# Hong Kong Planning Standards and Guidelines

# Industry

Chapter

5


Planning Department
The Government of the Hong Kong Special Administrative Region

# CHAPTER 5 INDUSTRY

## CONTENTS

**Tables**



**Figures**

**Appendices**

# INDUSTRY

## 1. Introduction

1.1 The re-structuring of the industrial sector that has taken place in Hong Kong since the launching of the 'open door' policy in China and the subsequent continuous economic restructuring to be more service and knowledge-based have important implications on the demand for industrial land, in both quantitative and qualitative terms.

1.2 The planning standards and guidelines presented in this chapter are formulated within the strategy framework developed on the basis of the findings of on-going studies on industrial land requirements. The latest studies were the 'Study on the Provision of Industrial Premises and the Development of Planning Guidelines and Design Parameters for New Industrial Areas and Business Parks completed in late 1996' (i.e. the PIPNIB Study) and the 'Study to Review the Planning Framework for the Reservation and Provision of Industrial Land' (Industrial Land Review Study) completed in end 1999.

## 2. Scope and Application

2.1 This chapter sets out the industrial land use typology based on which land reservation is made; as well as the provision standards and locational guidelines for industrial developments including development parameters and planning criteria such as lot size, plot ratio, site coverage, worker density, traffic engineering requirements and supporting facilities. Planning guidelines for environmental consideration and other supporting facilities such as open space and provision of parking and loading/unloading spaces, are incorporated in the respective chapters of the Hong Kong Planning Standards and Guidelines (HKPSG).

2.2 Guidelines relating to development parameters and planning criteria are mainly intended for application in the planning of new industrial areas. Where possible and appropriate, they should also be applied in an incremental manner in existing industrial areas, in particular, when opportunities exist in the comprehensive redevelopment of sizable properties.

### 3. Main Features of Hong Kong Industry

3.1 Manufacturing industry in Hong Kong has undergone significant changes with many firms relocating their production-related and labour-intensive operations to southern China and other countries in South-east Asia. Despite these changes, manufacturing industry remains an important component of Hong Kong's economy.

3.2 With the relocation of the manufacturing operations, many manufacturing

establishments have shifted their roles towards non-production activities such as administration, design, sales and marketing, prototype production, research and development, quality control and packaging. Closer ties have also been established with other sectors such as finance, transportation, trade and advertising.

3.3 Although many firms have relocated their production operations, a substantial number of manufacturing establishments are still engaging in low value-added, light manufacturing activities. On the other hand, manufacturing processes that have emerged in recent years have tended to be higher value-added and technology- and information-based production activities such as printing, multi-media computer hardware and software production, food processing, electronic toys and quality clocks and watches production. In addition, there has also been a tremendous growth in the number of trading firms, many of which are also actively involved in aspects of the manufacturing process such as product design, mould and sample making, production planning and quality control.

3.4 The trend for the manufacturing industry towards more technology and information-based and the intricate linkage of manufacturing and commercial functions have blurred the distinction between the conventional industrial and office uses, particularly in new industrial areas. Many industrial establishments are engaged in non-production, import/export and office-based activities. The infiltration of commercial uses into industrial areas is becoming a common phenomenon.

## 4. Planning Strategy for the Provision and Reservation of Industrial Land

4.1 The framework for the planning strategy for the provision and reservation of industrial land was endorsed in 1997 on the basis of PIPNIB, which provided recommendations with respect to the magnitude, timing and distribution of industrial land at the strategic level as well as a guide to more detailed planning at the district level where the planning standards and guidelines are applied. Due account was taken of the level of land requirements worked out on the basis of the industrial land forecasting methodology.

4.2 The strategy framework was subsequently reviewed on the basis of the Industrial Land Review Study and endorsed in end 1999. The strategy recognized that industrial and office uses are not mutually exclusive and there are commonalities between them in spatial demand. To cater for the changing needs of the industrial and business sectors, the strategy recommended the introduction of the “Business” zone.

4.3 Noting that manufacturing industry will increasingly concentrate on higher technology processes, research and development functions and service-oriented activities, the planning and provision of industrial land and premises in Hong Kong shall follow this trend.

## 5. Definition of Industrial Use

5.1 The following definition of "Industrial Use" promulgated by the Town Planning Board is also generally adopted:

'The use of any place, premises or structure for the manufacture, alteration, cleansing, repairing, ornamenting, finishing, adaptation for sale, breaking up, or demolishing or transformation of goods and materials; for the storage, loading, unloading or handling of goods and cargo; or for the training, research, design and development, quality control and packaging in relation to the above processes.'

## 6. Broad Types of Industrial and Related Activities

6.1 For land use planning purposes, the following broad types of industrial, and the related activities are identified, based on general operational characteristics and any special requirements.

**Light Manufacturing Activities**

6.2 These consist of mainly labour-intensive production activities, a substantial amount of which have continued to remain in Hong Kong despite the trend for relocation to China and other countries in southeast Asia.

**Industrial-related Activities**

6.3 These are mainly undertaken by manufacturing firms whose manufacturing operations have been relocated away from Hong Kong, but have retained such activities as administration, sales and marketing, design, prototype production, quality control, packaging, research and development, in support of the relocated manufacturing operations. Although non-production in nature, these activities are integral parts of the industrial processes.

**Business Activities with Special Operational Requirements**

6.4 These are primarily undertaken by trading firms many of which, for operational and linkage requirements, may not be suitably accommodated in conventional flatted factories or office buildings. They prefer locations with good accessibility and an environment favourable to business visitors, such as separation of passenger and cargo lifts. The nature of these activities is not industrial but operationally many of the firms require large storage area and dedicated loading/unloading facilities; and, hence, would be more suitably accommodated in industrial/office buildings.

**High-tech Manufacturing Activities**

6.5 These are typically capital-intensive, higher value-added and highly automated/mechanised activities. Depending on the type of production

processes adopted, some may have special building design and/or site requirements.

**Technology-based Service Activities**

6.6 These activities are mainly involved in research, new technology and product development, rather than production. They bring new technology from the research laboratories and pure academic research into the market through application of the same. One major sector is the "Information Technology (IT) and Telecommunications" industries which comprise establishments involved in the manufacture, design, development, production, operation, processing or assembly of, or research into sectors including telecommunications facilities and services, IT products and services, electronic and micro-electronic systems goods and components.

**Informal Industrial Activities**

6.7 These are mainly the industrial operations operating in workshop premises in the rural areas of the New Territories. They are usually of a smaller scale and less sophisticated nature. The activities range from primary processing of raw materials to machinery repair.

**Special Industrial Activities**

6.8 Unlike the mainstream light manufacturing industries in Hong Kong, this type of industrial activities mainly engage in heavy industries and the handling of bulky commodities, raw materials and/or dangerous goods. Special industries are generally capital intensive, land extensive and often have special infrastructure and locational requirements. Some of them are also potentially hazardous and may produce significant environmental impacts.

## 7. Land Use Types

***Industrial Land Use Types***

7.1 The broad types of industrial and industrial-related activities generate a demand for a range of premises which the land use planning system needs to cater for. The industrial land use types set out in this section are formulated in response to the identified needs, and are for use in the planning and reservation of land. The relationship between the types of industrial and industrial-related activities and the industrial land use typology is illustrated in Figure 1. Examples of the types of industrial and industrial-related activities that are suitable for accommodation in the industrial land use types are at Appendix 1.

7.2 Considering the differences in dominant building forms, the industrial land use types can be grouped under General Industrial Use (GIU) and Special Industrial Use (SIU) as follows:

**(a) General Industrial Use Category (GIU)**

GIU is the principal generic category for industrial land use types which mainly accommodate ordinary multi-storey factory buildings, purpose-built godowns and dual-purpose industrial/office (I/O) buildings. These types are:

**Industrial Use**

7.2.1 Land reserved for Industrial Use is normally zoned or designated "Industrial" ("I") on statutory and non-statutory town plans, and is intended for the development of multi-storey factory buildings to accommodate light manufacturing industries which are generally, but not exclusively, labour intensive and lower value-added activities. Apart from manufacturing processes, activities such as ancillary storage, ancillary office, ancillary showroom, technical support services, IT and telecommunications industries are also normally suitable for accommodation.

7.2.2 In addition, land reserved for Industrial Use is also suitable for the development of multi-storey warehouses for general storage purposes. Moreover, trading firm requiring frequent loading/unloading and large storage space of not less than 30% of the total usable floor area of the firm within the same premises or building, which cannot normally be accommodated in conventional commercial/office buildings, will also be permitted as of right in industrial buildings.

7.2.3 As a result of the shift towards more management and less direct production functions, manufacturing establishments now require a larger proportion of space for ancillary office use. In the "I" zone, office related to industrial use is always permitted.

**Industrial/Office Use**

7.2.4 The activities permitted in I/O buildings within "I" zone should be industrial and industrial-related. There is no restriction on the size of an office to be established within an I/O building, as long as it is directly related to an industrial operation.

7.2.5 Trading firms requiring large storage areas and involving frequent loading and unloading are also suitable for locating in I/O buildings on the basis of operational requirements which commercial buildings could not satisfy. In view of this, trading firms with a minimum of 30% of usable floor area used for storage are allowed in I/O buildings within "I" zone as of right.

7.2.6 To allow greater flexibility in the use of industrial and industrial/office buildings, a wide range of commercial uses are always permitted in the purpose-designed non-industrial portion

on the lower floors (except basements) of an existing building, provided that the uses are separated from the industrial uses located above by a buffer floor or floors and no industrial uses are located within the non-industrial portion. The types of commercial uses to be permitted as of right or through the planning permission system should be determined according to local circumstances.

**(b) Special Industrial Use (SIU)**

SIU is the principal generic category for industrial land use types which are generally characterised by specially-designed premises including specialised storage buildings. These types are:

**Industrial Estate**

7.2.7 Land reserved for industrial estate development is zoned or designated 'Other Specified Use**s**' annotated (Industrial Estate only) on statutory and non-statutory town plans. This land use type primarily aims at manufacturing and service industries with new or improved technology and processes which cannot operate in multi-storey factory or commercial buildings. They play an important role in meeting the demands of high-tech industries and industries that have unique processes or facility installations. Some small size lots and rental buildings may also be required especially for those small and medium size firms which do not have the financial resources to construct their own specialised premises.

**Science Park**

7.2.8 Land reserved for science park development should be zoned or designated "Other Specified Uses" annotated (Science Park only) on statutory and non-statutory town plans. The primary emphasis of this land use type is research, new technology and product development. Science park is viewed as part of Hong Kong's technology support infrastructure in developing indigenous high-tech industry.

7.2.9 In the Science Park Study, which examines the proposal for developing a science park in Hong Kong and the implementation aspects, science park is seen as a property-based initiative which has formal and operational links with universities, other higher education institutions or major centres of research. It is designed to encourage the formation and growth of knowledge-based business and other organisations with management function which is actively engaged in the transfer of technology and business skills to the organisations on site.

7.2.10 Other activities including other aspects of the production process

such as sales, marketing, procurement, financial and general management, may be permitted in the science park provided they are associated with the core research and development functions. Limited ancillary manufacturing may also be permitted on the merit of individual cases.

7.2.11 A science park will provide the environment and image for knowledge-based and technology-based firms. It should be well-served by high quality ancillary and supporting uses including commercial and recreational facilities, where appropriate. Service apartment type of accommodation may be provided for visiting academic and technical research staff. The science park should be extensively landscaped to create a high quality environment.

**Rural-Based Industrial Use**

7.2.12 Land reserved for rural-based industrial activities is zoned or designated 'Industrial (Group D)' on statutory and non-statutory plans. This land use type will continue to comprise mainly residual low-overhead industrial activities employing production processes which require open land and could not be carried out in flatted factories due to operational reasons. The majority of informal industrial establishments are accommodated in largely low-rise temporary structures with open land for goods storage, parking and loading/unloading. The workshops are usually developed on comparatively small individual sites in rural locations.

7.2.13 Rural-based industrial activities are the cause of some significant adverse impacts on the environment and infrastructure facilities. There is a need to contain such activities to bring about environmental improvement. In this regard, other than the land already under the 'Industrial (Group D)' zoning, no new land for 'Industrial (Group D)' should be encouraged. Opportunities should be provided for existing industrial users to operate more efficiently within their existing areas.

**Other Industrial Uses with Special Requirements**

7.2.14 This land use type, which is zoned 'Other Specified Use**s**' with the appropriate annotation, is to accommodate special industries which are generally capital intensive and land extensive, cannot be accommodated in flatted factories and may also have special infrastructure and/or locational requirements such as deep water marine access, waterfront location, bulk storage or warehousing facilities on site. They may require heavy consumption of water or generate some degree of environmental nuisance.

***Business Land Use Types***

7.3 The "Business" zone can be perceived as a combination of the "Commercial"(C) and "I" zones. It is however not intended to replace either of them. While the "Business" zone can legitimately accommodate the non-polluting industrial*, commercial and office uses, the "I" zone will still need to be retained for the traditional industrial activities. On the other hand, the demand for higher grade retail, composite retail/office and hotel developments will also need to be met in the "C" zone.

7.4 The planning intention of the "Business" zone is primarily for general business uses. Under the "Business" zone, a mix of information technology and telecommunications industries, non-polluting industrial, office and other commercial uses are always permitted in new "business" buildings. The flexibility of uses in 'Business' zone would enable the property market to more readily respond to the changing needs of the industrial/business sectors. However, in order to ensure a clean environment for the new zoning, polluting industrial uses including offensive trade would not be permitted. To address the concerns on fire safety, only less fire hazard-prone office use that would not involve direct provision of customer services or goods to the general public will be permitted as of right in existing industrial and I/O buildings within 'Business' zone.

7.5 While the "Business" zone will replace some of the "I" zone, it is important to retain the "I" zone in suitable areas to maintain an adequate supply of industrial floor space to meet demand from production-oriented industries. Following the principle of allowing flexibility in the planning system, information technology and telecommunications industries and offices related to industrial use are also always permitted in the "I" zone. Such office use should be in direct support of and complementary to an associated industrial operation, which may or may not be located in the same premises or building, or in the same general industrial area. Office not related to industrial use may only be permitted on application to the Town Planning Board. Besides, general office use is permitted as of right in the purpose-designed non-industrial portion on the lower floors (except basement(s)) of an existing building, provided that the uses are separated from the industrial uses located above by a buffer floor or floors and no industrial uses are located within the non-industrial portion.

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* "Non-polluting industrial use" means any industrial use which does not involve activities that are detrimental to the occupants of the building and amenity of the area by reason of noise, waste water discharge, vibration, smell, fume, smoke, soot, ash, dust or grit. Reference should also be made to relevant ordinances such as Air Pollution Control Ordinance, Water Pollution Control Ordinance, Waste Disposal Ordinance and Noise Control Ordinance, and their relevant technical memoranda and regulations, as well as the planning standards and guidelines contained in Chapter 9 on Environment.

7.6 The following types of buildings are permitted as of right in the "OU(Business)" zone as new development or redevelopment/conversion of the whole building:

(a) Business buildings providing accommodation for a mix of non-polluting industrial (excluding industrial undertakings involving the use/storage of Dangerous Goods), office and other commercial uses;

(b) Office buildings with or without retail and other commercial uses;

(c) Industrial buildings providing accommodation for non-polluting industrial uses (excluding industrial undertakings involving the use/storage of Dangerous Goods) and office uses (excluding those involving direct provision of customer services and goods); and

(d) I/O buildings providing accommodation for non-polluting industrial uses (excluding industrial undertakings involving the use/storage of Dangerous Goods), offices (excluding those involving direct provision of customer services and goods) on upper floors, and general offices with or without commercial uses in the purpose-designed non-industrial portion on the lower floors which will be separated from the industrial uses on the upper floors by a buffer floor.

## 8. Guidelines for Plot Ratios and Worker Densities

8.1 The maximum average permitted plot ratios and ranges of permissible plot ratios for the various industrial land use types are summarised in Table 1 below:

**Table 1 : Guidelines for Plot Ratios**

| **Land Use** | | **Maximum Average Plot Ratio** | **Range of Permissible Plot Ratios** |
|---|---|---|---|
| General Industrial Use (GIU)/ Business Use | Existing Industrial Areas in Metropolitan Area | 9.5 | 5.0 - 12.0 |
| | New Industrial Areas in Metropolitan Area | 8.0 | 2.5 - 12.0 |
| | New Towns & Other New Development Areas | 5.0 | 3.5 - 9.5 |
| Special Industrial Use (SIU) | Industrial Estate (IE) | 2.5 | 1.0 - 2.5 |
| | Science Park (SP) | 2.5 | 1.0 - 3.5 |
| | Rural-Based Industrial Use (RI) | 1.6 | 1.0 - 2.0 |
| | Other Industrial Uses with Special Requirements (SI) | vary according to operational requirements | |

8.2 The ranges of permissible plot ratios are for reference only. For individual layouts, the plot ratios of individual plots would be determined within the ranges specified, having regard to local conditions which may require some adjustments to the above standards e.g. height and density restrictions, capacity of approach roads, infrastructure provision etc.

8.3 The guidelines in Table 1 above should be applied in drawing up conditions of land grant or modification and for proposed redevelopment sites. For already developed sites not subject to lease modification and for which redevelopment is proposed, the plot ratios specified in the Building (Planning) Regulations or lease conditions, as appropriate, shall apply subject also to any other relevant statutory limitations.

8.4 For the purpose of the planning of infrastructure and facilities for workers at a district planning level, the worker densities as summarised in Table 2 below are provided as a general guide:

**Table 2 : Guidelines for Worker Densities**

| **Land Use** | | **Worker Density** |
|---|---|---|
| Business Use | | 20m² - 25m²/worker |
| General Industrial Use (GIU) | Industrial Use (I) | Existing Industrial Areas: 25m²/worker<br>New Industrial Areas: 35m²/worker<br>Warehouse: 700m²/worker |
| | Industrial/Office Use (I/O) | 20m²/worker (all areas) |
| Special Industrial Use (SIU) | Industrial Estate (IE) | 75m²/worker |
| | Science Park (SP) | 15m²/worker |
| | Rural-Based Industrial Use (RI) | 300 workers/ha |
| | Other Industrial Uses with Special Requirements (SI) | Vary as per functional needs |

Note: In view of the wide range of variations in both the floor space allocations and the plot ratios of factory buildings between districts and between industrial types, it is inappropriate to specify fixed standards for worker densities. Instead, it is more realistic for each area to be evaluated on the basis of its own circumstances. The above figures should be used to estimate likely worker numbers in the absence of more detailed information and for the planning of industrial supporting facilities

# 9 Assessing Territorial Industrial Floor Space and Land Requirements

9.1 A methodology for forecasting general industrial and storage floor space requirements was first proposed in the context of the ILDS in 1991. In the light of the structural changes that have taken place in the economy since then, and the new typology of industrial land uses adopted for incorporation as part of the planning standards and guidelines, the methodology has been reviewed and revised. Separate floor space forecasts are developed for the General Industrial Use category including the Industrial and the I/O land use types and storage. A brief description of the revised methodology is at Appendix 2.

9.2 Floor space demand indicators, i.e. demands of general industrial uses and storage, are used as the dependent variables for forecasting. The dependent variables are regressed against a wide range of macro and micro economic indicators such as the level of employment in manufacturing industries, retained imports of industrial machinery, re-exports, index of industrial production, floorspace productivity of storage premises, floorspace lagged measure of total demand of general industrial uses and storage to arrive at the recommended forecasting models.

9.3 A total of five forecasting models were developed, three for the General Industrial Use category, and two for storage. Based on the five forecasting models, forecasts of internal floor space requirements for a period of 15 years are prepared. To provide flexibility for planning purposes, a forecasting 'band' is adopted from within the range of forecasts to indicate the upper and lower limits of potential demand.

9.4 The floor space forecasts can then be converted to land requirements, when needed, by applying a number of working assumptions, namely:

(a) a factor for converting the internal floor area requirements to gross floor area requirements;

(b) plot ratio assumptions; and

(c) net to gross ratio assumptions.

9.5 Plot ratio assumptions used in the conversion exercise are as set out in Table 1 above. Net to gross ratio assumptions used are set out in Table 3 annexed. The net to gross ratio is a measure of land efficiency or development capacity. It is a broad assessment of the proportion of a development area which will be available for industrial development and the proportion which will need to be set aside to accommodate roads, open space and other facilities. The relationship of gross and net land areas is illustrated graphically in Figure 2.

9.6 The forecasting models, and the forecasts that they produce, are subject to changes in the future as model re-calibration will be undertaken on a regular basis. New data for the existing dependent and independent variables should be taken into account as they become available. The assumptions should be

reviewed periodically. New independent variables should also be considered when more significant structural changes take place over time.

9.7 The revised methodology combines the disciplines of economic theories, statistical techniques as well as qualitative judgment and interpretation of the results to develop reasonable and plausible forecasts. This is an important combination as no forecasting should be solely reliant on only one element.

9.8 The revised methodology does not forecast land requirements for the Special Industrial Use category which are largely policy-led. Forecast of land requirements for industrial estate and science park will continue to be developed by the Hong Kong Science and Technology Parks Corporation. For industrial use with special requirements, land requirement estimates should be made by reference to the appropriate sectoral studies. For rural-based industrial use, it is assumed that the existing level of provision will be largely maintained.

## 10. Locational Requirements

### Common Locational Requirements

10.1 The locational requirements common to all industrial and business land use types are:

(a) Flat land or large flat terraces;

(b) Good accessibility to port facilities, inland container depots or airport;

(c) Good access to major traffic routes, preferably direct access to major trunk roads wherever possible to avoid causing nuisance to other noise sensitive uses;

(d) Convenient access to business centres in existing urban areas;

(e) Adequate provision of piped water, sewage disposal and waste storage/treatment facilities, electricity supply and telephone services;

(f) Sited to avoid adverse environmental effects (e.g. noise, odour, dust etc.) on residential and other sensitive land uses, or with design requirements for the provision of appropriate installations to mitigate such effects; and

(g) Sited to avoid despoliation of the rural landscape, country parks**,** water catchment areas and environmentally sensitive areas, and the site concerned should be properly designed and landscaped so as to minimise adverse impacts.

**Special Locational Requirements**

10.2 A review of the locational requirements of the different industrial and business land use types has shown that there are some specific locational factors which may only be applicable to specific land use types:

10.3 **Industrial and Industrial/Office Uses**

(a) Conveniently accessible by public transport but not immediately adjoining residential and other sensitive uses unless a buffer land use element such as a commercial building or an I/O building is in between;

(b) Preferably in the western quadrant in relation to residential areas, in order to be down wind for most of the year; and

(c) Preferably close to cross-border highways or railway links to facilitate transportation associated with outward processing in China**.**

10.4 **Industrial Estate**

(a) Large tracts of virgin land or reclamation that are capable of staged implementation and future expansion;

(b) Particular site requirements for those industries which cannot be accommodated in multi-storey premises;

(c) Sufficiently close to, but not adjoining, residential areas and with special regard for environmental effects;

(d) Reasonably good accessibility to other industrial estates to strengthen industrial linkages;

(e) Availability of good public transport services; provision of mass transit is not essential but linkage to such facilities is desirable;

(f) Preferably in the western quadrant in relation to residential areas, in order to be down wind for most of the year;

(g) Preferably in areas with good air dispersion capacities and where pollution is not serious; and

(h) The minimum site area should preferably be about 100 ha.

10.5 **Science Park**

(a) Large tracts of virgin land or reclamation that are capable of staged implementation and future expansion;

(b) Well served by advanced telecommunication infrastructure;

(c) Excellent access to major strategic roads and rails;

(d) Preferably near tertiary and/or research and development institutions for facilitating cooperation with industries;

(e) Surroundings with special identity, pleasant environment, and/or scenic setting to create a high quality environment; and

(f) The minimum site area should preferably be about 20 ha.

10.6 **Rural-Based Industrial Use**

(a) Particular site requirements for industries which cannot be accommodated in ordinary multi-storey factory buildings or industrial estates;

(b) Particular site characteristics and sufficient size for provision of open storage and parking areas and landscape buffers;

(c) Well served by local infrastructure including, inter alia, access roads with adequate width for goods and emergency vehicles;

(d) Special regard for minimizing adverse environmental effects; and

(e) The minimum site area should preferably be about 5 ha.

10.7 **Other Industrial Uses with Special Requirements**

(a) Generally land extensive. Particular site requirements for those industries which cannot be accommodated in multi-storey flatted factory buildings;

(b) Remote from residential areas with special regard for minimizing adverse environmental effects and potential hazards;

(c) Preferably in the western quadrant in relation to residential areas, in order to be down wind for most of the year;

(d) Preferably in areas with good air dispersion capacities and where pollution is not serious;

(e) Sites with deep water-frontage which are required by certain special industries, e.g. those using dangerous goods as raw materials or for loading and unloading of bulky raw materials;

(f) Sites with deep water-frontage which are required by certain special industries should be compatible with current and planned uses of those water areas;

(g) For certain special industries needing direct access to sea transport, a safe navigational approach route for ships must be available. Risks of, and

hazards arising from, ship accidents must not exceed acceptable levels. Early consultation with the Director of Marine is required for such uses;

(h) Other specific requirements related to the particular types of special industries; and

(i) The site area should be as per functional requirements.

10.8 **Dangerous Goods Godowns**

(a) Factories in multi-storey industrial buildings may have their own dangerous goods stores provided that these stores are located not more than 30m above the surrounding street level. The quantities shall be restricted to:

| | | |
|---|---|---|
| Liquid | : | 2 500 litres for Cat. 5, Class 3 substances; or<br>1 350 litres for other substances |
| Solid | : | 900 kg |
| Gas<br>(other than LPG) | : | to be considered on the merits of individual application |

(b) The storage of dangerous goods in excess of the exempted quantity shall require a valid license issued by the Director of Fire Services in compliance with safety requirements. The storage of liquefied petroleum gas (LPG) in excess of the exempted quantity shall be subject to the approval of the Director of Electrical and Mechanical Services. Dangerous goods stores provided in the factories where the dangerous goods are used would reduce the need for transportation of dangerous goods and therefore the likelihood of accidents during transport.

(c) As a necessary supplement to the above arrangements, public dangerous goods godowns to be managed by single owners and used by all those concerned in the same industrial areas should be constructed on sites conveniently or centrally located in relation to the users.

(d) Sites with water-frontage near or within industrial centres are considered ideal locations for dangerous goods godowns as they have the advantage of sea transport, which is cheaper and safer than land transport.

(e) Sites reserved for bulk dangerous goods godowns must allow for the creation of 'island' sites within a lot boundary, if no true island site is available. To this end, a sterile area of 6m wide from any lot boundary line to the building line is required by the Director of Fire Services for fire fighting purposes and protection of the surrounding properties.

10.9 **Business Use**

(a) At nodes of transport facilities, or areas with high accessibility to mass transit facilities;

(b) Industrial areas with low propensity for redevelopment into industrial or residential use due to land use incompatibility or insurmountable environmental and traffic problems;

(c) Area having some degree of interface problem with adjoining sensitive uses e.g. in between existing residential and industrial development so that the "Business" zone can act as a buffer; and

(d) Area having large extent of the existing industrial buildings with high vacancy and in poor conditions requiring some incentives for change of use.

## 11. Layout Concepts

**Common Layout Design Principles**

11.1 The following general layout design principles should be adopted as far as possible in preparing layouts for industrial areas. It is recognised that each layout will be conditioned by individual site circumstances such as topography and site configuration, but the principles should be adopted to the maximum degree possible. They are nevertheless not hard and fast rules but design guidelines.

11.2 **Functional Considerations**

(a) To meet the functional requirements of lot size, access road, fire appliance access, parking and loading/unloading, open space and landscaping by following the standards and guidelines contained in the relevant sections of this chapter or other chapters of the HKPSG;

(b) To define a clear road hierarchy in road layout which contains no service road, and provides double frontage for every lot;

(c) To provide lots of sufficient size to accommodate the parking and loading/unloading facilities and associated manoeuvring;

(d) To use public roads as access for fire appliances in normal circumstances in order to avoid designating emergency vehicular access (EVA);

(e) To provide public transport facilities in areas most accessible to pedestrians; and

(f) To centralise supporting community, commercial and recreation facilities and cluster industrial supporting facilities in separate locations.

11.3 **Urban Design, Amenity and Environmental Considerations**

(a) To provide roadside/streetscape treatment to delineate pedestrian and

vehicular circulation, and establish a hierarchy for points of entry;

(b) To segregate pedestrian routes from vehicular traffic;

(c) To provide breezeways to facilitate air circulation; and

(d) To provide landscaping areas and open space which are accessible and manageable. The open space provided should mainly be for passive recreational uses such as sitting out areas and parks.

**Specific Layout Considerations for General Industrial Use and Business Use**

11.4 **Industrial and Business Uses**

(a) To provide EVA, where necessary, in accordance with the requirements of the Fire Services Department (FSD);

(b) To provide substantial landscaped verges and landscaped median strips to improve general amenity; and

(c) To provide pedestrian footbridges to connect centralised supporting facilities to the rest of the industrial areas.

**Specific Layout Considerations for Special Industrial Use**

11.5 **Industrial Estate and Science Park**

(a) To provide EVA, where necessary, in accordance with the requirements of the FSD;

(b) To provide setbacks and suitable building facade treatment along building edges;

(c) To replace lot wall by frontage landscaping for SP;

(d) To create a prestigious image and attractive external and internal environment for visitors; and

(e) To allow flexibility of phased development and future expansion through adequate land reservation for future extension of roads, open space and supporting facilities such as commercial and recreation.

11.6 **Rural-Based Industrial Use**

(a) To provide EVA, where necessary, in accordance with the requirements of the FSD;

(b) To provide sub-roads or lay-bys to relieve congestion created by queuing trucks and on-street loading and unloading;

(c) To provide communal parking for visitors and lorries at sites with a concentration of workshops; and

(c) To provide landscaping buffers to soften the outlook of industrial structures and screen off untidy operations.

11.7 **Other Industrial Uses with Special Requirements**

(a) To provide EVA, where necessary, in accordance with the requirements of the FSD;

(b) To provide sufficient physical separation from major development areas;

(c) To provide strictly controlled boundaries such as a boundary wall or wire fencing; and

(d) To allow for the provision of special infrastructure support facilities such as pier and communal sewage treatment system.

**Illustrative Layout Concepts**

11.8 Illustrative layout concepts for the industrial land use types are contained in Figures 3.1 to 3.7, in accordance with the stated layout considerations, the nature of activities, scale of development, ownership arrangement and mode of management. These illustrative layout concepts indicate the broad spatial arrangements for road layout, pedestrian facility and landscape/open space provision and should be applied flexibly according to actual site condition. They are for reference purposes only and not intended as prescriptive guides.

## 12. Recommended Lot Sizes

12.1 The recommended lot sizes are summarised in Table 4 annexed.

12.2 The objectives of recommending lot sizes are as follows:

(a) To provide a minimum lot size large enough to accommodate parking and loading/unloading facilities and associate manoeuvring areas;

(b) To provide a lot size large enough to allow for an efficient building layout;

(c) To provide a lot size large enough to allow for achieving the maximum density development recommended in the development guidelines sections; and

(d) To provide a lot size large enough to accommodate the setbacks along front, rear and side boundaries, wherever setback provision is desirable.

## 13. Recommended Site Coverages and Setbacks

13.1 The recommended site coverages and setbacks are also summarised in Table 4 annexed.

13.2 The objectives of controlling site coverages and setbacks are as follows:

(a) To improve the streetscape by reducing the apparent density of development;

(b) To open up the industrial areas and create breezeways to improve air circulation;

(c) To reduce on-street congestion by allowing space for vehicles to queue/manoeuvre within lot boundaries; and

(d) To provide space for landscaping which can soften the visual impact of buildings.

## 14. Fire Appliance Access Requirements

14.1 The principles for the incorporation of fire appliance access requirements in new industrial area layouts are as follows:

(a) Each industrial lot should be served by two vehicular access roads in conforming to the road requirements as stipulated in Figure 4 entitled 'Minimum Standard Industrial Access Roads in New Industrial Areas'. If a central median is provided, the minimum width of the dual carriageway should be 7.3m wide for one-way traffic. Where constraints do not allow the provision of a central median, the minimum width of a carriageway without a central divider should be 13.5m for two-lane two-way traffic;

(b) Public roads used as access for fire appliances are preferred to designated EVAs. Should EVAs be provided due to site constraints, they shall be formed to Highways Department standards for road pavement loadings. They should be maintained and managed as public roads under the Road Traffic Ordinance and be enforceable by the police. Standard EVAs for industrial lots should be 9m wide. EVAs of less than 9m wide should only be considered for areas where no purpose-built roads can be provided but such EVAs should not be less than 6m wide. Illustrations of possible arrangements for double frontage lots and EVAs are shown in Figures 5.1 and 5.2 for reference;

(c) The horizontal distance between the EVA/kerb edge and the building facade should not exceed 10m. A 6m wide EVA in the form of a hard paved footpath capable of withstanding 20-tonne loading should be provided immediately adjacent to the lot boundary. In order to prohibit parking on EVA/pedestrian pavements, emergency crash gates conforming to Highways Department standards should be provided perpendicular to

the alignment of the access road. The crash gates should be arranged at least 11m away from the access point to allow fire appliances to exert a vertical force onto them; and

(d) A reserve for a designated EVA, not less than 6m in width in the setback area inside the lots, should be included as part of the lease conditions for sites within the industrial estates and science parks.

14.2 For existing industrial areas, the fire appliance access requirements are as set out in Figure 6 entitled 'Minimum Standard Industrial Access Roads in Existing Industrial Areas'. The standards for new industrial areas could be adopted for comprehensive redevelopment of existing industrial areas. Early consultation with the FSD should be undertaken prior to departmental circulation of an industrial layout plan.

## 15. Traffic and Transport Requirements

**General Design Principles**

15.1 The general planning guidelines for the traffic and transport requirements are laid down in Chapter 8 of the HKPSG. When planning and designing roads and other transport facilities in new industrial areas, reference should be made to Chapter 8 and the following design principles :

(a) Definition of a clear road hierarchy;

(b) District distributor roads should be designed to a suitable standard to accommodate the expected volume of locally generated and through traffic;

(c) Local roads providing principal access to sites should be dual carriageways with landscaped central medians;

(d) Local roads providing secondary access, but not direct site access, should be of a single carriageway standard;

(e) Local roads should not be designed to attract through traffic;

(f) All industrial lots should be provided with double-frontage;

(g) Pedestrian routes and accesses should be segregated from vehicular traffic;–

(h) Public transport facilities should be provided in areas most accessible to pedestrians; and

(i) Industry or business that would generate large volume of traffic should have direct access to major trunk roads wherever possible to avoid causing nuisance to other noise sensitive uses, such as residential uses

along the access routes.

**Road Hierarchy**

15.2 Within new industrial areas, roads may be broadly categorised as providing either principal access or secondary access to industrial premises and a clear road hierarchy should be defined (See Figure 4).

15.3 District distributor roads, which link industrial areas to the primary road network and to other population or employment centres, should be designed to accommodate expected levels of locally generated and through traffic to the standards required by the Transport Department. District distributor roads do not provide site access but allow links between self-contained areas where local roads provide the principal and secondary access.

15.4 Local roads should take the form of either direct through roads or a 'crescent' or 'loop'. 'Cul-de-sac' which may require difficult turning or reversing manoeuvres by large vehicles should be avoided if possible.

**Roads Providing Principal Access**

15.5 Local roads providing principal access to industrial lots, on which site ingress and egress points are located, should be designed to dual carriageway standards. A summary of the total width of roads giving principal access to industrial lots is provided in Table 5 annexed.

15.6 Roads giving principal access in new industrial areas should normally be provided to dual two-lane standards with each carriageway at least 7.3m in width and at least 7.9m in width on curves of radius less than 150m. A solid landscaped median of at least 5m in width in areas for general industrial uses, and at least 2m in width in industrial estates and science parks should be provided. Short breaks in the median may be provided opposite to site access points to allow right-hand turns to and from the sites.

15.7 Where constraints do not allow the provision of a central median, the minimum width of a two-lane carriageway two-way road giving principal access is 13.5m. This standard is illustrated in Diagram 3.4.12.8 of the Transport Planning and Design Manual Volume 2.

15.8 Service roads are not required in new industrial areas, as parking and loading/unloading provision should be contained entirely within individual sites.

**Roads Providing Secondary Access**

15.9 Local roads which have no site ingress or egress points but allow traffic circulation within an industrial area are roads providing secondary access.

15.10 The minimum width for a two-way single carriageway providing secondary access is 10.3m. The minimum width for a one-way road performing a similar function is 7.3m. These standards are illustrated in Diagram 3.4.12.8 of the Transport Planning and Design Manual Volume 2.

**Junctions**

15.11 The most suitable design for a junction depends on the characteristics of the traffic passing through the junction. Guidance on selection of junction type and locational considerations, including spacing between junctions, is outlined in the Transport Planning and Design Manual Volume 2 Chapter 4.

**Pedestrian Routes**

15.12 The minimum through zone width of footpaths to cater for pedestrian flow alongside roads in areas for general industrial uses is 4.5m, and in areas for special industrial uses is 3.5m, except for rural-based industrial areas is 2.5m (see Chapter 8, Section 5.8 and Table 9 for definition of through zone and detailed footpath standards). A planting and street furniture area of a minimum width of 4m in areas for general industrial uses, and 2m in areas for special industrial uses (except in rural-based industrial areas), should be provided alongside the footpaths. Pedestrian crossings should be controlled by traffic signals if warranted by traffic conditions. This could be more efficiently achieved by including pedestrian phases in traffic signals at road junctions. Concentrations of pedestrians at locations such as major intersections, communal parking areas or at public transport facilities, may justify the provision of grade separated pedestrian facilities. Guidance on the design of pedestrian crossing facilities is provided in the Transport Planning and Design Manual Volume 2 section 3.7.

15.13 In designing pedestrian routes, environmental consideration such as air quality should be taken into account. Pedestrian routes within individual sites should, wherever possible, be segregated from areas where there are frequent vehicular movements. Consideration should be given to the provision of segregated vehicular and pedestrian accesses to reduce conflicts. Physical barriers, such as planters or railings, can be provided where the provision of separate accesses are not possible.

15.14 Pedestrian facilities should be designed to permit use by the disabled. Ramps and/or lifts where practicable, should be provided at footbridges. Dropped kerbs, tactile warning strips and audible crossing signals should be provided at signal controlled pedestrian crossings.

**Public Transport**

15.15 Public transport facilities should be located in the most accessible locations for pedestrians and should normally be at grade and in the vicinity of pedestrian crossing facilities. The need for any public transport interchange facilities should be determined from a local area demand viewpoint with reference to the planning guidelines in Chapter 8. Guidance on the location and design of the public transport facilities is also provided in the Transport Planning and Design Manual Volume 9.

## 16. Parking and Loading/Unloading Requirements

**Parking Requirements for Industrial Developments and Business Uses**

16.1 The general guidelines for the assessment of parking and loading/unloading requirements in industrial and business buildings/areas are given in Chapter 8 of the HKPSG. A summary of the parking standards is provided in Table 6 annexed. Further guidance on the design of parking and loading/unloading facilities is provided in the Transport Planning and Design Manual Volume 7.

16.2 On-street parking is not required for new industrial and business areas as parking and loading/unloading should be provided within individual sites. On-street parking prevention measures such as barriers or planters should be provided.

**General Parking Facilities**

16.3 Parking provision for buses and taxis, and provision of public parking facilities should be part of an area-wide strategy and designed in consultation with transport operators and Government departments concerned. Guidance on the provision of car parks and public transport facilities is contained in the Transport Planning and Design Manual Volumes 7 and 9 respectively.

## 17. Guidelines for Open Space and Landscape Areas

**General Design Principles**

17.1 The aim of the general design principles listed below is to improve the overall landscape and visual quality of the industrial area through improving the design components of individual sites as well as the overall consistency of landscape proposals in the area:

(a) An overall site masterplan including the planning and design of open space areas should be formulated early in the planning stage;

(b) Consideration should be given to operational requirements and their relationship to the arrangement of external space;

(c) Active and passive recreation facilities should be provided in accessible locations;

(d) Open space should be provided at easily visible locations to discourage illegal occupation and vandalism;

(e) An open space system should be provided to form a purposeful and continuous link throughout the industrial development;

(f) Roadside/streetscape treatment should be provided to delineate pedestrian and vehicular circulation;

(g) Kerbside planters, bollards and/or rails should be used to prevent on-street parking and loading/unloading activities;

(h) Landscape buffers should be provided to screen service areas; and

(i) Requirements for the proper management and maintenance of private landscaped areas should be included in the lease conditions of the respective sites.

**Guidelines and Standards**

17.2 General guidelines for the provision of landscaped areas and open space are summarised in Table 7 annexed. Some illustrative examples are provided in Figures 7.1 to 7.9. The examples are for guidance only, and should not limit future development of the related working details.

**Landscape Masterplan**

17.3 An overall landscape masterplan should be provided for all land use types during the initial planning stage, except for rural-based industrial areas.

**Roadside/Streetscape Treatment**

17.4 The design elements listed below are to be applied to the following industrial land use types - industrial, industrial/office, industrial estate and science park:

(a) Suitable paving materials (e.g. interlocking concrete blocks laid to Highways Department standards) should be introduced to delineate road junctions, pedestrian areas and entrances to individual lots (See Figure 7.1). For industrial and industrial/office areas, crash gates (designed to Highways Department standards) should be located at 11m away from either side of an access point;

(b) A combination of street tree planting, raised planters and/or barrier elements designed to Highways Department standards should be provided to improve pedestrian access and define entrances to individual lots. The minimum width of planter should be 4m from the inside face of planter for industrial and industrial/office areas, and 2m for industrial estates and science parks. All raised planters should have open bottom design with decompacted subsoil. Irrigation water points should be provided at suitable spacing (See Figures 7.2 to 7.4). For industrial estates and science parks, bollards should be provided on both sides of an access point;

(c) A combination of suitable plant materials or barrier elements within raised planters should be provided to discourage unauthorised pedestrian access;

(d) Underground utilities and street planting should be confined to different portions of the footpath reserve in order to avoid possible problems in future maintenance;

(e) Landscape features should be provided at primary entrances to the area;

(f) Median planting strips should be provided on carriageways, where appropriate. There should be a minimum width of 5m from the inside face of planter for industrial and industrial/office land use types, and 2m for industrial estates and science parks. An automatic irrigation system should be provided where possible. Figures 7.5 to 7.7 illustrate typical arrangements to provide soft landscape areas between carriageway, pedestrian area and individual lot;

(g) A suitable mix of plant species should be used throughout the area/estate;

(h) Street furniture (i.e. lighting, signage, seating, shade structures, litter bins etc.) should be fully coordinated throughout each area/estate to provide visual cohesion; and

(i) Consideration should be given to the design of bridges (e.g. footbridges) and associated structures to ensure integration with surrounding built elements.

**Treatment to Individual Lots**

17.5 The design elements listed below are to be applied to the following industrial land use types - industrial estates and science parks:

(a) The layout and design of individual lots should take into account the siting of the building(s) to achieve a better environment;

(b) The use of landscape measures instead of hard elements, e.g. fences and walls, should be used for lot boundaries of science parks. Where the use of walls is unavoidable, they should be provided in combination with landscape planting (See Figure 7.8);

(c) A 2m wide planting strip should be provided in the setback to the lots; and

(d) Provision should be made within the lease conditions for maintenance requirements.

**Treatment to Estate Boundaries**

17.6 For treatment to estate boundaries, the following guidelines are relevant:

(a) Comprehensive landscape treatment including mounding and/or retaining walls should be provided, where possible, to boundaries of industrial estates**,** science parks and rural-based industrial areas. This is particularlyuseful with regard to rural-based industries and industries with special requirements in minimising adverse environmental impacts. Plant

species should preferably be similar to those existing in the locality; and

(b) Boundary planting width should be between 6 to 7m minimum (See Figure 7.9).

**Provision of Open Space**

17.7 The following guidelines are relevant for the provision of open space:

(a) Centralised public open space should be provided in accordance with Chapter 4 of the HKPSG. An overall masterplan for the open space area should be provided;

(b) Other open space areas should be arranged to provide a system or network that connects different building areas within the layout to the centralised open space area; and

(c) Open space areas should have tree planting which integrates with street tree planting.

## 18. Supporting Facilities

18.1 A range of community, commercial, accommodation, catering, recreation and other supporting facilities should generally be provided to support the establishments in industrial areas and they should be carefully planned so as to avoid conflicting uses. A recommended checklist showing the types of supporting facilities likely to be required for the different industrial land use types is given in Table 8 annexed. The list indicates the facilities that may likely be required to support the industrial uses and is not exhaustive. The recommended checklist should be interpreted flexibly by having regard to the provision in adjoining areas.

18.2 Some supporting facilities may be provided in centralised and highly accessible locations e.g. a purpose-built commercial centre, and some could only be located in clusters for operational reasons e.g. machinery equipment and plant rooms. Table 8 also shows the broad locational factors for each type of supporting facility.

18.3 The provision of supporting facilities will vary according to individual circumstances. Many of these facilities are also covered in other chapters of the HKPSG, and surveys may be required to establish their range and scale. The provisions of some of such facilities are covered by Town Planning Board Guidelines.

**Factors for Provision of Supporting Facilities**

18.4 The provision of supporting facilities should take into account the following factors:

(a) The characteristics of a particular industrial area in respect of its location, main industry type, worker population, composition of work force, nature of business visitors and environmental quality;

(b) Industrial areas in remote locations should preferably be self-sufficient with a wider range of facilities;

(c) New industrial areas being established on green field sites should have adequate site reservation for supporting facilities; and

(d) For existing industrial areas, new supporting facilities could be incorporated in redevelopment for I/O, commercial buildings or in comprehensive redevelopment schemes.

**Guidelines for Canteens in Factory Buildings**

18.5 In order to provide sufficient eating places for workers at convenient locations in industrial areas, canteens may be provided in factory buildings. The following guidelines apply:

(a) Canteens should not be permitted in areas set aside under the lease conditions for access, parking, loading or unloading of vehicles but could be established elsewhere in factory premises upon approval by the Land Authority, provided all statutory and departmental requirements are met;

(b) Since canteens are intended to cater for employees working in the same buildings, a canteen should not be allowed to have an exclusive direct access to the street, except for emergency use;

(c) The canteen area should not exceed 10% of the total gross floor area of the factory building on the lot; and

(d) Factory canteens complying with the specified requirements could be provided for the lifetime of the existing buildings.

**Cooked Food Centres**

18.6 Standards for cooked food centres are given in Chapter 6 of the HKPSG.

**Hotels**

18.7 In order to provide more location choices for tourists and business visitors, increase efficiency in undertaking and conducting businesses and allow for a better integration of activities within an area, a wide range of accommodation such as hotels could be considered for provision at suitable sites adjoining or

within **"**Industrial**"** and "Business" zoned areas. The following guidelines are intended to facilitate the consideration of whether or not to include hotels in industrial/office areas and science parks:

(a) Proximity to facilities or uses such as airports, cross-border transport stations and conference/exhibition areas (e.g. trade mart) which attract a high concentration of business visitors;

(b) Proximity to compatible uses such as industrial/office and commercial/ office buildings, open space and government/institution/community facilities;

(c) Proximity to mass transit stations or transport interchanges;

(d) Prominent locations with long street frontage, as hotels could induce significant improvements to the general amenity of the district as a whole;

(e) Areas lacking in conference/exhibition facilities;

(f) Areas where there are acceptable views from the main hotel frontage;

(g) Areas where there is a need for traffic improvements, as it is expected that hotel developments would generate less heavy goods vehicular traffic and have different peak hours, thereby may bring about an improvement to local traffic conditions; and

(h) Areas with interface problems where the use can act as an environmental buffer to environmentally sensitive uses such as residential developments, schools and hospitals.

**- End -**

## Table 3 : Net to Gross Ratios for the Industrial Land Use Types

| Land Use | | Net To Gross Ratio (%)[1] |
|---|---|---|
| General Industrial Use (GIU) | Industrial Use (I) | 45 - 55 |
| | Industrial/Office Uses (I/O) | 45 - 55 |
| Special Industrial Use (SIU) | Industrial Estate (IE) | 60 - 65 |
| | Science Park (SP) | 55 - 65 |
| | Rural Based Industrial Use (RI) | 65 - 70 |
| | Other Industrial Uses with Special Requirements (SI)[2] | N/A |

*Notes : 1. The net to gross ratios are for reference only and should be updated once a number of layouts based upon the new standards have been completed.

2. No net to gross ratio is provided for SI because the layout for SI will be designed as per functional needs.

## Table 4 : Recommended Site Area, Lot Size, Site Coverage and Setback

| Land Use | | Minimum Site Area (ha) | Maximum Site Coverage (%) | Recommended Lot Sizes | Minimum Setback | General Building Height |
|---|---|---|---|---|---|---|
| General Industrial Use (GIU) | Industrial Use (I) | 10 | 100[1] | 2 700m² (45m frontage x 60m depth) | 4.5 side setback and 7.5 front & rear setback above podium level | High rise |
| | Industrial/Office Use (I/O) | 5 | 100 | 2 700m² (45m frontage x 60m depth) | As per Industrial Use | High rise |
| Special Industrial Use (SIU) | Industrial Estate (IE) | 100 | 40[2] - 60 | 5 000m² - 40 000m² (62.5m frontage x 80m depth) | 4.6m for every boundary which abuts another industrial lot and 7.6m for all other boundaries | Low rise |
| | Science Park (SP) | 20 | 65 | 5 000m² - 20 000m² (62.5m frontage x 80m depth)[3] | 5m for every boundary which abuts another industrial lot and 10m for all other boundaries | Low to medium rise |
| | Rural-Based Industrial Use (RI) | 5 | 80 | 1 000m² | Vary according to operational requirements | Low rise (13m maximum) |
| | Other Industrial Uses with Special Requirements (SI) | Vary according to operational requirements | | | | |

Note :
1 The 100% site coverage should be restricted to the podium height not exceeding 15m above ground level under the Building (Planning) Regulations. For tower blocks above podium, the permitted percentage site coverage should not exceed that specified in the First Schedule of the Building (Planning) Regulations.
2 Minimum site coverage is stipulated for Industrial Estates to prevent unnecessary acquirement of land due to its comparatively low land price.
3 The recommended lot sizes for Science Park is for guidance only and smaller lot size is allowed.

## Table 5: Minimum Total Width of Roads Giving Principal Access to Industrial Lots

| Land Use | | Carriageway | Median Strip | Roadside Planters[1] | Through Zone Width for Footpath | Minimum Total Width[2] |
|---|---|---|---|---|---|---|
| General Industrial Use (GIU) | Industrial Use (I) | two lanes: 7.3m each | 5m | 4m | 4.5m | 36.6m |
| | Industrial/Office Uses (I/O) | two lanes: 7.3m each | 5m | 4m | 4.5m | 36.6m |
| Special Industrial Use (SIU) | Industrial Estate (IE) | two lanes: 7.3m each | 2m | 2m | 3.5m | 27.6m |
| | Science Park (SP) | two lanes: 7.3m each | 2m | 2m | 3.5m | 27.6m |
| | Rural Based Industrial Use (RI) | 7.3m | N/A | 1.5m | 2.5m | 15.3m |
| | Other Industrial Uses with Special Requirements (SI) | Vary as per functional requirements | N/A | 2m | N/A | N/A |

Note: (1) Street furniture would be provided within the roadside planter area.

(2) Additional space should be allowed for footpath along the building edge (see Table 9 of Chapter 8 for details).

# Table 6: Parking Standards for Industrial and Business Developments

## (a) General Industrial Use (GIU) and Business Use ["OU(B)"]

| Type of Development | | Parking Requirements | | Loading/unloading Requirements | |
|---|---|---|---|---|---|
| | | **Standards** | **Remarks** | **Standards** | **Remarks** |
| General Industrial Use (GIU) | Industrial Uses (I) | - Private car: 1 per 1 000 -1 200m² GFA. | See Notes (1) – (3). | - 1 goods vehicle bay per 700-900m² GFA**,** 50% of which should be for parking of goods vehicles.<br>- 1 container vehicle loading/unloading bay with turning circle of 11.6m outer radius should be provided for a site with dimensions not less than 45m x 40m. | See Notes (1) – (5). |
| | Industrial/ Office Uses (I/O) | - Private car: 1 per 600-750m² GFA. | See Notes (1) – (3). | - 1 goods vehicle bay per 1 000-1 200m² of 50% of the I/O GFA; and 1 per 2 000-3 000m$^2$ of the remaining 50% of the I/O GFA.<br>- 50%of all the above required goods vehicle bays shall be for parking of goods vehicles.<br>- 1 goods vehicle bay per 800-1 200m$^2$ for commercial GFA solely for loading/unloading.<br>- 1 container vehicle loading/unloading bay with turning circle of 11.6m outer radius should be provided for a site with dimensions not less than 45m x 40m. | See Notes (1) – (5). |
| Business Use ["OU(B)"] | Industrial Buildings (I) | - Private car: 1 per 600-750m² GFA. | See Notes (1) – (3). | - 1 goods vehicle bay per 1 000-1 200m² of 50% of the GFA; and 1 per 2 000-3 000m$^2$ of the remaining 50% of the GFA.<br>- 50% of all the above required goods vehicle bays shall be for parking of goods vehicles.<br>- 1 container vehicle loading/unloading bay with turning circle of 11.6m outer radius should be provided for a site with dimensions not less than 45m x 40m. | See Notes (1) – (5). |

*(to be continued)*

*Table 6 (cont'd)*

| Type of Development | | Parking Requirements | | Loading/unloading Requirements | |
|---|---|---|---|---|---|
| | | **Standards** | **Remarks** | **Standards** | **Remarks** |
| | Industrial/ Office (I/O) Buildings | - Private car: 1 per 600-750m² GFA. | See Notes (1) – (3). | - 1 goods vehicle bay per 1 000-1 200m² of 50% of the I/O GFA; and 1 per 2 000-3 000m$^2$ of the remaining 50% of the I/O GFA.<br>- 50% of all the above required goods vehicle bays shall be for parking of goods vehicles.<br>- 1 goods vehicle bay per 800-1 200m$^2$ for commercial GFA solely for loading/unloading.<br>- 1 container vehicle loading/unloading bay with turning circle of 11.6m outer radius should be provided for a site with dimensions not less than 45m x 40m. | See Notes (1) – (5). |
| | Office Buildings | - Private car: 1 per 150-200m$^2$ GFA for the first 15 000m$^2$ GFA; 1 per 200-300m$^2$ GFA for the remaining GFA . | See Notes (1) – (3). | - 1 goods vehicle bay per 2 000-3 000m$^2$ GFA.<br>- For sites of at least 5 000m$^2$ net site area, 1 picking up/setting down lay-by for taxis and private cars for every 20 000m$^2$, or part thereof, GFA. | See Notes (1) – (4). |
| | Business Buildings | - Private car: 1 per 200-300m$^2$ GFA. | See Notes (1) – (3). | - 1 goods vehicle bay per 800-1 200m$^2$ GFA, 50% of which should be for parking of goods vehicles.<br>- A minimum of 1 picking up/setting down lay-by for taxis and private cars shall be provided for the sites of at least 5 000m$^2$ net site area.<br>- 1 container vehicle loading/unloading bay with turning circle of 11.6m outer radius should be provided for a site with dimensions not less than 45m x 40m. | See Notes (1) – (5). |

* Notes :

1. The relevant standards of the HKPSG Chapter 8 for Internal Transport Facilities will apply where other supporting facilities are provided.
2. Provision referring to gross floor area (GFA) includes part thereof of the specified m$^2$ GFA.
3. The following design standards apply:
   i) For private cars: Turning circle - 7.5m outer radius.
   ii) For goods vehicles: turning circle - 11.5m outer radius.
4. Goods vehicle provision is divided into 65 % Light Goods Vehicles (LGV) and 35 % Heavy Goods Vehicles (HGV).
5. The provision of container vehicle loading/unloading bay on sites with dimensions less than 45m x 40m should be considered on a case-by-case basis and in consultation with the Transport Department.

## (b) Special Industrial Use (SIU)

| **Type of Development** | **Parking Requirements** (see Notes (1) to (4)) | | |
|---|---|---|---|
| | **Private Car** | **Lorry** | **Container Vehicle** |
| 1. Industrial Estate (IE)[5] | 1 per 900m$^2$ GFA or 1 per 450m$^2$ site area, whichever is the greater. Of the spaces provided, 50% shall be for parking of private cars and light vans and 50% shall be for parking and loading/unloading of lorries. | | 1 container vehicle bay should be provided for a site with dimensions not less than 45m x 40m. |
| 2. Science Park (SP)[6] | 1 per 75m$^2$ GFA (75% for cars; 25% for vans). | 1 per 5 000m$^2$ GFA. | Nil |
| 3. Rural Based Industrial Use (RI) | 1 parking space per establishment or 1 parking space for every 900m$^2$ GFA of the establishment, whichever is the greater, for lorry/visitor parking. | | |
| 4. Other Industrial Uses with Special Requirements (SI) | As per functional needs. | | |

Notes:

1. The relevant standards of the HKPSG Chapter 8 for Internal Transport Facilities will apply where other supporting facilities are provided.
2. 50% of all the above required goods vehicle bays shall be for parking of goods vehicles.
3. Goods vehicle provision is divided into 65 % Light Goods Vehicles (LGV) and 35 % Heavy Goods Vehicles (HGV).
4. Provision referring to gross floor area (GFA) includes part thereof the specified m$^2$ GFA.
5. For Industrial Estates, the parking requirement is the minimum provision; the Hong Kong Science and Technology Parks Corporation will assess the actual parking provision on an individual site basis.
6. For Science Park, parking requirement for HGV will not apply.

## Table 7 : Guidelines for Open Space and Landscaped Areas

| Land Use | Overall Landscape Masterplan | Roadside/ Streetscape Treatment | | Open Space Provision | Treatment to Individual Lots | Treatment to Estate Boundaries |
|---|---|---|---|---|---|---|
| | | Median Planting Strip | Raised Planters to Roadside | | | |
| Industrial Use (I) | Yes | 5 metres | 4 metres | Yes | N/A | N/A |
| Industrial/Office Uses (I/O) | Yes | 5 metres | 4 metres | Yes | N/A | N/A |
| Industrial Estate (IE) | Yes | 2 metres | 2 metres | Yes | 2 metres planting strip | Yes |
| Science Park (SP) | Yes | 2 metres | 2 metres | Yes | 2 metres planting strip | Yes |
| Rural Based Industrial Use (RI) | N/A | N/A | N/A | N/A | N/A | Yes |
| Other Industrial Uses with Special Requirements (SI) | Yes | N/A | 2 metres | Yes | N/A | Yes |

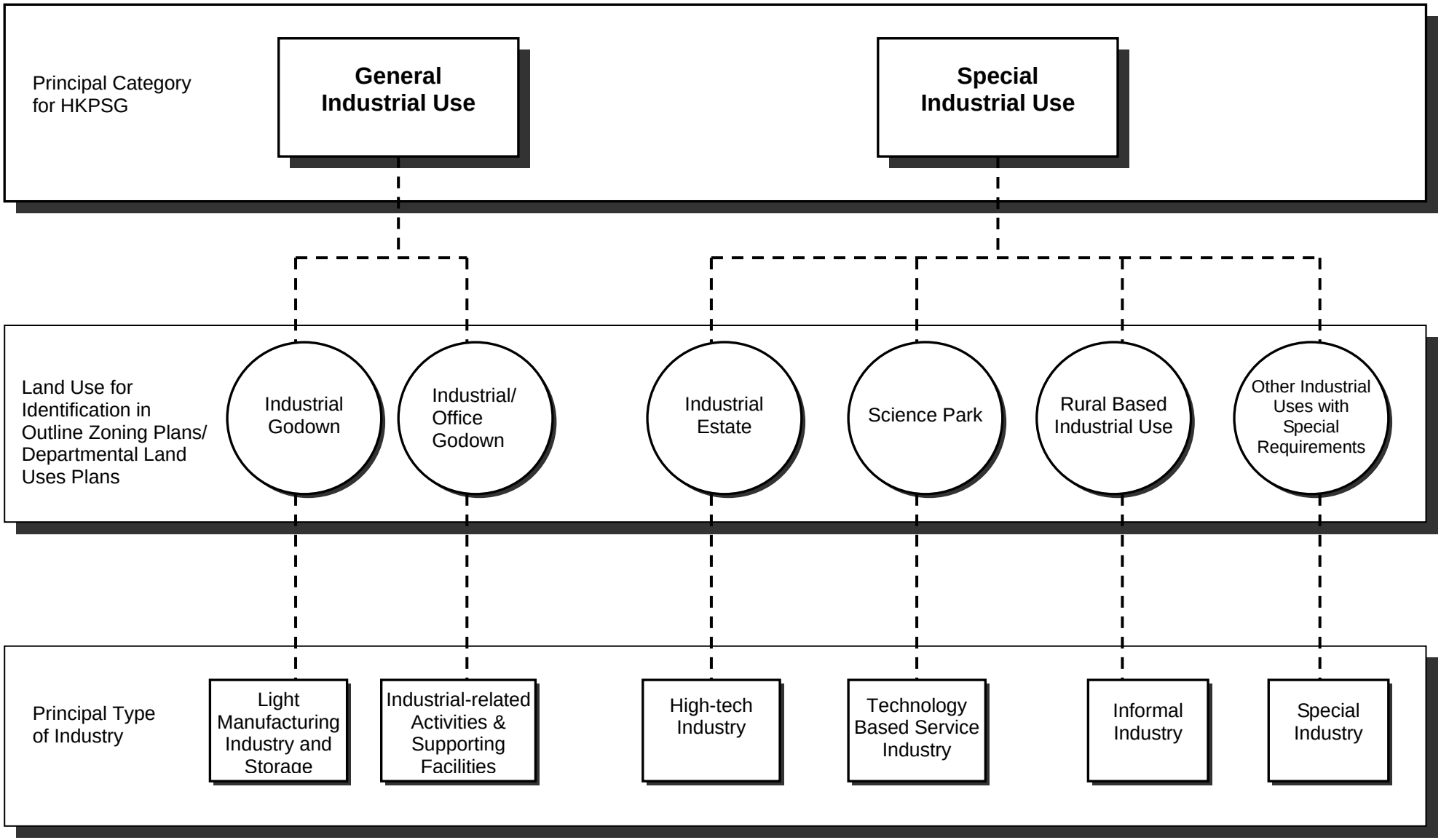
## Table 8 : Recommended Checklist for Supporting Facilities by Industrial Land Use Types

| | Type of Supporting Facilities | General Industrial Use | | | | Special Industrial Use | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Industrial Use (I) | | Industrial/ Office Use (I/O) | | Industrial Estate (IE) | | Science Park (SP) | | Rural Based Industrial Use (RI) | | Other Industrial Uses with Special Requirements (SI) |
| | | C | D | C | D | C | D | C | D | C | D | |
| **A** | **Community Facilities** | | | | | | | | | | | As per functional needs |
| 1 | Medical Clinic | * | | * | | * | | * | | | | |
| 2 | Postal Office | * | | * | | * | | * | | | | |
| 3 | Day Nursery | * | | * | | * | | * | | | | |
| **B** | **Catering Services** | | | | | | | | | | | |
| 1 | Canteen | | * | | * | | * | | * | | * | |
| 2 | Cooked Food Centre | | * | | | * | | | | | | |
| 3 | Fast Food Shop | | * | | * | * | | * | | | | |
| 4 | Restaurant | * | | * | | * | | * | | | | |
| **C** | **Commercial Services** | | | | | | | | | | | |
| 1 | Supermarket | * | | * | * | | | * | | | | |
| 2 | Convenience Store | * | * | * | * | * | | * | * | | * | |
| 3 | Clothing, Footwear & Allied Product | * | | * | * | | | * | | | | |
| 4 | Consumer Goods | * | | * | * | | | * | | | | |
| 5 | Durable Goods | * | | * | * | | | * | | | | |
| 6 | Bank | * | | * | * | * | | * | | | | |
| 7 | ATM Facilities | * | * | * | * | * | | * | * | | | |
| **D** | **Business Supporting Services** | | | | | | | | | | | |
| 1 | Centralised Telephone Systems | | | * | | | | * | | | | |
| 2 | Central Receptionists | | | * | | | | * | | | | |
| 3 | Common Meeting Rooms | | | * | | | | * | | | | |
| 4 | Equipment (Computers, Typewriters.) | | | * | | | | * | | | | |
| 5 | Secretarial Services | | | * | | | | * | | | | |
| 6 | Bookkeeping | | | * | | | | * | | | | |
| 7 | Accounting Services | | | * | | | | * | | | | |
| 8 | Convention and Exhibition Centre | | | * | | | | * | | | | |
| **E** | **Industrial Supporting Services** | | | | | | | | | | | |
| 1 | Fuel | * | | * | | * | | * | | | | |
| 2 | Machinery Equipment and Parts | * | * | * | | * | | * | | | * | |
| 3 | Raw Materials & Semi-Manufactures | * | * | * | | * | | * | | | | |
| 4 | Motor Vehicle | * | | * | | | | | | | * | |
| 5 | Services | * | | * | | * | | * | | | | |
| **F** | **Accommodation** | | | | | | | | | | | |
| 1 | Staff Quarters | | | * | | | * | * | | | | |
| 2 | Service Apartments | | | * | | | | * | | | | |
| 3 | Hotel | | | * | | | | * | | | | |
| **G** | **Recreational Facilities** | | | | | | | | | | | |
| 1 | Indoor Sport Facilities | * | | * | | | | * | | | | |
| 2 | Outdoor Sport Facilities | * | | * | | | | * | | | | |
| 3 | Club | | * | | * | | | * | | | | |

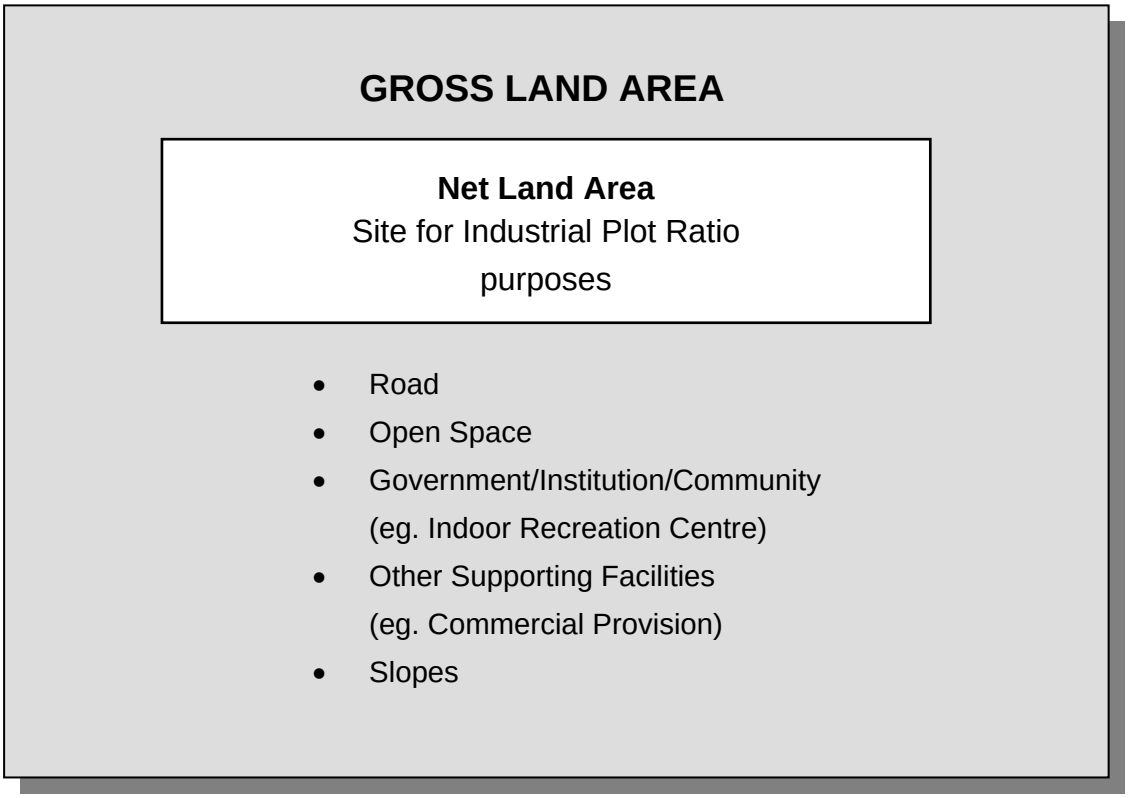
NOTES:

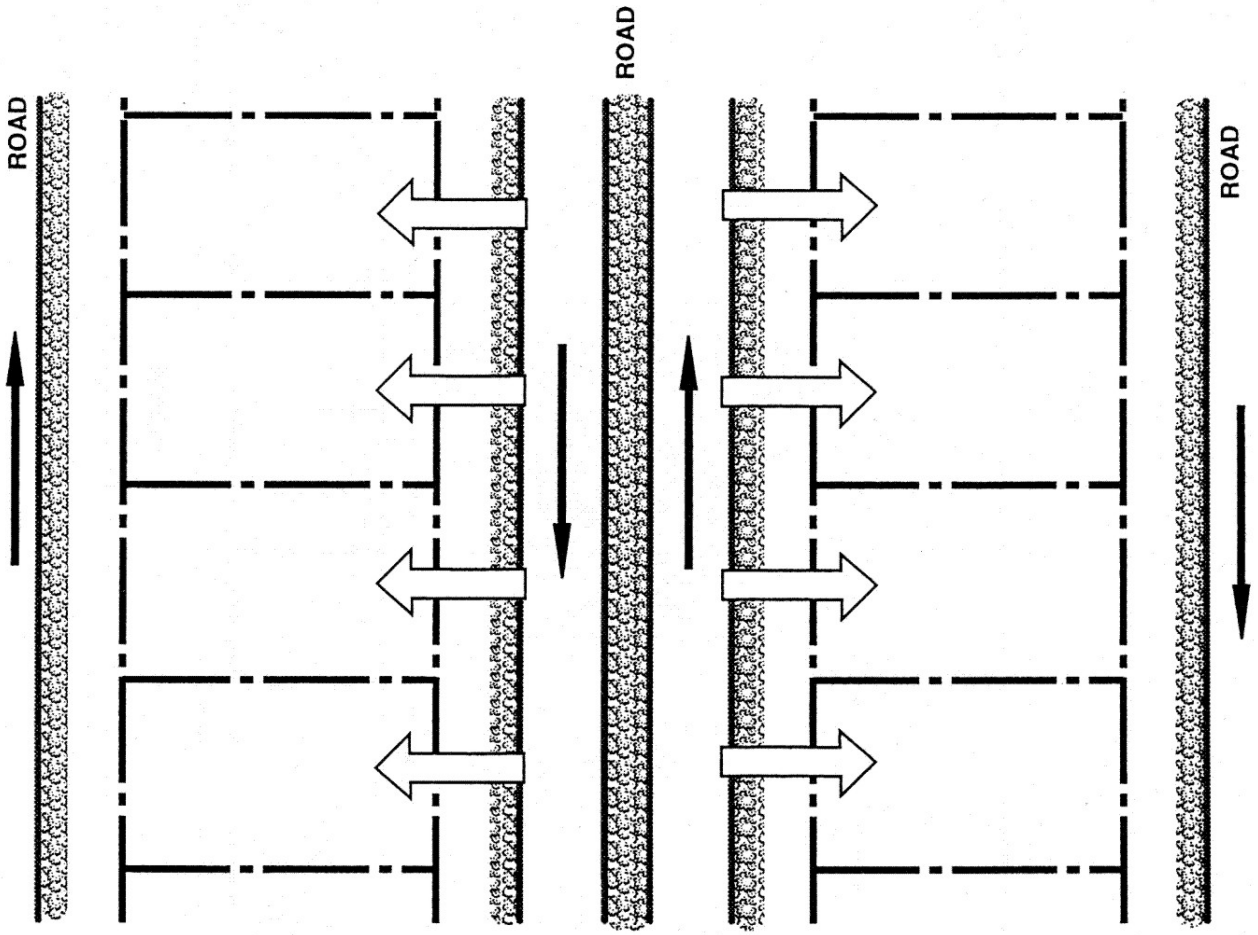
1 "C" Centralised Provision
2 "D" Dispersed Provision
3 For Other Industrial Uses with Special Requirements, supporting facilities are provided as per functional needs.
4 These provisions are not exclusive and may be adjusted to suit local circumstances.

## Figure 1 : Industrial Land Use Typology



## Figure 2 : Land Area Definitions for Industrial Area






**Advantages:**

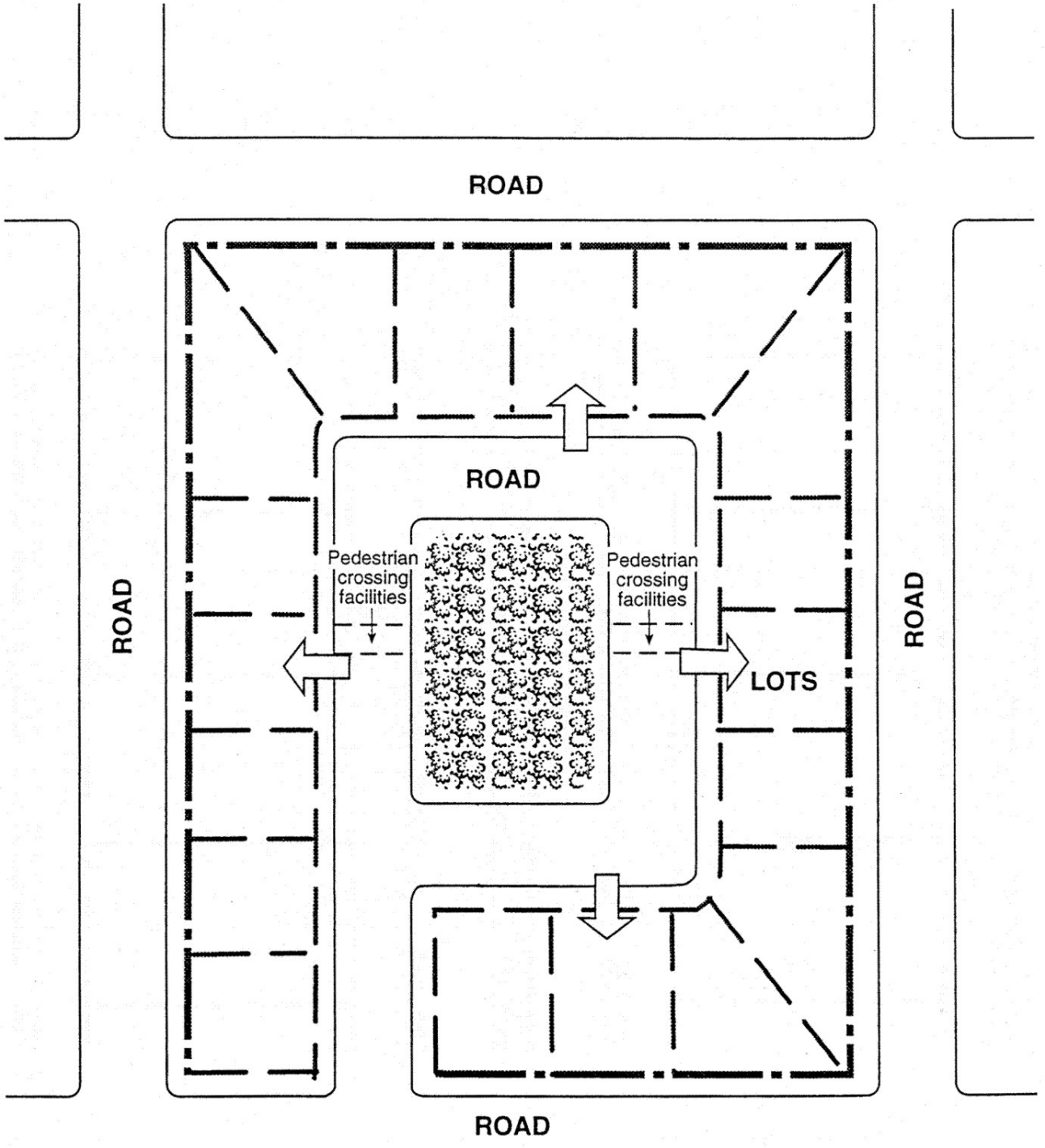
- **A continuous landscape framework throughout the area.**
- **Separation of footpaths from street/road would discourage illegal parking and loading/unloading.**

**Disadvantages:**

- **Limited vehicular/pedestrian circulation.**
- **Footpaths crosses driveways frequently (approximately 40-50 metres).**

**LAYOUT CONCEPT 1:**
**GOOD STREETSCAPE-APPLICABLE TO ALL INDUSTRIAL LAND USE TYPES**

| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 33 | DATE | FIG. NO |
| FILE REF. NO | | 3.1 |




**Advantages:**

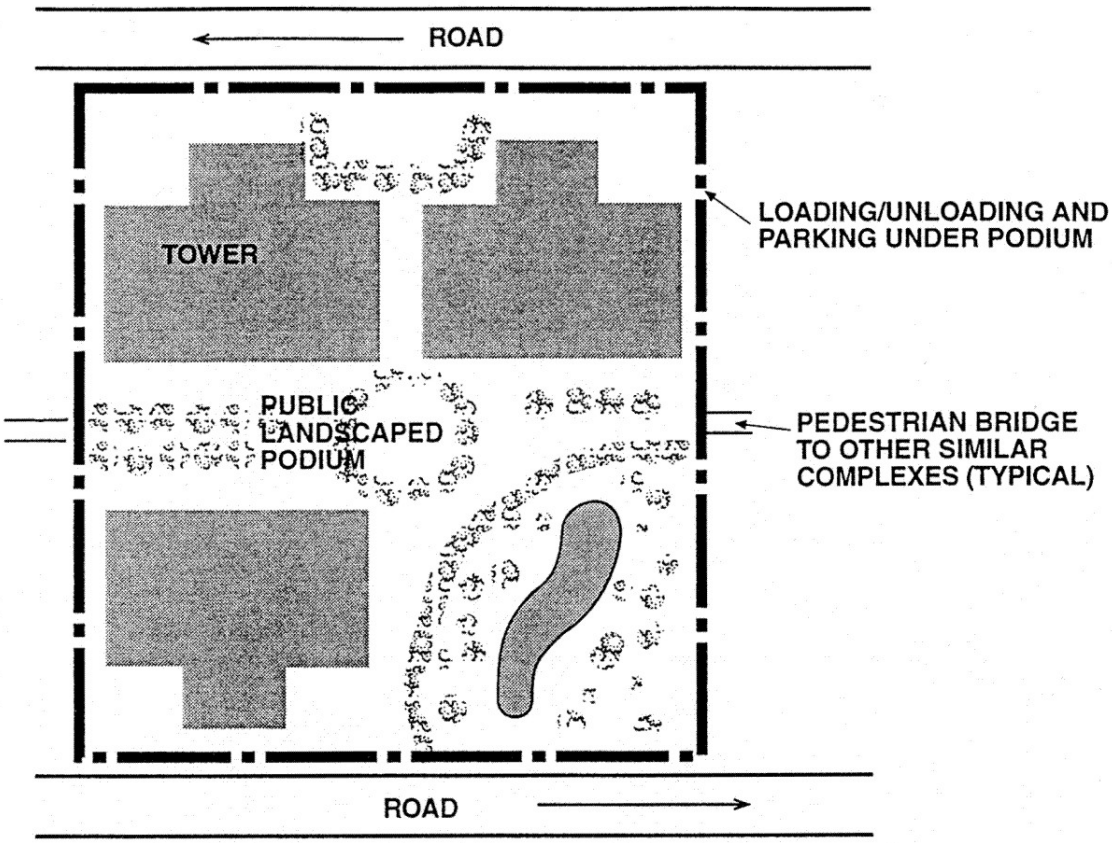
- Open space accessible from all blocks.
- Large open space can accommodate centralised recreational facilities.
- Central open space easier to manage.

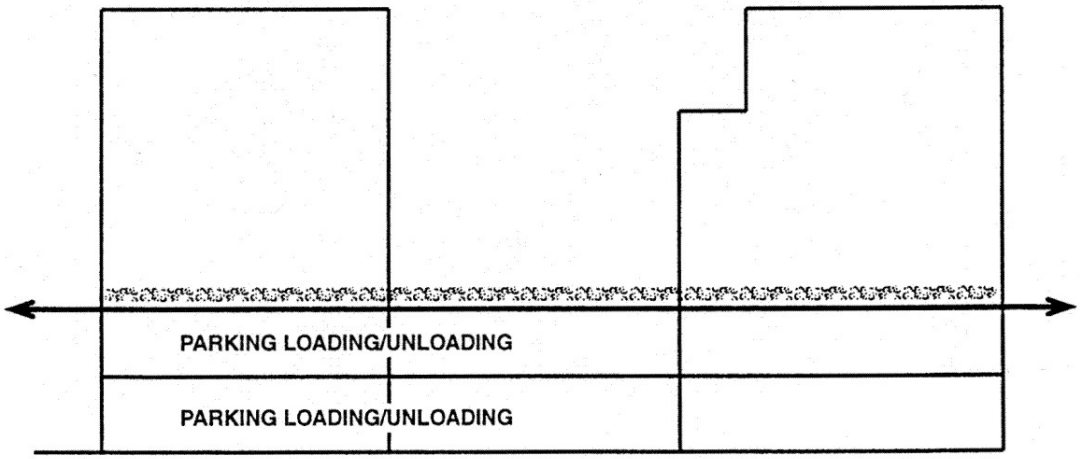
**Disadvantages:**

- Open space separated from blocks by road access.
- Limited pedestrian/vehicular segregation.
- Open space areas not linked.
- Enclosed open space may be less inviting because of visual enclosure of industrial permises and noise and air pollutions.
- These pocket spaces enclosed by industrial premises are likely to be abused by adjacent activities.

## LAYOUT CONCEPT 2: SINGLE LARGE OPEN SPACE-APPLICABLE TO ALL INDUSTRIAL LAND USE TYPES

| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 34 | DATE | FIG. NO 3.2 |
| FILE REF. NO | | |




SECTION

Advantages:

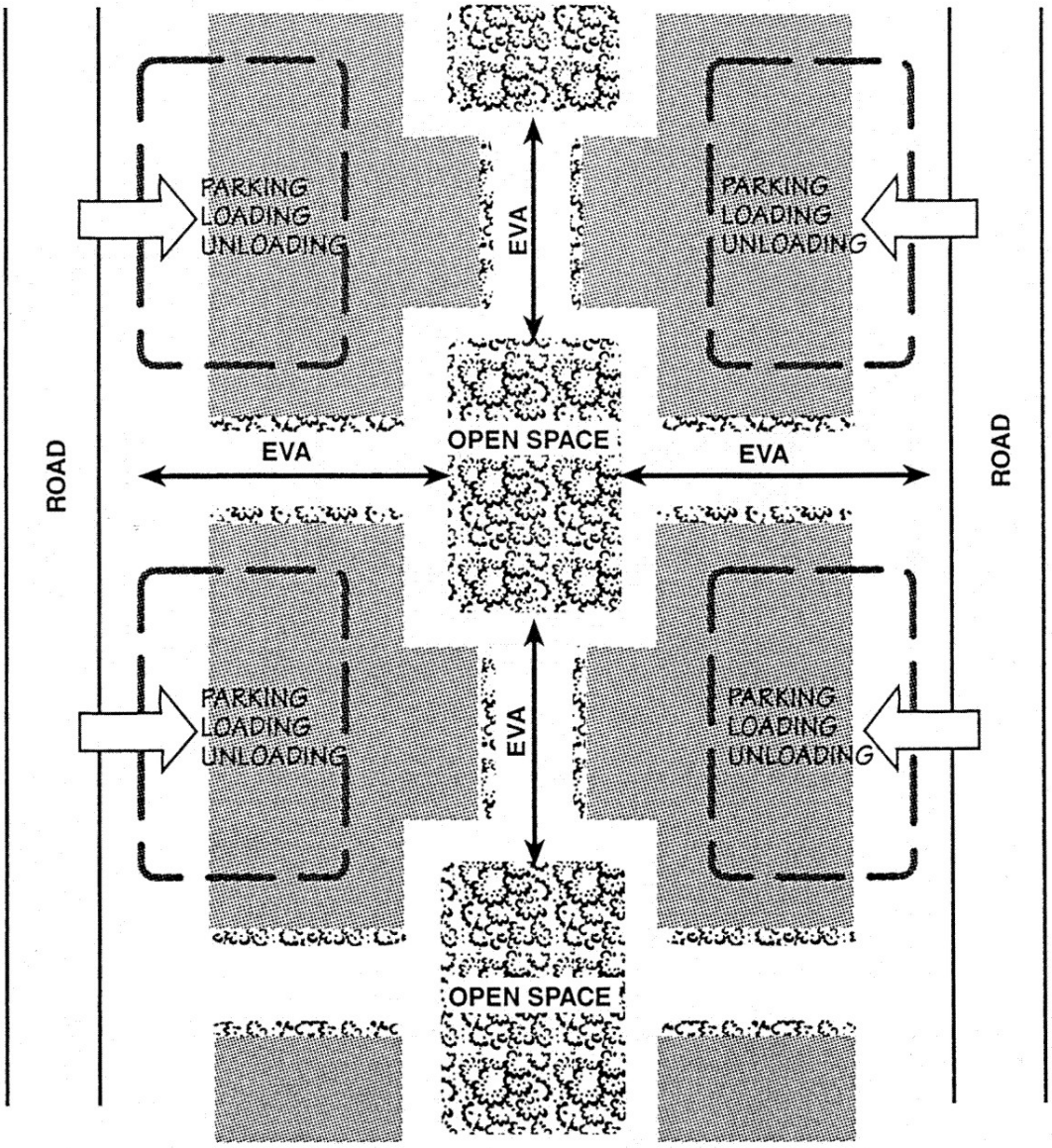
- Substantial areas available for landscaped open space.
- Open space easily accessible from other blocks.
- Open space separated from parking and loading/unloading area.
- Open space links can be formed at podium level.
- High site coverage below podium level.

Disadvantages:

- Additional construction cost involved in creating landscaped podia and elevated pedestrian links.
- Open space may be overprovided and underutilised.
- Attraction of outsiders may reduce building security.

## LAYOUT CONCEPT 3: LANDSCAPED PODIA - APPLICABLE TO I & I/O USE

| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 35 | DATE | FIG. NO |
| FILE REF. NO | | 3.3 |




**Advantages:**

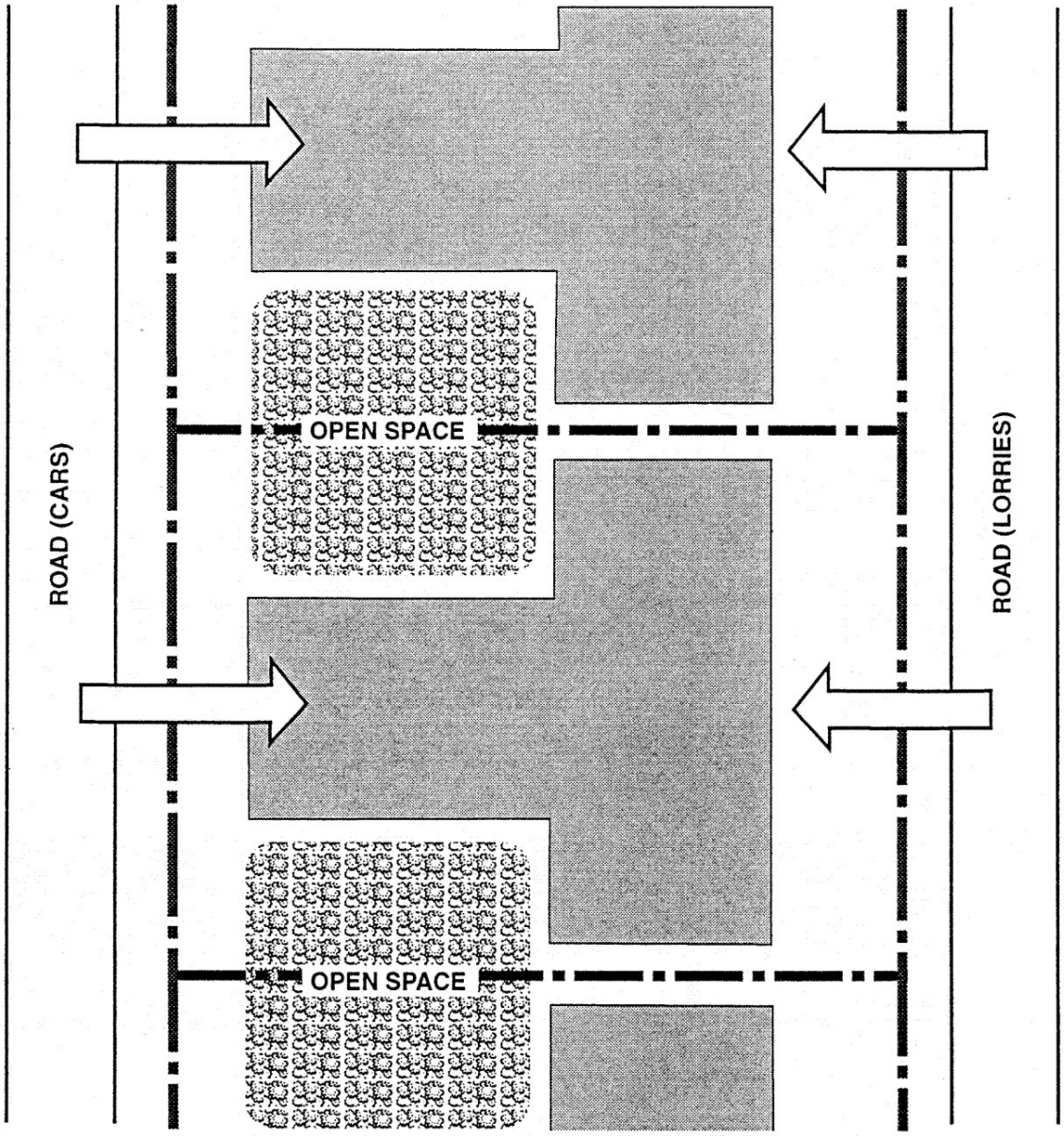
- A high degree of segregation between vehicular and pedestrian access.
- Open space more evenly distributed, accessible and infiltrated.
- Open space links created between blocks.
- More opportunities for interesting building design.

**Disadvantages:**

- The open space/EVA may be wrongly occupied as overspilled storage area.
- The open space/EVA between buildings may not be at the reach of police patrol.
- Open space may be overprovided and underutilised.
- Responsibility for the maintenance of the open space/EVA needs to be clearly defined.

## LAYOUT CONCEPT 4: INTERLINKING SHARED OPEN SPACE - APPLICABLE TO IE, SP & BE

| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 36 | DATE | FIG. NO |
| FILE REF. NO | | 3.4 |




**Advantages:**

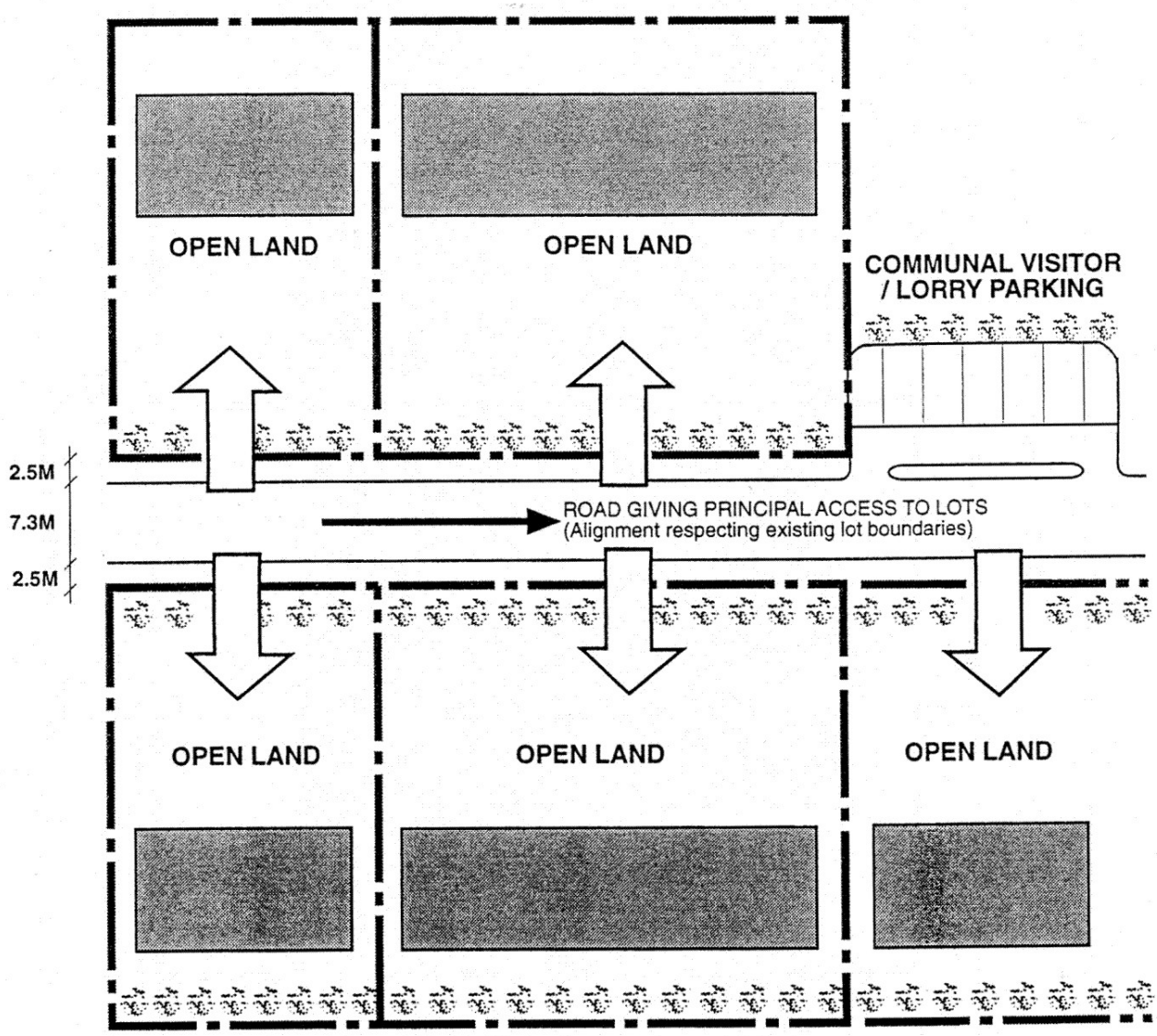
- Open space evenly distributed throughout the area.
- Open space easily accessible from blocks.
- Open space separated from loading/unloading area.
- Separation of pedestrian and loading/unloading activities.

**Disadvantages:**

- Open space separated from buildings by access road.
- Open space areas not linked.
- Responsibility for the maintenance of the open space needs to be clearly defined.

## LAYOUT CONCEPT 5: SHARED OPEN SPACE COURTYARD - APPLICABLE TO IE, SP & BE

| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 37 | DATE | FIG. NO |
| FILE REF. NO | | 3.5 |




**Advantages:**

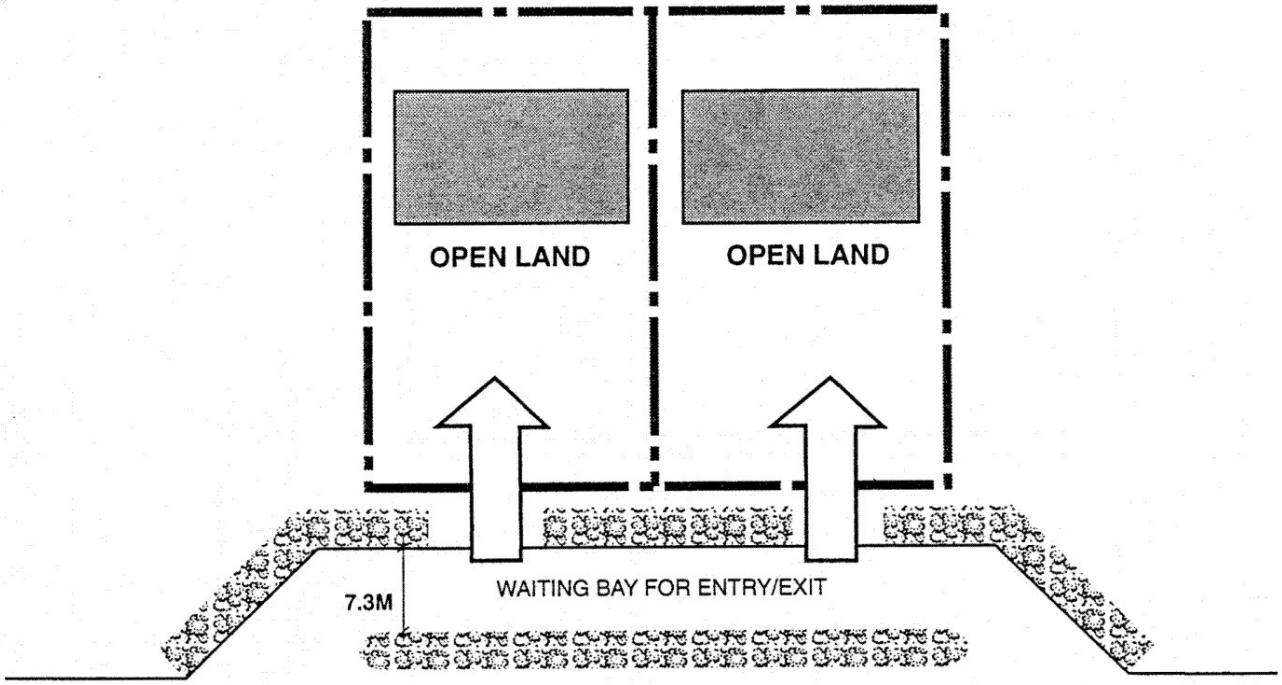
- **retain the existing temporary buildings which are in reasonable condition**
- **provision of proper access road and parking enable factories to operate more efficiently and provide opportunities for consolidation and expansion**

**Disadvantages:**

- **may involve resumption of land for road widening and provision of communal visitor/lorry parking**

## LAYOUT CONCEPT 6: PROVISION OF ACCESS ROAD WITH MINIMUM WIDTH - APPLICABLE TO RI

| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 38 | DATE | FIG. NO |
| FILE REF. NO | | 3.6 |




**MAJOR DISTRIBUTOR ROAD**

**Advantages:**

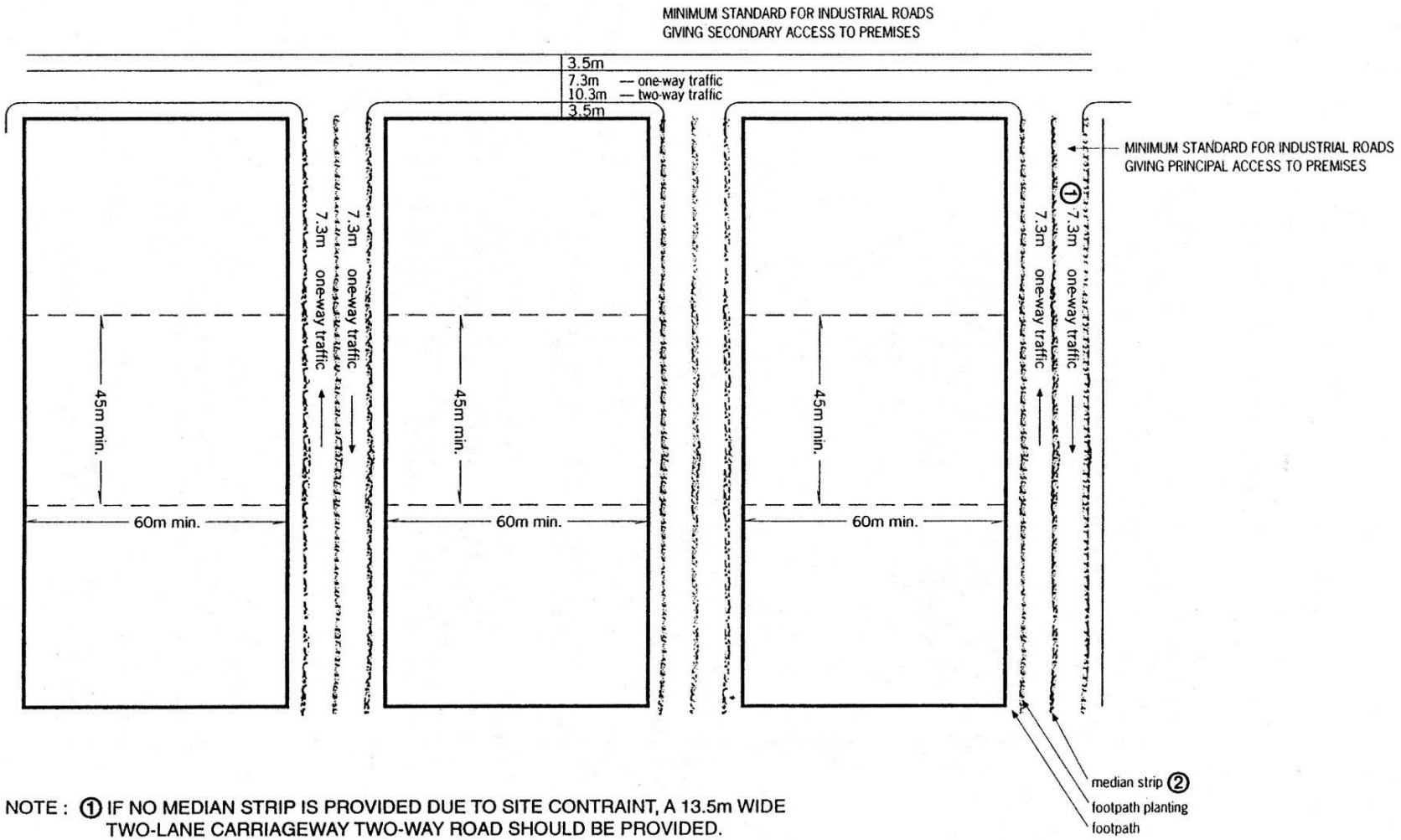
- reduce visual impact of the rural structure by landscaping
- reduce disruption of mainstream traffic along major distributor road

**Disadvantages:**

- only feasible intermittently along rural distributor roads
- may involve resumption of land for provision of waiting bay

**LAYOUT CONCEPT 7:**
**WAITING LAY-BY ALONG MAJOR DISTRIBUTOR ROAD - APPLICABLE TO RI**

| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 39 | DATE | FIG. NO |
| FILE REF. NO | | 3.7 |



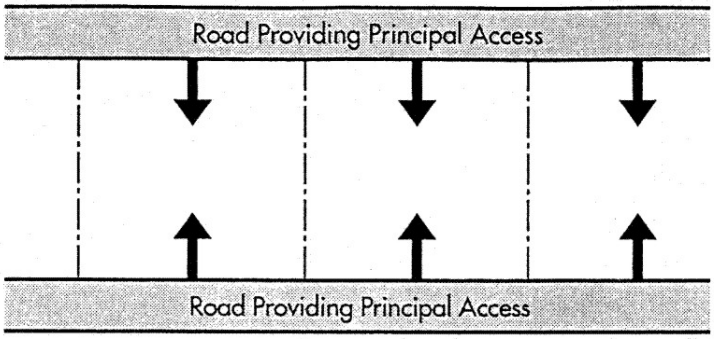

NOTE : ① IF NO MEDIAN STRIP IS PROVIDED DUE TO SITE CONTRAINT, A 13.5m WIDE TWO-LANE CARRIAGEWAY TWO-WAY ROAD SHOULD BE PROVIDED.

② REFER TO TABLE 5 FOR STANDARDS OF FOOTPATH AND LANDSCAPING FOR DIFFERENT LAND USE TYPES.

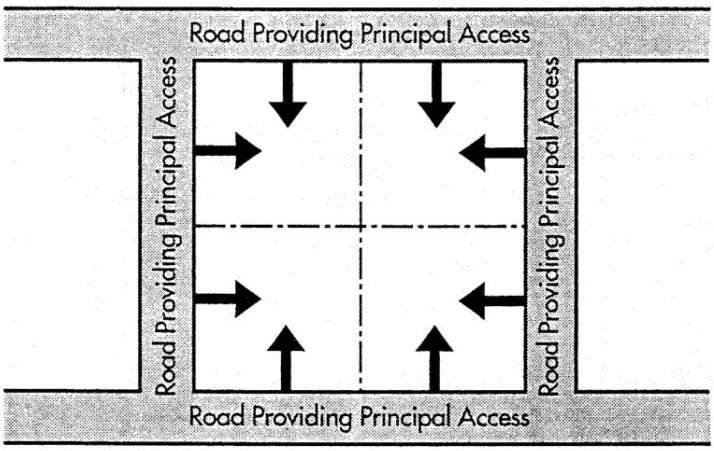
NOT TO SCALE

# MINIMUM STANDARD INDUSTRIAL ACCESS ROADS IN NEW INDUSTRIAL AREAS

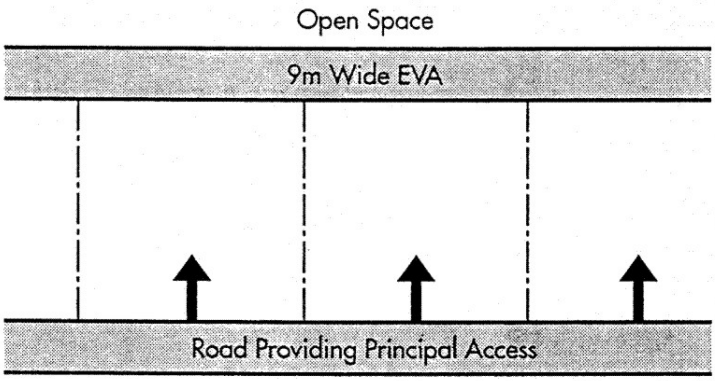
| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 40 | DATE | FIG. NO 4 |
| FILE REF. NO | | |




**(1) Preferred**
- EVA on 2 Sides
- Service Access on 2 Sides

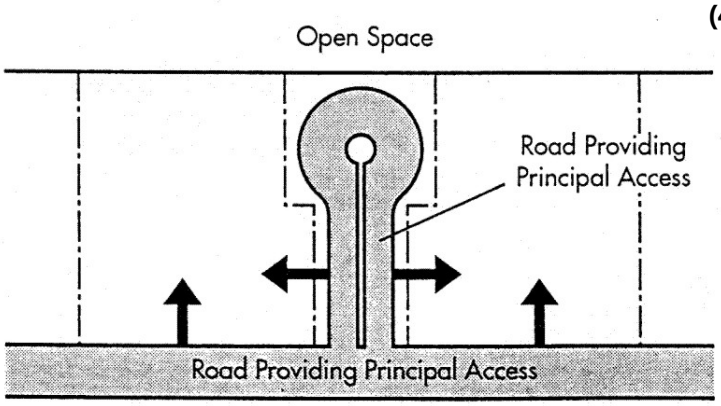



**(2) Preferred**
- EVA on 2 Sides
- Service Access on 2 Sides




**(3) Acceptable**
- EVA on 2 Sides
- Service Access on 1 Side
- EVA Maybe Constructed as a Cycleway or Footpath to Compliment the Adjacent Open Space

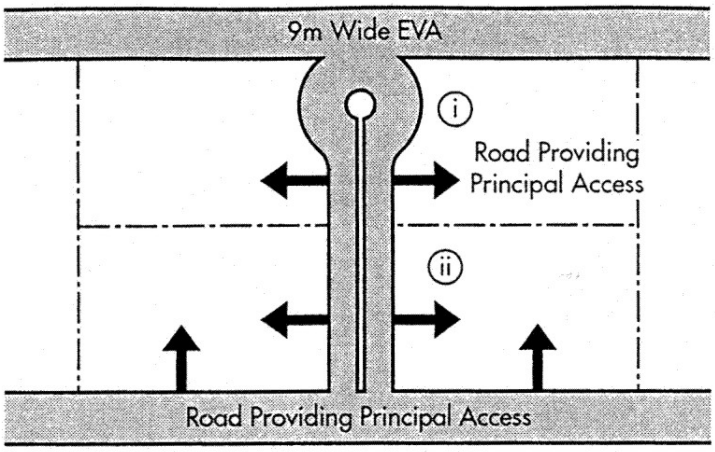
**(4) Acceptable**




**(4) Acceptable**
- EVA on 2 Sides
- Service Access on 2 Sides

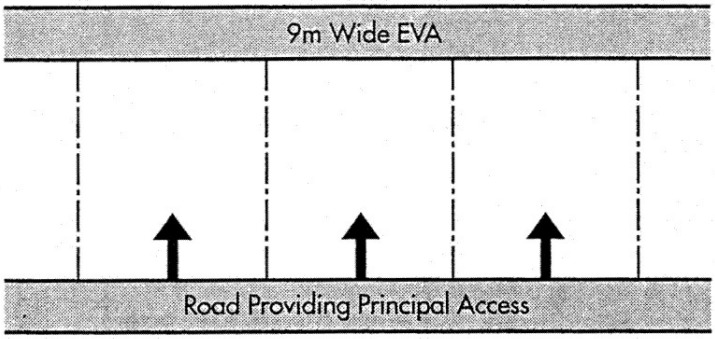
**DOUBLE FRONTAGE/EMERGENCY VEHICULAR ACCESS ILLUSTRATIONS (1) TO (4)**

| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 41 | DATE | FIG. NO |
| FILE REF. NO | | 5.1 |



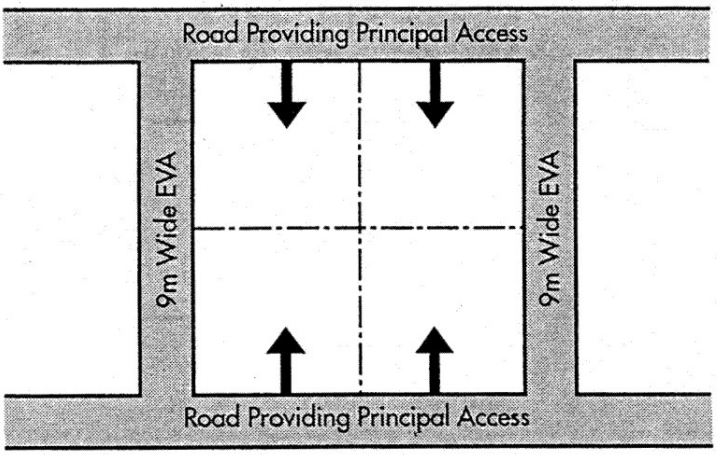

**(5) Acceptable**

- EVA on 2 Sides
- Service Access one side for (i) and 2 Sides for (ii)



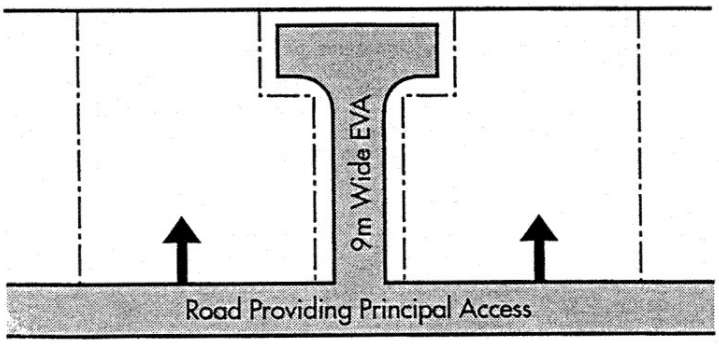

**(6) Marginally Acceptable**

- EVA on 2 Sides
- Service Access on 1 Side




**(7) Marginally Acceptable**

- EVA on 2 Sides
- Service Access on 1 Side




**(8) Marginally Acceptable**

- EVA on 2 Sides
- Service Access on 1 Side

**DOUBLE FRONTAGE/EMERGENCY VEHICULAR ACCESS ILLUSTRATIONS (5) TO (8)**

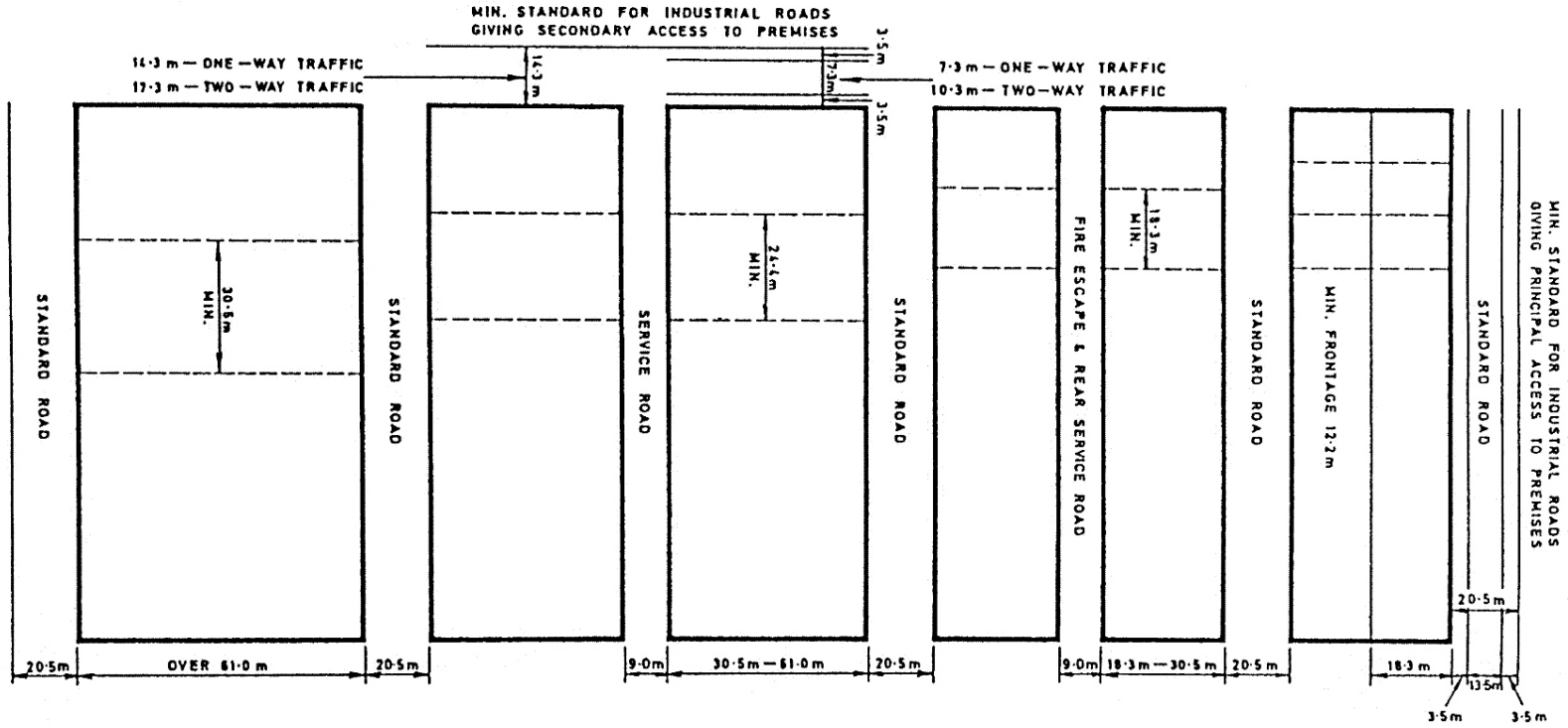
| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 42 | DATE | FIG. NO |
| FILE REF. NO | | 5.2 |

LARGE SITES (OVER 1 860 m²)

MEDIUM SITES (750 — 1 860 m²)

SMALL SITES (335 — 750 m²)

VERY SMALL SITES (225 — 335 m²)



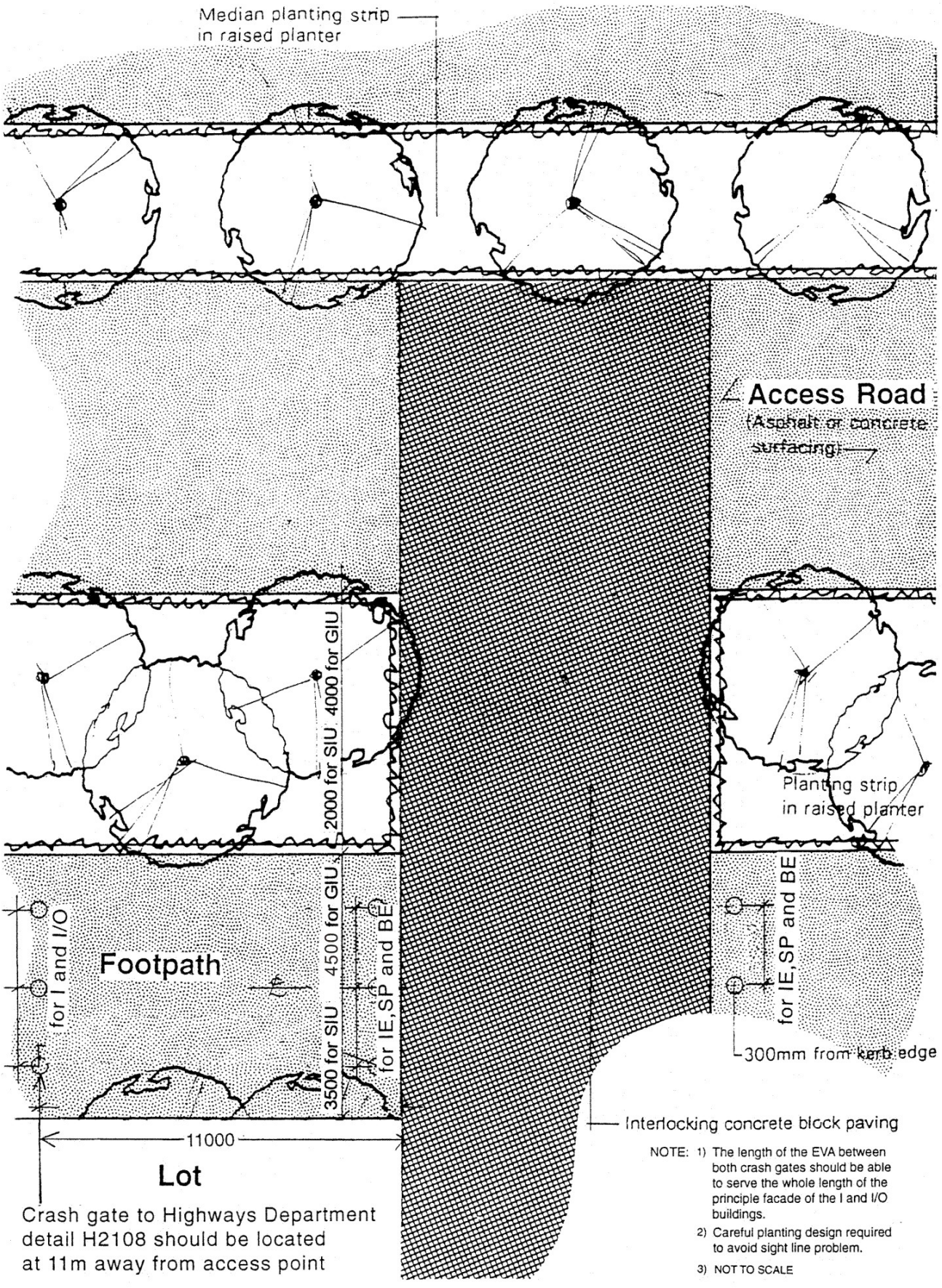

NOTE : LOT DEPTHS IN RELATION TO ROAD STANDARDS SHOULD TAKE INTO ACCOUNT FIRE SAFETY REQUIREMENTS AND SHOULD NOT BE EXCEEDED EXCEPT IN CONSULTATION WITH THE FIRE SERVICES DEPARTMENT.

NOT TO SCALE

# MINIMUM STANDARD INDUSTRIAL ACCESS ROADS IN EXISTING INDUSTRIAL AREAS

PLANNING DEPARTMENT

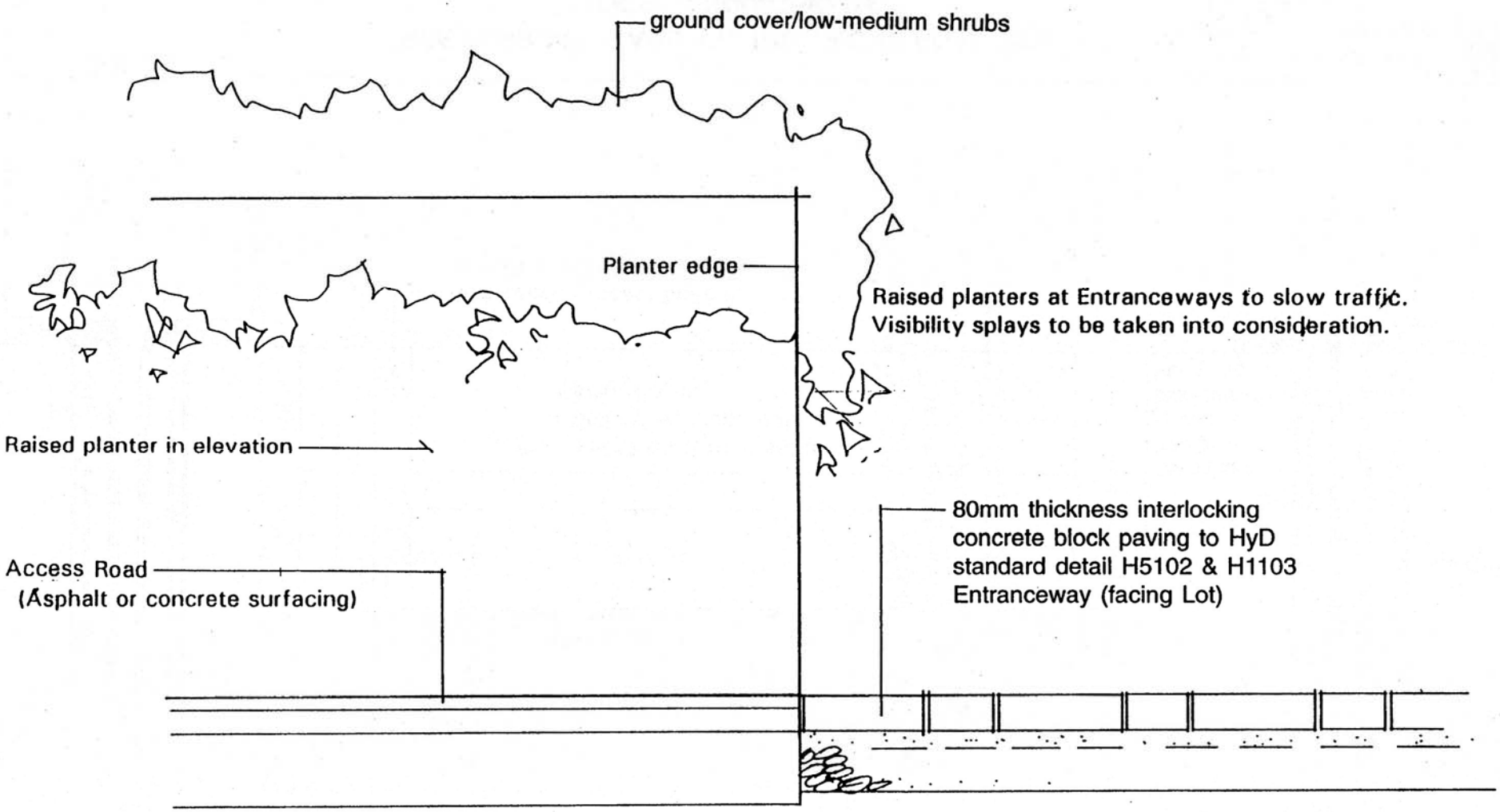
| PLAN No. M / SS / 07 / 43 | DATE | FIG. NO |
|---|---|---|
| FILE REF. NO | | 6 |




NOTE:
1) The length of the EVA between both crash gates should be able to serve the whole length of the principle facade of the I and I/O buildings.
2) Careful planting design required to avoid sight line problem.
3) NOT TO SCALE

**TYPICAL ENTRANCEWAY TO LOT - PLAN**

| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 44 | DATE | FIG NO |
| FILE REF NO | NOV 06 | 7.1 |

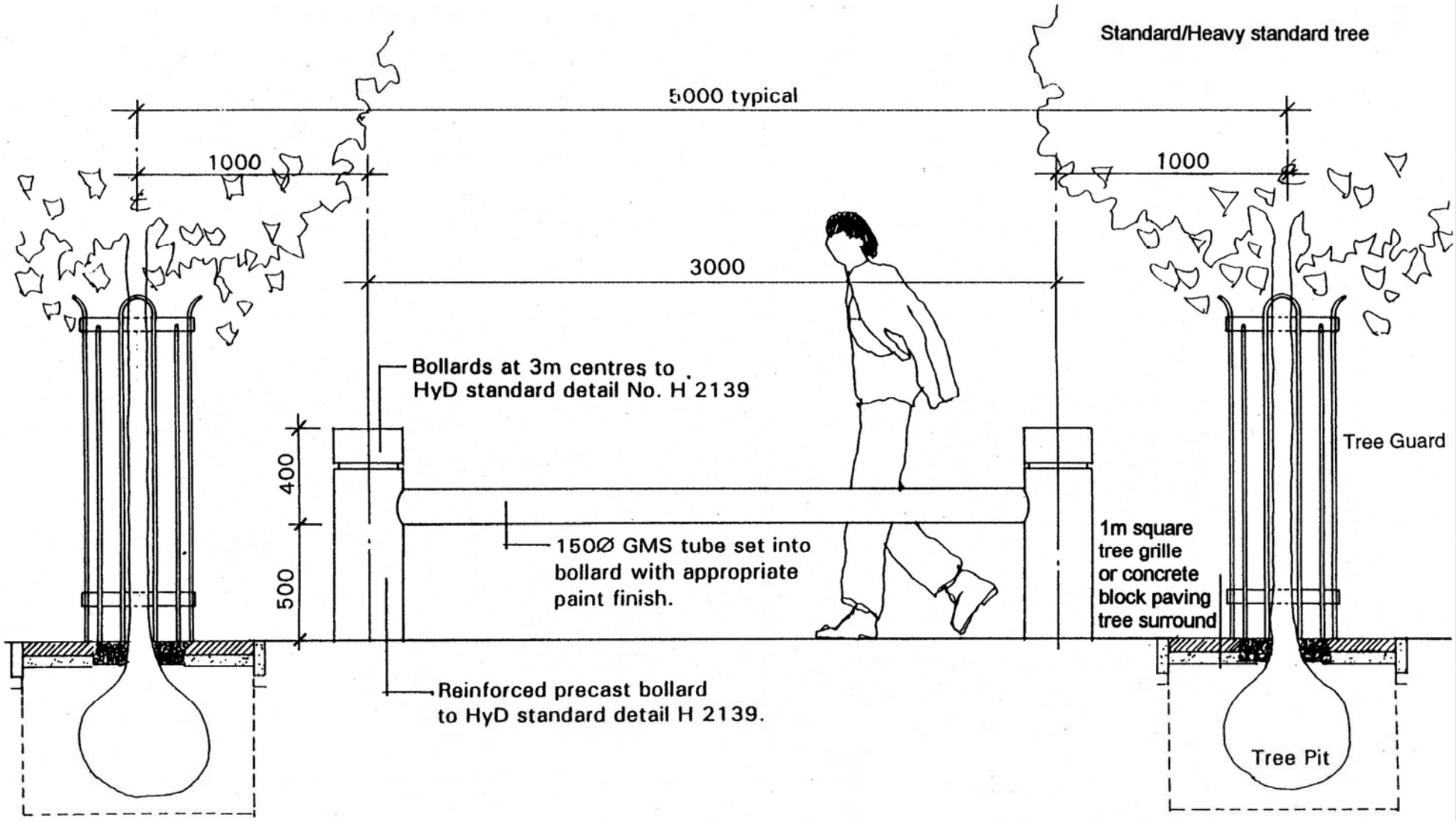



NOTES : 1) RAISED PLANTER TO HAVE BASE SOIL BROKEN UP TO A DEPTH OF 300mm TO ALLOW FREE DRAINAGE

2) NOT TO SCALE

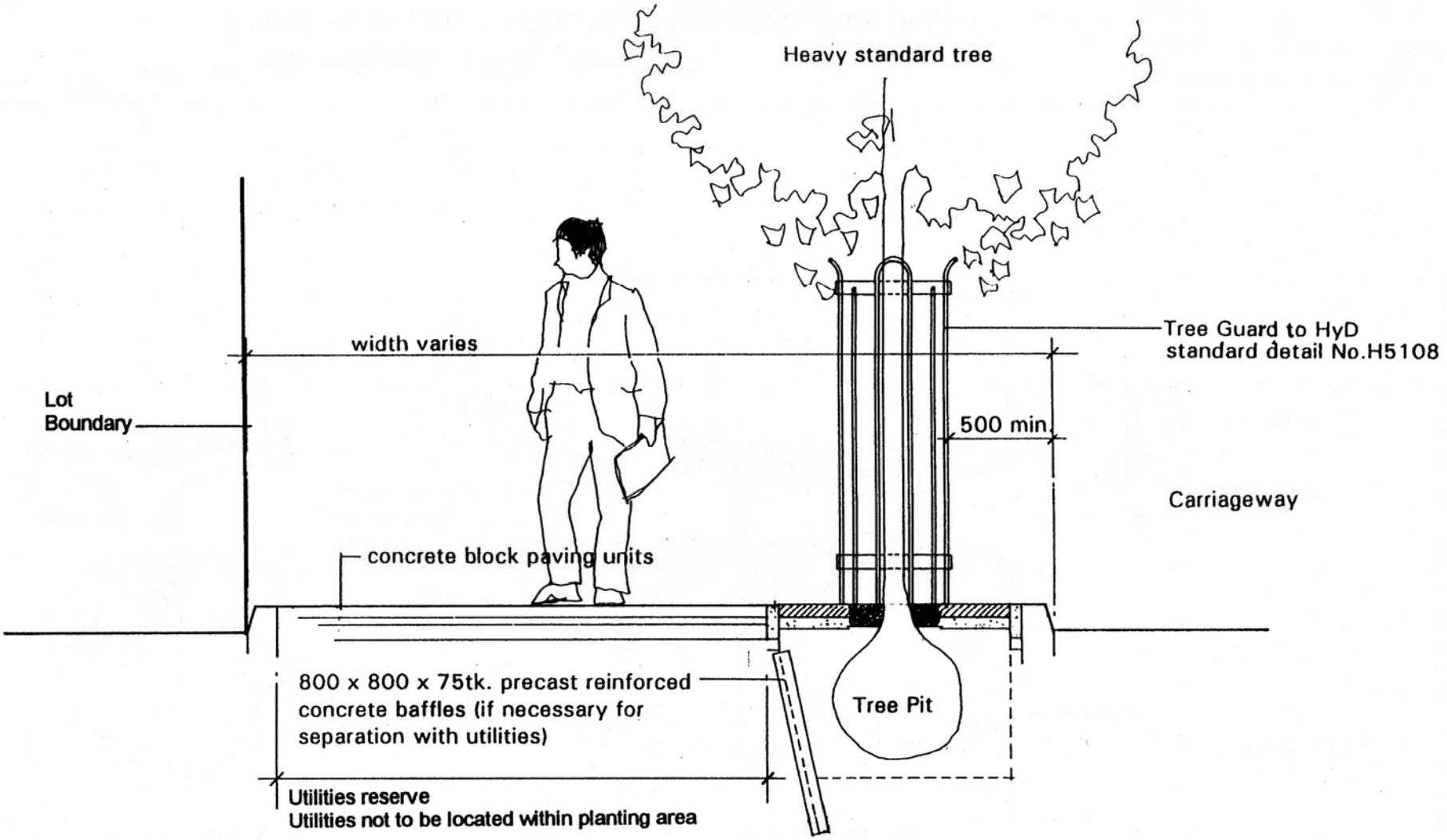
## PLANTER AT LOT ENTRANCEWAY - TYPICAL SECTIONAL ELEVATION

| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 45 | DATE | FIG NO 7.2 |
| FILE REF. NO | | |




## TREE GUARD/BOLLARD AND RAIL ALONG ROAD SIDE- TYPICAL ARRANGEMENT

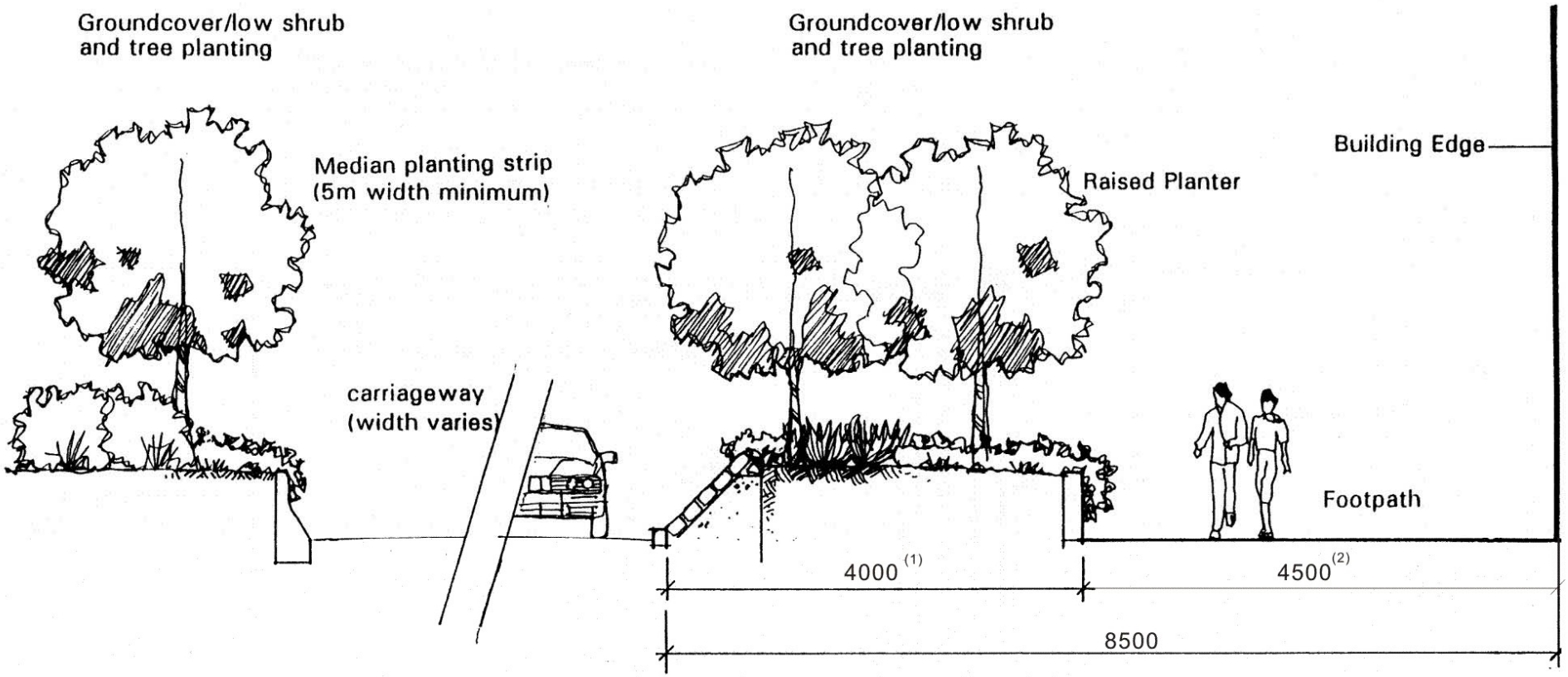
| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 46 | DATE | FIG NO |
| FILE REF. NO | | 7.3 |




NOTES : PLANTING AREA MUST BE FREE OF ANY UTILITIES

## UTILITY RESERVE - TYPICAL ARRANGEMENT

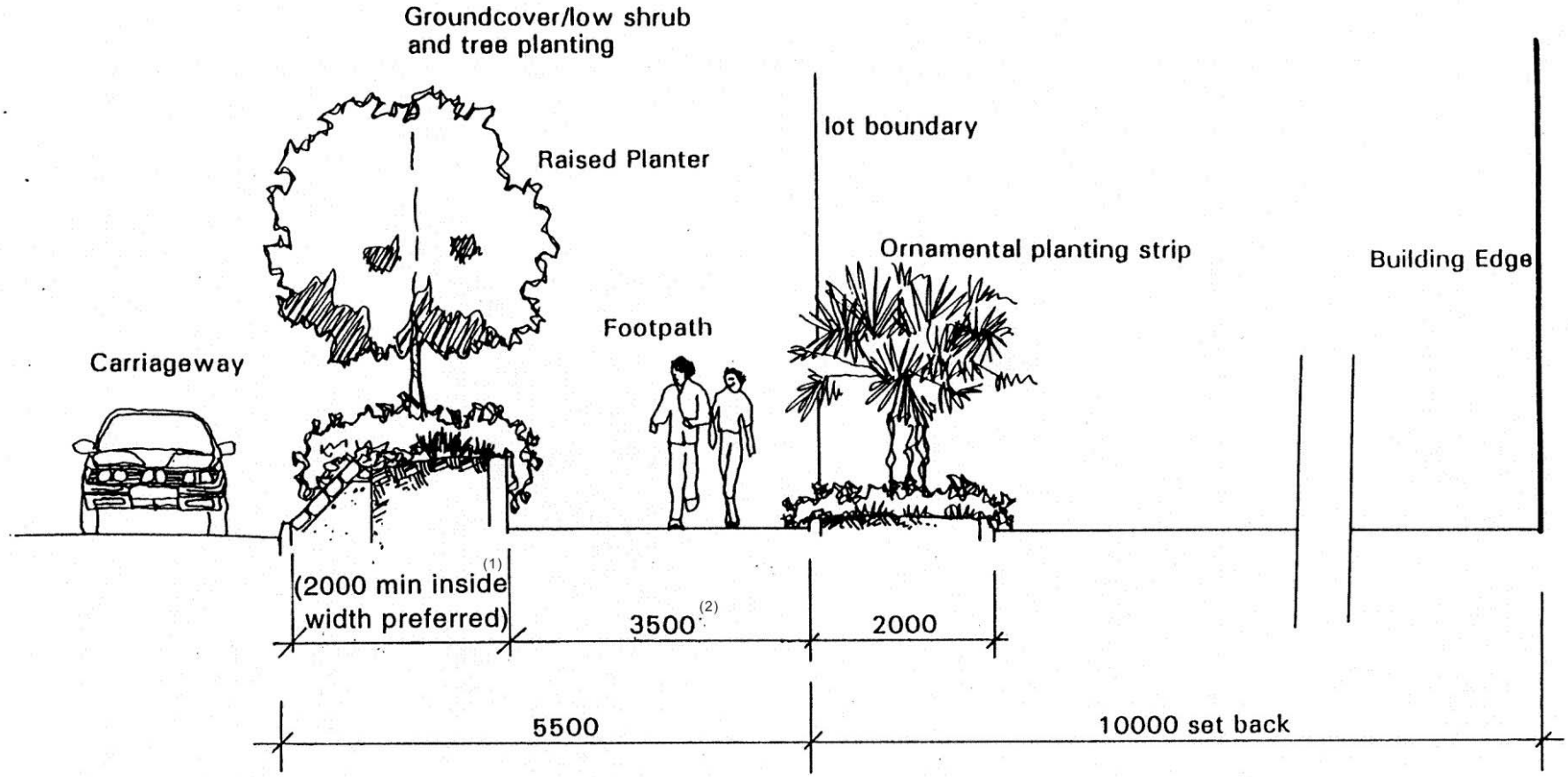
| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 47 | DATE | FIG NO |
| FILE REF. NO | | 7.4 |




Note: (1) Street furniture would be provided within the roadside planter area.
(2) Additional space should be allowed for footpath along the building edge.

## GENERAL INDUSTRIAL USE (GIU)
## ACCESS ROADS - TYPICAL LANDSCAPE TREATMENT

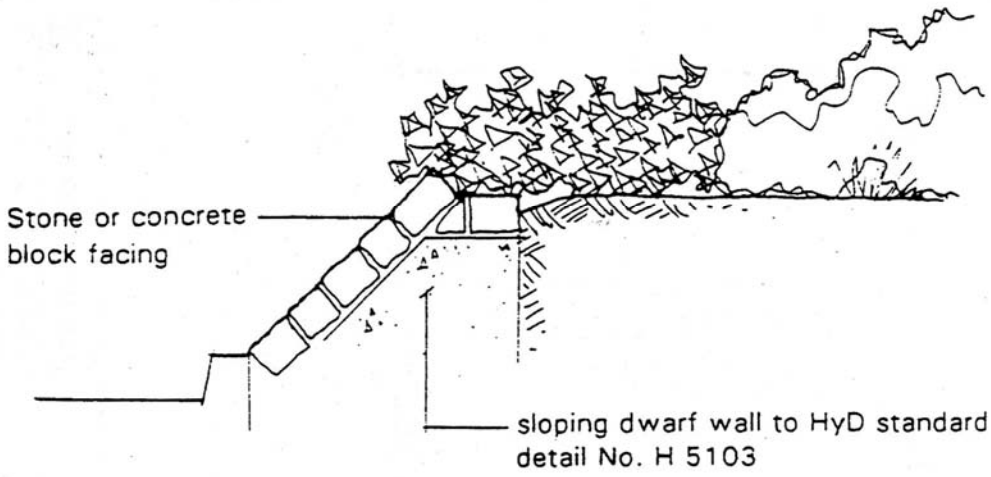
| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 48 | DATE | FIG NO |
| FILE REF. NO | NOV 06 | 7.5 |



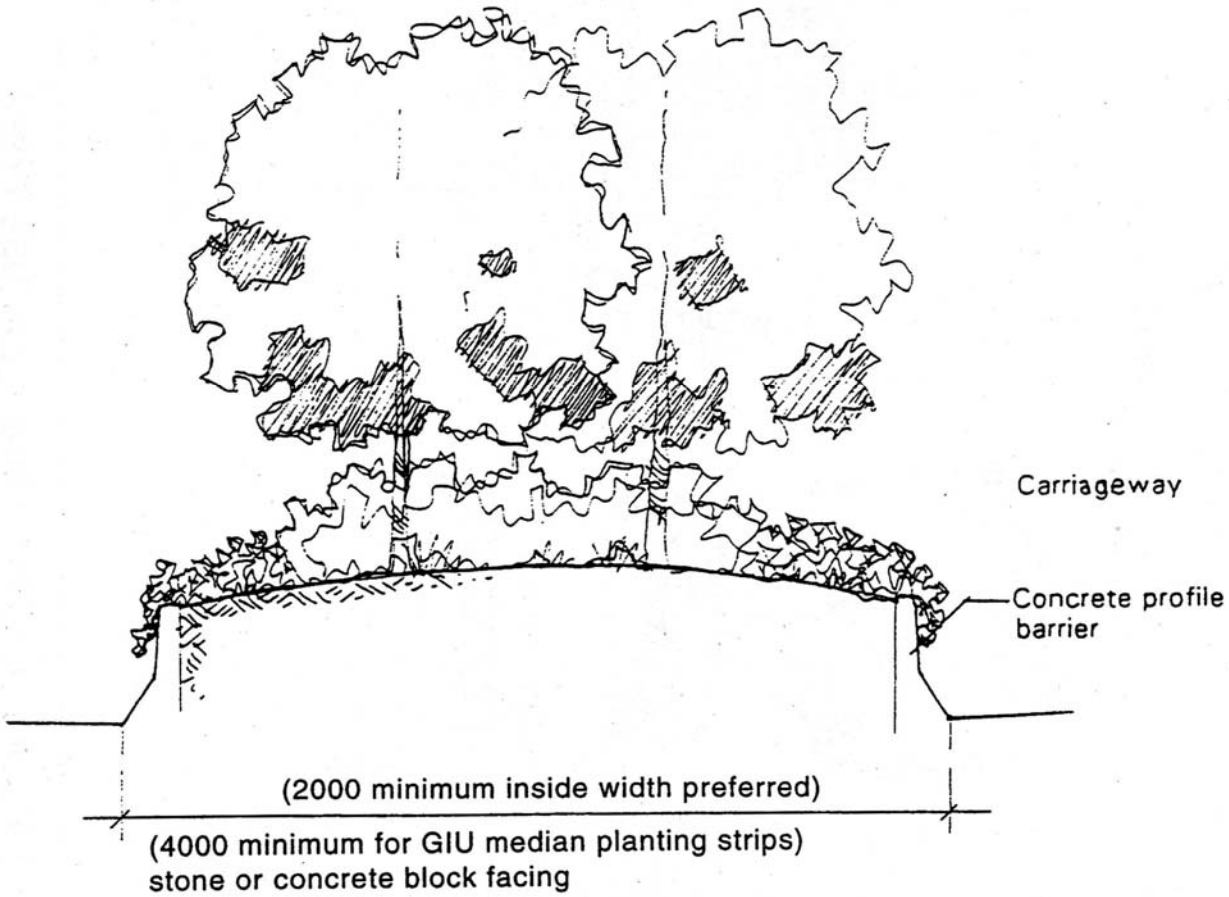

Note: (1) Street furniture would be provided within the roadside planter area.
(2) Additional space should be allowed for footpath along the building edge.

## IE, SP & BE INDUSTRIAL LAND USE TYPES
## ACCESS ROADS - TYPICAL LANDSCAPE TREATMENT

| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 49 | DATE | FIG NO |
| FILE REF. NO | NOV 06 | 7.6 |



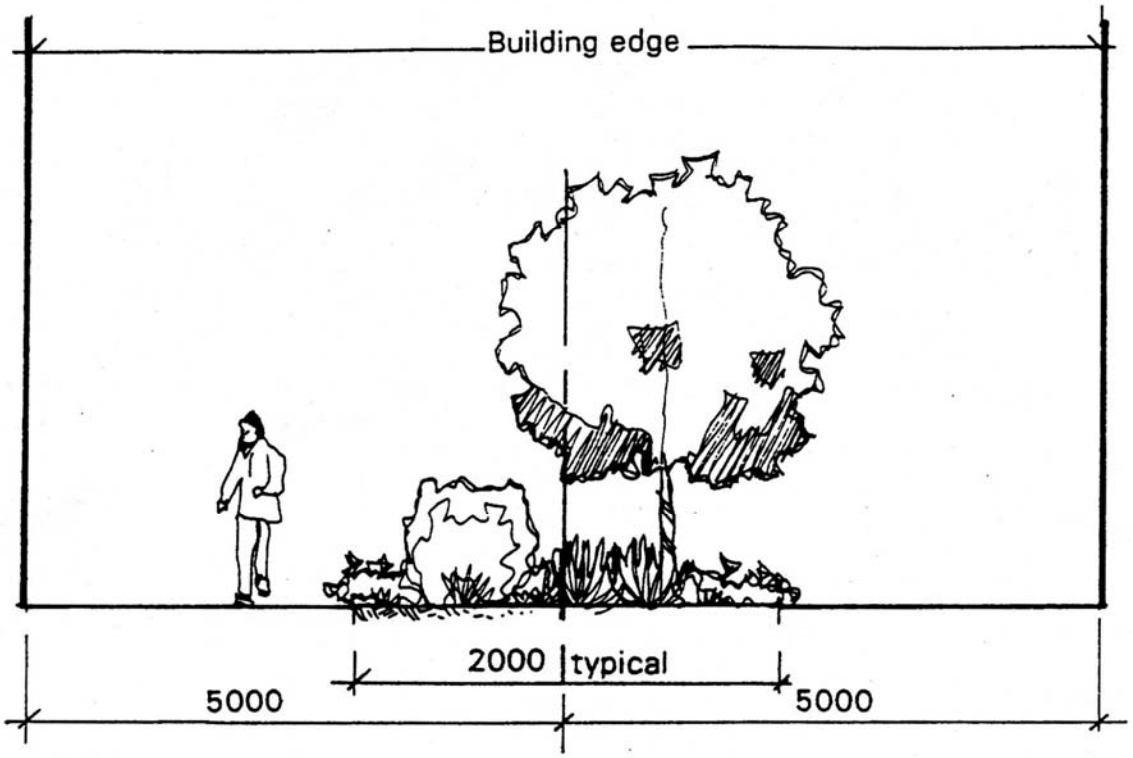

TYPICAL SECTION



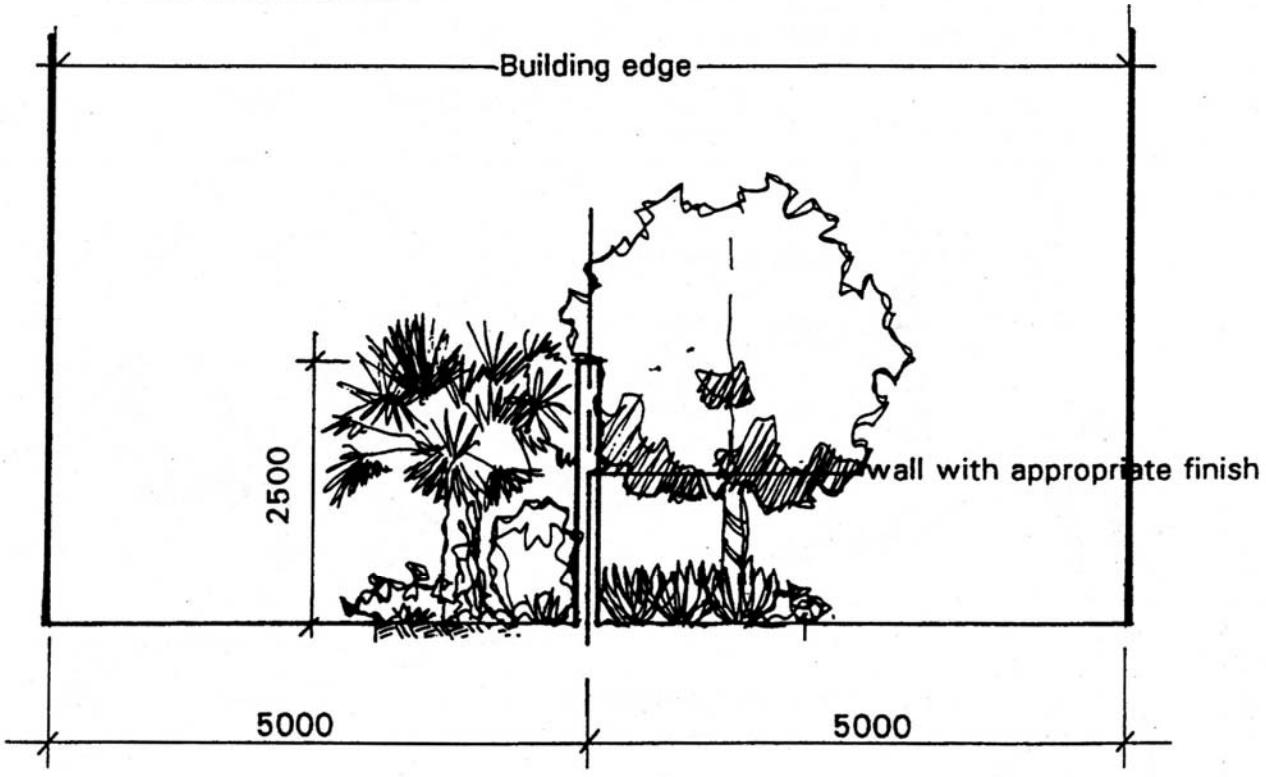

ALTERNATIVE DETAIL

**MEDIAN PLANTING STRIP**
**- TYPICAL DETAILS**

| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 50 | DATE | FIG. NO |
| FILE REF. NO | | 7.7 |



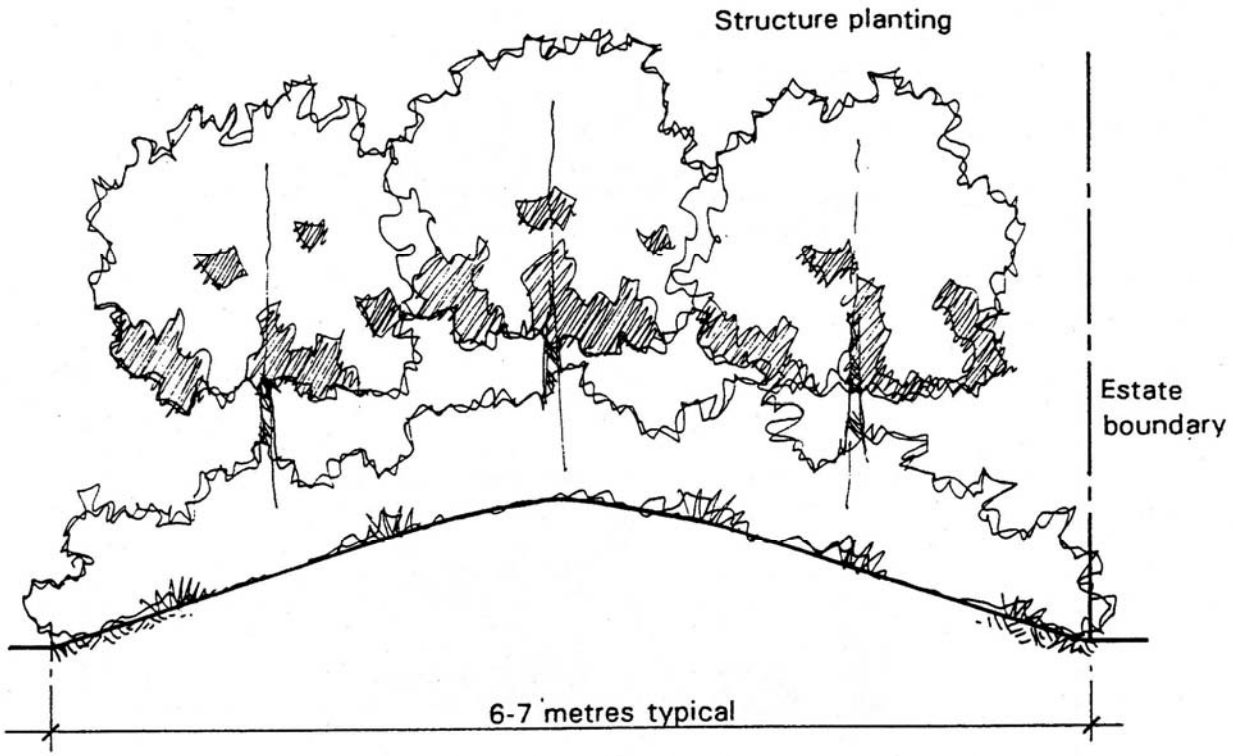

TYPICAL SECTION



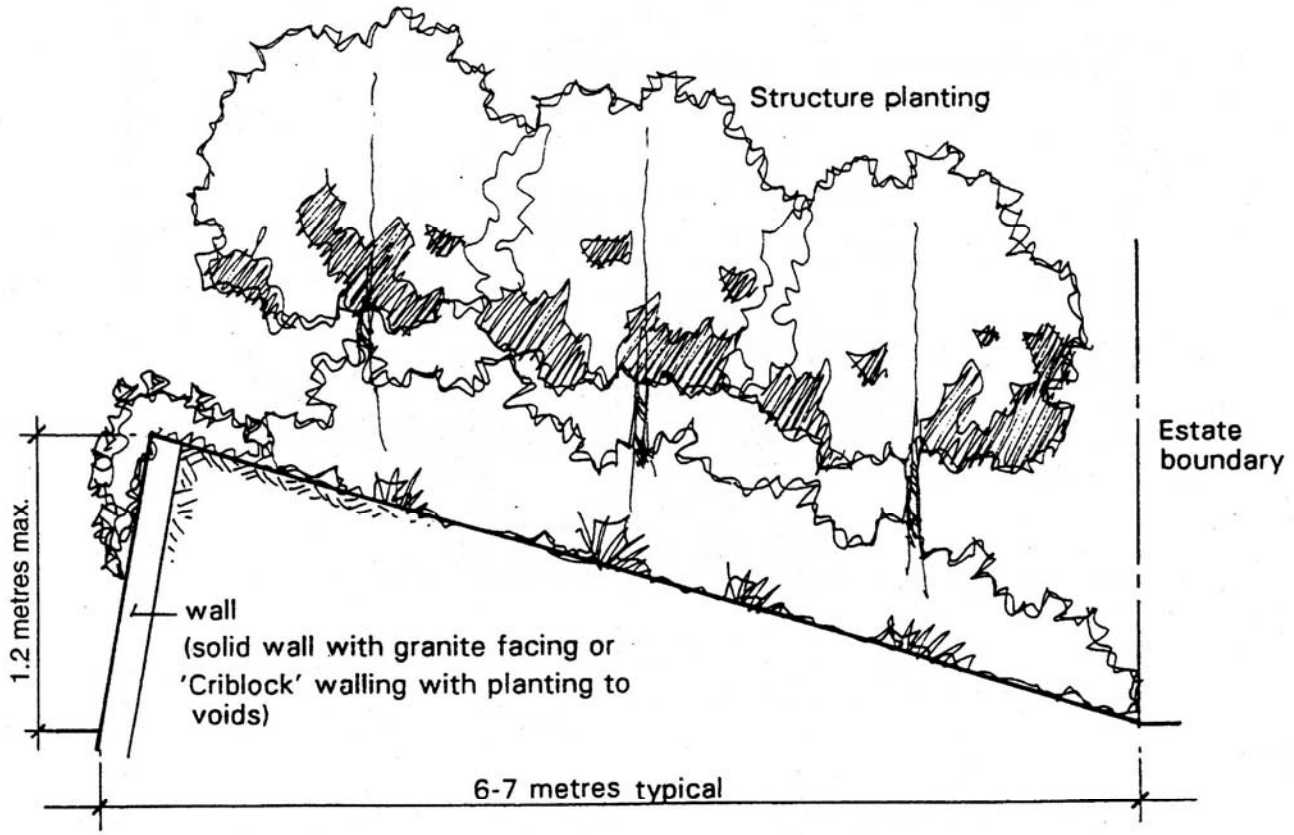

TYPICAL SECTION WITH BOUNDARY WALL

**GENERAL TREATMENT TO INDIVIDUAL LOT SETBACKS**

| PLANNING DEPARTMENT | | |
|---|---|---|
| PLAN No. M / SS / 07 / 51 | DATE | FIG. NO 7.8 |
| FILE REF. NO | | |




OPTION 1




OPTION 2

**TREATMENT TO ESTATE BOUNDARIES**

| PLANNING DEPARTMENT | | |
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| PLAN No. M / SS / 07 / 52 | DATE | FIG. NO |
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**Appendix 1**

Examples of Industries Accommodated in the Industrial Land Use Types

| Land Use | | Examples Of Potential Type Of Business |
|---|---|---|
| General Industrial Use | Industrial Use | A production facility of a clothing and textiles manufacturing company<br>A production and sales facility of a clock manufacturing company<br>A management and technical support office of a household appliance manufacturing company<br>A warehouse for general storage and distribution services |
| | Industrial/Office Use | A head office of a mobile telephone manufacturing company<br>A regional marketing and distribution centre for chemical products<br>An office for import/export of an office equipment manufacturing company<br>An office for wholesaling, repairing and quality control of an electrical appliances manufacturing company<br>A training centre and technical support unit of a software manufacturing company<br>A storage and office facility of an electronic toys import/export company<br>A storage and office facility of a foodstuff wholesale company |
| Special Industrial Use | Industrial Estate | A production facility of a semi-conductor and ICs manufacturing company<br>A production and distribution facility of a food company<br>A printing facility for a high quality printing company<br>A production facility for a waste paper recycling company<br>A production and research facility for a group of pharmaceutical companies<br>A casting yard for prestressed concrete pile<br>A repairing and testing facility for aircraft engine<br>A production and research and development facility of a tempered glass company<br>A laboratory facility for consumer product testing and product certification services |
| | Science Park | A research and development facility of an information technology company<br>A research and development facility and sales office of a biotechnology company<br>A research, development and administrative office of an advanced materials manufacturing company |
| | Rural Based Industrial Use | A wood/furniture/paper making workshop<br>A small sawmill<br>A production and storage facility for a metal goods manufacturing company<br>A vehicle repair workshop<br>A storage facility for construction materials and equipment |
| | Other Industrial Uses with Special Requirements | A production complex of a chemical manufacturer<br>A fuel storage facility<br>A shipyard of a shipbuilding company<br>A cement manufacturing company<br>A purpose-built storage facility for bulk storage of dangerous goods<br>A dyeing and bleaching facility for a fabric company |

**Appendix 2**

## Territorial Industrial Floor Space Requirements Forecasting Methodology

### 1. Introduction

1.1 This appendix presents the industrial floor space forecasting methodology. Separate forecasting models are developed for General Industrial Use (GIU) and storage floor space requirements.

### 2. Forecasting Internal Floor Space Requirements of GIU

2.1 The methodology used to forecast internal floor space requirements of GIU is illustrated in Figure A2.1. GIU includes the Industrial (I) and Industrial/Office (I/O) land use types. The methodology involves principally the use of linear multiple regression analysis to establish the inter-relationship between the demand for GIU floor space and a wide range of independent variables which are believed to be the major factors affecting the demand for GIU.

2.2 Two measures of floor space demand for GIU are adopted as the dependent variables. They are:

- change in take-up for GIU - take-up is a measure of the annual increase in occupied floor space (IFA). It is defined as supply less demolition less vacancy of the preceding year plus vacancy at the end of the year. Change in take-up refers to the changing level of take-up compared with the previous year; and

- total demand for GIU - a stock based measure of the total floor space (IFA) being occupied. It is defined as stock less vacancy of the year.

2.3 Time series data for the dependent and independent variables, which provide the basis for model testing, are collected over the period 1976 to 1995. Using linear multiple regression analysis, three forecasting models for GIU are constructed. Two of them are used to estimate the total demand for GIU and one to estimate the change in take-up for GIU. The specific form of the models are as follows:

Equation 1: $TD_{year\ t} = B_0 + B_1 * (TD_{year\ t-1}) + B_2 * \ln(EMP_{year\ t}) + B_3 * \ln(RI_{year\ t})$

Equation 2: $\ln(TD_{year\ t}) = B_4 + B_5 * \ln(TD_{year\ t-1}) + B_6 * \ln(RE_{year\ t}) + B_7 * \ln(RI_{year\ t})$

Equation 3: $\ln(TUC_{year\ t}) = B_8 + B_9 * \ln(EMPC_{year\ t}) + B_{10} * [\ln(TU_{year\ t-1}) - \ln(EMP_{year\ t-1})]$

where ln = natural logarithm
TD = total demand for GIU
TUC = change in take-up for GIU
EMP = employment of manufacturing industries
RI = retained imports for industrial machinery

RE = re-exports
EMPC = change in employment of manufacturing industries
TU = take-up for GIU
$B_0$, $B_1$, $B_2$, $B_3$, $B_4$, $B_5$, $B_6$, $B_7$, $B_8$, $B_9$, $B_{10}$ are constants

2.4 The definitions of the independent variables included in the models are:

(a) Employment of manufacturing industries (EMP) includes working proprietors, active business partners, unpaid family workers and all employees who are at work for pay or profit in the whole of the manufacturing sector, i.e. Hong Kong Standard Industrial Classification (HSIC) No. 3.

(b) Retained imports for industrial machinery (RI) is used as a proxy data to indicate the level of capital investments in the manufacturing sector.

(c) Re-exports (RE) are goods that are imported into Hong Kong and are subsequently exported without their shape, nature, form or utility being permanently altered.

(d) Change in employment of manufacturing industries (EMPC) refers to the changing level of employment in the manufacturing sector compared with the previous year.

(e) Take-up for GIU minus employment of manufacturing industries (TU-EMP) attempts to capture the long run economic relationship with change in take-up for GIU.

2.5 The floor space forecasts for GIU (IFA) are estimated by substituting the projected values of the independent variables into the three forecasting models. The model forecasts are adopted to construct a forecasting "range" for GIU. The highest value of model forecasts from the three equations is taken as the upper bound of the forecasts while the lowest value is taken as the lower bound of the forecasts.

2.6 From within the range, a forecasting "band" for GIU is constructed to indicate the upper and lower limits of potential demand. The band should be steadily widened to about 10% of the lower band figure in the last forecast year. The band position should take into account the past trends of the property and labour market to absorb the projected level of take-up and the economic theories underpinning the various models in order to highlight the more important variables. "Outlier" equations may be excluded in forming the band.

## 3. Forecasting Internal Floor Space Requirements of Storage

3.1 The same methodology for forecasting GIU is used to forecast internal floor space requirements for storage. Linear multiple regression analysis is used to establish relationships between the demand for storage floor space and a wide range of

independent variables which are believed to be the major factors affecting the demand for storage. Total demand and take-up for storage is adopted as the dependent variable in model testing.

3.2 Time series data for the dependent and independent variables, which provide the basis for model testing, are collected over the period 1976 to 1995. Using linear multiple regression analysis, two forecasting models are constructed to estimate the total demand for storage. The specific form of the models are as follows:

Equation 1: $\ln(TD_{year\ t}) = B0 + B1 * \ln(RE_{year\ t}) + B2 * \ln(FPROD_{year\ t})$

Equation 2: $\ln(TD_{year\ t}) = B3 + B4 * \ln(RE_{year\ t}) + B5 * \ln(TD_{year\ t-1})$

where ln = natural logarithm
TD = total demand for storage
RE = re-exports
FPROD = floor space productivity of storage premises
B0, B1, B2, B3, B4 and B5 are constants

3.3 The definitions of the independent variables included in the models are:

(a) Re-exports (RE) are goods that are imported into Hong Kong and are subsequently exported without their shape, nature, form or utility being permanently altered.

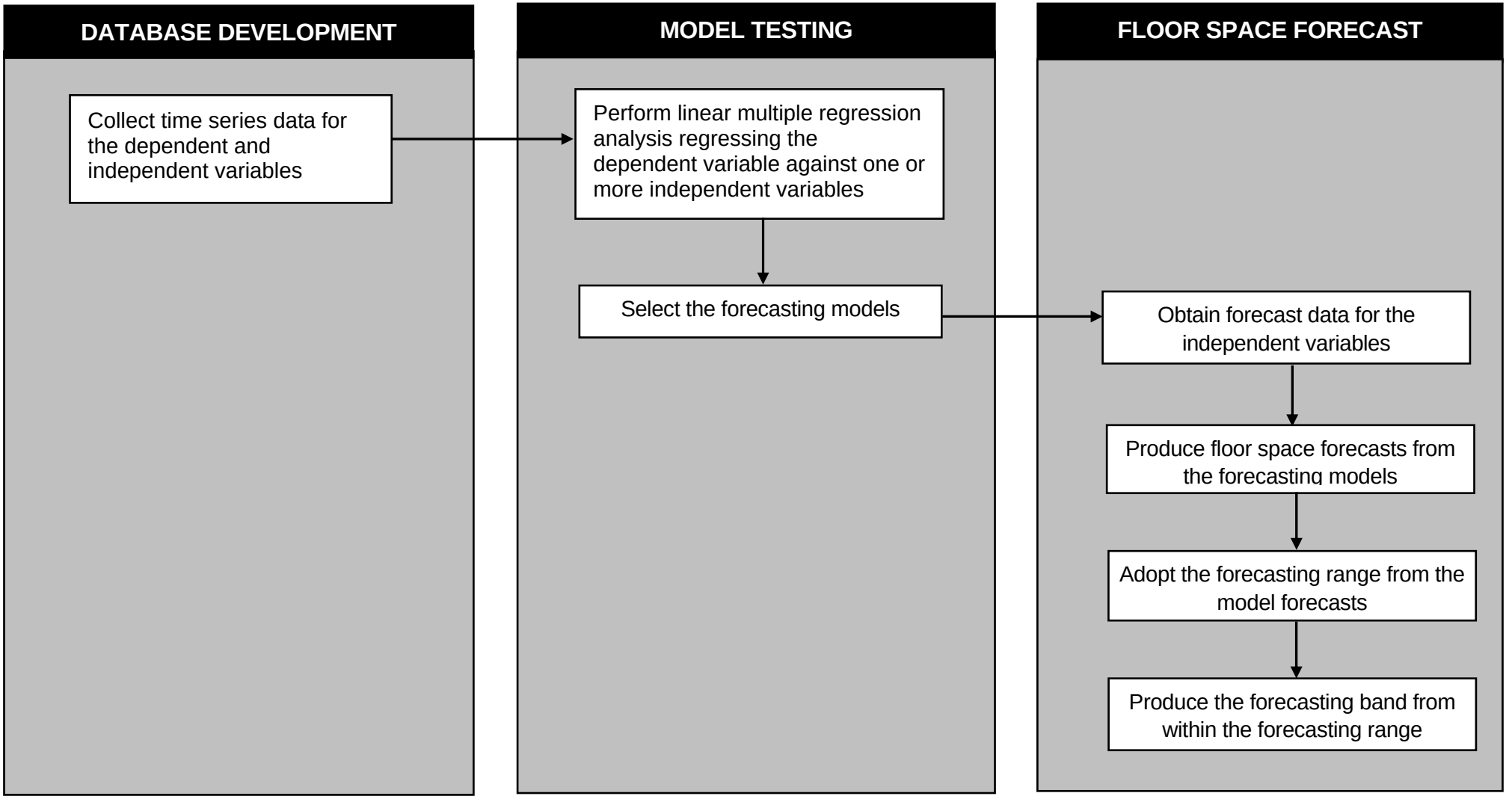
(b) Floor space productivity of storage premises (FPROD) refers to the production level of the storage sector per square metre of floor area. It is the quotient of real value added of the storage sector and the occupied storage floor space in the previous year.

3.4 The floor space forecasts for storage (IFA) are estimated by substituting the projected values of the independent variables into the two forecasting models. The model forecasts are adopted to construct a forecasting "range" for storage. The highest value of model forecasts from the two equations is taken as the upper bound of the forecasts while the lowest value is taken as the lower bound of the forecasts.

3.5 From within the range, a forecasting "band" for storage is adopted to indicate the upper and lower limits of potential demand. The considerations described in paragraph 2.6 should also be taken into account in adopting the band.

## 4. Conclusion

4.1 Model re-calibration is required on a regular basis to take into account new data for the dependent and independent variables when they become available. New independent variables should also be considered when more significant structural changes of the economy take place over time. The precise model forms and the forecasting results are therefore subject to changes. The methodology will assist the process of regular data updating and model revision in the future.




| SOURCES | TERRITORIAL INDUSTRIAL FLOOR SPACE REQUIREMENTS FORECASTING METHODOLOGY | PLANNING DEPARTMENT | | |
|---|---|---|---|---|
| | | Plan REF. No. | DATE | FIG. No. |
| | | File REF. No. | | A2.1 |

# Industry