have a visual differentiation in terms of colour and design from the adjacent paving to clearly delineate a designated route.

## 12.3.2 Frontages and Facade

**Frontage** is the privately held layer between the façade of a building and the lot line that fronts the public streetscape. It is characterised by the dimensional depth of the front yard and the combination of architectural elements such as fences, stoops, porches and colonnades and is correlated with the distance within which the building is setback from the boundary line. See also *Setback Line*.

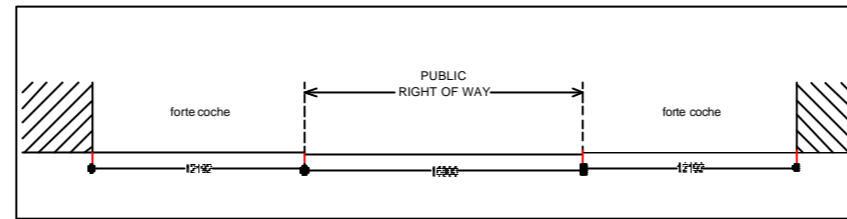
There are three typical frontage types as the following: -

- Forecourt
- Verandahway
- Stoop

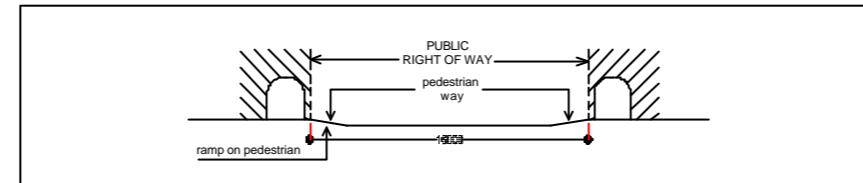
**Forecourt** is where the building façade is setback from the frontage line creating a forecourt suitable for vehicular drop-off, gardens and utility off-loading. This type is suitable for free-standing buildings.

**Verandahway** is where the ground level is setback from the lot line whilst the upper levels are aligned on the lot line. This accommodates pedestrian access along the frontage and more suitably applied to retail developments. Buildings are normally aligned on the boundary line. See also *Build-to-line*.

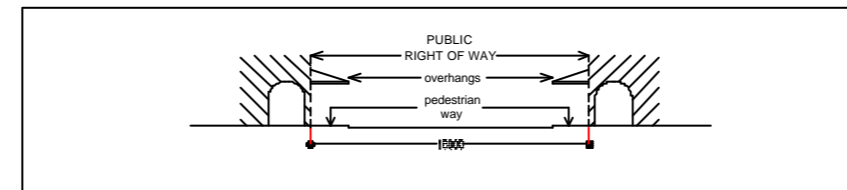
**Stoop Frontage** is where the façade is aligned build to line and the pedestrian way is elevated slightly from the street. Overhangs that extend into the public right of way are normally used to provide more coverage for pedestrians. See also *Build-to-line*.



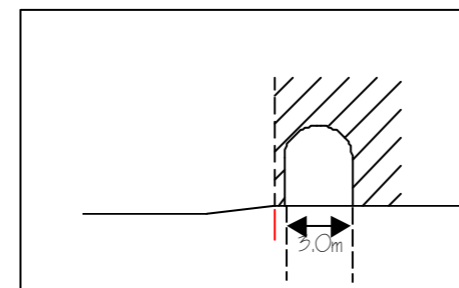
**Figure 12.8**  
**Forecourt Frontage**



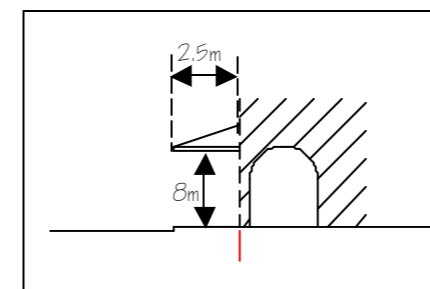
**Figure 12.9**  
**Verandahway Frontage**



**Figure 12.10**  
**Stoop Frontage**



**Figure 12.11**  
**Width of Verandahway**

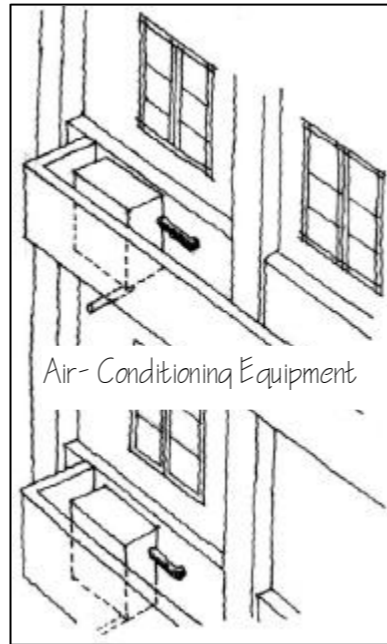


**Figure 12.12**  
**Overhang on Stoop Frontage**

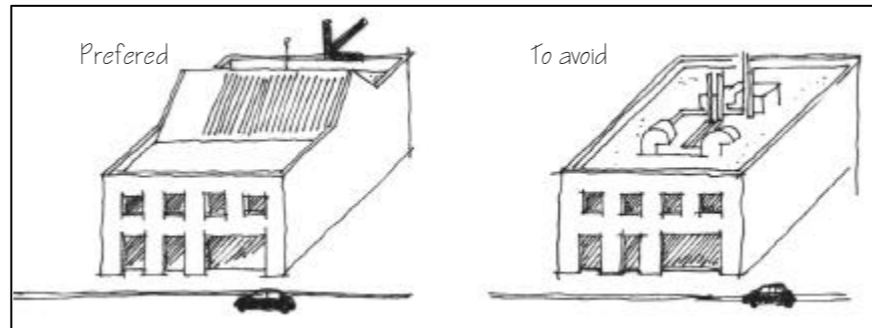
## FRONTAGE

- The width of any verandahway shall not be less than 3.0m and height clearance of 8m. Where there is a change in levels along the verandahway between adjoining lots, steps with riser not exceeding 150mm and treads not less than 275mm or a pedestrian ramp of gradient of not exceeding one in ten (1:10).
- Columns defining front verandahway shall be between 400cm and 600cm in depth.
- Overhangs on buildings with stoop frontage shall not be more than 2.5m in width and the height measured from the surface shall not be less than 8m.
- The façade treatment should: -
  - Provide sun shading
  - Incorporate tropical vernacularism design character
  - Avoid continuous blank walls or continuous or monotonous elevation treatment
  - Incorporate screening devices for mechanical units
  - Incorporate lively character for street level facades
  - Visually suggest uses within the building.

**12.3.3 Mechanical and Utility Appliances**



**Figure 12.13**  
**Compartment for Air Conditioning Equipment**



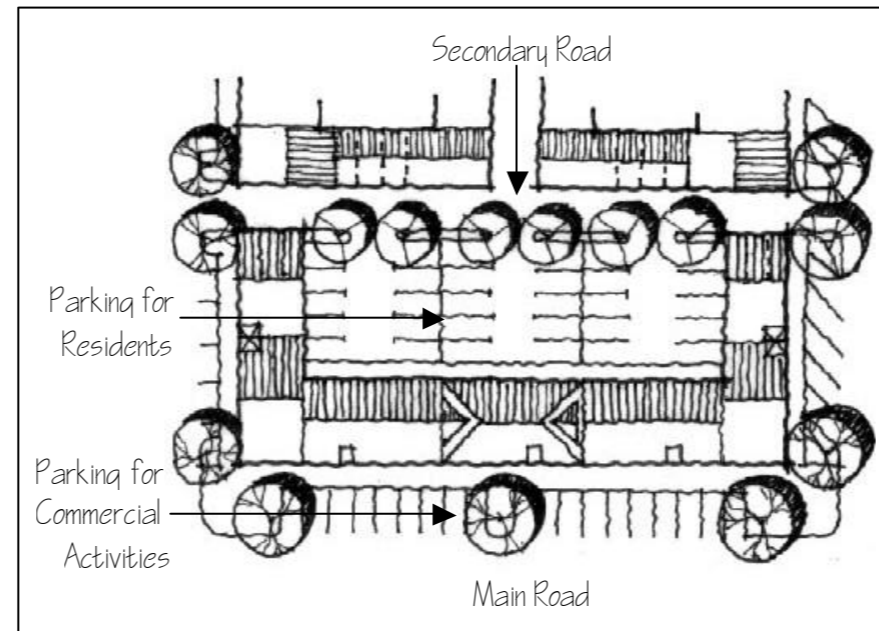
**Figure 12.14**  
**Service Equipment on Roof**

MECHANICAL & UTILITY APPLIANCES

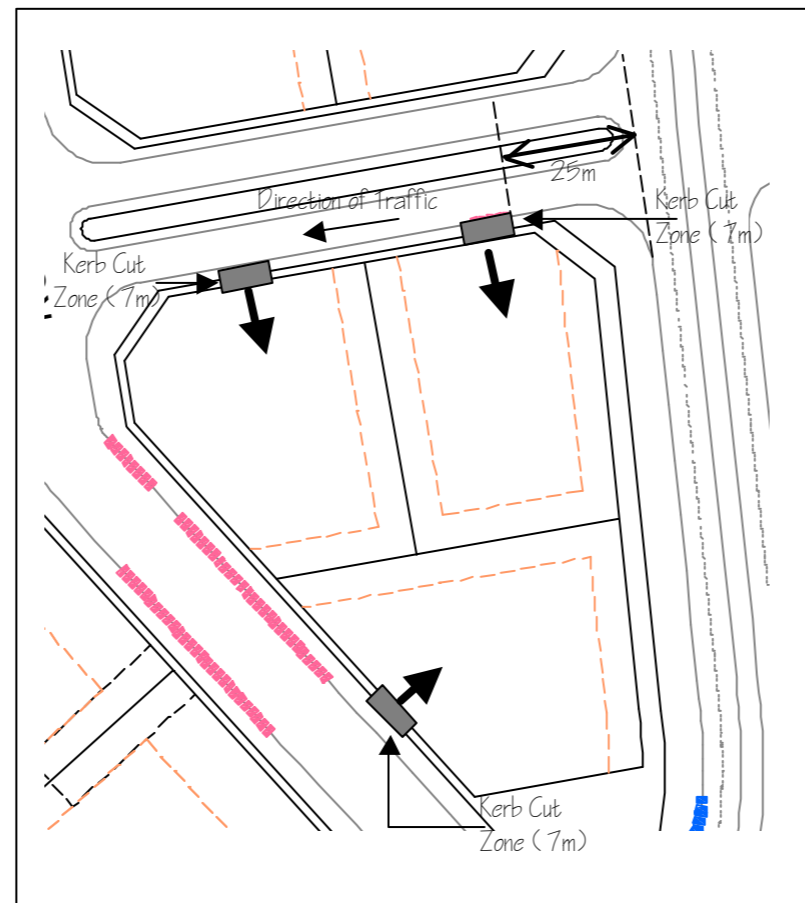
- Service equipments on roof shall be located within the roof cone and shall not be visible at ground level for up to a lateral distance of 57m from the façade of the building. They shall be position in such a way to minimise visual impact particularly from tall buildings and shall be housed in enclosures that are designed as a feature to effectively conceal any unsightly equipments.
- Air conditioning equipments should be contained in compartments that are designed as an integral component of the building to ensure they are hidden from view particularly from the public street. Air conditioning ducts shall not be exposed on the external surfaces of the buildings.
- Building design shall also take into consideration of placements of aerial and satellite dishes. For high-rise commercial buildings, a central reception system should be incorporated into building design. For other residential buildings, aerial and satellite dishes shall be located to avoid adverse impact on the amenity of adjoining buildings as well as character and appearance of the streetscape.
- All other service ducting shall not be exposed on the external surface of the buildings.

**12.4 ACCESS AND PARKING**

**Kerb Cut Zone** is the location where kerbs may be cut or discontinued for the purpose of incorporating vehicular and service access/drop off into the plots or easements without compromising the continuity of sidewalk.



**Figure 12.15**  
**Typical Example of Separate Access for Residential and Commercial Use**



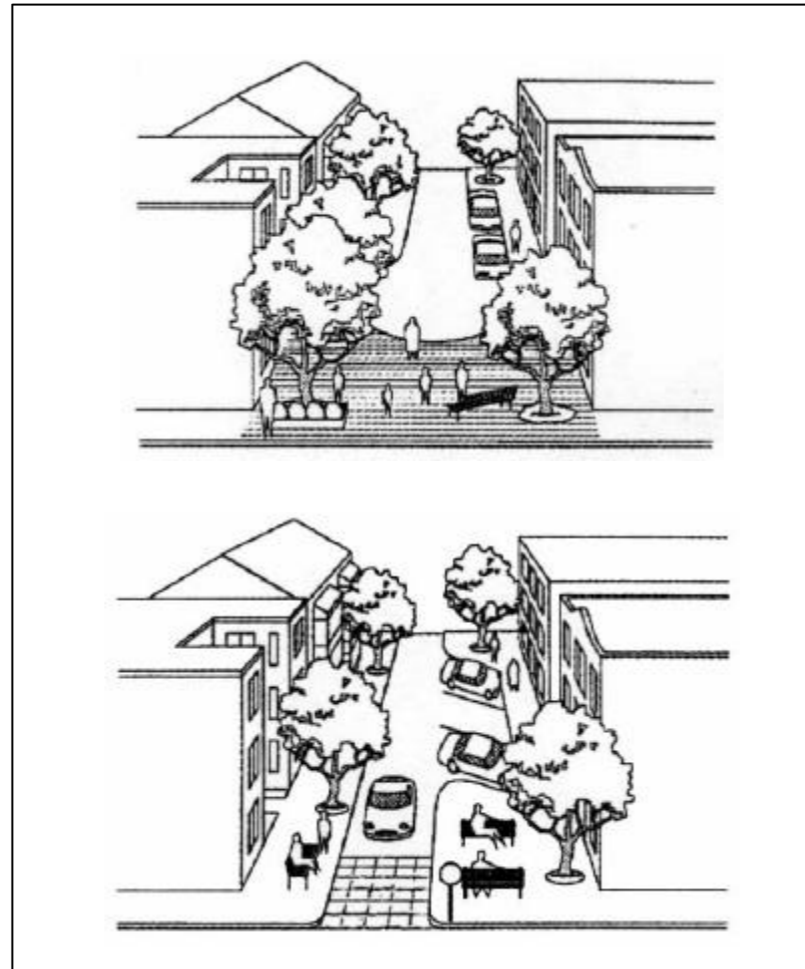
**Figure 12.16**  
**Kerb Cut Zone**

**VEHICULAR & PEDESTRIAN ACCESS**

**Vehicular and Pedestrian Access**

- A clearly identifiable road hierarchy and function segregating commercial and residential traffic should be established to provide safe circulation and some form of privacy for residents.
- Vehicular circulation should be segregated from pedestrian routes.
- Traffic calming devices should be introduced at strategic location especially along residential routes.
- Adequate provision should be provided for service and delivery vehicles and segregated from access for residents.
- Pedestrian routes should be segregated from vehicular circulation
- Plaza or open spaces should be created along important pedestrian street
- Shading devices such as awning, canopies etc should be incorporated along pedestrian routes
- Level changes along pedestrian routes shall be avoided.
- Main pedestrian route shall not be disrupted either by improper positioning of landscaping elements or any other utility equipments. Continuous pedestrian route or clear sidewalk zone must be maintained along important pedestrian route.
- Provision for disabled along main pedestrian route shall be made.
- Kerb cut zone should be allocated for all plot along all roads. The kerb cut zone shall be setback to a minimum distance of 25m from the nearest junction from which traffic is approaching. The kerb cut should be of minimum width of 7m to allow for egress/ingress of vehicles into development plot (**Figure 3.32**). Drop kerb with gradient not more than 1:12 shall be used at all kerb cut zones.

**Parking standard** is a requirement for provision of parking space based on number of dwellings units for residential development and on gross floor area for commercial and other developments.



**Figure 12.17**  
**Typical Dedicated Parking for Residential Use in Mixed Use Development**

**PARKING**

**Parking**

- Parking for commercial and residential use should be segregated and provided in accordance to the parking standard indicated in **Table 12.2**.
- Provide spaces for handicapped close to building entrance.
- Adequate lighting for security and safety reason especially for residents.

**Table 12.2 Parking Standard for Mixed Use Developments**

Type of Development	Number of Car Parking Spaces (CPS)	Number of Motorcycle Parking Spaces (MPS)	Others
Retail	1 CPS : 70 GFA	1 MPS : 200 GFA.	Handicapped parking – 1% on top of the required parking provision or minimum 2 parking spaces whichever is higher.
Shop Office	1 CPS : 70 GFA	1 MPS : 150 GFA	
Restaurants	1 CPS : 20 GFA.	1 MPS : 160 GFA	
Food Court	1 CPS : 20 GFA	1 MPS : 70 GFA	
SOHO	1 CPS : 70 GFA + 1 CPS : 1 unit	1 MPS : 200 GFA.	
Apartment	1 CPS : 1 unit + 10% for visitor	50% of total housing units	
Condominium	2 CPS : 1 unit + 10% for visitor	50% of total housing units	
Town House/ apartment	1 CPS : 1 unit + 10% for visitor	50% of total housing units	

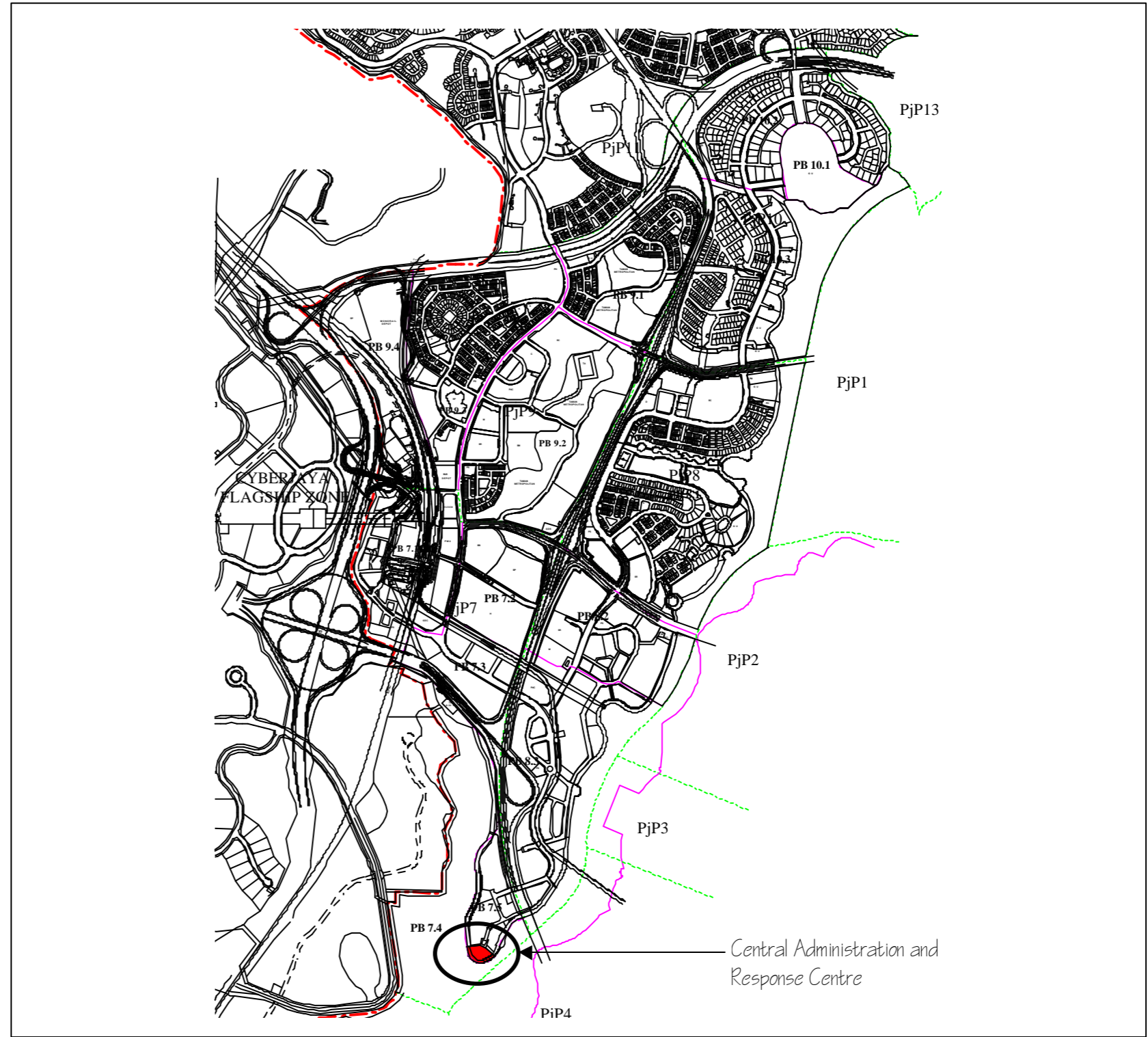
Note: GFA is in square meter  
CPS – Car Parking Space  
MPS – Motorcycle Parking Space

- Surface parking shall be located in pockets and as near to the pedestrian entry. Access for pedestrians via walkway and ramps where required shall be provided. Grasscrete surface shall be used for all surface parking to allow for infiltration surface runoff. Landscape features shall be used to soften hard surface of surface parking.
- Linear rows of car parking bays shall be avoided and shades shall be provided. Planting island of 1m shall be incorporated for every 6 parking bays.

# 13.0 CENTRAL ADMINISTRATION AND RESPONSE CENTRE

## 13.1 USE OF GUIDELINE

This guideline shall be used for development of the Central Administration and Response Centre (CARC) located within PB7.5 as shown in **Figure 13.1**.



**Figure 13.1**  
**Location of CARC**

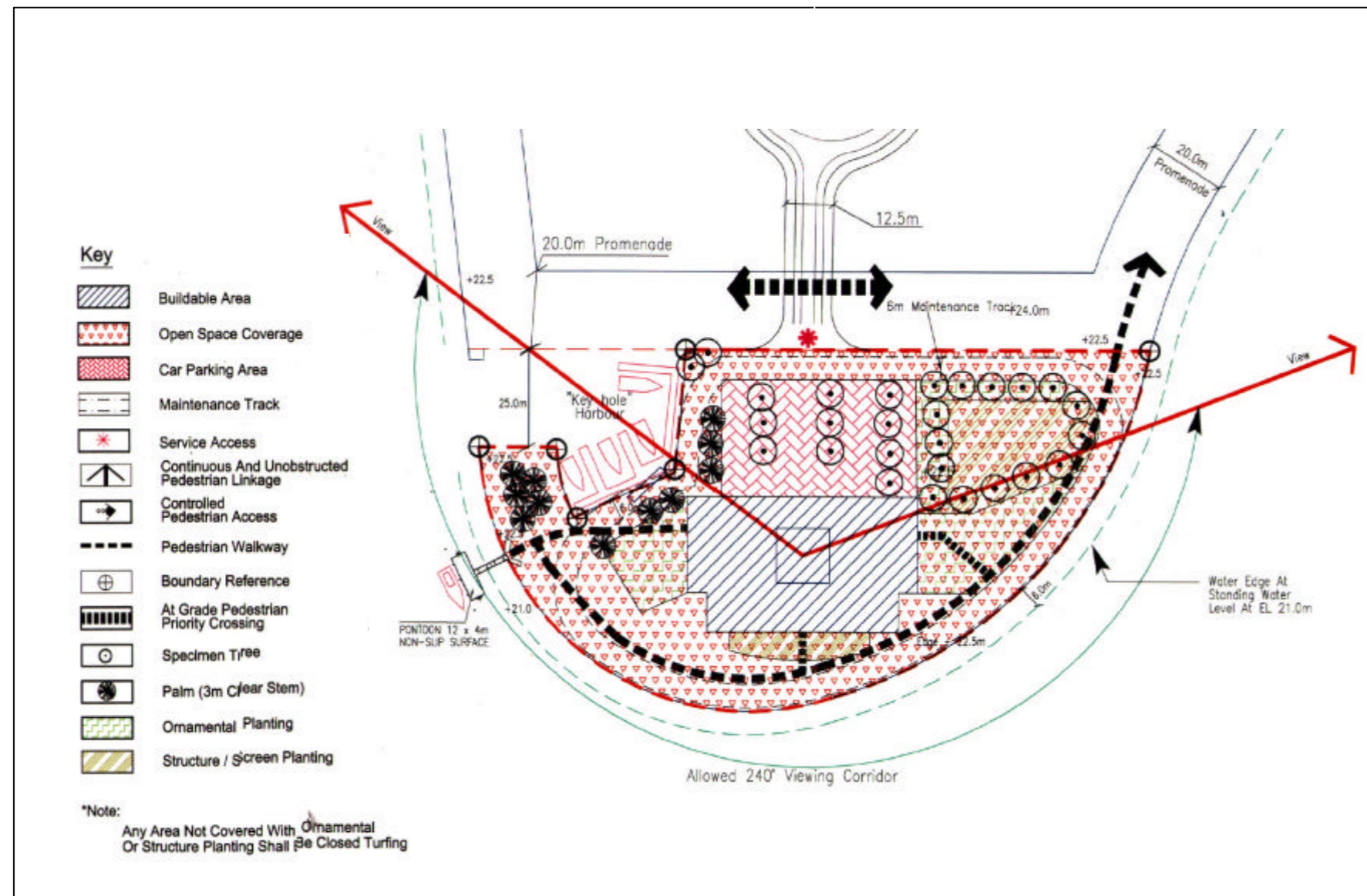
### 13.2 PLANNING REQUIREMENTS

**Gross Floor Area (GFA)** is the sum of the plan areas of all floor levels (inclusive of the plan area of all walls, windows, columns, elevator shafts) and the plan area of all internal and external stairs, landing ramps, escalators, or other means of access between levels, or at each level in the building.

**Open Space Coverage** is the portion of plot area outside plinth area. It may comprise of internal circulation, open space and both hard and soft landscape elements.

**Reference Platform Level** refers to the highest ground level adjoining the building at the street where the building fronts at the nearest chainage point. It provides a reference level based on a universal scale as preliminary orientation of levels on site.

**Figure 13.2**  
**Schematic Design Guideline for CARC**  
Source : Hijjas Kasturi Sdn Bhd



### PLANNING REQUIREMENTS

- Activities within the CARC shall conform to Use Class Order as specified in the Local Plan.
- Development of the CARC shall conform to the following planning requirements: -

**Table 13.1 Planning Requirements for Development of CARC**

Plot Area	1.25 hectares (3.1 acres)
Maximum GFA	1687.27 sq.m.
Reference Platform Level (RPL)	RL 24.0m
Parking	40 car parking spaces 9 motorcycle parking spaces
Minimum Open Space Coverage	40.65%
Minimum Landscape Reserve	40% of open space coverage

- Access for emergency vehicles and maintenance vehicles to promenade shall be made at every 500m interval within the promenade. Maximum gradient for the access shall not be more than 1:12.
- A viewing corridor of minimum 240 degrees shall be provided for within the CARC building to allow for unobstructed view from the building into the lake as part of the administrative function of the building.
- Building of the CARC shall be designed as feature building that can become a focal point or icon within the immediate surrounding developments.

# GLOSSARY

**Access Road.** Provides circulation to residential area or other developments and normally carries traffic from local road into individual development pockets.

**Access.** Vehicular entrance and exit into development plot.

**Activity Nodes** are created along axis line to break up monotonous of space and to create interesting gathering areas which enhance the urban identity and character of the development.

**Alfresco Dining.** Outdoor dining associated with restaurant activities on commercial development located next to promenade.

**Angled Parking.** Pattern of parking where the vehicles are stored at an angle either 90<sup>o</sup>, 60<sup>o</sup> or 45<sup>o</sup>. It is easy to maneuver and provides higher parking density but creates the most negative sidewalk experience.

**Avenue** is a limited distance, free movement thoroughfare within an urbanized area. It is characterised by a median in the centre that may be wide enough to hold monuments or even buildings. Buildings or other structures to accentuate a focal point normally terminate its trajectory. An avenue may be conceived as an elongated square and access for vehicular traffic may be limited.

**Avenue.** Road that is used outside the building lots to enter, drop off and pick up as well as parking. It provides circulation within residential estates or other developments and normally handles low traffic volume.

**Axis.** An imaginary reference line linking two major points used for orientation and organization of urban elements along its trajectory.

**Benches.** Long seats for sitting on. This can be in the form of a freestanding structure or a low wall, and can include arms and back rests as well as integrating other street furniture and lighting elements depending on designers preference.

**Bollard.** Short upright post usually found in multiple linear placements. Bollard is use to circumscribe vehicles on continuous paved surface, as in the design of plazas.

**Boulevard.** A long-distance, free movements thoroughfare traversing an urbanized area. A boulevard is flanked by wide parkway on both side of the thoroughfare with landscaped median in the centre. Buildings are setback from the lot line to accommodate for additional landscape strip, sidewalk or service lanes.

**Building Façade.** The external vertical surfaces of buildings or structures. Façade shall respond to urban topological character and context to create a coherent urban environment and attractive streetscape. Elements such as veranda way, entrance and portals, window, vertical landscaping, exterior projections, expression lines, roof projections, utility such as gutters, drainpipes etc make up a harmonious entity of building façade.

**Building Height.** The limit to the vertical extent of a building. It is measured as a number of storeys or floors from the ground level.

**Building Orientation.** Arrangement of building façade to face certain direction normally the public realm.

**Build-to-line.** Compulsory alignment along a specific edge that is parallel to the street or public open space. It is a line graphically indicated as a setback dimension along which a façade or wall must be placed to enforce building alignment along specific edge.

**Character.** Suitability of a road as a setting for pedestrian activities and as a location for a variety of building types. It is physically manifested by associated buildings and frontages that align a particular section of the road. The associated terminology for character is *streetscape*.

**Clear Sidewalk Zone.** The zone within the streetscape where pedestrian flow is in continuity and uninterrupted by any structures such as columns or any landscape furniture such as trees, benches, kiosks and utility elements such as covers and gratings.

**Commercial Roads.** Roads that serve traffic within commercial areas..

**Corner Buildings.** Part of buildings located facing the chamfered section of a junction or public open space.

**Corner Plaza.** Plaza located enfronting 'corner building' and usually happen at road junction or two designated path i.e. where the Peoples Parks meet the Drive, and intended to highlight the building frontage and to frame the view corridor. Introduced to ensure interesting variation to the streetscape and to highlight and emphasize frontage.

**Covered parking.** A specialised building or part of building dedicated for parking. The parking is at basement, sub-basement, multi-level or rooftop. This type is normally suitable for commercial or high-rise residential buildings.

**Cul-de-sac.** Access to individual buildings and does not normally carry through traffic. It normally creates a relatively secure and safe environment particularly if located within residential areas.

**Density.** Ratio of dwellings to the area of the site they occupy (including communal street and communal open space). It is measured as unit per acre of land.

**Distance Between Buildings.** The minimum distance measured horizontally from the outermost projection of the building to another building.

**District Park.** Public outdoor space located in the Sub-commercial Centre intended as an activity focus at the heart of intensive urban area. Also known as *Urban Park*.

**Drive.** A thoroughfare along the boundary between an urbanized area and a natural condition, usually along a waterfront, a park, or a cape. One side of a drive has the urban character of a street or boulevard, with sidewalk and buildings, while the other has the qualities of a road parkway, with naturalistic planting and detailing.

**Drop Kerb.** Area where kerb reduces in height at pedestrian crossings and kerb cut zones.

**Dual-use Path.** Footpath whose right of way is shared by both pedestrian and cyclist within the same lane.

**Environmental Management Plan (EMP).** Detail description of practices to be followed and activities to be undertaken for the environmental management of the development area.

**Expression Line.** A visual horizontal line that shall be expressed architecturally at defined heights between the base zone and the mid zone. It defines the façade proportionately to street level and human scale. It is expressed by a variation of material or by a limited projection such as a moulding or any protruding elements.

**Feeder Pillar.** An electrical distribution board for street lighting supply fed from TNB substations or looping from another feeder pillar.

**Fencing.** A broad range of approaches to property boundary demarcation including residential and non-residential fences of masonry, timber and metal construction (hard fencing), fences comprised of hedges and other forms of landscape (soft fencing), or walls, including retaining structures, courtyard walls, and party walls.

**Fibre Distribution House (FDH).** Telecommunication infrastructure, which terminate the fibre optic cable of the main telecommunication backbone before the final lines/coaxial lines/multi mode fibre optic lines are pulled to individual consumers.

**Flat Bed Kerb.** The smooth transition paving differentiating two different materials of the sidewalk and the carriageway that is laid flush with the surface or shallow ramp. This type of kerb is typically used along kerb cut zones where provision of vehicular access or drop off is made.

**Flat Kerb.** The edge between sidewalk and carriageway where change of level is minimal and the domain between pedestrian and vehicular is normally demarcated by kerb barriers. Typically used at public spaces such as parks.

**Focal Point.** Primary areas or elements that act as visual or directional landmarks; e.g.: where activities or main movement networks converge, primary open spaces, and important structures.

**Forecourt.** Building façade that is setback from the frontage line creating a forecourt suitable for vehicular drop-off, gardens and utility off-loading. This type is suitable for free-standing buildings.

**Formal Hard Edges.** Vertical or battered formed walls that have a profiled or decorative applied surface treatment. The main structural component of these walls will typically be reinforced concrete.

**Formal Promenade.** Promenade area characterised by hard paving with handrails where pedestrian access to the edge of the promenade immediately before the water is maximised. This type is normally associated with very urban ambiance particularly commercial areas and public realms.

**Frontage.** The privately held layer between the façade of a building and the lot line that fronts the public streetscape. It is characterised by the dimensional depth of the front yard and the combination of architectural elements such as fences, stoops, porches and colonnades and is correlated with the distance within which the building is setback from the boundary line.

**Frontage Street.** Residential road that face towards the main roads (i.e. Spine road and above). The frontage road will have similar characteristics of an Access Road, Avenues or Cul-de-sac.

**Gas Area Station.** The medium pressure gas line is regulated to low pressure 300mm H<sub>2</sub>O for residential use.

**Gas District Cooling Plant.** A centralised chiller plant using gas as the fuel to supply chilled water to mainly commercial buildings.

**Gas District Station.** A high-pressure gas line is regulated to medium pressure and fed to the Gas Area Stations.

**Gateway.** An urban element which marks the entrance or the threshold of a sector or a district, one of the elements useful for orientation within the urban fabric.

**Green Corridors.** Amenity spaces, which shall provide pedestrian and cycleway linkages between the metropolitan, local and neighbourhood open spaces. The green corridors are intended as a secondary level of access formed from either cycle and pedestrian routes or solely pedestrian routes. Also *Green Connectors*.

**Gross Floor Area (GFA).** The sum of the plan areas of all floor levels (inclusive of the plan area of all walls, windows, columns, elevator shafts) and the plan area of all internal and external stairs, landing, ramps, escalators, or other means of access between levels, or at each level in the building.

**Hardscape Zone.** Open space area dominated by paving, urban furniture. Parking and vehicular driveways can also be classified as hardscape.

**Hierarchy.** Organization of a road system into higher and lower ranks.

**High Density Housing.** Housing area that provide high-density residential development to meet the requirement for demand of such housing especially in the case of affordable homes. The residential development shall normally be of apartment type.

**Junction.** Formed when two or more roads, cross or meet. Junctions or intersections can be classified as grade separated or at-grade or partially grade separated.

**Kerb Barriers.** Low level traffic barriers employed to circumscribe vehicles on continuous paved surface and to ensure safety of pedestrians. Include bollards, landscaping and street furniture.

**Kerb Cut Zone.** Location where kerbs may be cut or discontinued for the purpose of incorporating vehicular and service access/drop off into the plots or easements without compromising the continuity of sidewalk.

**Kerb.** The detailing of the edge of thoroughfare pavement separating the level of vehicular carriageway and sidewalk.

**Kindergartens.** Pre-school education facilities for children from ages of 3 to 6 years. It may sometimes be combined with nursery facilities for infants and toddlers within the same compound or area of kindergarten.

**Kiosk.** A lightweight open-fronted booth or structure selling food, newspapers and other small consumer items.

**Lake Edge Treatment.** The treatment of the embankment of lake or the lake shoreline from the promenade boundary.

**Landmark.** A significant features or structure of superior or unique expression and form that adds interest to the urban fabric and language of the city.

**Landscape lighting.** Ornamental and atmospheric lighting to compound areas and public open space that is not governed by statutory regulations.

**Limited Commercial.** Development comprising of office, retail and residential within the same plot. It is similar to mixed use but is only applicable

**Local Centre.** An area where commercial activities and spaces are provided to serve a local community and are normally centrally located within one or several housing neighbourhood. Commercial activities usually include retail shops for convenient goods and the supply of basic services

**Local Distributor.** Fourth ranking road classification in terms of hierarchy in the Putrajaya Road Network. It is a 6-lane highway with reserve of 50 metres. It provides link into local road network.

**Local Park.** An open space that provides short distance recreational facilities for local population of various Planning Blocks within the Local Plan Area.

**Local Road.** Sixth ranking road in the Putrajaya Road Network. It has a reserve of 22 metres and serves to connect spine road to access and service roads.

**Lot Frontage.** The boundary line or part thereof, of the lot, which coincides with the alignment of a road, public open space, or promenade.

**Low Density Housing.** Area where all housing will be subject to provisions that seek to ensure a pleasant, low-density living environment. The intended development shall be of detached and semi-detached houses in an almost exclusively low-density residential environment.

**Maximum Roof Height.** Height of roof measured at top of roof cone of the building.

**Mechanical and Utility Appliances.** Appliances such as air conditioning equipments, service ducts for air-cons, drying yard, water tank, satellite dish, antenna etc

**Medium Density Housing.** Area comprises of terrace or link houses, which are in the form of row development with direct street frontage or town houses, which are multi-unit housing involving strata title.

**Medium High Density Housing.** Medium to high-density residential development in the form of multi-unit buildings of 4 storeys and above. Examples are terrace house, town house, condominium and low-rise apartment.

**Metropolitan Park** Green space designated to cater for recreational and knowledge needs for the population of the Local Plan Area of Precincts 7, 8, 9 and 10 as well as other areas of Putrajaya as a whole.

**Mixed Use Development.** Development located within the mixed-use zone of the Local Plan where it involves more than one activity on the same lot, such as dwelling, working or shopping, taking place in close and compatible proximity. Uses may mix horizontally on the same plot and/or vertically in the buildings but shall comply with the use class order specified under the Local Plan.

**Mosque.** Dedicated building for where prayers including Friday prayers and other related Islamic religious activities could be undertaken.

**Multi Dwelling Unit.** Residential building where strata title is involved. It includes residential buildings such as apartments, condominium, flats, as well as town houses.

**Natural Promenade.** Promenade area where the lake edge shall be screened using dense woodland and vegetation. Typically associated with parks and areas where public access to the waterfront and its adjoining landuse is restricted.

**Neighbourhood Commercial Centre.** A commercial area that serves a bigger catchments area than the local centre. It will serve several neighbourhoods and has the function and activities of higher order goods than a local centre.

**Neighbourhood Park.** An open space designated for neighbourhood sports and passive recreational facilities/activities of the residential population of each neighbourhood.

**Off-street parking.** Parking area located within a lot, away from the thoroughfare reserve. There are two types of off-street parking; surface parking and covered parking.

**One-stop Centre.** A block of commercial spaces located within one large plot where parking spaces are normally centralised and characterised by not more than two anchor tenants together with smaller retailers to support daily needs of the neighbouring residents.

**On-street parking.** A single line of car parking bays located along the kerb line of thoroughfare accessible directly from a moving lane.

**Open Space Coverage.** The portion of plot area outside plinth area. It may comprise of internal circulation, open space and both hard and soft landscape elements.

**Other Religious Reserves.** Land areas reserved for use as places of worship for other religions such as Buddha and Hindu.

**Parallel Parking.** Pattern of parking where the vehicle is stored parallel to the kerb line. It permits a narrower street section and creates the most positive sidewalk experience. It is however difficult to manoeuvre.

**Park and Ride.** Facilities that provide common location for individuals to transfer from a low-occupancy travel mode to a high-occupancy travel mode. It is oriented towards providing parking spaces for automobiles connected with bus or rail stations and frequent transit services.

**Parking.** The manner of storage and accommodation of vehicles when not in use. There are two types of parking categories, on-street parking and off street.

**Parking Standard.** Requirement for provision of parking space based on number of dwellings units for residential development and on gross floor area for commercial and other developments.

**Paving.** Stone, brick, block or homogenous surface treatment applied to pedestrian or vehicular routes (pavements) to provide a solid, well defined, safe and easily negotiated surface on which both pedestrian and vehicular traffic can travel and to encourage as well as facilitate pedestrian movement in the public realm.

**Pedestrian Crossing.** A controlled point within the streetscape dedicated for pedestrian to cross the carriageway. It provides a barrier free transition within the public realm. There are two type of crossings; signalised and unsignalised.

**Pedestrian Network.** Comprehensive system of walkways and linkages dedicated for pedestrian. It is a separate walkway network from the vehicular carriageway but includes the roadside walkway. Its function is to provide the pedestrians an alternative way of moving around.

**Playground.** An open space area allocated for daily recreational facilities of school age children and toddlers living within the vicinity of respective housing areas/smaller neighbourhoods. It shall form part of the ten percent requirement of provision of open space within each development project.

**Plaza.** A public space at the intersection of important streets, set aside for civic purposes and commercial activity, including parking, circumscribed by building frontages, its landscape consisting of durable pavement and formally disposed trees, requiring limited maintenance.

**Plinth Area.** As defined by the Town and Country Planning Act, 1972, is the proportion to be covered by building of the area of any lot.

**Plinth Area/Site Coverage.** As defined by the Town and Country Planning Act 1972 is the proportion to be covered by building of the area of any lot.

**Plot Ratio.** As defined by the Town and Country Planning Act, 1976, is the ratio of the total floor area of a building to the area of the building plot as measured between the survey boundary lines or, if there are no survey boundary lines, between the provisional boundary lines.

**Primary Distributor.** Highest hierarchy of road in the Local Plan area. Its primary function is to provide strategic linkage between longer distant urban area or from expressway to urban area. This is a dual carriageway road with a 70 meters road reserve. This is the only road where provision for motorcycle lane is required.

**Priority Junction.** Road junction that does not have any form of control except to the Highway Code to access and cross-junction. It is suitable at junction where traffic flows are relatively low, particularly where the flow on minor road is small and can feed into major road traffic stream using natural breaks in the flow.

**Promenade Type.** Associated with adjacent landuse and lake edge treatments to the shoreline. Typically characterised as formal, semi formal and natural.

**Promenade.** Strip of land area located between the Putrajaya Lake and individual land parcels next to it, the width of which shall be 20m measured from the top of slope of the lake edge.

**Promontory.** Localised variations in the shoreline that allow the promenade to extend onto the 5m wide submerged bench. It is to facilitate for additional edge variation and to allow better access to deeper water for fishing.

**Protected or Reverted Edges.** Edges formed by loose laid and freestanding natural materials such as boulders, quarry stones, gabions, bakau piles or rock. A reverted edge shall be the minimal required treatment for this type of edge protection.

**Provision Threshold.** The minimum limit for any amenity to be able to provide service for. In most cases the provision threshold relates to minimum population requirement or unit for housing. This minimum provision threshold will be the minimum standards for requirement of public amenities.

**Public Amenities.** Amenities that need to be provided within development plot particularly strata residential developments for the use of the residents. It includes all amenities such as surau, mortuary/holding room, nursery/kindergarten facilities, laundrette, cafeteria, multi purpose room/hall and management office.

**Public Utilities.** Utilities that need to be provided within development plot for the use of the residents. It includes all utilities such as electric substations and feeder pillars, fibre distribution house (FDH) and solid waste storage and collection facilities.

**Raised Kerb.** A raised paving of the sidewalk where level is higher than the carriageway and is used to demarcate the limits of carriageway.

**Reference Platform Level.** The highest ground level adjoining the building at the street where the building fronts at the nearest chainage point. It provides a reference level based on a universal scale as preliminary orientation of levels on site.

**Residential Streets.** Streets in residential areas which serve a number of functions.

**Roundabout.** Central space at intersections, which makes vehicles to circle it instead of straight across. It acts as 'slow point' on all intersecting thoroughfares. It allows more than two thoroughfares to converge at a single point and at acute angles and all thoroughfares are considered as of equal traffic significance. It operates in a one-way clockwise direction. Roundabout presents excellent opportunities to improve streetscape and incorporate green spaces into development proposals.

**School Complex.** An integrated school development that will house a primary and secondary school where some of the common facilities such as sports ground and multi-purpose hall can be shared between the two. The two schools also share common vehicular entrance and exit for better security.

**Sculpture.** Can take the form of carvings, freezes, murals installations, pictures, lighting, earthworks or applied and integrated into structures and paving.

**Secondary Distributor.** Third ranking road after Expressways and Primary Distributor in terms of hierarchy in the Putrajaya Road Network. It is a 6 lane highway with a road reserve of 65 metres. It distributes traffic from other primary routes within Putrajaya to precincts in the Local Plan area.

**Segregated Cycle Path.** A dedicated lane for cyclist.

**Semi-formal Promenade.** Promenade area where the predominant character shall be of park land with naturalistic plantings intermingled with series of events or activity points. Pedestrian access to the water edge shall typically through boardwalks. This type is typically associated with residential character on the adjoining land.

**Service Lane.** Dedicated road that is only allowed for utility service vehicles such as Bomba, or garbage truck and loading/unloading into commercial building. It is not meant for normal traffic. The road reserve for this road shall be 6m wide.

**Setback.** The minimum distance and a property boundary or a wall of another building.

**Shop Office Home Office (SOHO).** A premise designed in such a way to accommodate a mixed activity of office and home.

**Shophouse.** A row of commercial building where the frontage is associated normally with verandahway that allows pedestrian access from one end to the other. Shophouse also refers to mixed use of commercial activities at the lower ground and residential use at the upper floors.

**Shopoffice.** Row of commercial buildings where frontage is associated normally with verandahway that allows pedestrian access from one end to the other, and is used for commercial activities only.

**Side Setback.** Setback on the sides of the lot that adjoin another lot.

**Sidewalk.** Layer of the streetscape dedicated exclusively to pedestrian activity and small-wheeled oriented vehicles. It is normally situated within the road reserve or within the setback area of a development plot.

**Signalised Junctions.** Three or four arm junctions managed and controlled by traffic signals. The newer signalised junctions are computer controlled and linked to operate at a optimum level of efficiency.

**Single Dwelling Unit.** Residential building on landed property with individual title given to individual unit. It includes detached or bungalow housing, semi-detached housing and terrace housing.

**Soft Edges.** Natural soil edge where the slope profile runs into the water with no protective barrier into the water with no protective barrier for wash and wave action.

**Softscape Zone.** Space within the urban fabric and open space network designated for soft landscape. The soft landscape zone may include all or a combination of trees, shrubs, ground cover planting and turfing.

**Spine Road.** Fifth ranking road classification in terms of hierarchy in the Putrajaya road network. It is the main route serving neighbourhoods and normally be used as the main route for bus services. It is a dual two lane carriageway road with reserve of 32 metres.

**Stoop Frontage.** Façade which is aligned build to line and the pedestrian way is elevated slightly from the street. Overhangs that extend into the public right of way are normally used to provide more coverage for pedestrians. See also *Build-to-line*.


**Storey.** The space within a building which is situated between the floor of one level and the floor of the level next above, or, if there is no level above, the top of the ceiling above. The term includes any mezzanine floor or any space on the roof of a building, which is covered by impermeable material and areas of uncovered roof, which are assessed as comprising part of the gross floor area of the building.

**Street Frontage.** Setback where lot/building frontage faces the following. Also refers to *Front Setback*.

- i. Street frontage for main roads such as local or spine roads
- ii. Street frontage for roadside buffer
- iii. Park/public open space
- iv. Green corridor linking neighbourhood centres or open space
- v. Waterfront/promenade

**Street.** A local slow movement thoroughfare that provides frontages for higher density buildings such as offices and shops. The frontages are mostly green setbacks of buildings aligning it and sidewalks along the carriageway.

**Streetscape.** Part of urban character of the public realm that is made up of an assemblage of landscape, walks and curbs between the lot line and the vehicular lanes. Its physical character and ambiance is further defined by the vehicular lanes and building frontages aligning the public right of way.



**Surau.** A building or space within building where daily prayers and other daily religious activities such as learning of the Quran can be performed.

**Surface Parking.** Parking area at grade adjacent to building either as its rear, side or front. It provides convenient pedestrian access from the parking area to destination of the trip.

**Traffic Calming.** Series of measures to deliberately slow traffic in a commercial or neighbourhood. Typical measures are streets with different riding surface, non-linear streets, a typical parking layout and introduction of junctions.

**Tree Grilles** is material used to protect the tree pit.

**Tree Pit** A cavity as deep as the height of the ball of earth of the tree stock with side somewhat larger and unfilled with topsoil.

**Use Class Order.** The prescribed activity for the use of land or building. It is categorised into classes where change from one class to the other shall be deemed to constitute development and therefore shall require planning approval. Change within the same class however shall not require planning approval under the provision of the Local Plan.

**Verandahway.** The ground level is setback from the lot line whilst the upper levels are aligned on the lot line. This accommodates pedestrian access along the frontage and more suitably applied to retail developments. Buildings are normally aligned on the boundary line. See also *Build-to-line*.

**Visibility Cone/Splay.** Unobstructed clear sight distance required to on-coming and on-going traffic from an intersection. Adequate sight distance will permit drivers entering an intersection to see approaching traffic from a long enough distance to allow them to decide when to enter or accelerate in advance of the approaching traffic.

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