



PLANNING POLICY GUIDANCE



November 2004

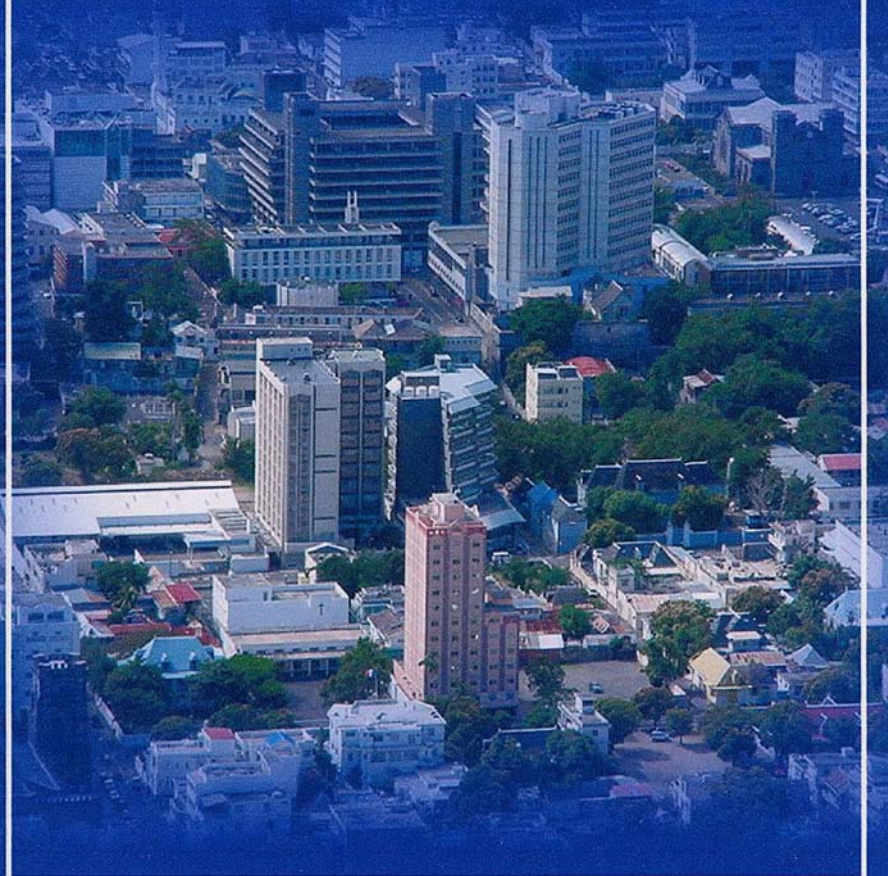


Ministry of Housing and Lands

Mauritius



PLANNING POLICY GUIDANCE



Ministry of Housing and Lands

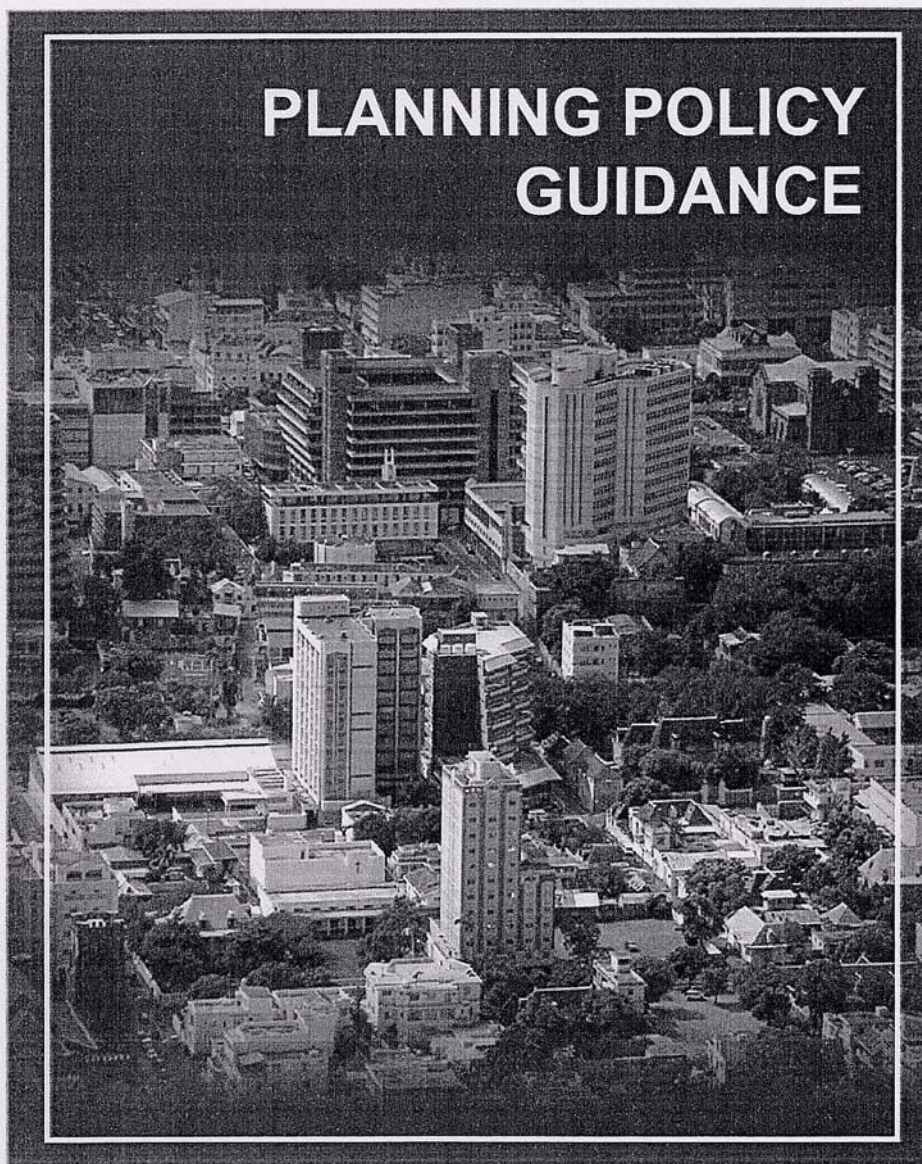
November 2004

Incorporating Revision 1
September 2006

Mauritius



PLANNING POLICY GUIDANCE



Ministry of Housing and Lands

November 2004
Incorporating Revision 1
September 2006



Planning Policy Guidance

The series of Planning Policy Guidance was first issued in 2004 and the following titles have now been issued:

		Date
PPG 1	Design Guidance	November 2004
PPG 1	Design Guidance Revision 1	September 2006



Ministry of Housing and Lands

PPG 1 Design Guidance Revision 1

September 2006

UPDATE to PPG 1 issued in November 2004 on

- (1) Residential Coastal Development **Design Sheet**
- (2) Resort Hotel Development **Design Sheet**
- (3) Residential building sites on existing small coastal sites **Design Guidance**
- (4) Building height along the Motorway Commercial Development **Design Guidance**
- (5) Small Industrial Workshops and Home Working Industrial Development **Design Guidance**
- (6) Fire Risks Industrial Development **Design Guidance**
- (7) Glossary of Terms

Objective

The revised guidance for (1), (2), and (3) allows a greater flexibility for development within coastal lands following practical difficulties encountered in its application.

The main changes concern standards with respect to sites' specific location and plot sizes. All stakeholders involved in development control have been consulted and their views incorporated in the revised guidance.

The amendments proposed however ensure that the visual image of the coastal zone and the future of the tourism industry are safeguarded.

The revised guidance at (4) aims to safeguard views from the Motorway and the rural landscape

The revised guidance for (5) and (6) has been introduced to facilitate investment and business in the light of new government policies.

Effective Date

With effect from 01 October 2006.



Details of guidance revision

1. Under PPG 1 issued in November 2004, the coastal zone was broken into three sub-zones and these broad bands could not cater for the wide range of plot sizes and individual circumstances. Secondly, the definition of coastal frontage as per the Planning and Development Act 2004 was not reflected in the zoning categories in the PPG.
2. The revised guidance has made provision for five sub-zones where plot sizes, building height and plot coverage allow a greater flexibility of use for residential coastal development
3. The main areas where amendment has been effected are
 - Definition of coastal lands
 - Development height
 - Plot size and Coverage
4. The design guidance sheet on residential coastal development remains valid except for the changes mentioned above.
5. The design sheet on Resort Hotel Development retains the initial three sub-zones as defined in PPG 1 but allows more flexibility in building height where coastal frontage land is deeper than 81.21 metres. The intention behind this revision is to allow a slight densification for development to cater for more hotel rooms without jeopardizing the quality of the setting.
6. The PPG will now also include guidance for residential coastal development on existing very small sites to cater for low income groups. A paragraph is included after **Section 3.8 in Residential Development**.
7. Design Guidance is also provided for building height along the motorway in **Section 2.2 Commercial Development**.
8. An amendment is also included in the **Design Guidance for Small Industrial Workshops and Home Working in Section 2.13** to be in line with the requirements of the **Business Facilitation (Miscellaneous Provisions) Act 2006** where no Building and Land Use Permit is required for that category of development. A similar amendment in the same spirit is carried out for Fire Risks in relation to industries.

The revised guidance is incorporated in the main guidance and supersedes the existing corresponding guidance.



Please do not hesitate to call on us at **Tel: 2134868** if you have any queries concerning this amendment. We shall be pleased to answer queries on this and on any development control matter. For your information the amendment is available on the Ministry' website <http://housing.gov.mu>

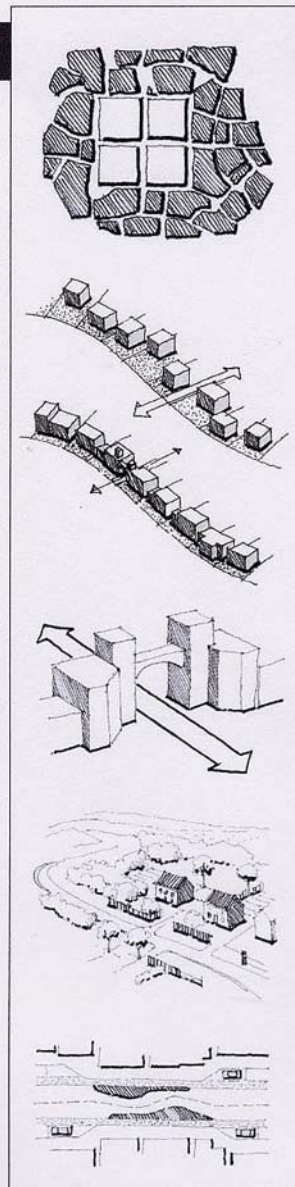
Design Guidance

Ministry of Housing and Lands, September 2006

Mauritius



Design Guidance



Residential Development



Ministry of Housing and Lands

November 2004
Incorporating Revision 1
September 2006



DESIGN GUIDANCE Residential Development

1 INTRODUCTION

2 PLANNING FOR RESIDENTIAL COMMUNITIES

- 2.1 Planning and Design Principles
 - 2.2 Location
 - 2.3 Analysis of Context
 - 2.4 Layout
 - 2.5 Community Facilities
 - 2.6 Traffic Management
 - 2.7 Landform and Landscaping
-

3 PLOT DEVELOPMENT CRITERIA

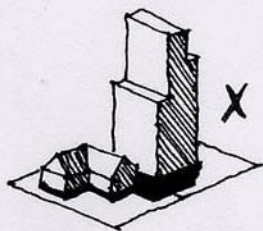
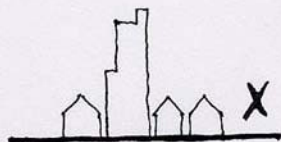
- 3.1 Plot Layout
 - 3.2 Setbacks
 - 3.3 Privacy
 - 3.4 Private Open Space
 - 3.5 Security
 - 3.6 Design for Climate
 - 3.7 Building Design
 - 3.8 Tall Buildings in Residential Areas
 - 3.9 Residential development on existing small coastal sites
-

DESIGN SHEETS

Individual Household Development
Design for Sloping Sites
Residential Coastal Development



DESIGN GUIDANCE Residential Development



Scale to be appropriate to context

3.8 Tall Buildings in Residential Areas

Proposals for tall buildings located within residential areas, particularly on small sites, need careful consideration in order to ensure that it takes place without detriment to the character and amenity of surrounding properties and the local street scene. Criteria to consider include:

- The design, bulk and density of development should respect the character and appearance of the surrounding area;
- The development should not be detrimental to the privacy, daylighting and amenity of neighbouring dwellings nor will there be a reciprocal impact on the proposed development; and
- The development should provide adequate access and car parking and where appropriate, on-site turning facilities to serve proposed and existing properties.

3.9 Residential development on existing small coastal sites.

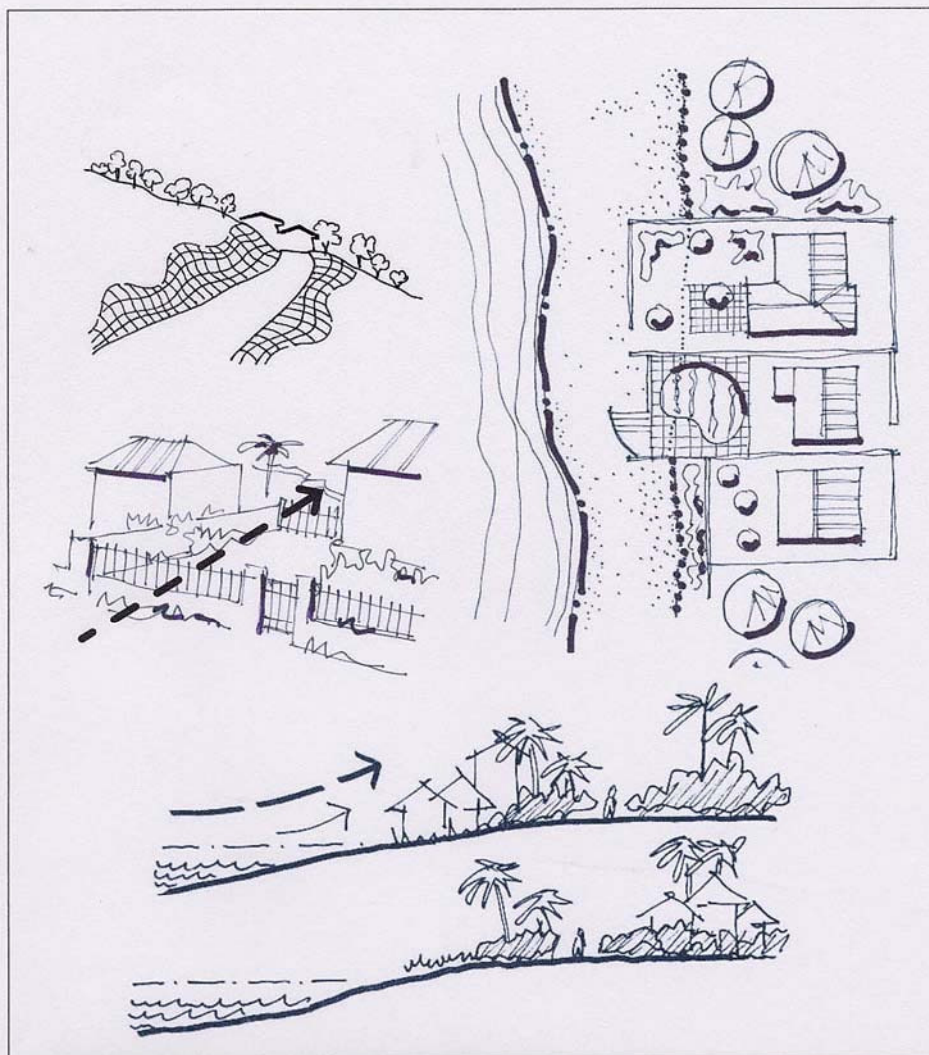
In determining proposals for residential development on existing State-Leased small sites within the coastal areas, the Planning Policy Guidance will be applied with some flexibility, with regard to plot coverage and setbacks of building except for maximum height of buildings and on-plot sewage disposal. In the assessment of applications however, the following criteria should be considered:

- The design should allow for adequate daylight, ventilation and access.
- Building to plot boundaries or with reduced setbacks may be permitted with neighbour's consent or where it can be demonstrated that development is not likely to infringe on privacy and security of adjoining properties or roads.
- The design, bulk and density should be in harmony with surroundings.
- Storm-water drainage should be disposed of within the plot boundary and should not be allowed to flow to adjacent plots or into road reserves.
- Development should ensure that on site sewage and waste water disposal are in conformity with technical guidance provided in the Technical sheets.

Mauritius



Design Sheet



Residential Coastal Development

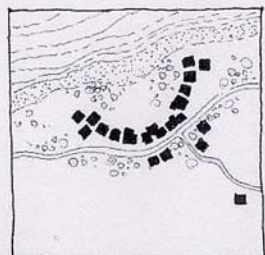


Ministry of Housing and Lands

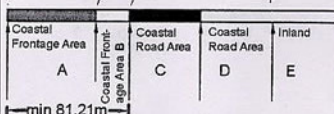
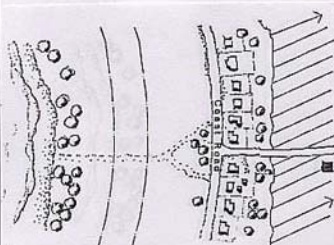
November 2004
Incorporating Revision 1
September 2006



Residential Coastal Development



Definition of Coastal Development Land



STEP 1 - Site Context

STEP 2 - Design Objectives

STEP 3 - Design Solutions

Typical Design Stages

Coastal Lands

Lands which fringe the shore are often the most desirable location and are generally more sensitive than inland areas. In addition, the character and quality of the coastal road environment is an important element in the coastal 'experience'. Thus 'transitional' guidance has been devised referring to different areas of coastal lands. The locations of these areas are illustrated in the left margin below:

Coastal Frontage Area (A)

Coastal frontage area (A) is reckoned as that area which normally accommodates the first row of sites from HWM and is commonly referred to as 'pieds dans l'eau'.

This strip consists of extremely fragile land where considerations of visual impact, environmental disturbance and pollution control are paramount. It is a key element in Mauritius's tourism product and it is equally popular with local people, but the emphasis should be on sustainable development in harmony with the environment.

Coastal Frontage Area (B)

This area is meant to accommodate rows of sites immediately behind coastal frontage area (A) up to a minimum depth of 81.21m which implies that it may extend further inward depending on site circumstances / specificity. In this area, even if there is no 'pieds dans l'eau' sites in front, a minimum setback of 30m from HWM has to be observed.

Coastal Road Area (C)

This includes those plots immediately fronting the coastal road and located beyond coastal frontage areas (A) and (B) but still on the seaward side of the coast road.

Coastal Road Area (D)

Plots in this area would be those immediately adjoining the coast road but on the landward side.

Inland (E)

This includes those areas that may not have a coastal road frontage but may still be visible from or relate to the coastal road.

Others

A plot of land which does not fall in any of the above zones but is considered to be within the coastal area should be developed in accordance with the design factors defined below:

Design Factors

General

All development should be designed so as to integrate well into the topography and fragile landscape with as little interference to the environment as possible.

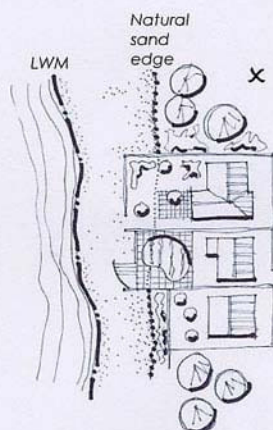
The proposed development should be designed creatively and comprehensively. All aspects of:

- site context, including site constraints and opportunities;
- design objectives; and
- resultant design solutions;

should be demonstrated as having been considered and adopted as the most appropriate solution for the particular site in mind.

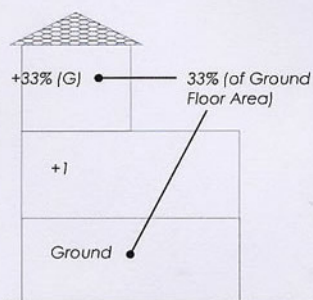


Residential Coastal Development



No structures should intrude into the beach area between low water mark and the highest edge of natural sand.

A key policy objective is to secure/maintain public access to public beaches at no more than 500m - 1km intervals. Wherever possible, development proposals should achieve this. These accesses would be used to facilitate access for fishermen and the public to the sea, and response to emergency at sea or other environmental emergencies.



General development height for buildings within the Coastal Frontage Area.

Beach and Sea

Layout plans should show low water mark (LWM), high water mark (HWM) and the line of the highest edge of natural sand, together with contour levels above mean sea level. Plan scales should be not less than 1:500.

Jetties should only be constructed if approved by relevant statutory authorities. Jetties should normally be on piles or floating structures to allow proper water circulation.

No structure of any kind including fence, wall, or swimming pool should be constructed on the beach between low water mark and the highest edge of natural sand. This is to ensure that the public have unrestricted access along the beach frontage.

Sea defence measures, groynes or other structures projecting into the sea and the creation of any artificial beach need the approval of the regulatory authorities.

Development Height

This is measured both in numbers of storeys and height in metres. Restrictions are imposed on the proportion of building volume that may reach the maximum height expressed as a percentage of the total building ground floor area. This guidance is intended to promote variety in building volumes and forms. Maximum height should also be related to location, existing built environment and natural site features.

On Coastal Frontage land (A)&(B), buildings and other ancillary structures should generally not exceed two floors (G + 1) plus additional accommodation (of no more than 33% of ground floor area) that may be provided within the roof space or a "penthouse" floor. If there is a pitched roof, this should be no more than 13 metres in height from local ground level to the highest ridge.

On Coastal Road land (C) buildings should generally be (G+1+50%). Any pitched roof should not exceed 13m height.

On Coastal Road (D) buildings should generally not exceed (G+2) and any pitched roof should not exceed 15m.

On Inland plots (E) buildings should normally not exceed 4 floors [G+2+ 50% (of ground floor area)].

Generally, pitched roofs are preferred.

As a general guide, the level of the lowest floor should normally be no less than one metre above the high water mark.

Plot Size and Coverage

As a general guide, new residential plots on Coastal Frontage land (A), plots should be around 1000m² in area. The sub-division of land resulting in plots smaller than this will not normally be supported. However, exceptions to this may include for example:



Residential Coastal Development

S Note that where this symbol is placed, the guidance provided alongside it is considered to be the minimum/maximum acceptable and should normally be provided.

- Town centre and urban waterfront areas, coastal settlements where height, plot size and density may vary for special "downtown"/waterfront areas and highly urbanised coastal settlements where buildings may already predominate, and a more urban character is appropriate.
- It can be demonstrated that all buildings proposed would remain subservient to a quality landscape setting.

For Coastal Frontage land (B) on the seaward side of the Coast Road, residential plots should normally be around 600m² in area: in the case of semi-detached development, the plot size for each plot may be 400m².

For Coastal Road land (C), residential plots should normally be around 300m² for detached unit and 265m² for semi-detached unit.

For Coastal Road land (D) and Inland areas (E), residential plots should normally be around 235m² for detached unit and 210m² for semi-detached units

When calculating coverage, all enclosed spaces on the ground floor shall be taken as 100% of their enclosed area on plan. "Enclosed" means surrounded by walls and covered by a roof. In the case of verandahs, porches, car ports and the like, if they are covered by a roof, they should be included as coverage. Where the verandah, porch, car port, etc., is backed by no more than one wall, the area should be included as 50% of its plan area in the coverage calculation. If backed or enclosed by two or more walls, the whole area shall be included in the coverage calculation. Layout plans must include site coverage calculations.

Some "Soft Structures" may be acceptable within the 30 m HWM setback. Such structures may include:

- Jetties on piles
- Wooden "umbrellas" which are open, supported by one pole that does not have a concrete or hard base
- Slipways not exceeding 20cm above datum

Setbacks

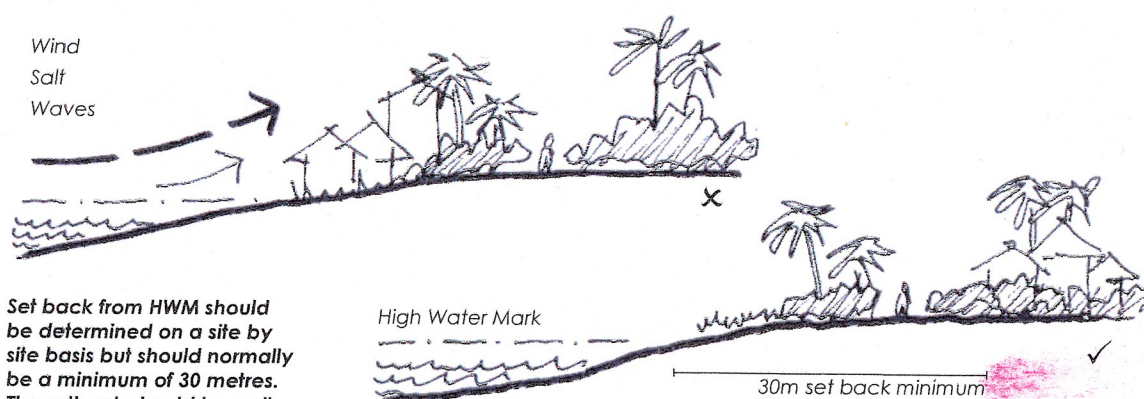
S Buildings and structures should be located as far back as practicable from the shoreline. The setting of structures back from the shoreline offers various advantages:

- Efficient connection to hinterland service systems
- Reducing wind, salt and sand impact on structures
- Reducing impact on unstable soils
- Reducing interference with the flow of littoral sediments
- Optimising pedestrian accessibility
- Minimising overshadowing.



Residential Coastal Development

Residential Development (S)	Coastal Frontage		Coastal Road		Inland
	A	B	C	D	E
Plot Sizes	Around 1000m ²	Around 600m ² Detached Unit 400m ² Semi D	Around 300m ² Detached Unit 265m ² Semi D	Around 235m ² Detached 210m ² Semi D	
Maximum Building Height	G+1+33% of G	G+1+33% of G	G+1+50% of G	G+2	G+2+50% of G
Max Building Height in metres	13m	13m	13m	15m	18m
Max Plot Coverage	20%	27.5%	30%	40%	40%
General Setbacks	No less than 30m from HWM	No less than 30m from HWM			
From Main Road (Class A&B)	6m	6m	6m	6m	6m
Access Roads	4.5m	4.5m	4.5m	4.5m	4.5m
Lightly Trafficked Roads	3m	3m	3m	3m	3m
Side and Rear Boundaries	3m	3m	2m	2m	2m



Set back from HWM should be determined on a site by site basis but should normally be a minimum of 30 metres. The setback should be well landscaped with appropriate coastal vegetation that would limit coastal erosion.

The presence of rocky outcrops in the beach and lagoon contribute to the distinctive character of lagoon areas and help maintain the stability of the beach system breaking waves and currents. The removal of such features should be avoided

Details of all walls and fences should be shown on plans submitted for permit approval.

(S) Setback from roads should normally be 6 m from main road (A or B), and 4.5 m from adjoining public road. This may be relaxed to 3 m in the case of a minor access roads.

Setback from side and rear boundaries should be 3 m. In appropriate urban areas, this may be relaxed to achieve a continuous street frontage.

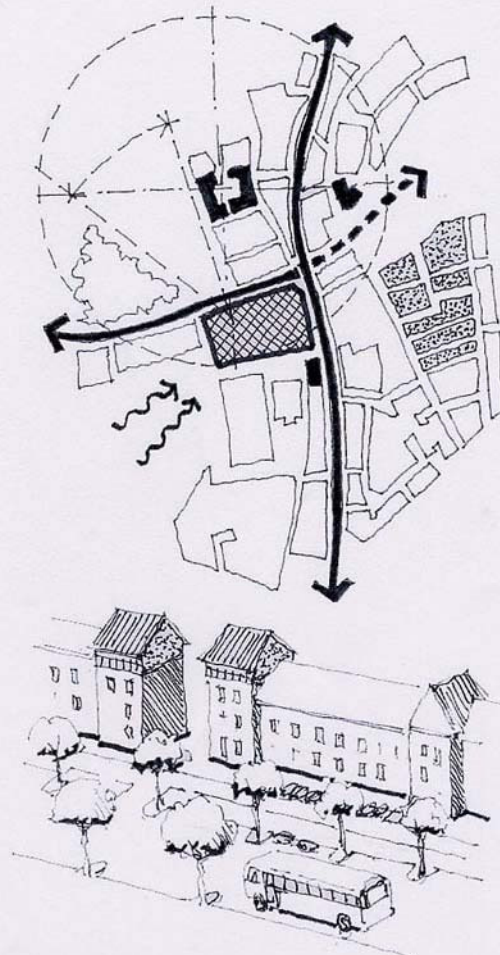
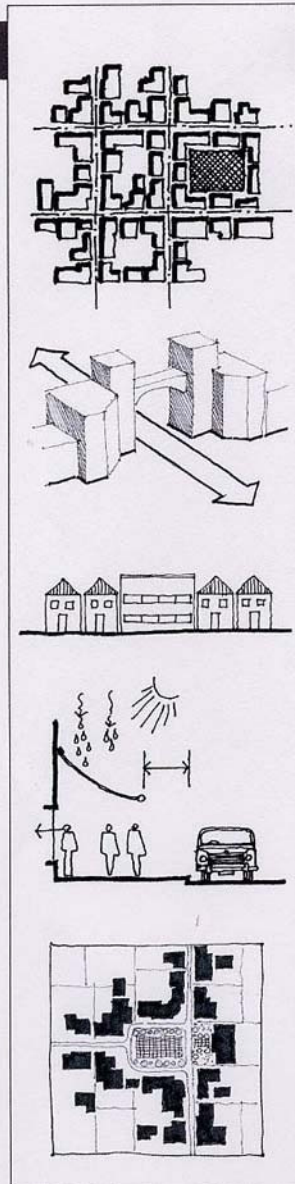
Walls, Fences and Wind-breakers

Along road frontages and most particularly the coast road, long expanses of uninterrupted walls and fences should be avoided. Walls and fences should not create a "canyon" or "corridor" effect along roads. When walling or fencing is required, solid areas should be kept to a minimum to avoid a hard "urban" edge and allow views through to the beach and sea.

Mauritius



Design Guidance



Commercial Development

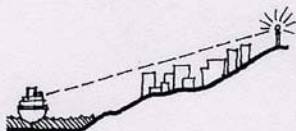


Ministry of Housing and Lands

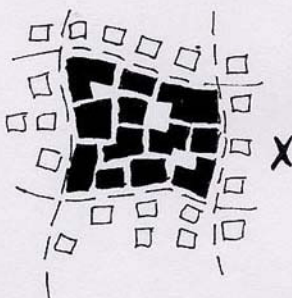
November 2004
Incorporating Revision 1
September 2006



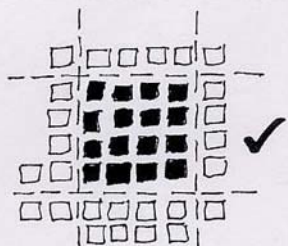
DESIGN GUIDANCE Commercial Development



Height controls to maintain clear connection to navigation signals



Development density must respect the character of the existing environment



In coastal zones, the general guidance that relates to Coastal Frontage and Coast Road areas should be considered.

Special controls on building height may apply in areas around ports and airports in order to permit the safe navigation and movement of ships and aircraft. Further guidance is contained within Design Sheet - Tall Buildings.

Building height along the motorway needs to be controlled such that buildings immediately fronting the motorway are lower in height (G+3) and increasing gradually inland to safeguard views.

2.3 Density

Sustainable development within growth centres may be achieved by increasing development densities. In order to prevent environmental deterioration as a result of increased density, the following principles will be applied:

- The development should provide the optimum layout for the site.
- The reasonable privacy and amenity (including daylight and sunlight) of neighbouring areas and buildings and potential users of the new proposals, should not be unduly affected.
- The land should not be reserved or zoned for non-commercial purposes, and the proposed activity should not prejudice the development of adjacent land.
- The character and amenity of the area should not be adversely affected by the proposed development through additional noise, dust, smoke, fumes, smells or parking problems, or through the appearance or scale of the proposal.

2.4 Quality Design and Design Statements

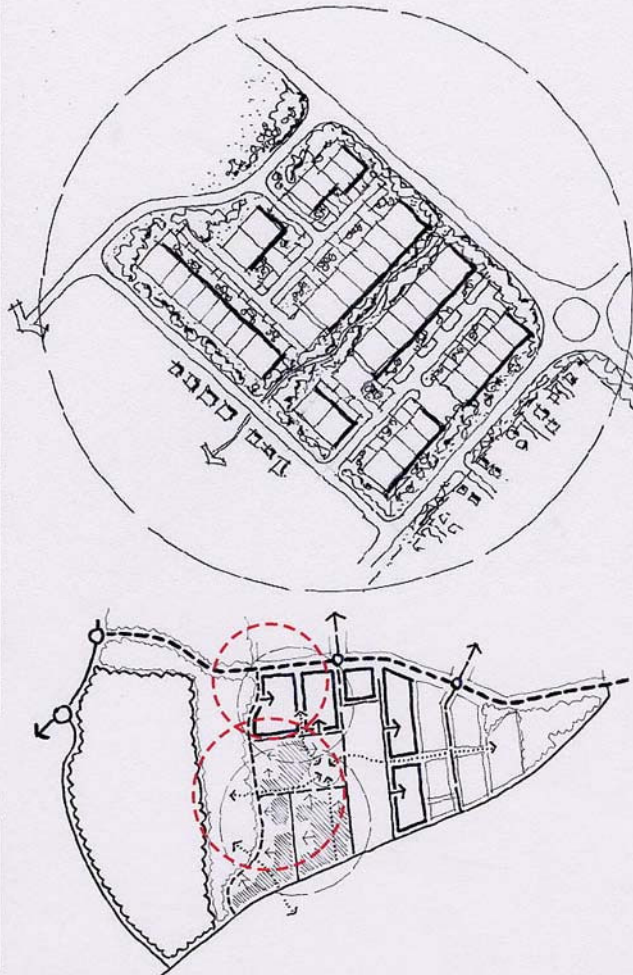
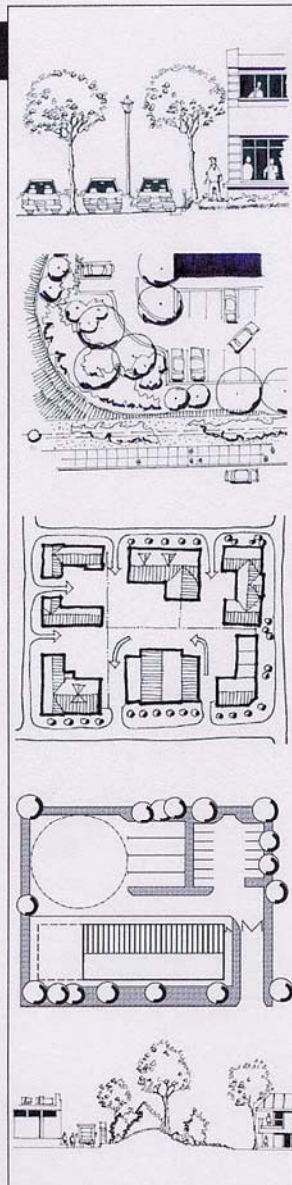
One of the aims of the National Development Strategy is to ensure that good quality design is given a high priority. Development promoters should therefore, as part of any application submission, demonstrate clearly how the important issues of design (as discussed in this document and relevant Design and Technical Sheets) have been addressed in their proposals.

Information submitted with a permit application should include a short statement setting out the development and design principles of the proposals, and how they relate to the site, its context, and how they have responded to stated aims and objectives of national and local planning policy, including all relevant Design Guidance.

Mauritius



Design Guidance



Industrial Development



Ministry of Housing and Lands

November 2004
Incorporating Revision 1
September 2006



DESIGN GUIDANCE Industrial Development

2.13 Small Industrial Workshops and Home Working

Small scale enterprises that are carried out in the home with or without modification of the dwelling may in some locations be acceptable if the use is ancillary to the principal use as residential but stringent criteria are necessary to ensure that surrounding residential amenity is not compromised.

Industrial uses such as panel beating and spray painting, manufacture of furniture and vehicle repairs are not normally acceptable uses within residential areas due to dust, noise, fumes, vibration and other adverse environmental effects. Examples of potentially acceptable small scale enterprises include cooking of sweets and food preparation, sewing and small scale clothing manufacture, repairs to electrical goods, minor car/mechanical and bicycle repairs, artists studios, offices such as book keeping, administration, professional services etc. In order to provide for the start up of small scale enterprises the use of home as a small scale enterprise may be appropriate and no Building and Land Use Permit is required if:

- daily vehicle movements associated with the enterprise are limited (less than 8 vehicle movements in total, to and from the site).
- there would be no adverse external nuisance such as noise, dust, fumes, vibration etc.
- loading and unloading are not disruptive to the amenity of the surrounding residential neighbourhood.
- the operator of the enterprise should normally reside at the premises and the numbers of staff employed on site is small (typically less than 10 in total).
- adequate parking is available for staff and visitors.
- all materials can be safely stored on site and stored materials are not unduly visible or intrusive in the street scene.

For both the use of home as office or other small scale enterprise the key consideration is whether the overall character of the dwelling and surrounding amenity will change as a result of the proposed use? If the answer to any of the following questions is "yes", then the proposed enterprise, by reason of its nature or scale is likely to be unacceptable:

- Will the home no longer be used mainly as a private residence?
- Will the enterprise result in a marked rise in traffic or people calling?
- Will the enterprise involve any activities unusual in a residential area?
- Will the enterprise disturb your neighbours at unreasonable hours or create other forms of nuisance such as noise, dust, fumes or smell?



DESIGN GUIDANCE Industrial Development

2.14 Fire Risks

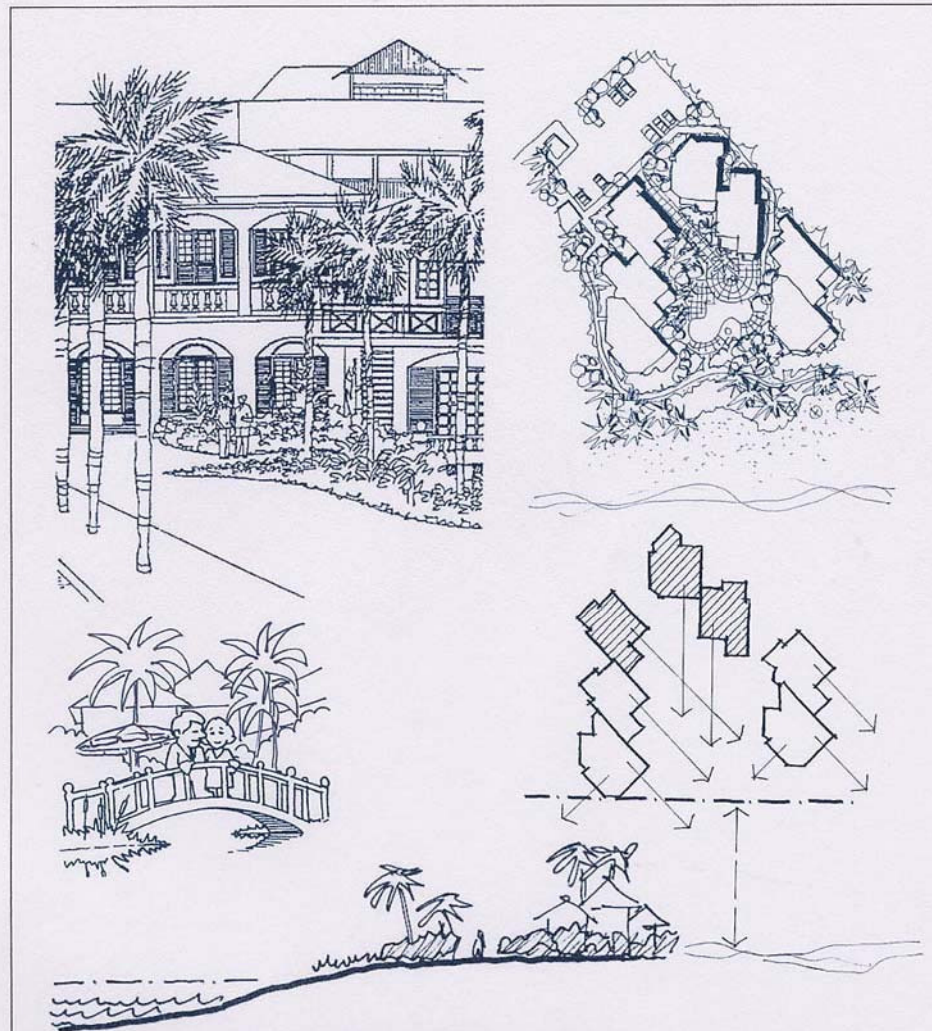
Industries should comply with guidelines from the Fire Services Department on all aspects of fire safety, prevention and fire-fighting.

In the case of hazardous processes or materials, a perimeter roadway may be required on every side of the building to allow for fire fighting access from any external point. A setback of 12.5 metres would in such a case be required. The roadway should be at least 4 metres from the building, so that fire tenders may be sufficient distance from any fire. A landscaping strip of no less than 3 metres should be provided between the roadway and any site boundary road frontage.

Mauritius



Design Sheet



Resort Hotel Development

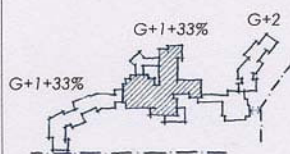


Ministry of Housing and Lands

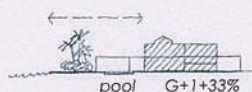
November 2004
Incorporating Revision 1
September 2006



Resort Hotel Development



Set back from cliff to be determined on site but not less than 30 m



High buildings set back from the coast

Coastal Frontage Land

Design Factors

Building Height

Measured both in numbers of storeys and height in metres. Restrictions are imposed on the proportion of building volume that may reach the maximum height expressed as a percentage of the total building ground floor area. This guidance is intended to promote variety in building volumes and form. Maximum height will also be related to location, existing built environment and natural site features.

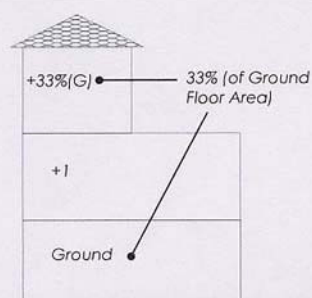
Plot Coverage

The percentage of the site area that may be covered by buildings at ground level.

Minimum Room Size

The net area of a typical double bed room, excluding bathroom, balcony, entry etc. It is emphasised that this figure is an absolute minimum standard. Larger areas of up to 30 m² should be considered for luxury resorts.

HOTEL RESORT	A Coastal Frontage	B Coastal Road	C Inland	S
Max Building Height	G+1+33% within 81.21m G+2 remainder of land	G+2	G + 2 + 50%	
Max Building Height in metres	13m - 15m	15m	18m	
Max Plot Coverage	20%	40%	40%	
Min Room Size (double bedroom, net room area)	18m ²	14m ²	14m ²	



Note. The additional 33% should be used to ensure an interesting and varied roofline is achieved.

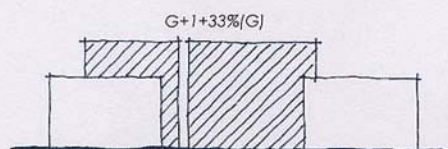
For Type C Resorts – the guidance may be applied generally to most inland sites but with emphasis on type of development, location and site conditions. For example, for lodge development located in the countryside, maximum height restrictions may be imposed to respect the natural features (landscape setting, hillside etc). Higher densities may be appropriate near town centres, with height increased for special 'downtown'/waterfront locations.

For Type C Apartments – residential/morcellement guidance should be applied with specific plots identified.

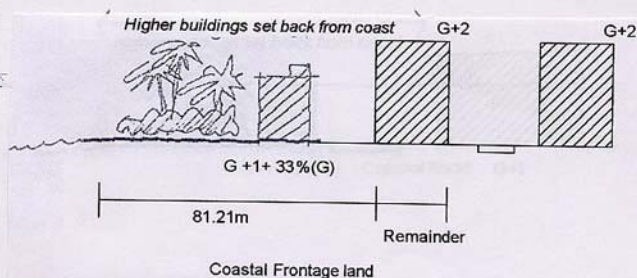
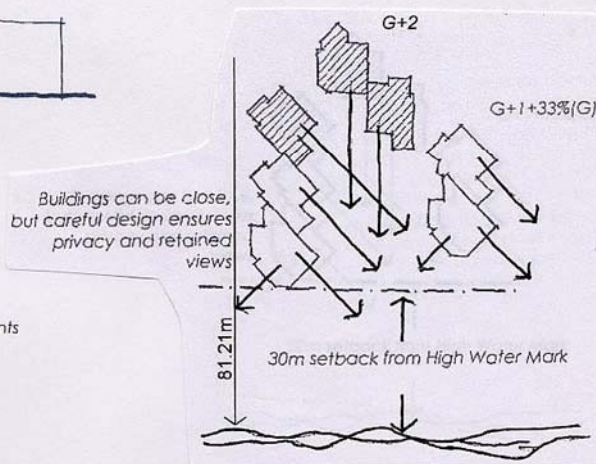
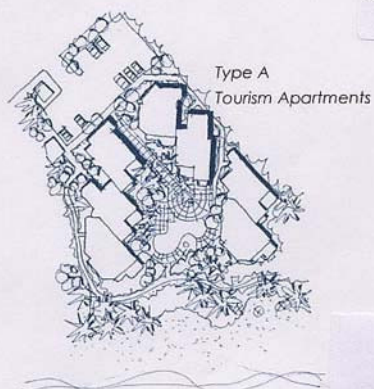


Resort Hotel Development

TOURISM APARTMENTS	A Coastal Frontage	B Coastal Road	C Inland	S
Max Building Height	G + 1 + 33% within 81.21m G + 2 : remainder of land	G + 2	G + 2 + 50% (G)	
Max Building Height in metres	13m - 15m	15m	18m	
Max Plot Coverage	20%	40%	40%	

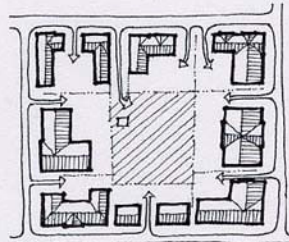


Coastal Frontage Land



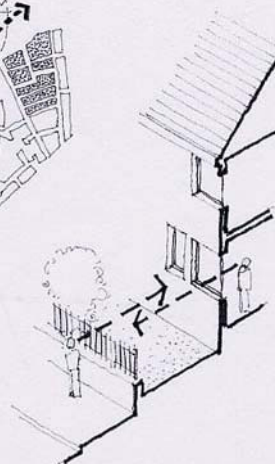
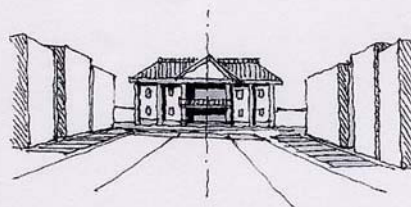
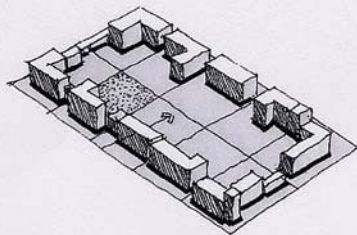
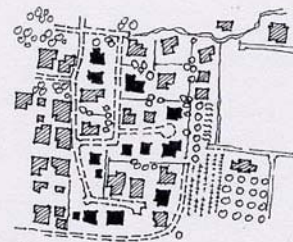
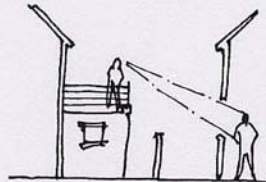


Design Guidance



This Glossary of Terms has been produced to support and aid understanding of the Planning Policy Design Guidance.

Reference should also be made to the Planning and Development Act, 2004 for legal definition. Where inconsistencies exist then the provisions of the Act will prevail.



Glossary of Terms

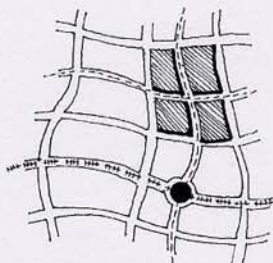


Ministry of Housing and Lands

November 2004
Incorporating Revision 1
September 2006



Glossary of Terms



Accessibility

Accessibility

The word 'accessible' is defined in the Oxford English dictionary as 'able to be reached'. As a strategic theme in local transport planning, it is appropriate to consider its broadest meaning. Accessibility is more than transport; it is the means of access to facilities with or without travel.

Appropriate Uses

Uses for the essential requirements of agriculture, forestry or other uses appropriate to a rural area.

Bad Neighbour Use

Bad neighbour uses are those considered a potential nuisance to adjoining development by reason of noise, dust, smoke, fumes, smells, parking or excessive loading problems, or through the appearance and/or scale of the proposal. Defined to include those uses requiring a Preliminary Environmental Report or an Environmental Impact Assessment as listed in the First Schedule (Section 15(2)) Parts A and B of the Environment Protection Act 2002, or as subsequently amended.

Brownfield Site

A site which has previously been developed and has not been restored to agriculture, forestry or recreation land. The definition includes residential gardens but does not include agricultural land or buildings.

Buffer

A safeguard between unneighbourly/ bad neighbour uses and other uses (e.g. residential uses). Buffers may be separation distance between uses, landscaping, walling and other acoustic barriers or a combination of such elements.

Bulk

The combined effect of the arrangement, volume and shape of a building or group of buildings. Also called massing.

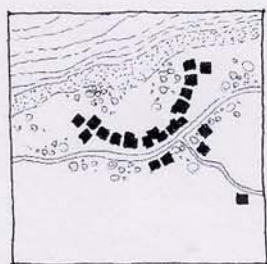
Character Assessment

An area appraisal identifying distinguishing physical features and emphasising historical and cultural associations.

Coastal Frontage Land (Hotels & Integrated Resorts)

Normally the strip of land between the high water mark and the nearest coastal road.

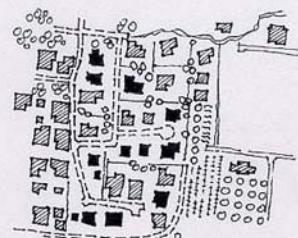
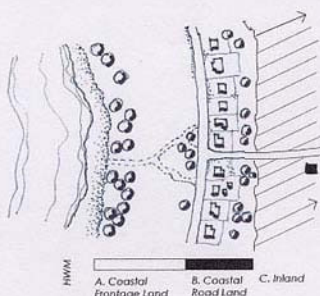
Consists of extremely fragile land where considerations of visual impact, environmental disturbance and pollution control are paramount. It is a key element in Mauritius's tourism product and it is equally popular with local people, but the emphasis must be on sustainable development in harmony with the environment.



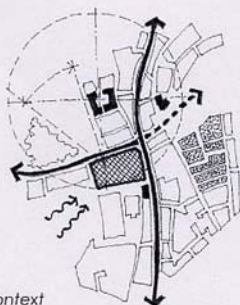
Definition of Coastal Development Land



Glossary of Terms



Consolidate



Context

Coastal Road Land (Hotel & Integrated Resorts)

This includes those plots immediately fronting the coastal road and located on the inland side of the road.

(Coastal) Inland (Hotel & Integrated Resorts)

This includes those areas that may not have a coastal road frontage but may still be visible from or relate to the coastal road

Coastal Lands (For Residential Coastal Development)

See addendum on last page of glossary.

Consolidate

See diagram in margin

Context

The setting of a site or area, including factors such as traffic, activities and land uses as well as landscape and built form.

Context (or site and area) Appraisal

A detailed analysis of the features of a site or area (including land uses, built and natural environment, and social and physical characteristics) which serves as the basis for an urban design framework, development brief, design guide or other policy or guidance and informs a detailed planning application.

Design-Led Approach

An approach to preparing a development proposal to ensure an appropriate design quality, the use of the site is optimised and the effect of development on the character of the area is positive.

Design Principle

An expression of one of the basic design ideas at the heart of an urban design framework, design guide, development brief or a development.

Design Statement

A design statement sets out the design principles that the applicant has adopted in relation to the site and its wider context as part of a development permit application.

Development

The carrying out of building, engineering, mining or other works or operations in, on, over or under land, or the making of any material change of use of any buildings or other land or morcellement.

Development Brief

A document produced by the planning authority, or jointly with a developer, providing guidance and setting principles for the development of a particular site.

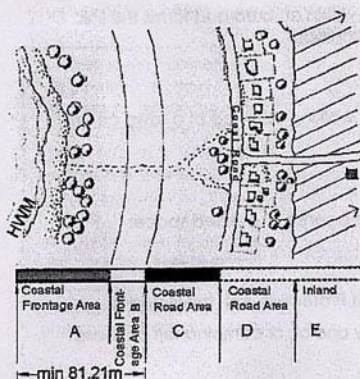


Glossary of Terms

Addendum to Glossary of Terms

Coastal Lands (For Residential Coastal Development)

Lands which fringe the shore are often the most desirable location and are generally more sensitive than inland areas. In addition, the character and quality of the coastal road environment is an important element in the coastal 'experience'. Thus 'transitional' guidance has been devised referring to different areas of coastal lands. The locations of these areas are illustrated in the left margin below:



Coastal Frontage Area (A)

Coastal frontage area (A) is reckoned as that area which normally accommodates the first row of sites from HWM and is commonly referred to as 'pieds dans l'eau'.

This strip consists of extremely fragile land where considerations of visual impact, environmental disturbance and pollution control are paramount. It is a key element in Mauritius's tourism product and it is equally popular with local people, but the emphasis should be on sustainable development in harmony with the environment.

Coastal Frontage Area (B)

This area is meant to accommodate rows of sites immediately behind coastal frontage area (A) up to a minimum depth of 81.21m which implies that it may extend further inward depending on site circumstances / specificity. In this area, even if there is no 'pieds dans l'eau' sites in front, a minimum setback of 30m from HWM has to be observed.

Coastal Road Area (C)

This includes those plots immediately fronting the coastal road and located beyond coastal frontage areas (A) and (B) but still on the seaward side of the coast road.

Coastal Road Area (D)

Plots in this area would be those immediately adjoining the coast road but on the landward side.

Inland (E)

This includes those areas that may not have a coastal road frontage but may still be visible from or relate to the coastal road.

Others

A plot of land which does not fall in any of the above zones but is considered to be within the coastal area should be developed in accordance with the design factors defined below:

Design Factors

General

All development should be designed so as to integrate well into the topography and fragile landscape with as little interference to the environment as possible.

The proposed development should be designed creatively and comprehensively. All aspects of:

- site context, including site constraints and opportunities;
- design objectives; and
- resultant design solutions;

should be demonstrated as having been considered and adopted as the most appropriate solution for the particular site in mind.

Incorporating Revision 1
September 2006



Useful Addresses

Ministry of Housing & Lands

Head Office
SILWF Building, Moorgate House & Victoria House
Port Louis
Tel: 208 28 31
208 28 35
208 02 38
208 05 34

Ministry of Agro-Industry

Head Office
8th & 9th levels, Renganaden Seeneevassen Building
Cnr Jules Koenig & Maillard Streets
Port Louis
Tel: 212 44 27
212 08 53
212 06 43
212 82 56
Fax: 212 44 27

Ministry of Environment & National Development Unit

Head Office
2nd, 3rd, 4th, 5th, 6th, 8th, 9th & 13th levels,
Ken Lee Tower,
Cnr Barracks & St Georges Streets,
Port Louis
Tel: 212 83 32
212 83 27
212 94 95
212 85 09
Fax: 212 94 07

Ministry of Fisheries

Head Office
4th floor, LIC Building,
President J. Kennedy Street,
Port Louis
Tel: 211 24 70
211 24 71
211 24 72

Ministry of Industry & Small Medium Enterprises, Commerce & Cooperatives

Head Office
Level 7, Air Mauritius Centre,
Port Louis
Tel: 211 71 00
211 08 55

Ministry of Local Government

Level 3 & 10,
Emmanuel Anquetil Building
Jules Koenig Street,
Port Louis



Useful Addresses

Ministry of Public Infrastructure, Land Transport & Shipping

Head Office
8th & 10th floors, Moorgate House,
29, Sir William Newton Street,
Port Louis
Tel: 208 02 (81-84)
208 30 63
Fax: 2087149

Ministry of Public Utilities

Head Office
Level 10, Air Mauritius Centre,
President J. Kennedy Street,
Port Louis

Ministry of Tourism & Leisure & External Communications

Head Office
Levels 5 & 12, Air Mauritius Centre,
Port Louis
Tel: 211 79 (30)-(33)

Board of Investment

10th floor, One Cathedral Square Building
16, Jules Koenig Street,
Port Louis

Business Parks of Mauritius Ltd

10th floor,
NPF Building
Rose Hill
Tel: 467 69 00/01/02/03
Fax: 467 69 07

Water Resources Unit

3rd floor, Royal Commercial Centre,
Rose Hill
Tel: 465 79 88
Fax: 234 60 12

Water Management Authority

The Celicourt
Celicourt Antelme Street,
Port Louis
Tel: 206 30 00
Fax: 211 70 07

Mauritius Association of Architects MAA

Professional Architects Council
4th floor
Discovery House
St Jean Road
Quatre Bornes
Tel: 466 03 24



Useful Addresses

Central Electricity Board
Senior Planning Engineer
Loreto Convent Street,
Curepipe
Tel: 670 60 40 / 674 05 51
Fax: 674 04 45

Central Water Authority
Head Office
Royal Road, St Paul
Phoenix
Tel: 601 50 00
601 50 83
Fax: 696 71 03
Email: cwa@bow.intnet.mu
Webpage: <http://www.cwa.intnet.mu>

Mauritius Telecom
Head of Section
Access Network Planning & Development
8th floor,
Telecom Tower,
Edith Cavell Street,
Port Louis
Tel: 203 76 64
Fax: 208 87 32

Road Development Authority
Head Office
2nd & 3rd floor, Jhugroo Building,
St Paul Road,
Vacoas
Tel: 686 66 30
Fax: 686 75 52

**Small Enterprise and Handicraft Development Authority
SEHDA**
Industrial Zone Coromandel
Royal Road
Coromandel
Tel: 233 05 00
Fax: 233 55 45

Traffic Management & Road Safety Unit
Head Office
3rd floor, Mere Barthelemy Street,
Port Louis
Tel: 210 87 39
211 60 42
211 19 89
Fax: 210 87 54



PPG 1 DESIGN GUIDANCE

INTRODUCTION, APPROACH AND DESIGN PRINCIPLES

Introduction
Approach
Urban Design Principles

RESIDENTIAL DEVELOPMENT

Individual Household Development
Design for Sloping Sites
Residential Coastal Development

COMMERCIAL DEVELOPMENT

Tall Buildings

INDUSTRIAL DEVELOPMENT

Industry Adjacent to Sensitive Sites
Industry in the Countryside

HOTELS AND INTEGRATED RESORTS DEVELOPMENT

Resort Hotel Development
Golf Development
Marina Development
Eco Tourism Development

GLOSSARY OF TERMS

USEFUL ADDRESSES

TECHNICAL SHEETS

Residential Roads
Industrial and Commercial Roads
Access for People with Disabilities
Drainage
Water Supply
Mains Sewerage
On-Plot Sewage Disposal
Electricity
Telecommunications
Combined Utilities Summary Plans

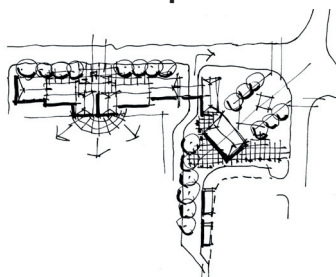


PLANNING POLICY GUIDANCE

The series of Planning Policy Guidance (PPG) was first issued in 2004 and the following titles have now been issued:

		Date
PPG 1	Design Guidance	Nov. 2004

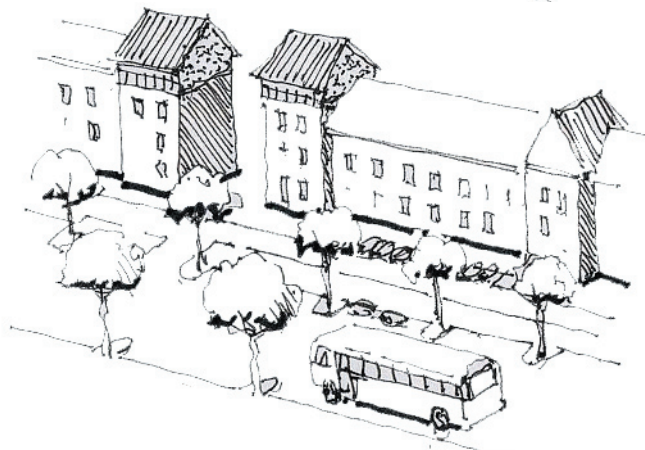
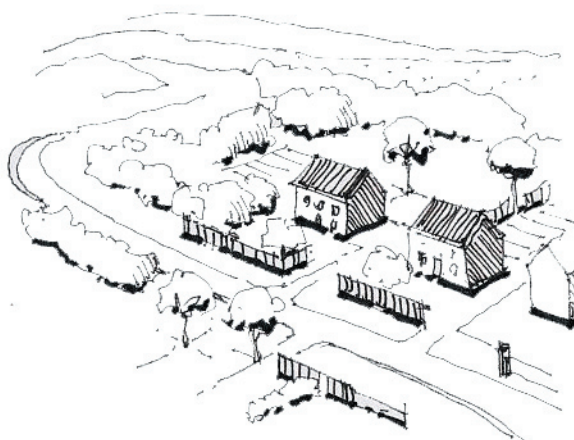
Public. Scheme Promoters. Architects. Individuals.
Householders. Town Planners. Developers. Urban Designers. Utilities. Politicians.



Mauritius



Design Guidance

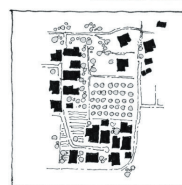
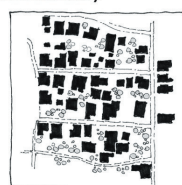


1 Sequential Approach

2 3

Inside Settlement Boundary

Outside Settlement Boundary



ACCESSIBILITY

Walking, Cycling, Public Transport, Highway Network, Utilities Distribution, Community Facilities

LAND QUALITY

Agricultural Land Suitability, Environmental Sensitivity, Landscape Significance

Introduction, Approach and Design Principles

November 2004



Ministry of Housing and Lands



1 INTRODUCTION

- 1.1 Land Use Design Guidance
- 1.2 Technical Sheets
- 1.3 Context and Support

2 APPROACH

- 2.1 Quality and Design in Planning - a Design Led Approach
- 2.2 Status of the Design Guidance
- 2.3 Purpose and Aims of design Guidance
- 2.4 Who Should Use the Design Guidance?
- 2.5 How to Use the Design Guidance - Flexibility

3 URBAN DESIGN PRINCIPLES

- 3.1 Design Principles
- 3.2 Urban Design Qualities
- 3.3 Urban Design Process



DESIGN GUIDANCE Introduction

1 INTRODUCTION

This document is the first in a series of Planning Policy Guidance. It focusses on various aspects of development design. Other Planning Policy Guidance will be issued in due course.

1.1 Land Use Design Guidance

Design Guidance has been produced for a range of key land uses, including:

- Residential Development
- Commercial Development
- Industrial Development
- Hotels and Integrated Resort Development

The objective is to create a set of performance criteria and design standards that are applicable to most forms and scales of development for use by individual site owners, developers of large schemes and for assisting Government and local authorities when considering permit applications.

Design Sheets have also been produced that consider special design circumstances and supplement the key land use Design Guidance. The Design Sheets include:

Residential:

- Individual Household Development
- Design For Sloping Sites
- Residential Coastal Development

Commercial:

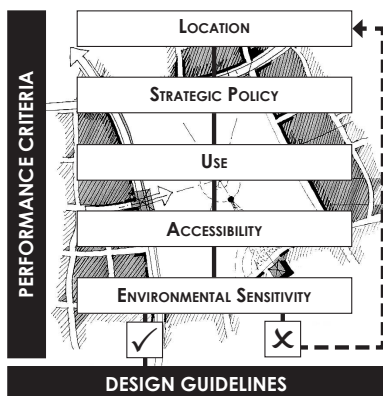
- Tall Buildings

Industrial:

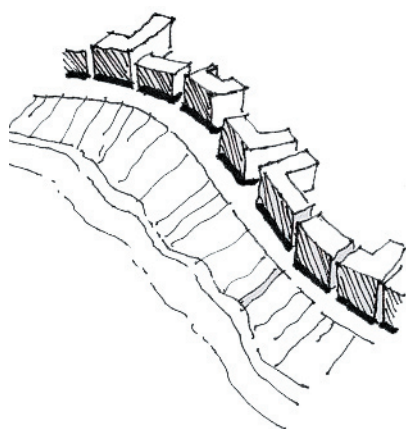
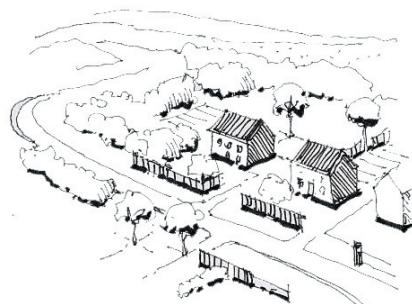
- Industry Adjacent to Sensitive Sites
- Industry in the Countryside

Hotels and Integrated Resorts:

- Resort Hotel Development
- Eco Tourism Development
- Golf Development
- Marina Development



The Sequential Approach



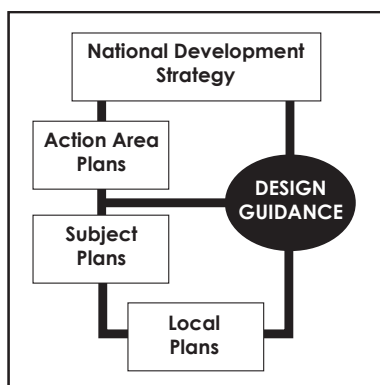
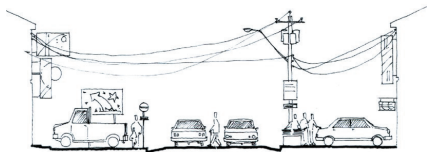


DESIGN GUIDANCE Introduction

1.2 Technical Sheets

Although the design guidance is based on performance criteria where possible, there are situations where certain standards or technical requirements must be maintained, for reasons such as health and safety. A series of **Technical Sheets** has been produced and reference should also be made to these. The Technical Sheets include:

- Residential Roads
- Industrial and Commercial Roads
- Access for People with Disabilities
- Drainage
- Water Supply
- Mains Sewerage
- On-Plot Sewage Disposal
- Electricity
- Telecommunications
- Combined Utilities Summary Plans



Government Planning Policy and Guidance

1.3 Context and Support

Design Guidance is meant to be used alongside various other Government advice that set out policy and guidance relating to land use and development. This guidance should be considered with:

- The National Development Strategy, 2003;
- Outline Schemes/Local Plans
- Action Area Plans
- Subject Plans.



2 APPROACH

2.1 Quality and Design in Planning – a Design Led Approach.



Planning Policy Guidance is a material planning consideration

Achieving good design depends upon the skills of the designer and a commitment to sound design principles by all those concerned with development. Better practice guidance can assist skilled designers to analyse places, to understand how they are used and experienced and to design with flair and sensitivity.

Unfortunately, many development proposals in Mauritius are currently prepared and submitted without the assistance of skilled and qualified designers such as architects, which means that the planning system has a fundamental role to play in ensuring acceptable standards of design. By setting out a clearly related structure of location, layout and design principles, design guidance can help planning authorities assess proposals, facilitate the creation of acceptable planning schemes, and where necessary to refuse obviously poor schemes. Design guidance can also help promoters of schemes establish an early understanding of and commitment to design quality.

A design led approach to new development seeks to bring the aspirations (and various development disciplines) together in an inter-disciplinary way. It is hoped for example, that the series of Design Guidance sheets will encourage more developers to re-examine their approach and employ architects and other professionals to achieve an acceptable standard of design.

2.2 Status of the Design Guidance

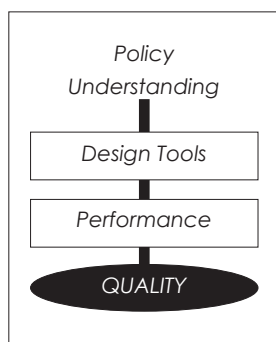
Planning Policy Design Guidance is a **National Planning Instrument** under the terms of the Planning and Development Act 2004. Applicants for development permits should demonstrate how they have taken account of the requirement for good design in their development proposals and that they have given due regard to relevant plan policies and design guidance.

There are many other controls on development (The Building Act, The Environment Protection Act, and the Roads Act, amongst others) and conformity with design guidance will not imply acceptance of the proposals by any of the other regulatory authorities.

2.3 Purpose and Aims of Design Guidance

As a series of working documents, the Design Guidance is intended to serve as a common source of design information by:

- Translating the National Development Strategy policies and principles at the local and site specific level, and
- Equipping all those involved in development in Mauritius with appropriate guidance on designing and assessing new development and regeneration projects.





DESIGN GUIDANCE Approach

Public. Scheme Promoters. Architects. Individuals. Householders. Town Planners. Politicians. Developers. Urban Designers. Utilities.

The aim of the Design Guidance is to encourage a more positive emphasis on performance criteria rather than rely on rigid standards and norms. Standards specify strictly how a development is to be designed (by setting out minimum distances between buildings, for example). Performance criteria are the means of assessing the extent to which a development fulfills a specific planning requirement (such as privacy). Imaginative designers can respond to performance criteria with a variety of design solutions.

2.4 Who Should Use the Design Guidance?

The overall message is that there is a need for everyone involved in land development to contribute to a culture of high quality design in Mauritius:

- Government and Local Authority officers will use the Design Guidance to enable the practical application of national and local planning policy and the management and control of development.
- Project promoters, developers, designers and individual property owners should use the Design Guidance to prepare proposals using appropriate design principles.

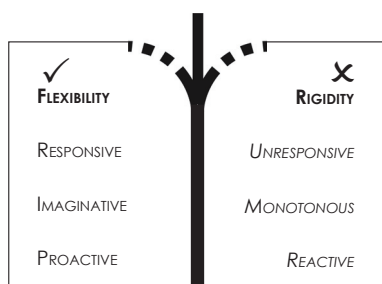
2.5 How to Use the Design Guidance - Flexibility

The Design Guidance has been prepared against a changing and evolving land development background and therefore cannot be over-prescriptive:

- Fundamental changes are taking place in public policy, technological development and environmental thinking, which will continue to have significant implications for planning and development design.
- Each site is different and there can be no standard or pre-determined design formula.
- Achieving an acceptable form of development involves a balance of issues. Each solution involves a compromise between competing ideals.

The Design Guidance does not prescribe rules and should be applied with a measure of flexibility. Development design is not a "tick box" exercise. Rather, the Design Guidance sets out a range of design issues and corresponding principles that are regarded as necessary to consider in formulating acceptable design responses.

The Design Guidance should be seen as a solid basis of practical design solutions to stimulate developer innovation and local interpretation. However, it is the developer's responsibility to demonstrate sound reasons for any proposed departure from the guidance.

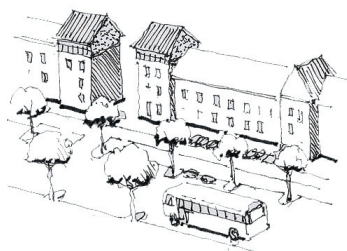


No two places are identical and there is no such thing as a single blueprint for good design. Good design arises from a thorough and caring understanding of site and context.

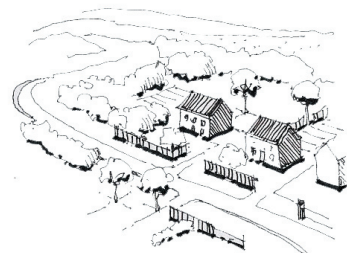


Urban design is a key to creating sustainable developments and the conditions for a flourishing economic life, for the prudent use of natural resources and for social progress. Good design can help create lively places with distinctive character; streets and public spaces that are safe, accessible, pleasant to use and human in scale; and places that inspire because of the imagination and sensitivity of their designers.

Quoted from "By Design",
Commission for Architecture and
the Built Environment (CABE)



Urban design qualities and processes apply to both built up and rural areas



3 URBAN DESIGN PRINCIPLES

3.1 Design Principles

The description opposite provides an understanding that the urban design process should include consideration of the following key aspects:

- The creation of schemes that are safe, comfortable, distinctive, varied and attractive.
- The creation of schemes that improve their surrounding environments.
- The creation of schemes that are easy to get to and move through, and that offer a range of choices as to the preferred mode of travel.
- The creation of schemes that are integrated with the natural and manmade landscape, and that respond positively to climate, landform, and ecology.

This section provides a broad introduction to the key principles of urban design and the process of creating quality places.

It should be noted that the term "urban design" does not necessarily imply only places that are characterised by high intensities of development, or that are located in town centres. The qualities and processes apply equally to out of town situations where lower densities might be needed in developments or that are predominantly single use in character.

3.2 Urban Design Qualities

The following elements combine to make memorable places that are lively and distinctive:

- **character**
- **continuity and enclosure**
- **permeability**
- **legibility**
- **quality of the public realm**
- **ease of movement**
- **robustness**
- **diversity**

These qualities are described in the following diagrams.



DESIGN GUIDANCE Urban Design Principles

Legibility

The extent to which people can understand the layout of an area and find their way around it. This includes cues from three-dimensional forms, and the way in which the appearance of buildings and places allows people to understand their context and function. It also includes the establishment of a coherent visual and physical character for an area.



Landmark structure

Permeability

The degree of physical and visual accessibility; more specifically, maximising the number and variety of connections with surrounding streets and activities, and making their roles clear to potential users.

Continuity and Enclosure

The degree to which the built form succeeds in clarifying the distinction between public and private realms. The creation of distinct edges for an area is also a means of enhancing legibility.

Quality of the Public Realm

The creation of an accessible, active and clearly defined public open space system.

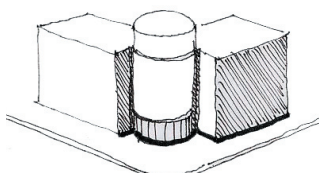
Ease of Movement

The creation of sustainable movement systems that permit maximum choice of mode and direction of travel, plus strong connections with the surrounding environment.

Character

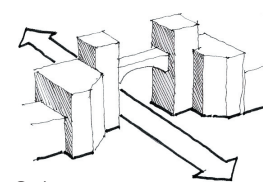
The positive features that make a place special and memorable. This includes the specific character of building traditions and materials, landscape, patterns of life, and similar factors that serve to differentiate one place from another.

Corner treatment



Corner treatment

Gateway



Gateway

Robustness

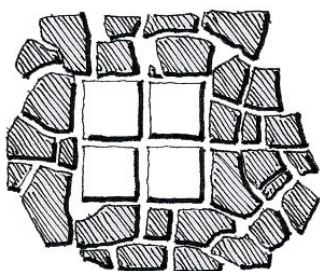
The ability for a set of buildings or places to be used for more than one purpose or to change their function over time, in both the short and long terms.

Diversity

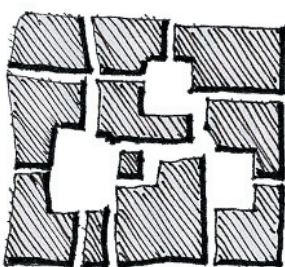
The provision of a range of experiences, in both spatial and activity terms, including the creation of a variety of land uses within close proximity.



DESIGN GUIDANCE Urban Design Principles



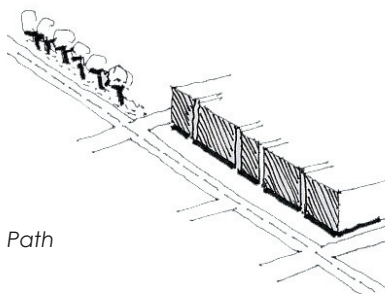
District



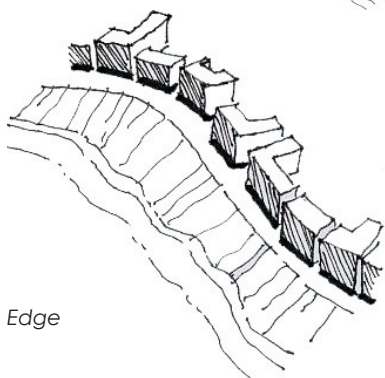
Nodes



Landmark



Path



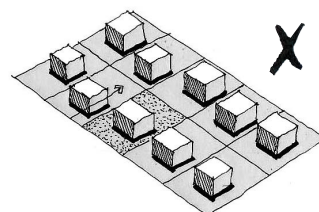
Edge

District and Block

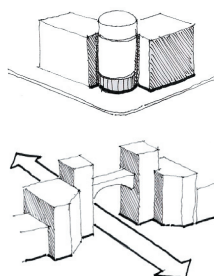
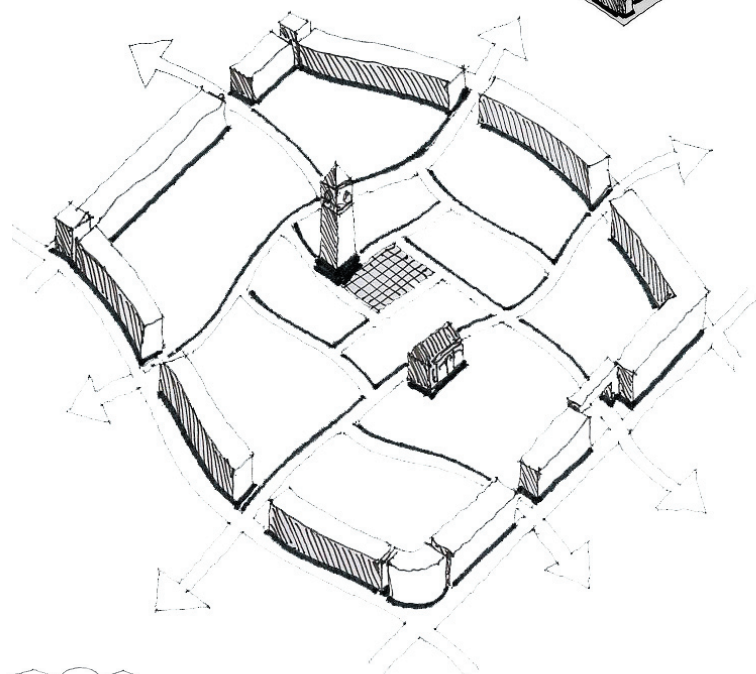
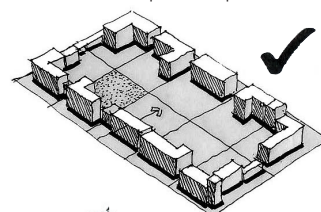
Districts and blocks are defined by the distinctiveness of their grain and character, and by the continuity of their edges (see below). When the edges are not relatively continuous the district loses identity, and there is a lack of clear distinction between public and private spaces. This also applies at the scale of a street block, where the building spacing should be such that private space is clearly contained in the depth of the block.

Nodes

Nodes are places of focus within a district or block, that exercise a pull for the local community. They are commonly the places where community facilities such as shops, clinics and community halls, are located.

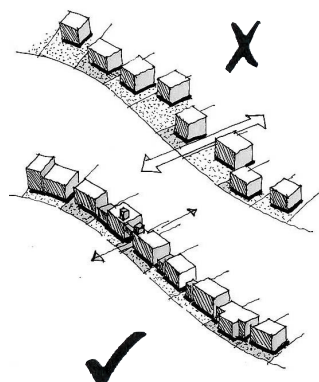


More cohesive edges clarify the distinction between public and private space



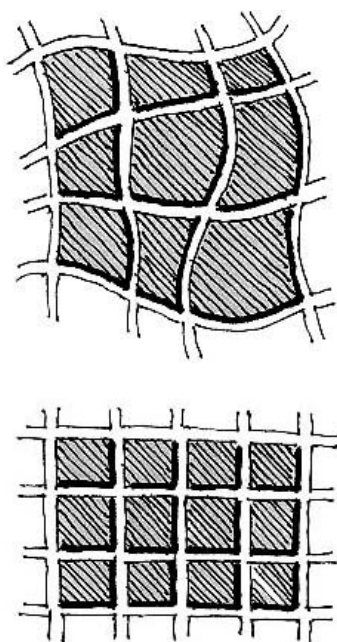
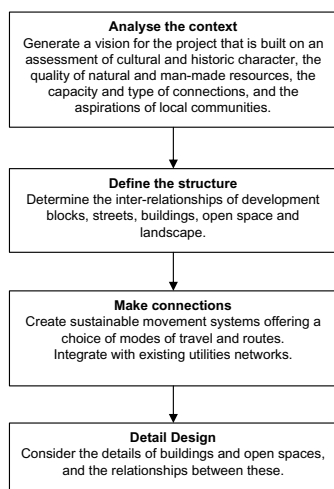
Corners and Gateways

By paying careful attention to the design of significant corners and gateways it is possible to enhance the legibility of the edges and therefore of the block or district.



Edges

Continuous edges help to define the boundaries of the district or block. If the edges are broken by excessive spaces between buildings the distinction between inside and outside, or public and private space, becomes blurred, leading to loss of identity and potential lack of security.



A strongly defined structural framework has a coherent grain and pattern of development

3.3 Urban Design Process

The process of urban design involves four elements:

- Appraisal of the context in which the development is to be located
- Defining the framework within which the development will take place
- Connecting the development to movement and utilities systems
- Designing the details that make the place unique

3.3.1 The Context

The context of a development is the character and setting of its surrounding environment. It comprises natural and human elements, including the form of the built environment and its open spaces, history, culture, location, patterns of movement and local community identity.

An understanding of context informs the design process and assists with the creation of new places that are distinct from, but also compatible with, existing built environments and communities.

Context analysis includes the following elements:

- Appraisal of existing community
- Assessment of physical and visual character
- Appraisal of natural and manmade environments
- Assessment of linkages – movement and utilities systems

3.3.2 The Structure

The structure is the pattern of blocks, streets, buildings and open spaces that work together to create an identifiable development. When considering the structure it is the relationships between these elements, rather than individual details, that work to make a place unique and complete.

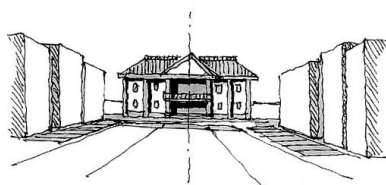
The object of designing a coherent structure is to create a framework that forms the basis for the detailed design of individual elements. The design of the framework should take into consideration the qualities of urban design described in the previous section.

In particular the following elements should be studied:

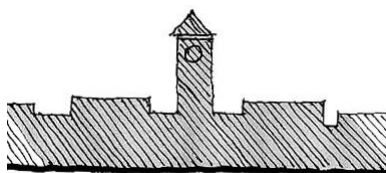
- Pattern and grain - both internally and in relation to any existing context
- Movement and utilities framework - providing connections



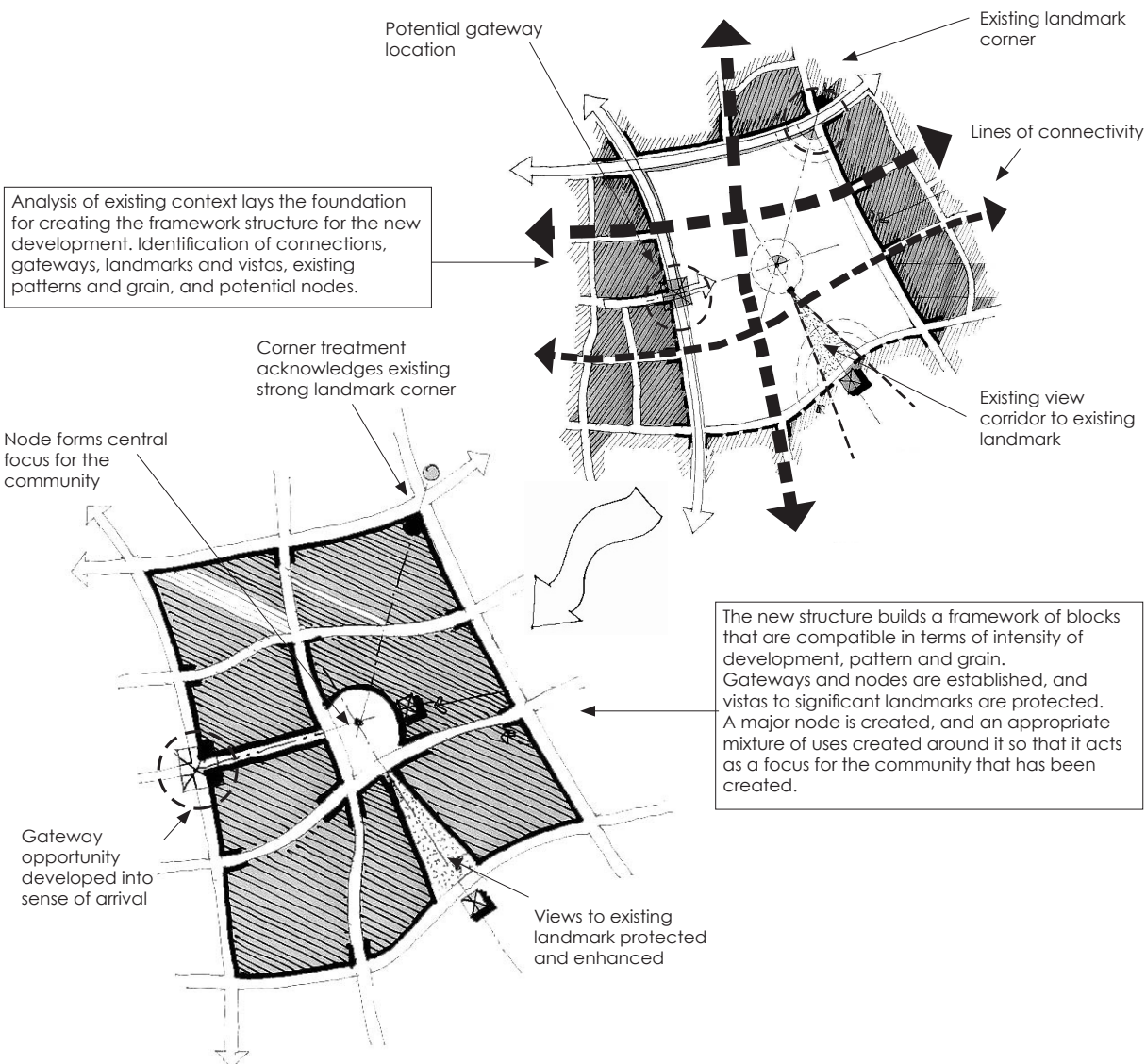
DESIGN GUIDANCE Urban Design Principles

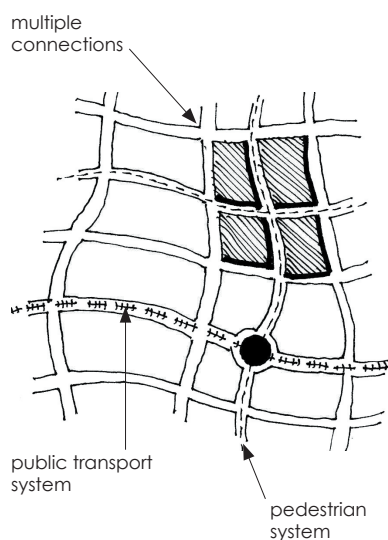


Landmarks, history and skyline



- Legibility, landmarks and views - making the place legible, and linking it with significant external vistas
- Blocks and plots - creating meaningful development packages
- Density and form - determining appropriate intensities of development
- Mixing uses - providing vitality, robustness and sustainability
- Landscape - considering the role of natural and manmade open space





Modes of Connectivity

3.3.3 Connections

Developments cannot exist in isolation – they depend on linkages and interactions with the movement and utility systems of the surrounding context. These connections are also an indication of the character of an existing context, and they play a key role in physically and visually integrating a new development.

Successful integration with existing connections therefore determines functional performance and contributes to the quality and character of the new development. The following elements are significant in this context:

- Linking and connecting (roads and services)
- Movement choices
- Modes of travel
- Parking capacity and layout
- Traffic management

3.3.4 Detail Design

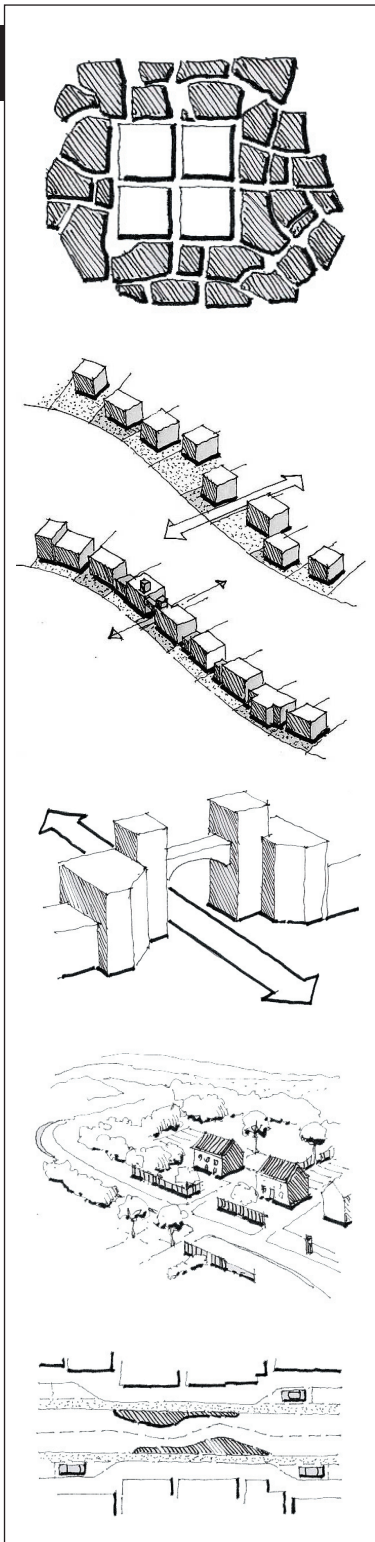
In urban design terms this means the composition and detailing of building masses and the open space that binds them. Successful application of detail design principles will assist in the creation of places that are coherent and memorable and that enjoy their own unique identity, while functioning effectively in the wider context of their surrounding environments.

The elements of detail design that should be considered include:

- The Public Realm - creating public spaces that are active, safe and unique
- Massing - arranging building massing to create focal points and emphasise important locations
- Robustness - designing for change over time
- Building and Open Space Design Details - using design elements that make a place unique



Design Guidance



Residential Development

November 2004



Ministry of Housing and Lands



1 INTRODUCTION

2 PLANNING FOR RESIDENTIAL COMMUNITIES

- 2.1 Planning and Design Principles
 - 2.2 Location
 - 2.3 Analysis of Context
 - 2.4 Layout
 - 2.5 Community Facilities
 - 2.6 Traffic Management
 - 2.7 Landform and Landscaping
-

3 PLOT DEVELOPMENT CRITERIA

- 3.1 Plot Layout
 - 3.2 Setbacks
 - 3.3 Privacy
 - 3.4 Private Open Space
 - 3.5 Security
 - 3.6 Design for Climate
 - 3.7 Building Design
 - 3.8 Tall Buildings in Residential Areas
-

DESIGN SHEETS

Individual Household Development
Design for Sloping Sites
Residential Coastal Development



1 INTRODUCTION

This document provides design guidance for **Residential Development** in Mauritius.

The objective is to create a set of performance criteria and design standards that are applicable to most forms and scales of residential development. The Design Guidance is equally appropriate for use by individual site owners as well as developers of large residential schemes.

Design Sheets have also been produced that consider special design circumstances and supplement the Residential Development Design Guidance. The Design Sheets include:

- Individual Household Development
- Design For Sloping Sites
- Residential Coastal Development

Although the design guidance is based on performance criteria where possible, there are situations where certain standards or technical requirements must be maintained, for reasons such as health and safety. A series of **Technical Sheets** have been produced and reference should also be made to these **(separate documents)**. The Technical Sheets include:

- Residential Roads
- Industrial and Commercial Roads
- Access for People with Disabilities
- Drainage
- Water Supply
- Mains Sewerage
- On-Plot Sewage Disposal
- Electricity
- Telecommunications
- Combined Utilities Summary Plans



2 PLANNING for RESIDENTIAL COMMUNITIES

2.1 Planning and Design Principles

2.1.1 Community Planning

Successful communities derive from attractive living environments that promote social interaction, participation and a sense of identity. A plan for residential development should therefore strive to provide a safe, convenient and attractive environment that will meet the diverse and changing needs of its inhabitants.

2.1.2 Design Approaches

Until recently the design of residential communities in Mauritius was based on the American suburban model of low density developments of detached houses built on a framework of curvilinear streets and culs-de-sac. Limited consideration was given to land use mix and the type of road system used resulted in low levels of connectivity, leading to reduced potential for community and identity building.

More recent trends acknowledge the social success of traditional grid-like residential models and currently the typical underlying objective is to create livable neighbourhoods that reduce dependence on motorised transport (whether public or private) and encourage social interaction and a feeling of belonging.

The current models aim to create compact well-defined communities featuring the following design principles:

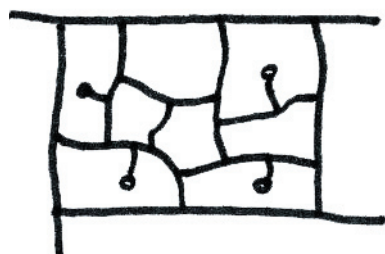
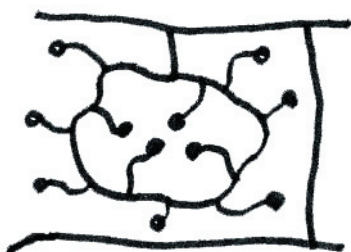
- relatively high densities
- a mix of uses to promote self-sufficiency and sustainability and to reduce traffic flows
- easier movement through enhanced connectivity and choice of mode of travel
- design of layouts and buildings to reduce energy consumption
- improved levels of public and private safety and privacy.

2.1.3 Design Process

The design of a residential development layout involves consideration of the following issues:

- analysing the site context
- determining the appropriate intensity of development
- establishing the broad framework for development, including consideration of connectivity and cohesiveness
- establishing housing types and plot sizes
- studying appropriate massing to enhance legibility and accessibility
- determining the requirements for community facilities
- incorporating traffic management systems.

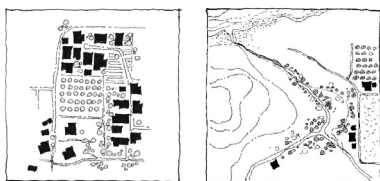
Typical cul-de-sac layout



Grid layout incorporating limited culs-de-sac



DESIGN GUIDANCE Residential Development



Settlement edge and out of town locations are focus areas for this document

2.2 Location

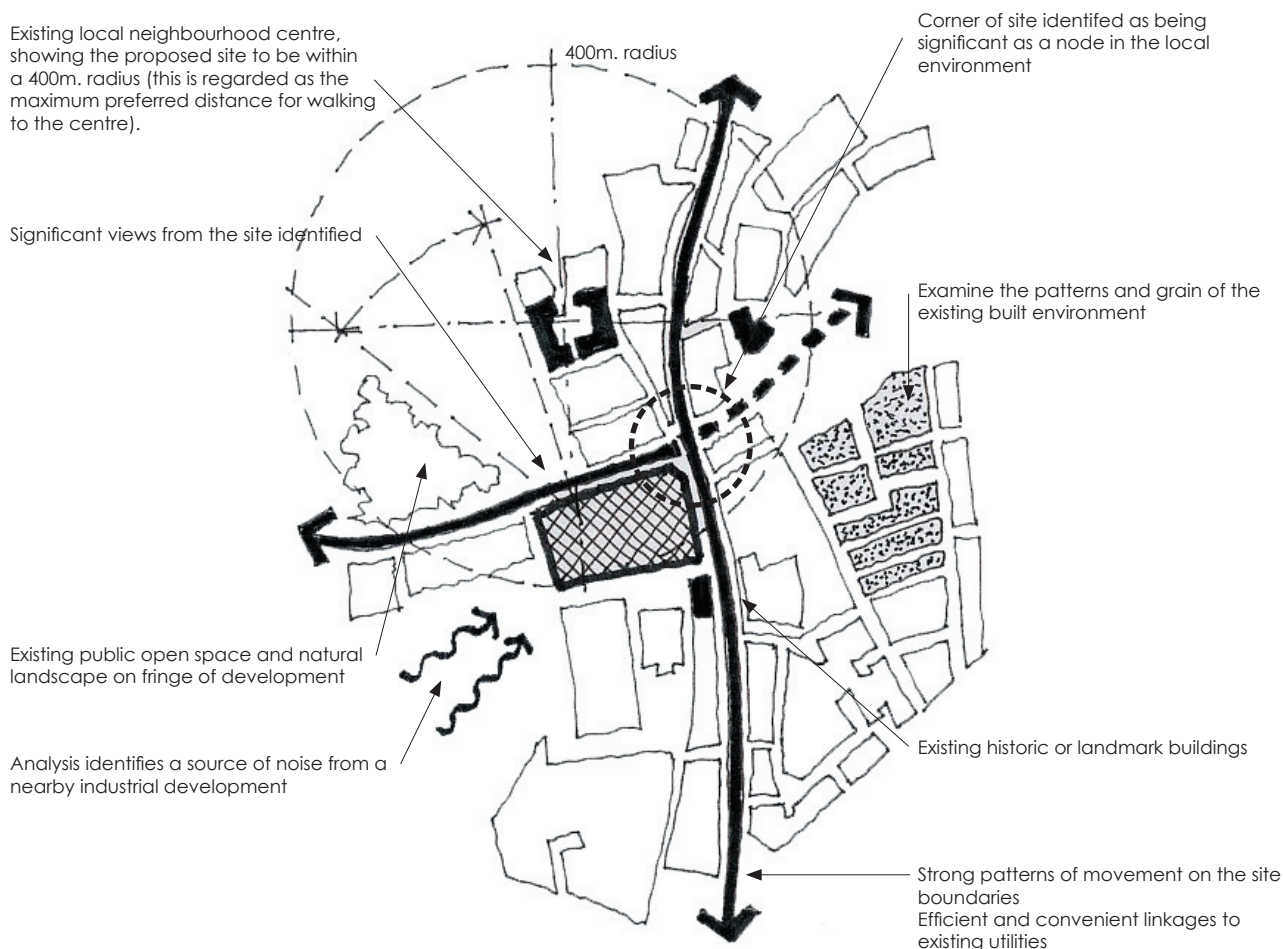
This document covers all forms of residential development in a generic sense. However, it should be noted that certain specific locations and development types, such as urban renewal projects or housing at transportation hubs, require specific levels of detail that are not covered here.

2.3 Analysis of Context

The context of a development is the character and setting of its surrounding environment. Some elements of context analysis that are of particular relevance in the context of residential developments are illustrated in the following diagram.

2.4 Layout

Every development should aim to provide a mix of plot sizes and dwelling types to meet a range of end-user requirements. The lots should be orientated where practical to take advantage of climatic conditions and topography and to enable micro-climate management.



Site location and context analysis



DESIGN GUIDANCE Residential Development

The layout should therefore:

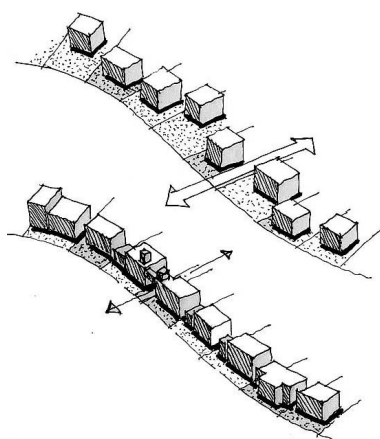
- Take account of slopes in order to minimise earthworks and retaining walls (see Design Sheet - Design for Sloping Sites)
- Be sited so as to enhance natural and cultural features
- Provide a diversity of plots to accommodate people with different housing needs
- Arrange plots so that frontages are orientated towards streets and public open space, so as to encourage natural surveillance of public areas
- Ensure that new development does not block views of important landmarks as seen from surrounding areas.

2.4.1 Edges

The outer edges of a development serve to define the boundaries and to make visual connections with surrounding environments. When seen from outside, the development should display a positive and clearly defined edge that also serves to enhance the character of the scheme. This can be achieved by:

- a clear design approach to the placing of buildings along the edges
- the creation of visually strong gateways into the development
- a well-defined approach to the creation of the skyline - particularly of the perimeter built form
- the creation of well-located key buildings to provide legibility and focus.

In any large development it is also important for the outer edges to be defined by the fronts of buildings so as to ensure the maintenance of a high standard of visual appearance. This is especially true in respect of edges that face onto rural landscapes or agricultural land.



Locate buildings so as to clearly define public spaces, such as roads

2.4.2 Intensity of Development

The maximum intensity of development is a function of the type of housing to be built and the capacity of existing or proposed infrastructure. It may also be determined by a need to conform with the specific contextual requirements of a particular location.

The development potential of groups of plots is dependent on the capacity of existing or proposed roads and utilities. Increasing the quantity of building will usually increase the on-site population which, in turn, places increasing demand on services. The developer must therefore demonstrate that proposals are adequately served by roads and utilities.



DESIGN GUIDANCE Residential Development

The quantity of development also impacts on the character of the project and on its surrounding environment. The developer should therefore use a combination of bulk, coverage and building height (see below) to achieve a result that lives comfortably in its context. It follows that permission will not normally be granted for a development proposal that impacts negatively on its context - whether by exceptional intensity, housing types or building height.

Various factors combine to determine the final appearance of the development. These include:

- the type of housing proposed (detached, semi-detached, townhouse or apartment)
- the size of individual plots
- the quantity of building
- how much of the site is covered by building
- the number of floors.

2.4.3 Coverage

The amount of land that may be covered by building is primarily a function of what is available for building after provision has been made for setbacks, on-site parking and sewerage systems (see plot sizes below). It may also be controlled by the specific demands of sensitive locations - for example it may be necessary to reduce allowable coverage in sensitive areas, such as Coastal Frontage Areas, so as to retain larger areas of landscaped open space. Conversely a development in a town centre may be built with high levels of coverage to match the existing character of the area and optimise sustainable land use opportunities in accessible locations.

2.4.4 Building Height

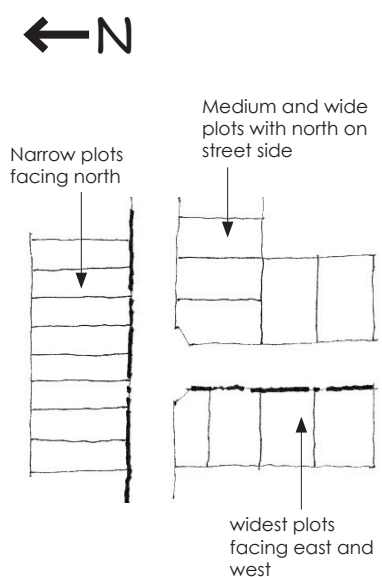
Generally speaking building height is controlled by the context of the development, the type of dwellings being built, the quantity of building and the site coverage. In certain key locations it may also be advantageous to increase building height to provide legibility or focus for the development. Building height may also be controlled by setback requirements, which are covered in further detail below.

2.4.5 Plot Sizes

Plot sizes are dependent on the type of housing proposed and certain minimum requirements for on-site parking and on site utility provision, such as adequate sewage treatment.

Reference should be made to minimum requirements illustrated within relevant Technical Sheets.

All plots should have provision for at least one car parking space per unit on site and apartment building projects should provide on-site parking for a further one bay for every five units for visitors. (see further guidance regarding parking provision in Technical Sheet - Residential Roads).

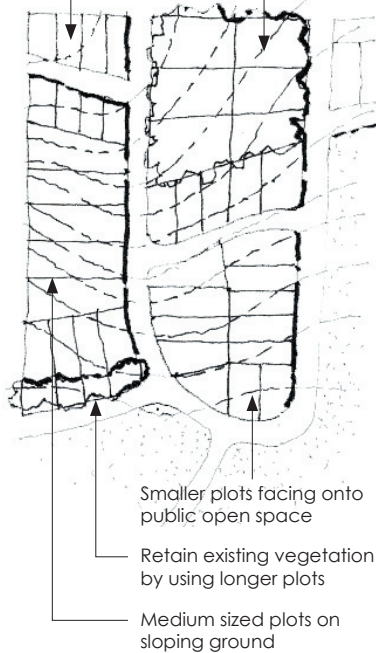


Varying plot widths to improve solar access



Larger plots are required where there is substantial vegetation

Smaller plots possible if there are views



Varying plot sizes to suit the characteristics of the development site

Where on-plot sewage disposal is required the site should also permit the installation of a septic tank and a soakaway system. A variety of options in this regard are presented in Technical Sheet - On-Plot Sewage Disposal.

Requirements for setbacks and building lines should also be taken into account. The criteria for these are covered in Section 3 - Plot Development Criteria.

In any proposed morcellement or sub-division approval will not normally be given to a layout based entirely on minimum plot sizes. The plan should provide a variety of plot sizes, with a reasonable percentage of the plots being up to 50% larger than the minimum so as to add interest to the layout and to meet the needs of a wider range of purchasers. Plots should also be varied in size to suit topography, orientation, required landscape character, etc.

When sub-dividing plots careful consideration should also be given to:

- The likely visual impact the proposals may have on the established character of an area
- The likely impact the proposals may have on the amenity of neighbouring property, such as on privacy and daylighting and
- The provision of adequate car parking.

2.5 Community Facilities

The provision of community facilities is largely determined by the population to be housed.

One of the most important considerations is the provision of public open space, which should be distributed so as to be an integral part of the layout for the project.

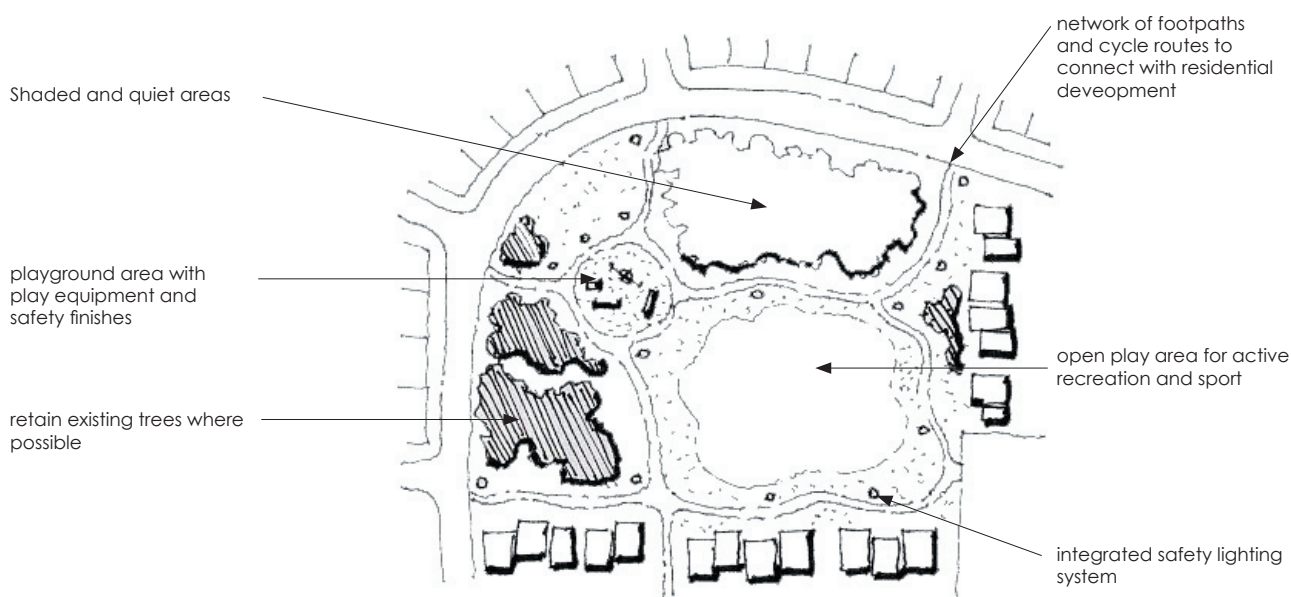
Open space should normally equate to no less than 2% of the development area, with a minimum of 25m² for 20 plots/units, and minimum dimension of 5m. Most importantly, the open space should be designed to meet a clear need i.e. be **useable** and **useful** e.g. accommodate children's play equipment, provide space for passive recreation (such as a small park) and/or create a good landscape setting to development.

Depending on the size of the project the developer may also be required to consult with the Permit Authority to determine the space to be provided for other facilities. Other facilities that may be required include:

- Commercial and retail
- Community hall
- Health care
- Schools
- Religious facilities
- Civic/local authority facilities



DESIGN GUIDANCE Residential Development



Important elements to consider in the design of Public Open Space.

Public open space should be of an appropriate size, be well located, and designed to meet a clear local community need i.e. be both useful and useable

2.6 Traffic Management

2.6.1 Connectivity

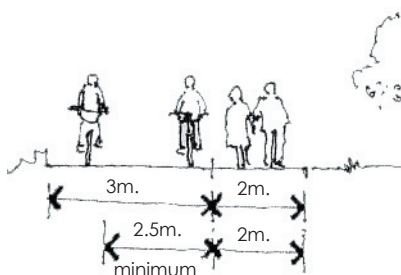
Any new development must be linked to the existing surrounding environment and the success of the connections will depend on the quality of the links and the possibilities of choice of movement that are created.

It should be possible for people to choose to make local journeys on foot, by bicycle, or by public transport, rather than using private vehicles and the development should aim to create a comfortable balance of travel modes, both in its connections with the external environment and internally within the project.

2.6.2 Road Access

Road access to residential developments is obtained through a proposed hierarchical system that is explained in Technical Sheet - Residential Roads.

The layout and dimensions of roads in a specific development should also be considered as an element of the design character of the scheme. For example, it may be desirable to reduce standard dimensions to lessen the impact of the roads in a small scheme in a rural area, or to increase the norm to provide for more landscape or boulevard character in an up-market morcellement.

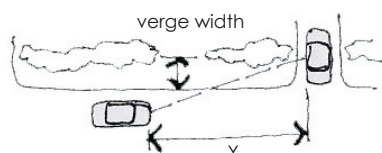


Provision for cyclists and pedestrians



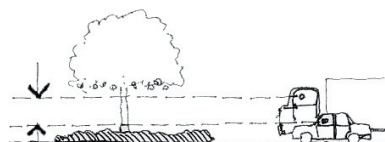
DESIGN GUIDANCE Residential Development

Speed	Stopping distance (Y in metres)
5	5
30	20
40	30
50	40
60	55



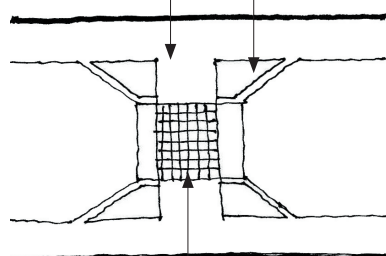
Stopping distances related to vehicle speed

Sightline requirements for different vehicles

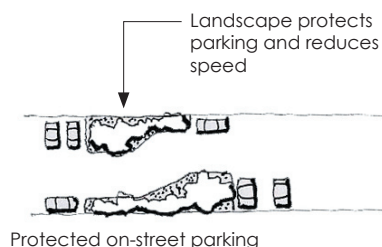


keep clear between 0.6 and 2.0m.

Speed table and reduced lane width force vehicles to slow down



Speed table and reduced lane width force vehicles to slow down



Measures to control vehicle speed

2.6.3 Traffic Calming and Traffic Safety

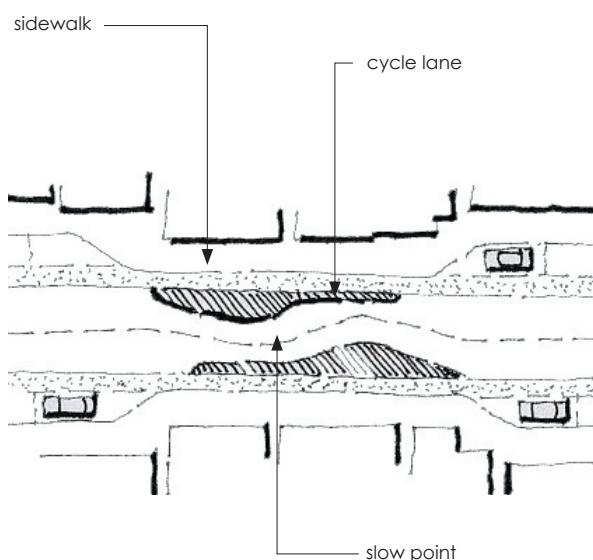
It is also important to ensure that road design facilitates safe use by pedestrians, cyclists, children and the disabled (see below).

This means:

- Creating road widths that permit safe travel at the recommended design speeds
- Taking into account the space requirement for and design of, on-street parking
- Using the alignment of the road to discourage excessive speed
- Giving consideration to pedestrian and cyclist safety in streets and at crossing points, by using traffic calming techniques
- Ensuring vertical and horizontal sightlines are kept free from visual obstructions.

Traffic calming can be achieved in a number of ways:

- Creating slow points by reducing the width of the carriageway
- Using on street parking and landscape elements to constrict the carriageway
- Designing the roadway so that its alignment is determined by the plot layout rather than vice versa



Traffic calming with cycle lanes and parking



2.6.4 Access for the Disabled

The layout and design of plots should take account of the needs of the disabled (particularly those with a mobility handicap). The design and location of car parking, bus stops and level changes should therefore be carefully considered. See also Technical Sheet - Access for People with Disabilities.

2.7 Landform and Landscaping

A development layout should strive to protect and enhance existing landform and natural landscape. In particular attention should be paid to the retention of existing indigenous trees, as these assist with maintaining the balance of natural systems and they are more likely to attract bird life. A landscape scheme for the project should be prepared and this should include details of:

- tree planting and existing trees (including street trees)
- ground covers and shrubs, hard surfaces, paving designs and verges
- adequate lighting - with protection against light pollution
- landscape treatment of public parking areas
- provision of amenity space
- opportunities for nature conservation and habitat creation.



3 PLOT DEVELOPMENT CRITERIA

3.1 Plot Layout

In determining the layout of individual plots a number of elements require consideration. These include:

- setbacks
- private open space
- security and privacy
- designing for climate
- on-plot facilities (parking, garbage, clothes drying, mail delivery, etc.)

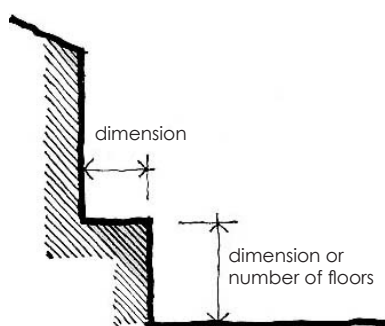
These elements are discussed in this section.

3.2 Setbacks

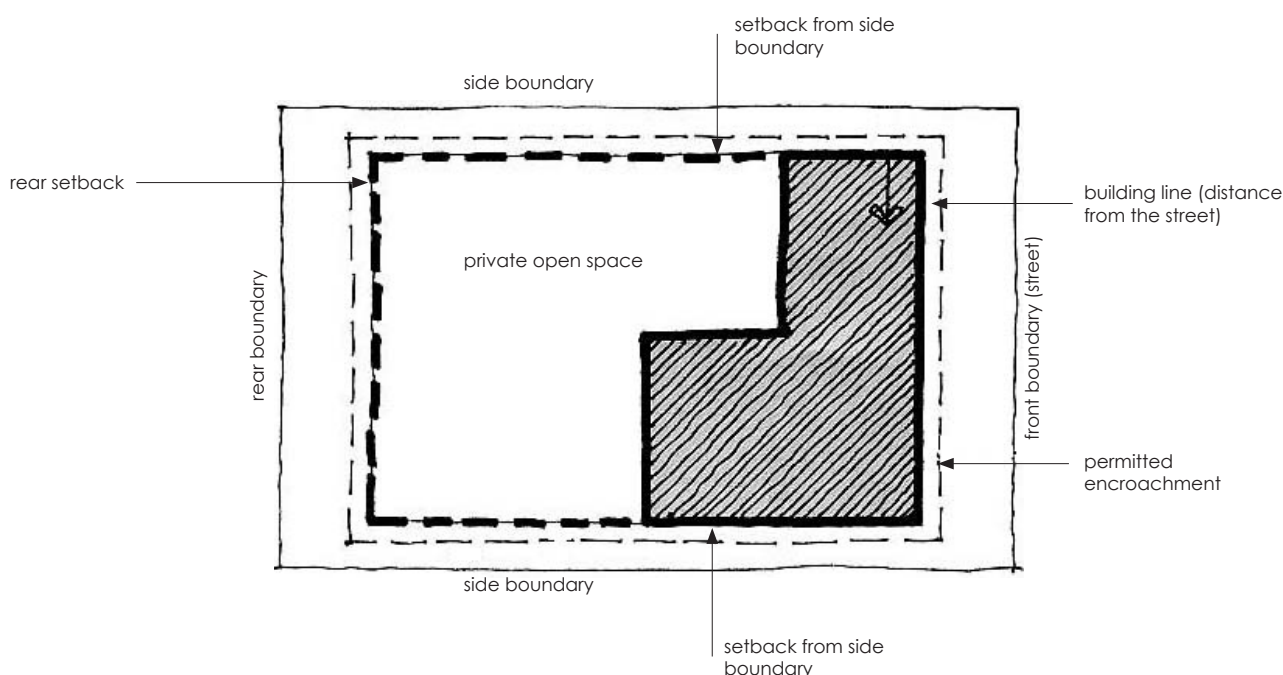
Setbacks serve to protect the amenity of adjoining properties, to provide spatial barriers against fire spread, to reserve utility and road corridors and to assist in the establishment of street character.

In the context of this document setback refers to the distance between a front, side or rear facade and their respective boundaries.

Setbacks are generally measured to the outer wall surface of the building. However, small encroachments may be acceptable in respect of overhanging roofs and canopies over windows. These should not project further than 1m into the setback reserve.



Vertical setback





DESIGN GUIDANCE Residential Development

The objectives of urban design encourage the placing of buildings close to the street. In order to achieve this it is essential to reduce the building line to the minimum that is appropriate for the context.

In established areas and infill sites, the building line should normally reflect the norm for the existing context. In this case the line should normally be equal to the average setback of existing buildings in the same street.

Indicative setbacks are provided within the tables opposite. However, cognisance should also be taken of specific design objectives and safety restrictions in respect of overhead power lines and other utilities.

The siting and scale of buildings is a function of the way the buildings relate to their boundaries and their overall massing. By adjusting setbacks these aspects can be controlled so as to ensure adequate daylight penetration, ventilation and reasonable protection of neighbouring amenity (privacy and noise).

Setbacks should normally increase with additional building height (see adjacent table) and also in relation to the particular requirements of an existing context. Where a setback is created it will normally be acceptable for minor architectural elements such as overhanging roofs and lightweight window canopies to encroach into the established side space up to a maximum of 1m.

Building to plot boundaries may be permitted in locations where this is not in conflict with the existing context and where it can be demonstrated that the buildings have been designed to ensure the provision of adequate daylight to habitable rooms, sufficient natural ventilation and private open spaces of the plot and adjacent plots are not overlooked.

Indicative Building Setbacks to Road Frontages

Motorways	15.0m
A Road	6.0m
B Road	6.0m
Other Roads	3.0m

Indicative Building Setbacks Related to Height

Building height (m)	Minimum setback (m)
7.5	2.0 side 3.0 -15.0 front
15.0	3.0 side 3.0-15.0 front
25.0	5.0 side 6.0-15 front
Setbacks for buildings over 25m. to be agreed with Local Authority	
Single storey buildings should generally be no less than 0.9m from the side boundary but account must be taken of the likelihood of extending to provide additional floors. If this is likely then increased setbacks indicated above should be provided.	

3.3 Privacy

Planning for privacy influences the location of buildings on plots and the placement of windows and private open space.

Acceptable standards of privacy that will be appropriate for a development may be determined by assessment of prevailing standards and norms in the local context, or by analysis of the way people use similar developments in other areas.

3.3.1 Visual Privacy

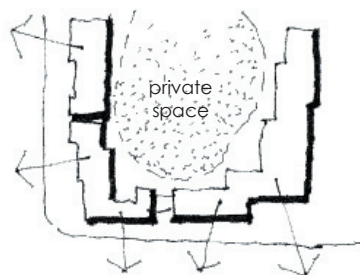
Visual privacy is achieved by creating layouts that avoid overlooking, by screening and by increasing distances. Generally, the distance between the rear elevations of residential buildings should not be less than 20m. Where this is not possible or desirable, windows should be located to avoid direct overlooking, using position, high cills, or obscure glazing. Other possible solutions may involve the appropriate location of ancillary buildings, such as garages, or screen walls and planting to obstruct potential views between private areas.

3.3.2 Acoustic Privacy

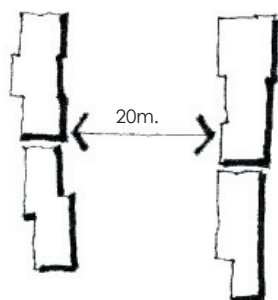
Acoustic privacy can be improved by consideration of the following:



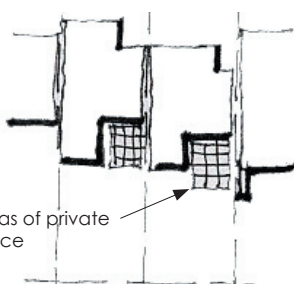
- ensuring that bedrooms are not constructed alongside garages or living rooms of adjoining dwellings, or in locations where they can be affected by traffic noise
- introducing landscape elements or ground shaping to deflect or absorb noise from streets or neighbouring properties
- where the problem cannot be solved by planning means, selecting materials and finishes (such as double glazing) that can absorb the noise



Private space contained by perimeter blocks



Distance between windows of facing dwellings - preferred minimum 20m.



Building onto boundary creates opportunities for private spaces

3.4 Private Open Space

Private open space plays a varying role that is partially dictated by the density of the development and partly by proximity to areas of community open space. It can take the form of gardens, balconies or terraced areas.

Primary considerations for the creation of private open space include:

- the space should form a logical extension of living spaces inside the dwelling
- it should be located and designed so that it is protected from major solar gain and can benefit from cooling breezes
- it should provide, where appropriate, space for utility equipment, clothes drying, etc.
- it should be as private as possible within the constricts of the overall planning concept for the development

The quantity of space to be provided varies according to unit type and location. However, the following represents a desirable minimum provision:

- for ground level space - a minimum of 35m² for plots up to 250m² in area and 20% of the site area for larger plots, with a maximum site gradient in each case not exceeding 1:10
- for above-ground space (balconies and terraces) a minimum of 10m² with a minimum depth of 2.5m.

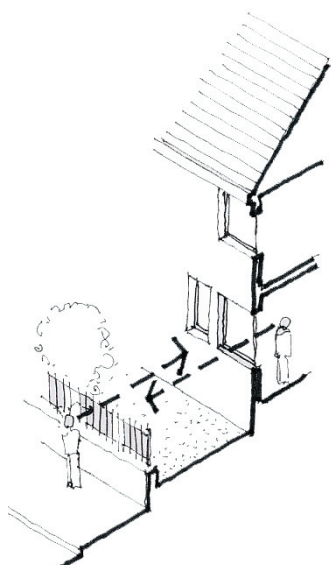
3.5 Security

Planning can contribute to security if plots and buildings are laid out and designed such that residents can make a contribution by collective surveillance of public areas. For this concept to operate successfully the following criteria must be satisfied:

- There should be a clear distinction between public and private space
- Building design and plot layout should encourage observation of public areas
- The design should avoid ambiguous spaces and hidden corners

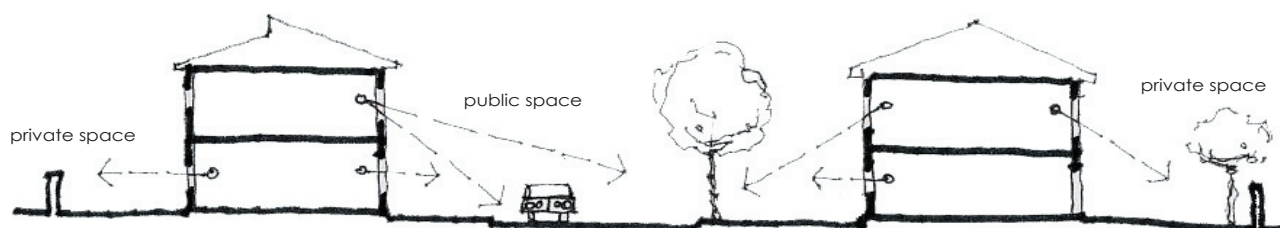


DESIGN GUIDANCE Residential Development



Resident is able to observe the street without a loss of privacy if there is a change of level between street and interior

- Windows should be placed so that it is possible to observe the public areas
- Public accessways, pedestrian routes and cycleways must be open, attractive and well-lit
- Real or symbolic barriers should be used to prevent access to areas intended only for private resident usage i.e. a clear distinction made between public and private space.



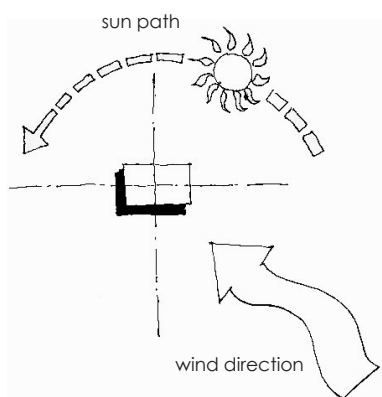
Surveillance of public spaces

3.6 Design for Climate

The layout of buildings on plots and the grouping and design of the buildings themselves, can have a significant impact on the energy efficiency of the buildings and on internal comfort levels.

Factors to be considered include:

- Compact, attached building forms are more energy efficient than detached buildings
- Buildings should be positioned so that the long axis extends in an east-west direction and should be designed with a shallow depth that encourages cross ventilation
- Sun penetration into the living areas of the house should be controlled so that it is screened off during the summer months and allowed to penetrate during the cooler months. This can be achieved with types of landscaping, or with overhangs that only cut off steeper angle rays
- East and west walls of the building should be protected from the sun where possible.



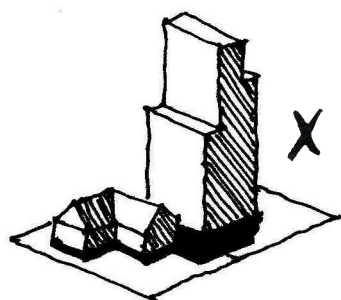
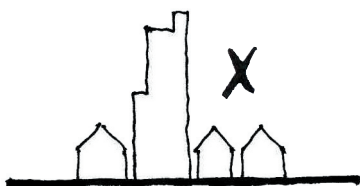


3.7 Building Design

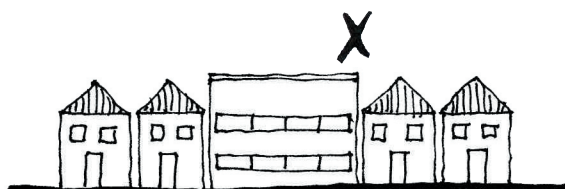
The form, rhythm and massing of buildings are significant elements of developments, especially in the context of an existing built-up environment. They should be designed to harmonise with surrounding developments and to take particular cognisance of existing landmark structures.

In applying these criteria attention should be paid to:

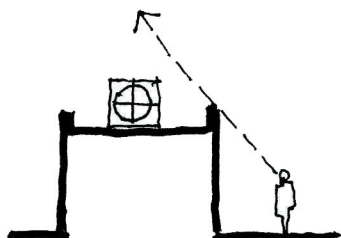
- the rhythm and scale of building blocks
- the design and organisation of roof shapes
- the use of appropriately designed fenestration
- the control of extensions such that they are subordinate to and compatible with, the main building
- the application of an architectural style that is in harmony with any local tradition
- the concealment of mechanical plant and utilities
- the positioning of solar panels so they are flush with sloping roofs.



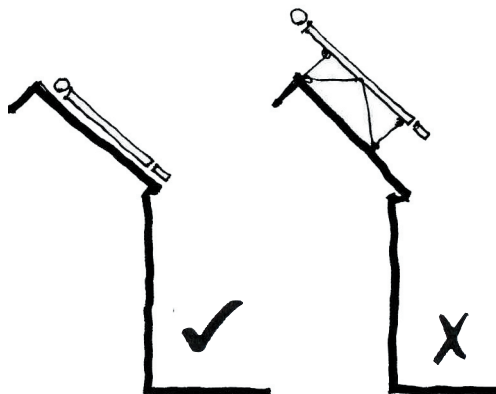
Scale to be appropriate to context



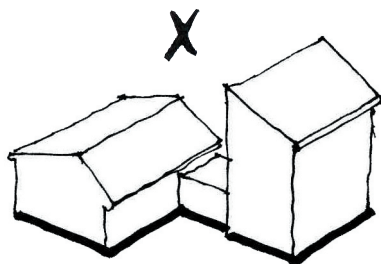
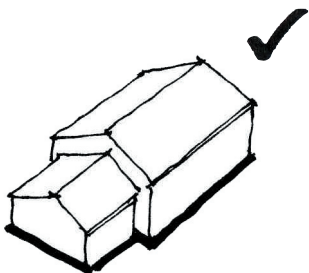
Scale, rhythm, roof shapes, fenestration, and architectural style to be appropriate to context



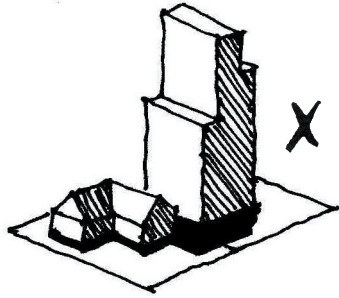
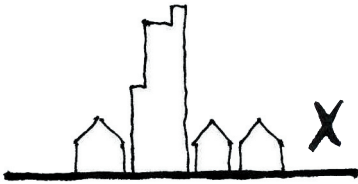
Conceal rooftop plant and equipment



Fix rooftop solar panels flush with roof slope



Design extensions that are in keeping with the existing buildings



Scale to be appropriate to context

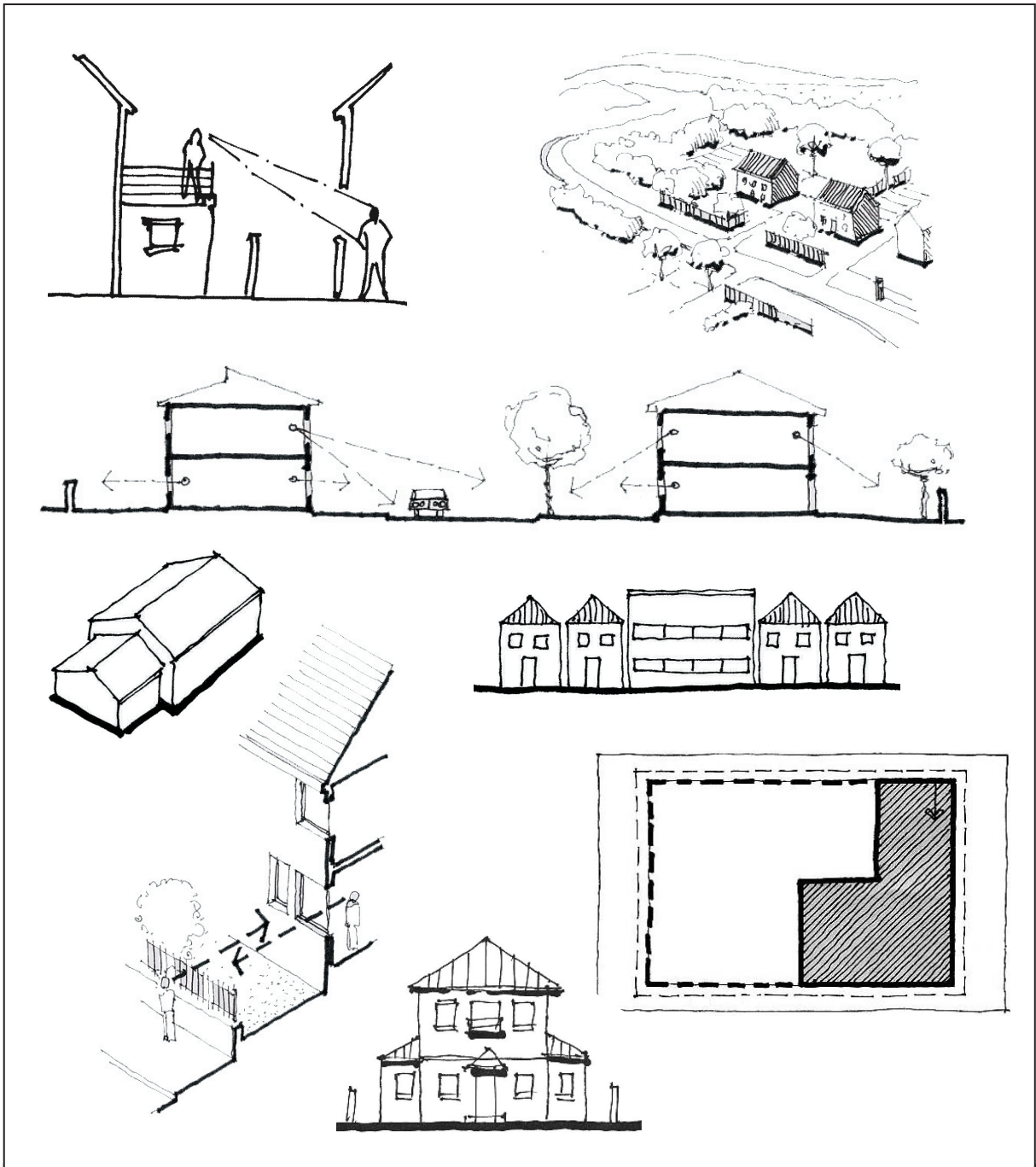
3.8 Tall Buildings in Residential Areas

Proposals for tall buildings located within residential areas, particularly on small sites, need careful consideration in order to ensure that it takes place without detriment to the character and amenity of surrounding properties and the local street scene. Criteria to consider include:

- The design, bulk and density of development should respect the character and appearance of the surrounding area;
- The development should not be detrimental to the privacy, daylighting and amenity of neighbouring dwellings nor will there be a reciprocal impact on the proposed development; and
- The development should provide adequate access and car parking and where appropriate, on-site turning facilities to serve proposed and existing properties.



Design Sheet



Individual Household Development

November 2004



Ministry of Housing and Lands



Individual Household Development



An urban context



A rural context

Consider the context of the site and the character of the surrounding area



INDIVIDUAL HOUSE DESIGN

In determining the layout of individual dwelling houses a number of elements require consideration. These include:

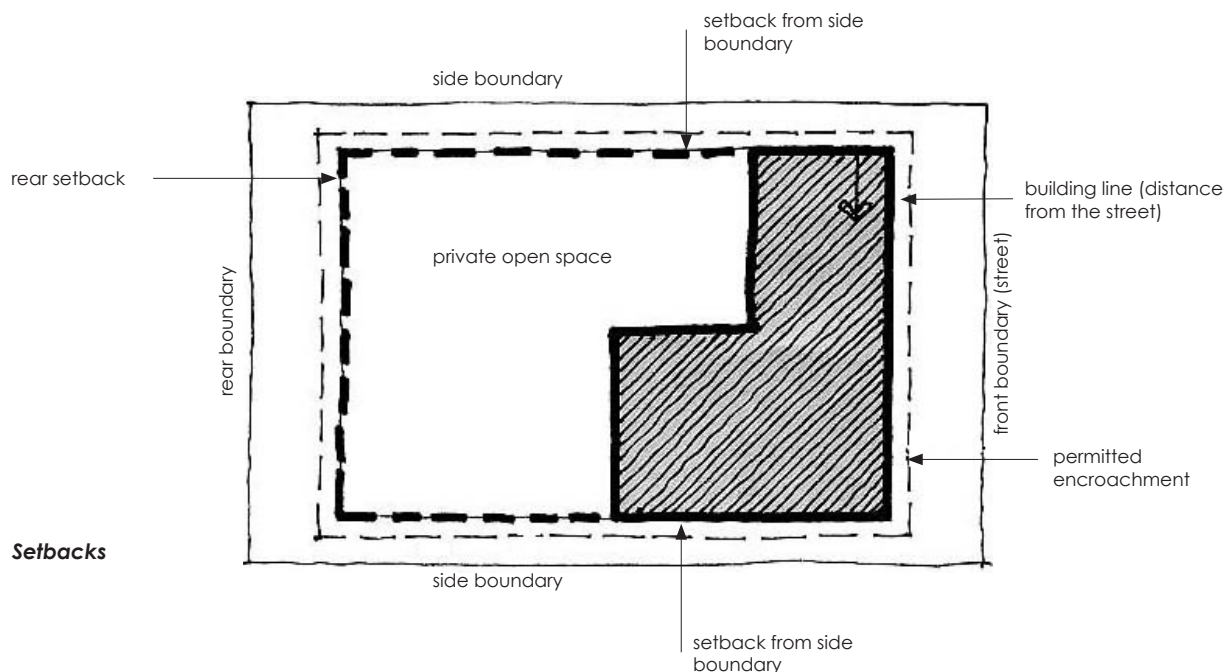
- Context
- Setbacks
- Privacy
- Protection from noise
- Private amenity space
- Security
- Building design
- Walls, fences and wind breaks
- Vehicular access
- Vehicle parking areas
- On plot services

Context

A new house or extension to an existing house should be designed in relation to the whole street or a particular group of surrounding buildings. When designing a new house or extension the effect the proposal would have on the existing street scene should be considered. A good design can enhance the area and the desirability of the property.

Setbacks

Setbacks serve to protect the amenity of adjoining properties, to provide spatial barriers against fire spread, to reserve utility and road corridors, and to assist in the establishment of street character.



Setbacks



Individual Household Development

Indicative Building Setbacks to Road Frontages

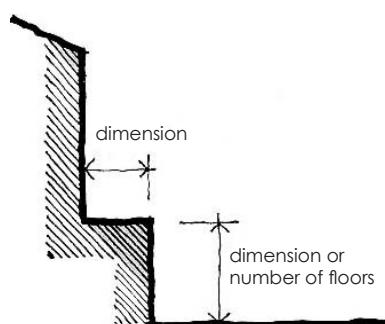
Motorways	15.0m
A Road	6.0m
B Road	6.0m
Other Roads	3.0m



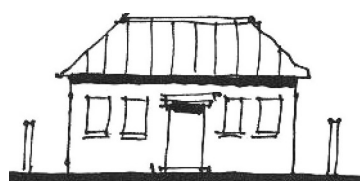
Building height (m)	Minimum setback (m)
7.5	2.0 side 3.0 -15.0 front
15.0	3.0 side 3.0-15.0 front
25.0	5.0 side 6.0-15 front

Setbacks for buildings over 25m. to be agreed with Local Authority

Single storey buildings should generally be no less than 0.9m from the side boundary but account must be taken of the likelihood of extending to provide additional floors. If this is likely then increased setbacks indicated above should be provided.



Vertical setback



Original single storey building with 0.9m side setbacks



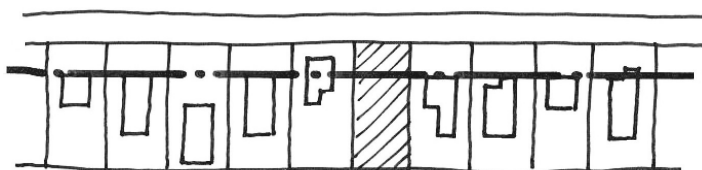
Inappropriate first floor extension with inadequate side setbacks



First floor extension that provides increased side setbacks

Setbacks refer to distances between front, side and rear facades and their respective boundaries.

Setbacks are generally measured to the outer wall surface of the building. However, small encroachments may be acceptable in respect of overhanging roofs and lightweight canopies over windows. These should not project further than 1m. into the setback reserve.



In established areas and infill sites, the building line should normally reflect the norm for the existing context.

Indicative setbacks are provided within the tables alongside. However, cognisance should also be taken of specific design objectives and safety restrictions in respect of overhead power lines and other utilities. Reference should be made to the relevant Technical Sheets.

Setbacks should normally increase with additional building height (see adjacent table), and also in relation to the particular requirements of an existing context. Where a setback is created it may normally be acceptable for minor architectural elements such as overhanging roofs and lightweight window canopies to encroach into the established side space up to a maximum of 1m.

Building to plot boundaries may be permitted in locations where this is not in conflict with the existing context, and where it can be demonstrated that the buildings have been designed to ensure the provision of adequate daylight to habitable rooms, sufficient natural ventilation, and private amenity spaces (see below) of the plot and adjacent plots are not overlooked.

Care should be exercised when constructing single storey buildings that may at some future date be extended to two or more storeys. Increased setbacks should normally be provided for additional floors and the design of the single storey building should take account of this.

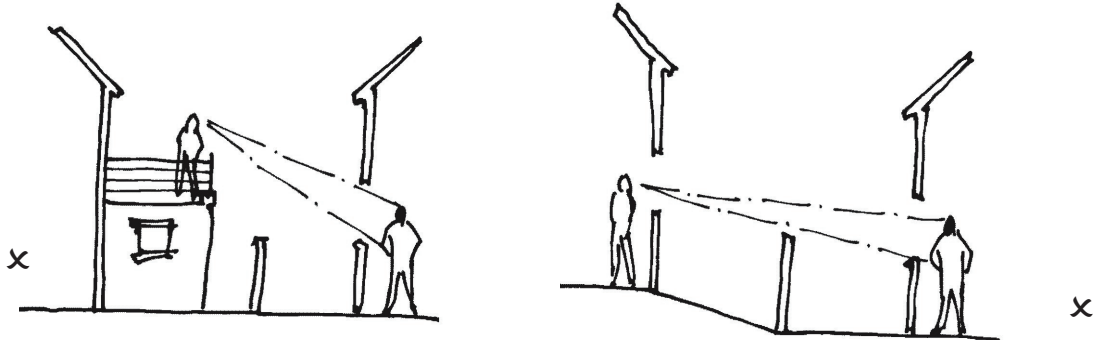


Individual Household Development

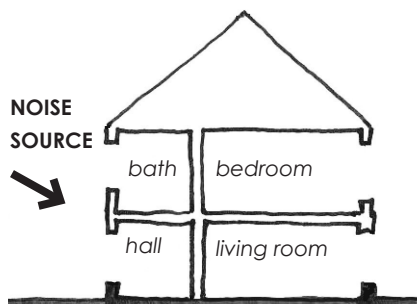
Privacy

Planning for privacy influences the location of buildings on plots and the placement of windows and private amenity space.

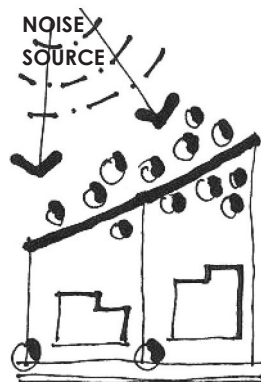
Avoid designing a new house or an extension to an existing house that directly overlooks neighbouring property.



Avoid creating situations that compromise neighbouring privacy



Consider the arrangement of rooms to minimise potential nuisance to sensitive areas



Use screening and landscaping to protect residential uses from noise sources

Visual privacy can be achieved by creating layouts that avoid overlooking, by screening, and by increasing distances. Generally, the distance between the rear elevations of residential buildings should not be less than 20m. Where this is not possible or desirable, windows should be located to avoid direct overlooking, using position, ancillary buildings, high cills, or obscure glazing. Other possible solutions may involve the appropriate location of ancillary buildings, such as garages, or screen walls and planting to obstruct potential views between private areas.

Protection from Noise

Freedom from excessive noise at evenings is a requirement for the private areas of residential development. Protection from noise can be improved by consideration of the following:

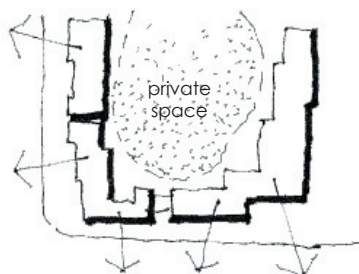
- ensuring that bedrooms are not constructed alongside garages or living rooms of adjoining dwellings, or in locations where they can be affected by traffic noise
- introducing landscape elements or ground shaping to deflect or absorb noise from streets or neighbouring properties
- where the problem cannot be solved by planning means, selecting materials and finishes (such as double glazing) that can absorb the noise.

Private Amenity Space

Private amenity space plays a varying role that is partially dictated by the density of the development and partly by proximity to areas of community open space. It can take the form of gardens, balconies or terraced areas.



Individual Household Development



Private space contained by perimeter blocks

Primary considerations for the creation of private open space include:

- the space should form a logical extension of living spaces inside the dwelling
- it should be located and designed so that it is protected from major solar gain, and can benefit from cooling breezes
- it should provide, where appropriate, space for utility equipment, clothes drying, etc.
- it should be as private as possible within the constricts of the overall planning concept for the development

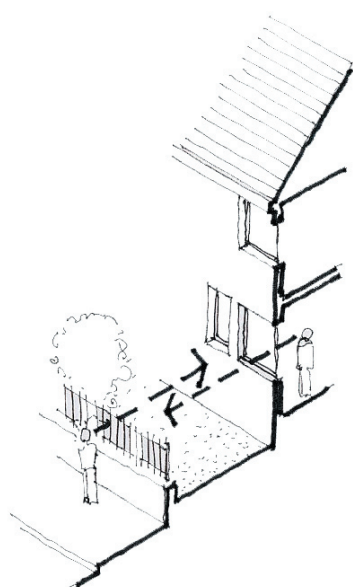
The quantity of space to be provided varies according to unit type and location. However, the following represents a desirable minimum provision:

- for ground level space - a minimum of 35m² for plots up to 250m² in area, and 20% of the site area for larger plots, with a maximum site gradient in each case not exceeding 1:10.
- for above-ground space (balconies and terraces) a minimum of 10m² with a minimum depth of 2.5m.

Security

Planning can contribute to security if plots and buildings are laid out and designed such that residents can make a contribution by collective surveillance of public areas. For this concept to operate successfully the following criteria must be satisfied:

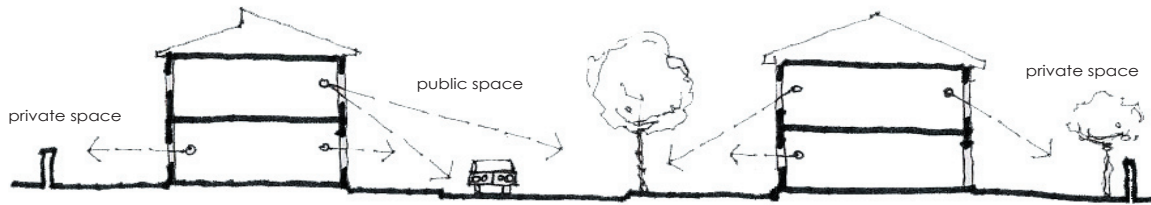
- There should be a clear distinction between public and private space
- Building design and plot layout should encourage observation of public areas
- The design should avoid ambiguous spaces and hidden corners
- Windows should be placed so that it is possible to observe the public areas
- Public accessways, pedestrian routes and cycleways must be open, attractive, and well-lit
- Real or symbolic barriers should be used to prevent access to areas intended only for private resident usage i.e. a clear distinction made between public and private space.



The creation of natural surveillance can help to enhance security



Individual Household Development



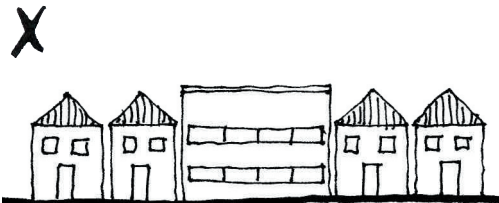
Ensure that there is a clear distinction between public space and private areas

Building Design

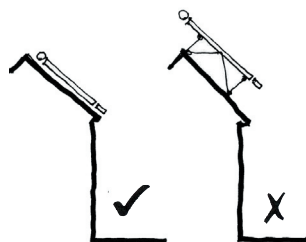
The form, rhythm and massing of buildings are significant elements of developments, especially in the context of an existing built-up environment. They should be designed to harmonise with surrounding developments and to take particular cognisance of existing landmark structures.

In applying these criteria attention should be paid to:

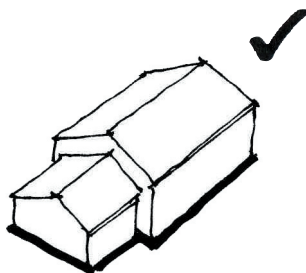
- the rhythm and scale of building blocks
- the design and organisation of roof shapes
- the use of appropriately designed fenestration
- the control of extensions such that they are subordinate to, and compatible with, the main building
- the application of an architectural style that is in harmony with any local tradition
- the concealment of mechanical plant and utilities
- the positioning of solar panels so that they are flush with sloping roofs



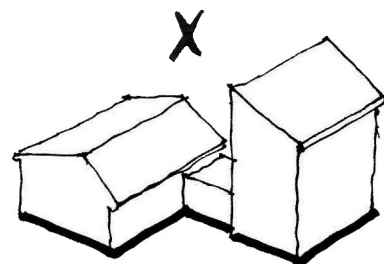
Scale, rhythm, roof shapes, fenestration, and architectural style to be appropriate to context



Fix rooftop solar panels flush with roof slope



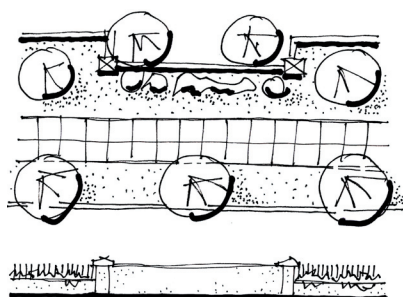
Design extensions that are in keeping with the existing buildings





Individual Household Development

Details of all walls and fences should be shown on plans submitted for permit approval.



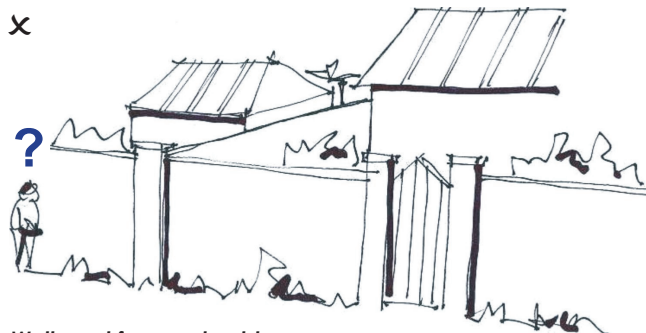
Walls and fences should be designed to avoid long monotonous facades and should be open as much as possible

Walls, Fences and Wind-breakers

Along road frontages and most particularly the coast road, long expanses of uninterrupted walls and fences should be avoided. Walls and fences should not create a "canyon" or "corridor" effect along roads. When walling or fencing is required, solid areas should be kept to a minimum to avoid a hard "urban" edge and allow views through to the beach and sea.

Long expanses of wall surfaces should be offset and architecturally designed to prevent monotony. Techniques to avoid monotonous wall frontages may include: raised planters, openings, material changes, staggered sections, and pilasters or posts. Boundary walls shall be constructed of local materials of good finish. No concrete block walls should be constructed unless they are finished in plaster.

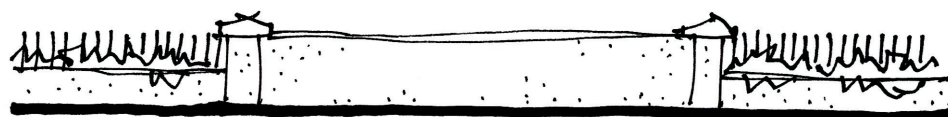
Public access should be retained between the coastal road and the beach and sea. These pedestrian "public beach gateways" should be announced by pilasters, trellises, special landscaping, or other special features.



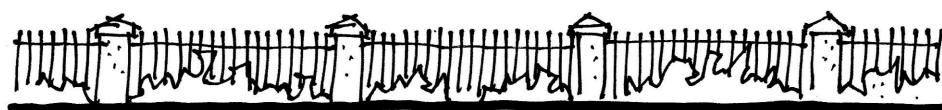
Walls and fences should not create a "canyon" or "corridor" effect along roads.



Walls and fences should remain as open as possible.

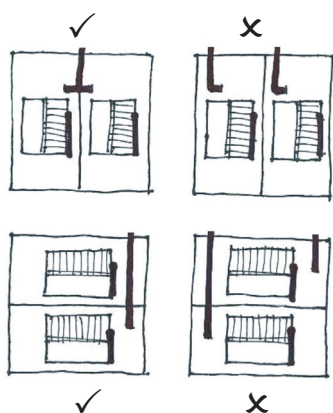


To reduce the impact of walls and fences keep them as low and open as possible

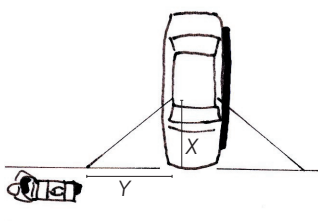




Individual Household Development



Separate accesses to individual sub-divided campment plots should be avoided whenever possible



2.4m X and Y dimensions should be provided where a driveway meets the back edge of a footway

Vehicular Access

Individual direct access will not normally be allowed off a motorway or other main road. Access arrangements should be consolidated with adjoining sites and connected to existing major junctions.

In designing accesses the following requirements should be met:

- Accesses should be in a safe location where visibility is good
- Adequate visibility splays should be provided
- Adequate vehicular turning radii should be achieved.

Vehicle Parking Areas

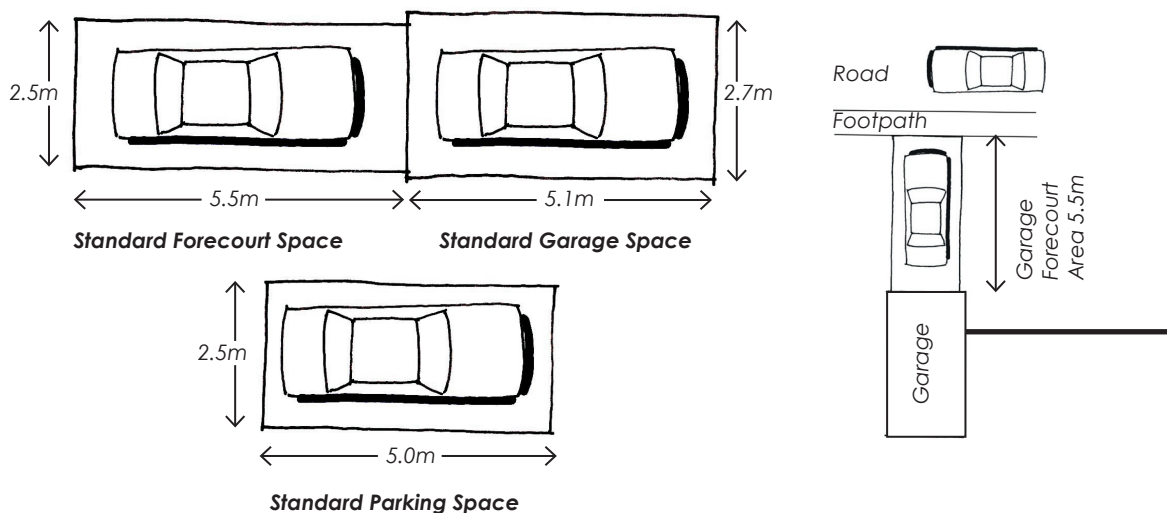
(S) All plots should allow for a car to be parked on site, and in the case of plots on A or B Class roads, reversing onto or out of plot should be avoided i.e. on plot vehicle turning facilities should be provided.

(S) Driveways serving garages within house curtilages should normally be long enough to accommodate a car and enable the garage door to be opened. The length of driveway should preferably be 6m or at least 5.5m. In order to enhance security through natural surveillance, all parking spaces should be visible from the interior of the adjoining buildings, especially entrances.

CAR PARKING - General Guidelines Residential Development

1 car parking space per residential unit plus 1 additional visitors space per 5 residential units

Parking space, garage and forecourt dimensions





Individual Household Development

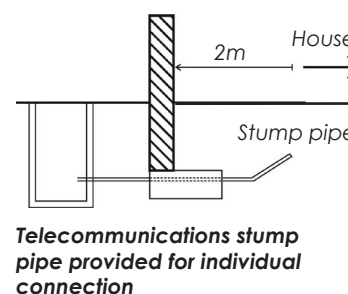
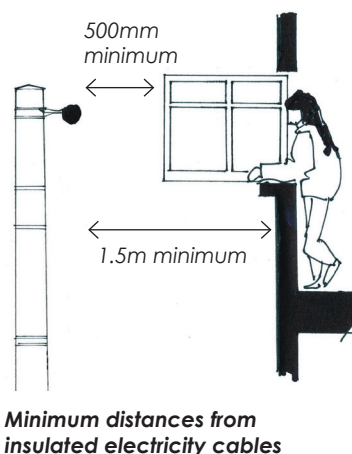
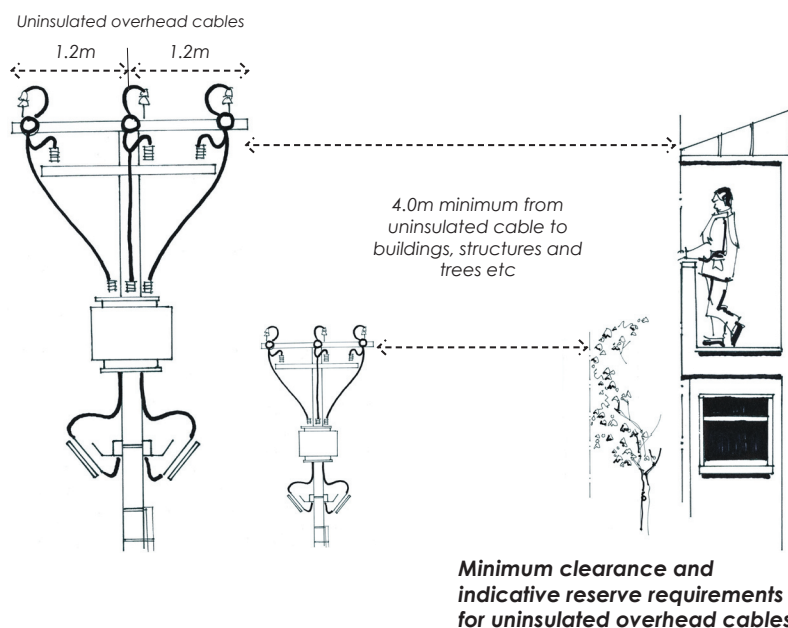
ON PLOT SEWAGE DISPOSAL DESIGN CHECKLIST

- Are there mains sewers nearby or planned for future installation?
- Is the plot large enough to permit on-site sewage disposal?
- Is the plot outside any flood hazard area?
- Is there a sufficient depth of soil to bedrock or any impermeable layer to allow a leaching field or absorption pit to be constructed and used safely?
- Is the groundwater table deep enough to allow an absorption pit or leaching field to be used?
- Is there a minimum distance of 30m to any water body?
- Is there a minimum distance of 200m to any borehole, spring or well?
- Is the ground slope and local geography satisfactory to prevent effluent rising to the surface on the plot or on any nearby properties?
- Is the proposed installation at least the correct minimum distances from other installations and structures etc?
- Is there sufficient space available to allow the construction of a second pit or leaching field when the initial one becomes clogged?

On Plot Services

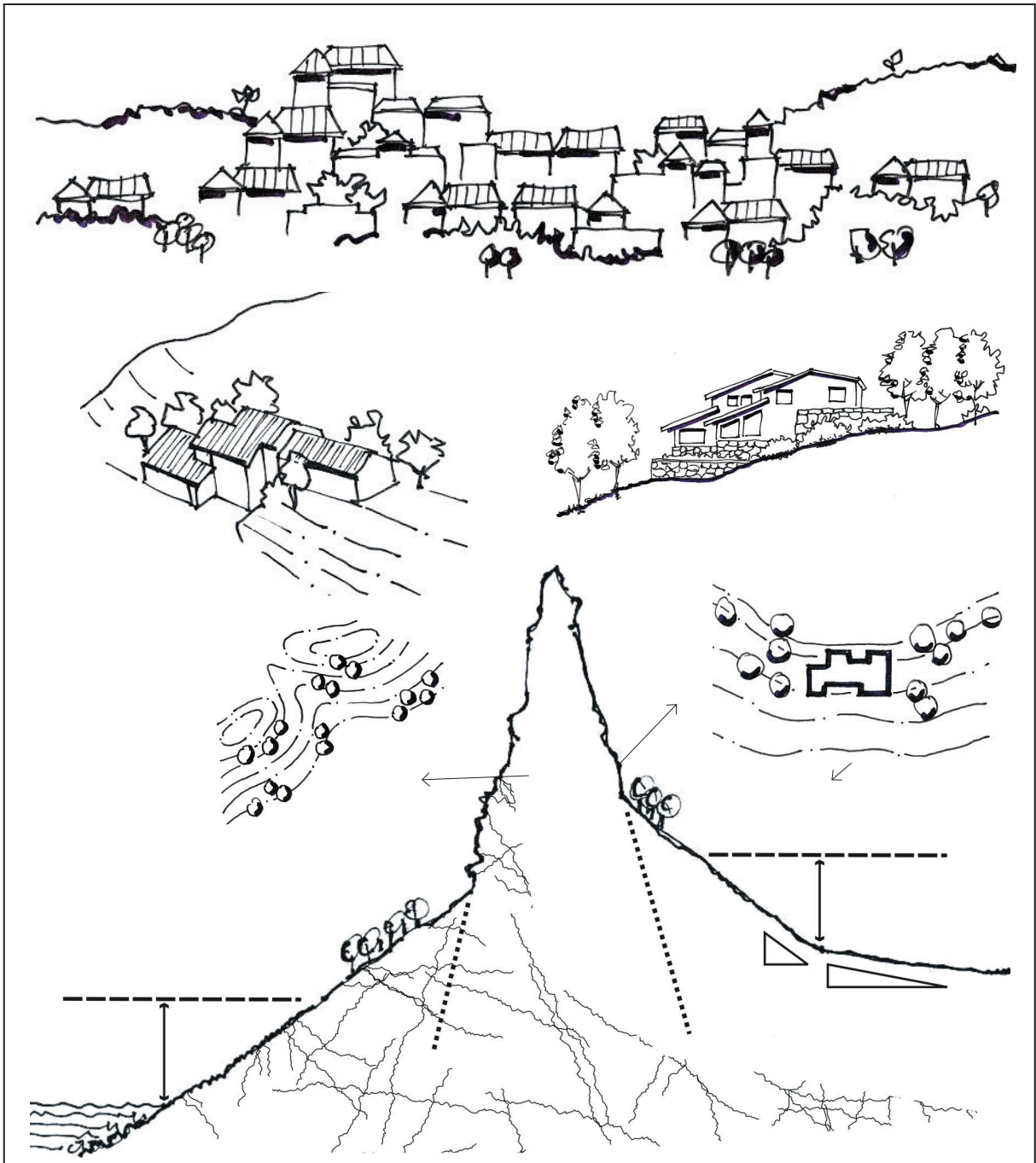
Although the design guidance is based on performance criteria where possible, there are situations where certain standards or technical requirements must be maintained, for reasons such as health and safety. A series of **Technical Sheets** have been produced and reference should also be made to these. The Technical Sheets include:

- Drainage
- Electricity
- Main Sewerage Provision
- On-Plot Sewage Disposal
- Telecommunications
- Water Supply
- Combined Utilities Summary Plans





Design Sheet



Design For Sloping Sites

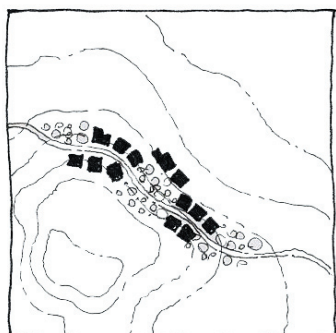
November 2004



Ministry of Housing and Lands



Design For Sloping Sites



Development on sloping sites

This Design Guidance should be applied to proposals for development on the slopes of the Mountain Ranges as listed in the First Schedule of the Forest and Reserves Act 1983 or as subsequently amended and other locations where steep (>10%) slopes exist.

Port Louis and Calebasses Ranges
Mont Piton
Montagne Blanche
Petit Malabar
Grand Malabar
Corps de Garde
Candos Hill
Rempart
Tamarin and Terre Rouge Ranges
Riviere Noire and Morne Brabant Range
Savanne Range
Perruche
Bambou and Creole Ranges
Lagrange and Chevillard or d'Auvillard Ranges
Montagne Chaumant
Montagne Pauline
Montagne Dalais
Montagne Maurice
Mountain Vernon

Development on steep slopes will also require the submission of a Preliminary Environmental Report and/or Environmental Impact Assessment. You should discuss the need for these with the Ministry of Environment

Pressure to develop mountain slopes in Mauritius has recently intensified. The pressure is particularly intense on those slopes that offer a view out to sea.

The following criteria apply to plot layouts on sloping sites:

Slope Stability

- Development will not normally be permitted on slopes steeper than 1:5 (20%).
- Above slopes of 1:10 (10%), and in areas of poor bearing capacity, the ground conditions should be checked and proposed structures certified by a qualified engineer. A Site Constraint Analysis and written statement detailing all proposed mitigation measures should be submitted to and approved by the Permit Authority prior to the commencement of any on-site works.

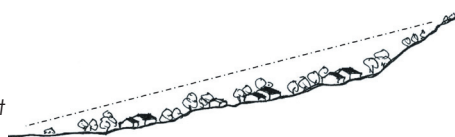
SITE CONSTRAINT ANALYSIS Typical Information

- | |
|---|
| • Topography, with emphasis on slopes over 10% |
| • Vegetation such as individual trees, groupings of trees and shrubs, habitat types |
| • Drainage courses and riparian corridors |
| • Sewage disposal systems |
| • Geologic constraints including landslides and active fault lines |
| • Visibility from off-site |
| • Areas of fire danger |
| • Solar orientation and prevailing wind patterns |
| • Significant ridgelines |

Site Location and Visual Impact

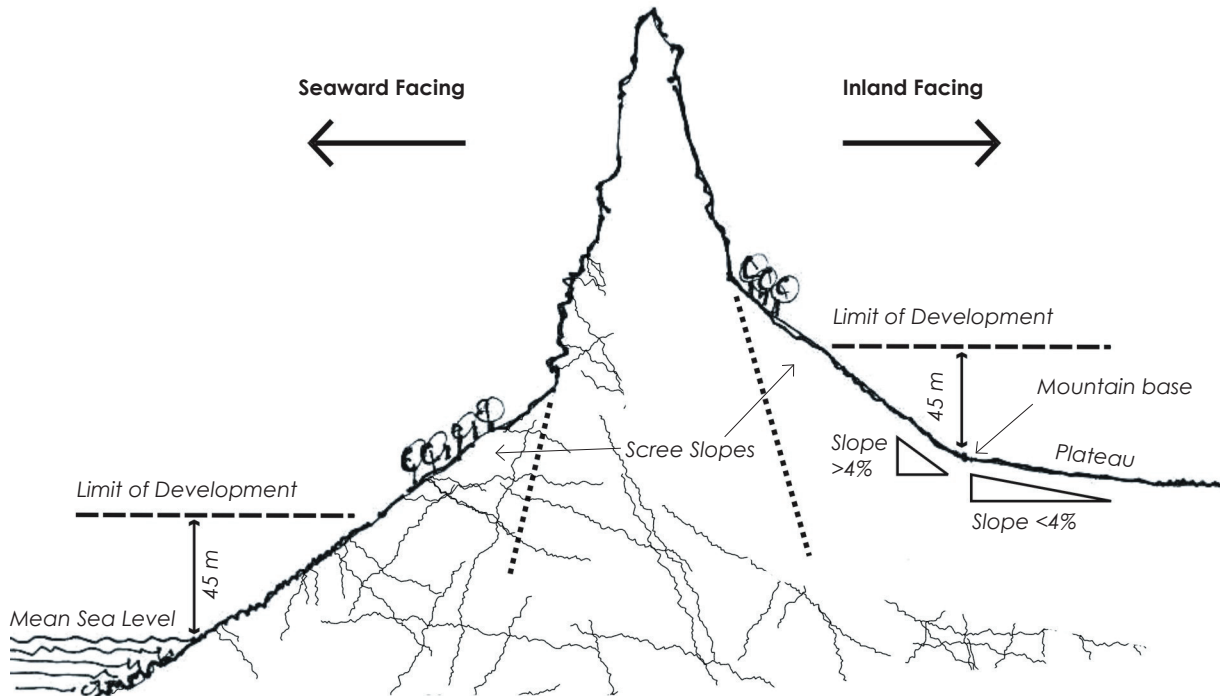
- As a general guide development should not be any higher than 45 metres above the mountain base, or in the case of slopes facing the sea, 45 metres above Mean Sea Level.
- Building profiles should not visually break the ridge line of the slope, especially when seen from important vantage points and buildings should not be built on the crest of slopes. The hillside should act as a backdrop to the buildings.

Development should not project above significant ridgelines

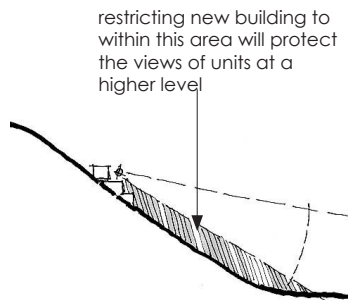




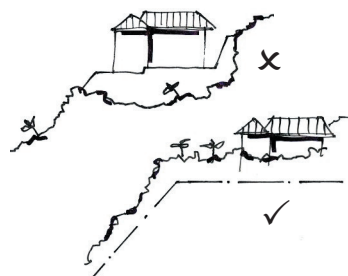
Design For Sloping Sites



Height limitation of development on mountain slopes



Protection of views



Set buildings back from the edge of ridges and cliffs

- Care should be taken to protect the view of dwellings both above and below any new development, and unit spacing should be such that views of the natural landscape are retained
- Buildings and structures should be set back far enough from ridges and cliff edges so that the structure does not appear to be perched on the edge
- The mountain or slope should act as the backdrop to the building. This is far more preferable to having the building project into a blue sky background. If the building or structure does break the plane of the natural backdrop, it should be designed to mimic the natural lines of the mountains and hillsides

Existing and new vegetation should be placed to soften the mass of building as viewed from off site

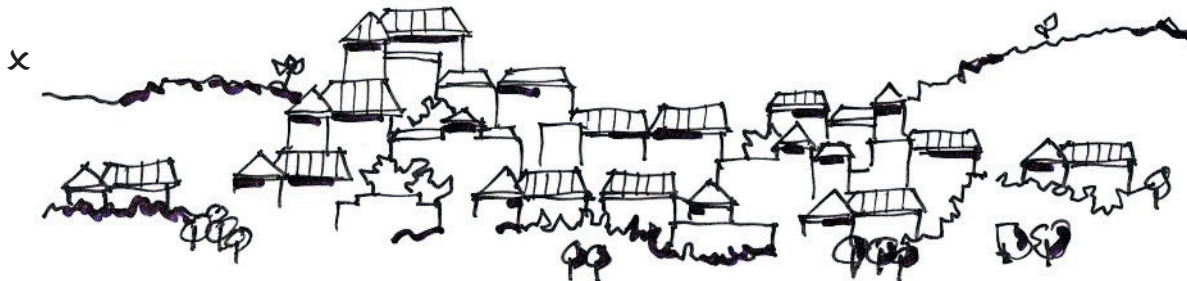


Avoid long unbroken building forms

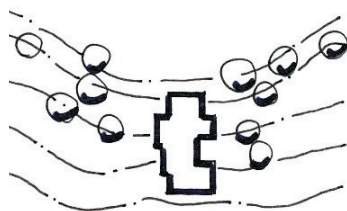
- Buildings should be placed far enough apart to reveal views of the mountain and the natural landscaped backdrop from other buildings and downslope



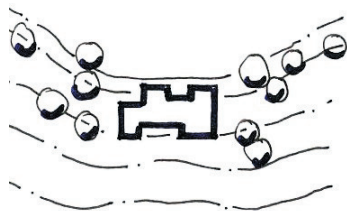
Design For Sloping Sites



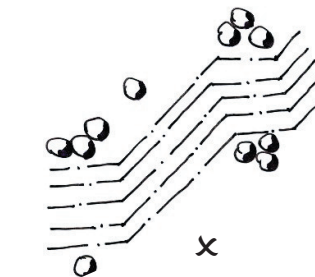
Avoid the cumulative impact of buildings dominating slopes



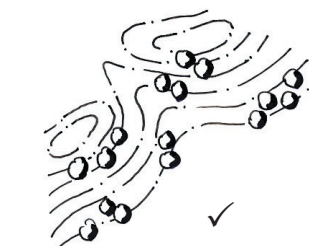
Building is perpendicular to contours X



Building is parallel with the contours ✓



Sharp angles and uniform slope banks appear unnatural

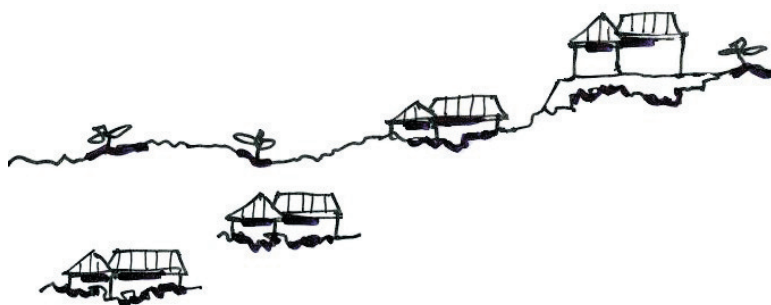


Use varied slopes and berms to resemble natural features

- Buildings sited to maximise views at the expense of natural vegetation should be resisted

Buildings should not appear overly prominent or obtrusive

- Buildings should be planned to enhance a site's natural features. The form, mass, profile and architectural features should be designed to blend with the natural terrain and preserve the undulating profile of the slopes. Multi storey buildings on or close to ridge lines should be avoided and on all sites lower profile buildings should be encouraged
- In areas of varying topography, buildings higher than their surroundings are particularly prominent and due consideration must be given to distant views and important skylines. The same dwelling sited at different heights and locations can have very different impacts on the hillside and skyline. Permit applications for development on slopes must include sufficient information for judgements to be made regarding the acceptability of the development; for instance photo montages, elevations over a wide area showing the setting of the building as well as sections and contours.



- Existing vegetation should be used to soften structural mass and blend buildings into natural settings

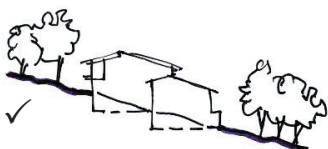
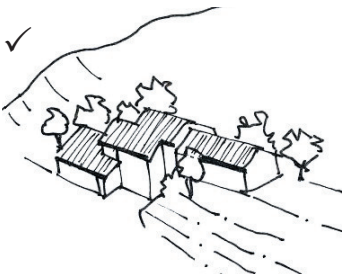
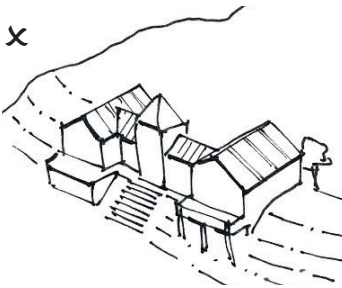


Design For Sloping Sites



Building form reflects hillside form and setting:

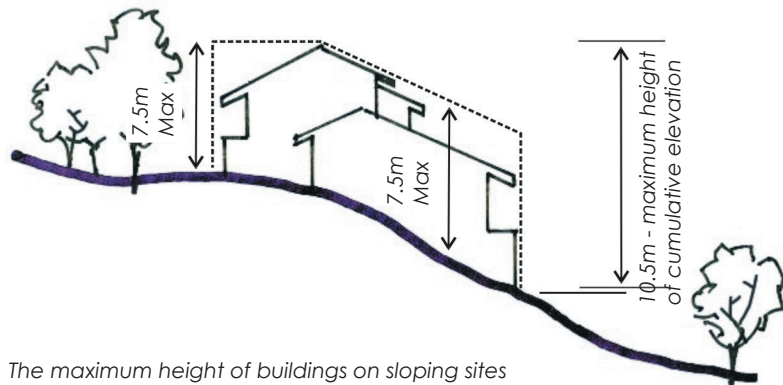
- Stepped into the slope
- Use of natural materials
- Small roof areas



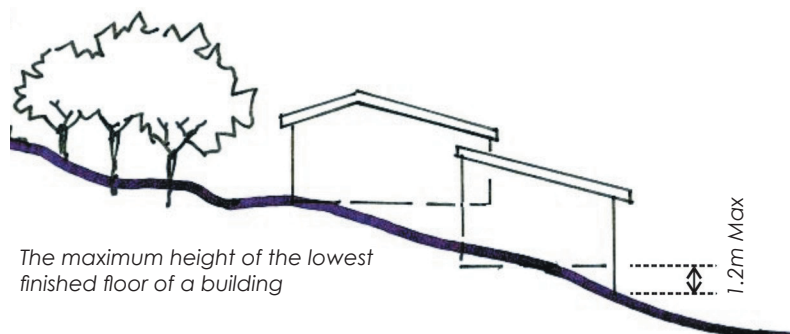
- Careful consideration should be given to the potential cumulative impacts of development within the hillside setting and upon existing ridgelines. Ensure sufficient space is retained between buildings to reveal appropriate views of ridges and the natural landscaped backdrop.

Architectural Form

- The form, massing and architectural features of buildings should be designed to blend with the natural terrain and preserve the undulations of the slopes. Roofs should be orientated in the direction of the slope and large gable ends should be avoided
- Contrasting and varied horizontal and vertical building planes should be used to create various light, shade, and shadow patterns to reduce perceived bulk. Large expanses of wall in a single plane on downhill elevations should be avoided
- The maximum height of buildings should not normally exceed 7.5m. The maximum height of a building's combined elevation should not normally exceed 10.5m measured from the lowest part of the building to the highest
- The height of the lowest finished floor(s) of a structure, excluding basements, should not be more than 1.2m above existing grade to ensure buildings follow slopes



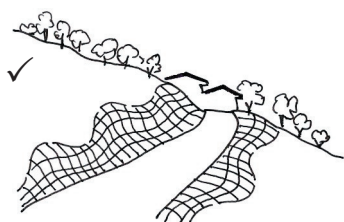
The maximum height of buildings on sloping sites



The maximum height of the lowest finished floor of a building



Design For Sloping Sites



Slope changes should appear as natural as possible

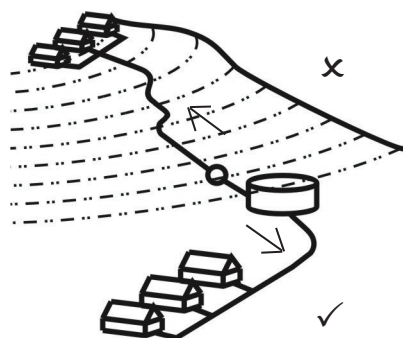
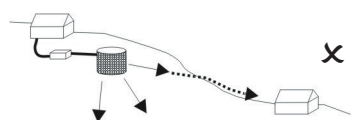
- Retaining walls and structures should be planned in a curvilinear manner that reflects the natural contours of the landscape, and materials and finishes should harmonise both with the terrain and the buildings on the site
- Long unbroken rooflines should be avoided. Instead, roofs should be broken into smaller components to reflect the irregular natural hillside patterns. The roof should be orientated in the same direction of the slope contour and large gable ends on downhill elevations should be avoided
- Dark or earthtone colours should be used to make the building less conspicuous as seen from off site. White or light colours should be avoided. The colours used for buildings should harmonise with the natural colours of the hillside.



Infrastructure

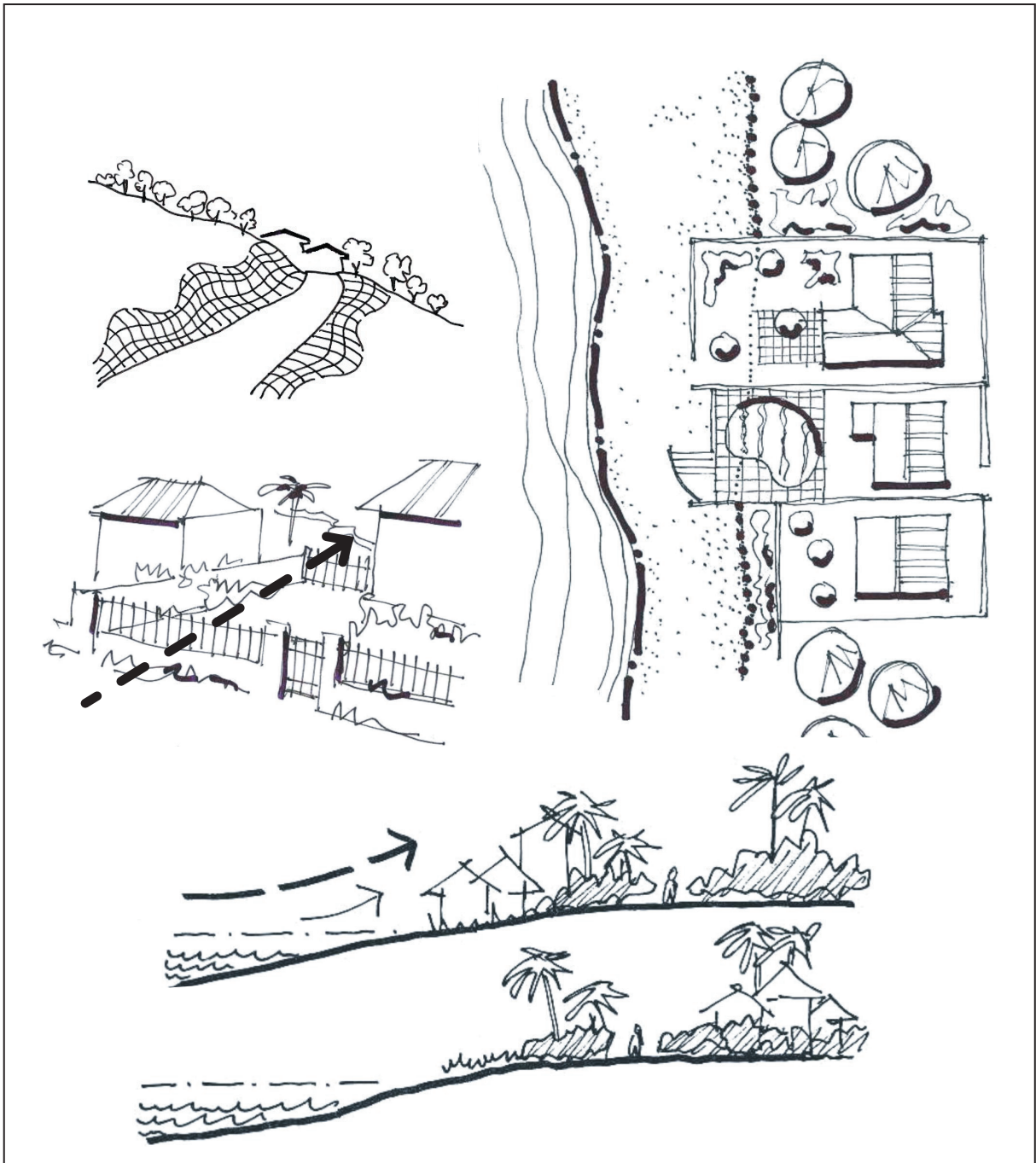
Highways and utility infrastructure services should be of a high standard for developments on steep slopes:

- Roads should be laid out to avoid steep grades and should normally not exceed 1:8 (12.5%)
- Stormwater should be disposed of within the plot boundary or to a centralised stormwater soakaway system and should not be allowed to flow to adjacent plots or into road reserves
- Special care is needed to control surface water drainage and engineering studies should be provided to show the effect that drainage might have on other properties. Inadequate drainage may trigger land slips
- On-site sewage and waste water disposal systems must take account of soil characteristics. The use of septic tanks may not be possible, or special designs might be required, because of the risk of effluent appearing at the surface in land/properties below the site being developed
- Underground utility services and poles should not be placed in made-up ground
- Water pressure from Central Water Authority facilities should be adequate to reach the upper limits of development on a high slope. A minimum residual pressure of 10 metres at property boundary is recommended
- The provision of water to properties above the level of existing water storage reservoirs, or remote from the existing supply network may be difficult and/or costly to achieve. Early discussion should be held with the Central Water Authority.





Design Sheet



Residential Coastal Development

November 2004



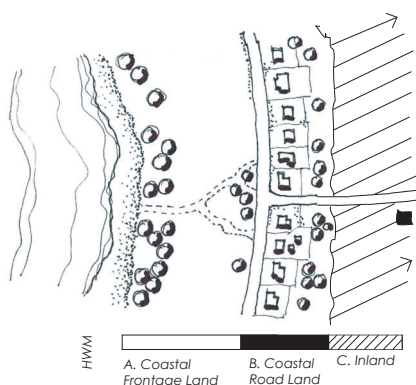
Ministry of Housing and Lands



Residential Coastal Development



Definition of Coastal Development Land



A. Coastal Frontage Land

Normally the strip of land between the high water mark and the nearest coastal road.

Consists of extremely fragile land where considerations of visual impact, environmental disturbance and pollution control are paramount. It is a key element in Mauritius's tourism product and it is equally popular with local people, but the emphasis should be on sustainable development in harmony with the environment.

B. Coastal Road Land

This includes those plots immediately fronting the coastal road and located on the inland side of the road.

C. Inland

This includes those areas that may not have a coastal road frontage but may still be visible from or relate to the coastal road.

Design Factors

General

All development should be designed so as to integrate well into the topography and fragile landscape with as little interference to the environment as possible.

The proposed development should be designed creatively and comprehensively. All aspects of:

- site context, including site constraints and opportunities;
- design objectives; and
- resultant design solutions;

should be demonstrated as having been considered and adopted as the most appropriate solution for the particular site in mind.

STEP 1 - Site Context

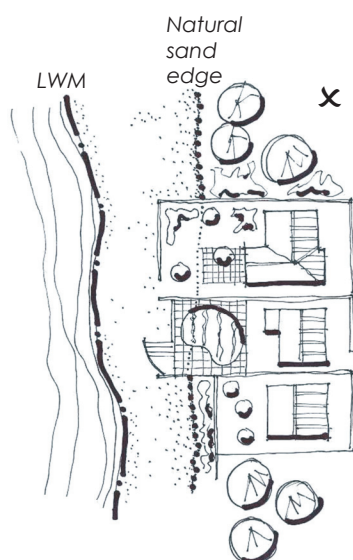
STEP 2 - Design Objectives

STEP 3 - Design Solutions

Typical Design Stages

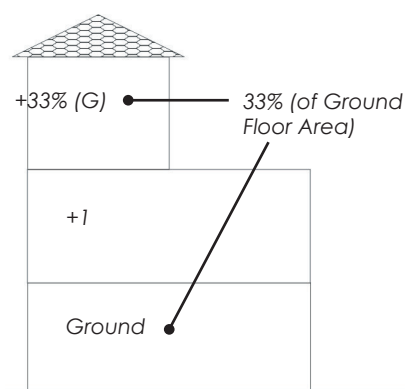


Residential Coastal Development



No structures should intrude into the beach area between low water mark and the highest edge of natural sand.

A key policy objective is to secure/maintain public access to public beaches at no more than 500m - 1km intervals. Wherever possible, development proposals should achieve this. These accesses would be used to facilitate access for fishermen and the public to the sea, and response to emergency at sea or other environmental emergencies.



General development height for buildings within the Coastal Frontage Area.

Beach and Sea

Layout plans should show low water mark (LWM), high water mark (HWM) and the line of the highest edge of natural sand, together with contour levels above mean sea level. Plan scales should be not less than 1:500.

Jetties should only be constructed if approved by relevant statutory authorities. Jetties should normally be on piles or floating structures to allow proper water circulation.

No structure of any kind including fence, wall, or swimming pool should be constructed on the beach between low water mark and the highest edge of natural sand. This is to ensure that the public have unrestricted access along the beach frontage.

Sea defence measures, groynes or other structures projecting into the sea and the creation of any artificial beach need the approval of the regulatory authorities.

Development Height

This is measured both in numbers of storeys and height in metres. Restrictions are imposed on the proportion of building volume that may reach the maximum height expressed as a percentage of the total building ground floor area. This guidance is intended to promote variety in building volumes and forms. Maximum height should also be related to location, existing built environment and natural site features.

Within Coastal Frontage areas, buildings and other ancillary structures should generally not exceed two floors (ground plus one) plus additional accommodation (of no more than 33% of ground floor area) that may be provided within the roof space or a "penthouse" floor. If there is a pitched roof, this should be no more than 13 metres in height from local ground level to the highest ridge.

Coastal Road plots should generally not exceed 3 floors (ground plus two). Any pitched roof should not exceed 15m height.

Inland plots should normally not exceed 4 floors (ground plus two plus 50% (of ground floor area)).

Generally, pitched roofs are preferred.

As a general guide, the level of the lowest floor should normally be no less than one metre above the high water mark.

Plot Size and Coverage

As a general guide, new residential plots in Coastal Frontage areas should normally be no smaller than 1000m² in area. The sub-division of land resulting in plots smaller than this will not normally be supported. However, exceptions to this may include for example:



Residential Coastal Development

S

Note that where this symbol is placed, the guidance provided alongside it is considered to be the minimum/maximum acceptable and should normally be provided.

- Town centre and urban waterfront areas where height, plot size and density may vary for special "downtown"/waterfront areas, where buildings may already predominate, and a more urban character is appropriate.
- It can be demonstrated that all buildings proposed would remain subservient to a quality landscape setting.
- In the case of semi-detached development, the plot size for each plot may be 265m².

For Coastal Road and Inland areas, residential plots should normally be no smaller than 235m² in area: in the case of semi-detached development the plot size for each plot may be 210m².

Plot coverage should not exceed 20% of the site area. When calculating coverage, all enclosed spaces on the ground floor shall be taken as 100% of their enclosed area on plan. "Enclosed" means surrounded by walls and covered by a roof. In the case of verandahs, porches, car ports and the like, if they are covered by a roof, they should be included as coverage. Where the verandah, porch, car port, etc., is backed by no more than one wall, the area should be included as 50% of its plan area in the coverage calculation. If backed or enclosed by two or more walls, the whole area shall be included in the coverage calculation. Layout plans must include site coverage calculations.

Setbacks

Some "Soft Structures" may be acceptable within the 30 m HWM setback. Such structures may include:

- Jetties on piles
- Wooden "umbrellas" which are open, supported by one pole that does not have a concrete or hard base
- Slipways not exceeding 20cm above datum

S

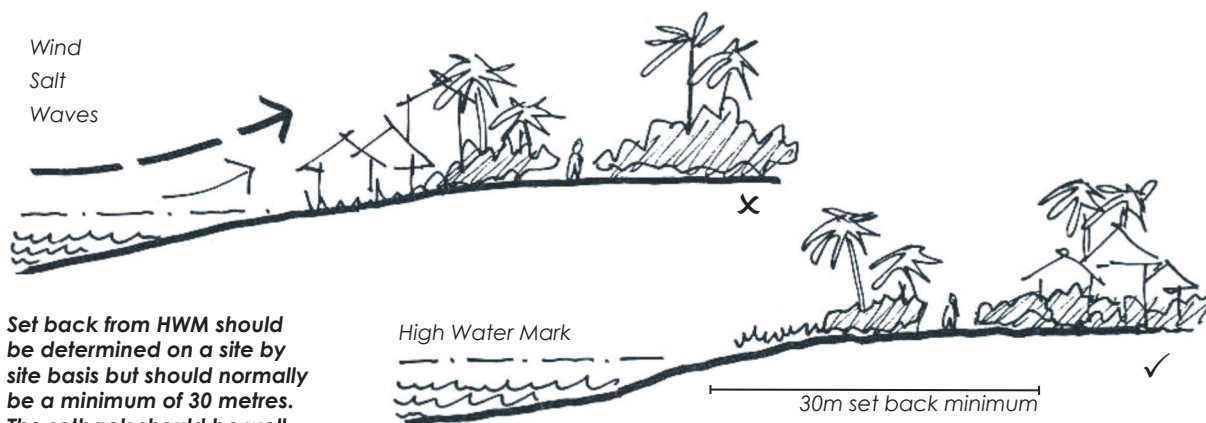
Buildings and structures should be located as far back as practicable from the shoreline. The setting of structures back from the shoreline offers various advantages:

- Efficient connection to hinterland service systems
- Reducing wind, salt and sand impact on structures
- Reducing impact on unstable soils
- Reducing interference with the flow of littoral sediments
- Optimising pedestrian accessibility
- Minimising overshadowing.



Residential Coastal Development

Residential Development	A Coastal Frontage	B Coastal Road	C Inland S
Maximum Building Height	G + 1 + 33% (G)	G + 2	G+2+50% (G)
Max Building Height in metres	13m	15m	18m
Max Plot Coverage	20%	40%	40%
General Setbacks	No less than 30m from HWM	No less than 30m from HWM	
From Main Road (Class A + B)	6m	6m	6m
Access Roads	4.5m	4.5m	4.5m
Lightly trafficked roads	3.0m	3.0m	3.0m
Side and rear boundaries	3.0m	2.0m	2.0m



Set back from HWM should be determined on a site by site basis but should normally be a minimum of 30 metres. The setback should be well landscaped with appropriate coastal vegetation that would limit coastal erosion.

The presence of rocky outcrops in the beach and lagoon contribute to the distinctive character of lagoon areas and help maintain the stability of the beach system breaking waves and currents. The removal of such features should be avoided

Details of all walls and fences should be shown on plans submitted for permit approval.

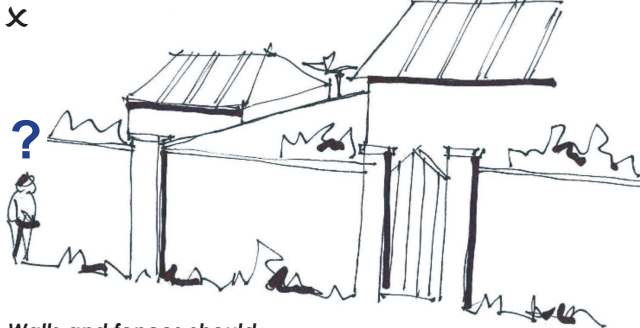


Setback from roads should normally be 6 m from main road (A or B), and 4.5 m from adjoining public road. This may be relaxed to 3 m in the case of a lightly-trafficked road.

Setback from side and rear boundaries should be 3 m. In appropriate urban areas, this may be relaxed to achieve a continuous street frontage.

Walls, Fences and Wind-breakers

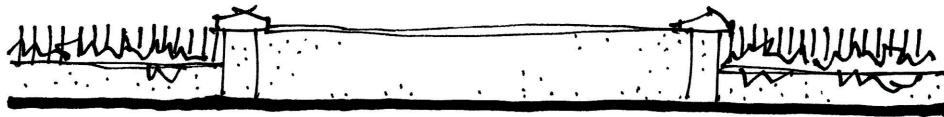
Along road frontages and most particularly the coast road, long expanses of uninterrupted walls and fences should be avoided. Walls and fences should not create a "canyon" or "corridor" effect along roads. When walling or fencing is required, solid areas should be kept to a minimum to avoid a hard "urban" edge and allow views through to the beach and sea.

**Residential Coastal Development**

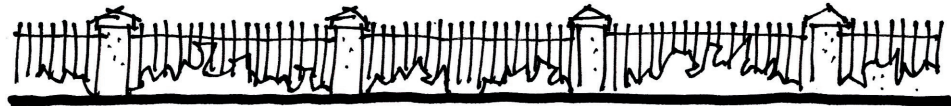
Walls and fences should not create a "canyon" or "corridor" effect along roads.



Walls and fences should remain as open as possible and views from the coast road to the beach and lagoon retained



To reduce the impact of walls and fences within Coastal Frontage and Coastal road areas keep them as low and open as possible



Walls fronting the coastal road should be no more than 1.5 metres high.

Walls and fences along the sea frontage should be no higher than 1.2m.

Side boundary walls in solid materials (e.g. concrete, finished blocks etc) should be no closer than 15m to the High Water Mark but may be continued using wood materials (e.g. picket fence).

The planting of green hedges and other natural/landscaped boundary treatment is encouraged.

Long expanses of wall surfaces should be offset and architecturally designed to prevent monotony. Techniques to avoid monotonous wall frontages may include: raised planters, openings, material changes, staggered sections, and pilasters or posts. Boundary walls shall be constructed of local materials of good finish. No concrete block walls should be constructed unless they are finished in plaster.

Public access should be retained between the coastal road and the beach and sea. These pedestrian "public beach gateways" should be announced by pilasters, trellises, special landscaping, or other special features.

Roads and Car Parking

No paved road or car park shall be constructed nearer than 40 metres from the high water mark. Where this cannot be achieved the road or car park must be provided with a grease trap to the satisfaction of the Ministry of Health.

Oil, diesel and petrol shall not be stored nearer than 30 metres from the high water mark and can only be stored with the approval of the Fire Officer.

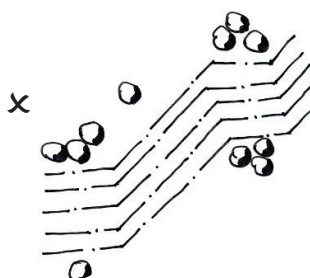


Residential Coastal Development

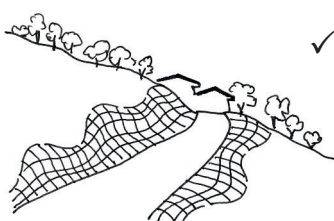
Infrastructure



Natural drainage areas should be preserved. New utility facilities, such as stormwater drains, should reflect the natural landscape context.



Sharp angles and uniform slope banks appear unnatural



Slope changes should be kept to a minimum and appear as natural as possible

Engineering and utility infrastructure services should be of a high standard for coastal developments. Reference should also be made to relevant Technical Sheets.

- Stormwater should be disposed of within the plot boundary or to a centralised stormwater soakaway system, and should not be allowed to flow to the beach, adjacent plots or into road reserves
- Special care is needed to control surface water drainage and engineering studies should be provided to show the effect that drainage might have on the coastal area
- All drains should be equipped with silt traps, sedimentation ponds and well engineered grids to trap solid waste
- On-site sewage and waste water disposal systems must take account of soil characteristics. The use of septic tanks may not be possible, or special designs might be required
- Natural drainage areas (river valleys, water resources) should be preserved with adequate green space to protect existing riparian systems and to allow maintenance access. When natural areas are altered, landscaping should be planted to reestablish the previous riparian habitat. Walkways are encouraged to facilitate pedestrian circulation through a site, and to adjacent areas and properties
- Generally, existing vegetation and levels should not be removed or altered. When this is unavoidable, building projects should include rehabilitation works to replace vegetation and sensitively re-model levels
- Existing mature trees in good health and judged to be cyclone-resistant, should be retained whenever possible.

Note. For further advice regarding utility provision please refer to the relevant Technical Sheets.

Campement Sites

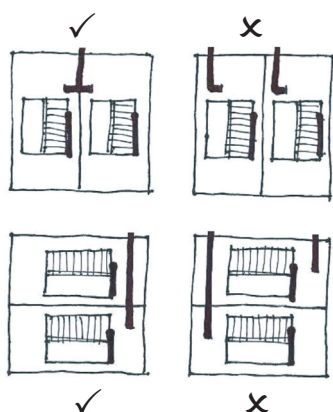
A campement site is a plot of State Land in the Pas Geometriques which has been leased to an individual for the purpose of building a house.

Campement plots should not normally be divided, or used for any use other than residential.

Campement plots should normally conform to all applicable guidance set out above, plus the following:



Residential Coastal Development



Separate accesses to individual sub-divided campement plots should be avoided whenever possible.

- Generally, unless special circumstances dictate (such as hardship) sub-division of an existing campement plot will not be permitted if it results in sub-plots of less than 300m² (or 265m² in the case of semi-detached development)
- Only one vehicle access should normally be provided to each main plot. Separate accesses to sub-plots will not normally be acceptable
- Development should preferably be arranged as separate detached (or semi-detached) residential units on one or two floors. Each unit (or pair of units in the case of semis) should be set a minimum of 2 metres away from the side of any other adjoining buildings
- Each residential unit should provide appropriate utility facilities, designed in accordance with relevant Utility Technical Sheets.

Other Sensitive Areas

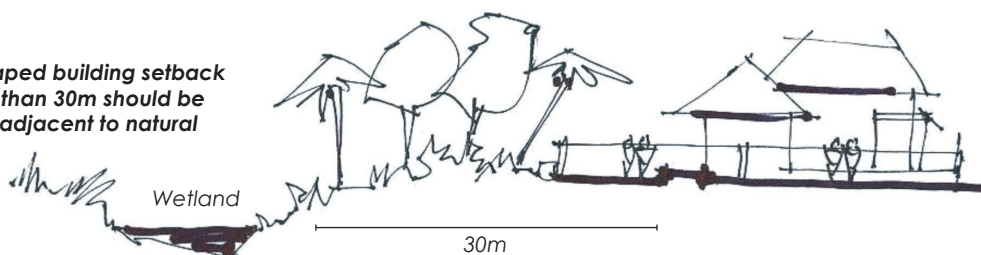
Natural features such as woodlands, rivers, streams and wetlands, besides being valuable resources, are an important part of the image of Mauritius.

In order to preserve and enhance any natural features, it is essential to have an accurate inventory of them. To this end, permit applications should indicate where existing natural features are located.

The careful treatment of proposals adjacent to Environmentally Sensitive Areas and Areas of Landscape Significance can enhance the effect of these natural spaces on the character of the site. By siting buildings with the greatest possible setback adjacent to natural features, their preservation and enhancement can be integrated with the landscaping and management of the site. This treatment can help to maintain effective landscape networks, increase apparent frontage of the natural greenspace and at the same time can dramatically enhance the setting, image and value of properties.

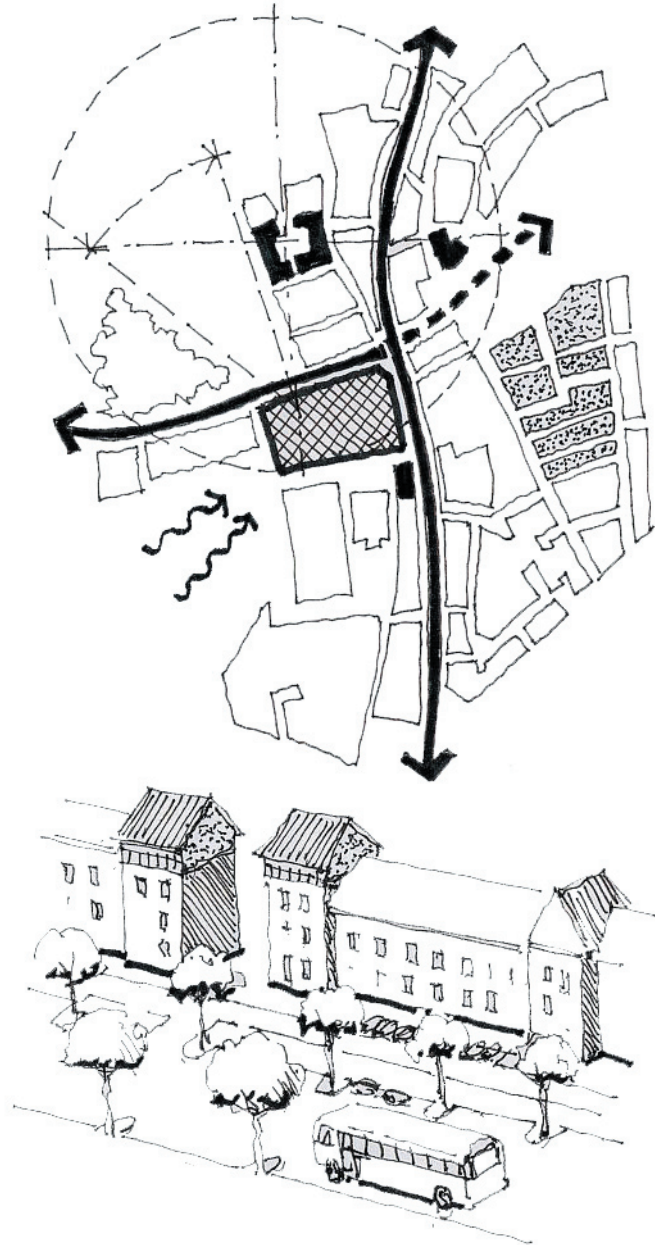
Whilst each site will need to be assessed on its merits, it is recommended that a landscaped building setback of at least 30 metres should be provided adjacent to natural areas such as wetlands.

A landscaped building setback of no less than 30m should be provided adjacent to natural areas





Design Guidance



Commercial Development

November 2004



Ministry of Housing and Lands



1 INTRODUCTION

- 1.1 Definitions

2 BASIC DESIGN PRINCIPLES

- 2.1 Project Locations
- 2.2 Commercial Centres
- 2.3 Density
- 2.4 Quality Design
- 2.5 Access, Circulation & Parking

3 PLANNING FOR COMMERCIAL DEVELOPMENT

- 3.1 Planning & Design Principles
- 3.2 Locations
- 3.3 Analysis of Context
- 3.4 Fences and Walls
- 3.5 Signs
- 3.6 Floodlighting
- 3.7 Landscaping
- 3.8 Pedestrians
- 3.9 Traffic Management
- 3.10 Parking

4 PLOT DEVELOPMENT CRITERIA

- 4.1 Plot Layout
- 4.2 Security
- 4.3 Design for Climate
- 4.4 Building Design
- 4.5 Arcades
- 4.6 Active Edges, Accommodate the "Big Box" into the Mix
- 4.7 Fire Safety

DESIGN SHEET

Tall Buildings



1 INTRODUCTION

This document provides design guidance for **Commercial Development** in Mauritius.

The objective is to create a set of performance criteria and design standards that are applicable to most forms and scales of commercial development. The Design Guidance is equally appropriate for use by individual site owners as well as developers of large commercial schemes.

Design Sheets have also been produced that consider special design circumstances and supplement the Commercial Design Guidance. The Design Sheets include:

- Tall Buildings

Although the design guidance is based on performance criteria where possible, there are situations where certain standards or technical requirements must be maintained, for reasons such as health and safety. A series of **Technical Sheets** have been produced and reference should also be made to these. The Technical Sheets include:

- Residential Roads
- Industrial and Commercial Roads
- Access for People with Disabilities
- Drainage
- Water Supply
- Mains Sewerage
- On-Plot Sewage Disposal
- Electricity
- Telecommunications
- Combined Utilities Summary Plans

1.1 Definitions

This guidance document provides policy and planning advice on Commercial Development particularly in relation to areas identified in the National Development Strategy as "Growth Zones" e.g. Urban Regeneration Zones, Rural Regeneration Zones, Tourism Zones and other highly accessible locations such as those close to the strategic road network and junctions, existing and proposed.

The primary land use concerns of these guidelines are shops and offices, but commercial activities also include banks, hotels, theatres, cinemas, assembly halls, bars, restaurants, clubs, or any other place where goods and services are provided.



2 BASIC PRINCIPLES

2.1 Project Locations

The National Development Strategy encourages the clustered growth development principle, promoting an urban renaissance. Allied to this, town centre policies encourage a sequential approach to commercial development, focusing first and foremost on sites within existing traditional centres. If these options are exhausted or are not available, sites within highly accessible growth clusters, sites contiguous with existing development, and strategic transport and other infrastructure networks and nodes are preferred.

Inside settlement boundary sites are preferred for high activity commercial uses, such as shopping and leisure, before out of settlement sites should be considered. Proposed out-of-settlement boundary retail proposals will normally only be permitted in cases where:

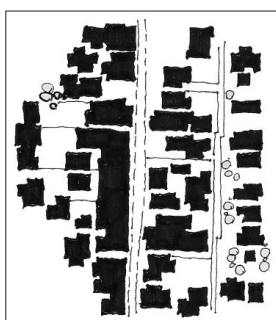
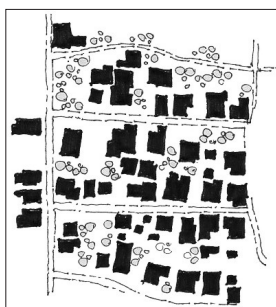
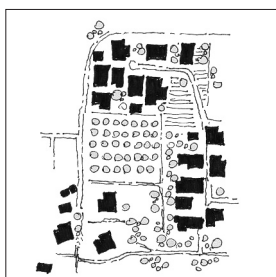
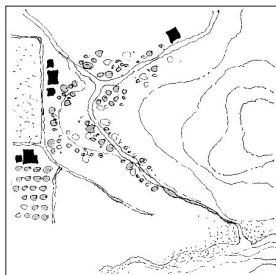
- Inside settlement sites are unsuitable, unavailable or have been exhausted
- The proposal is in the national interest

In these cases full retail and transport assessments should normally form part of the development application.

Retail and transport impact assessments undertaken and submitted with such proposals should include:

- Quantitative assessment of trading impact on existing commercial centres, plus a qualitative assessment of the likely effect on services provided (including public transport), vacancies, likely future effect on the town centre, and on the strategy for urban centres
- An assessment of accessibility by a choice of means of transport and likely impact on overall patterns of car usage
- The identification and examination of the alternatives considered inside settlement boundary

Outside Settlement



Inside Settlement

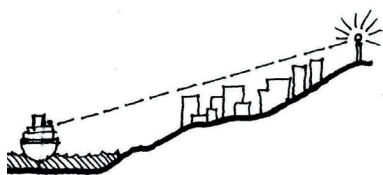
2.2 Commercial Centres

The design guidance set out below reflects the fact that commercial centres vary considerably in size and importance. In general, the bigger the centre the more development can be permitted on the plot. For example, a very tall office tower, which may be appropriate for the central business district (CBD) of Port Louis, is unlikely to be appropriate in Goodlands or Triolet, where it would be intrusive, overbearing and out of scale with existing property around it.

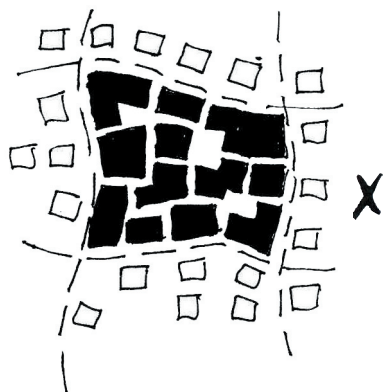
In some commercial centres there may be additional height controls designed to protect key views of important buildings or natural features (such as Port Louis' mountain setting). Furthermore, some parts of the commercial centre may be covered by conservation policies, which seek to control certain aspects of building design in the interests of maintaining the historic and/or visual character of the area.



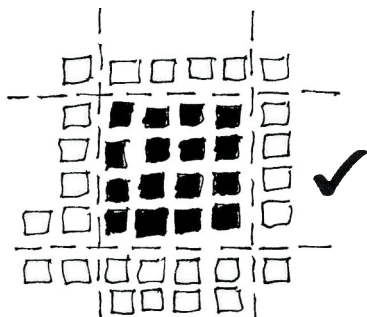
DESIGN GUIDANCE Commercial Development



Height controls to maintain clear connection to navigation signals



Development density must respect the character of the existing environment



In coastal zones, the general guidance that relates to Coastal Frontage and Coast Road areas should be considered.

Special controls on building height may apply in areas around ports and airports in order to permit the safe navigation and movement of ships and aircraft. Further guidance is contained within Design Sheet - Tall Buildings.

2.3 Density

Sustainable development within growth centres may be achieved by increasing development densities. In order to prevent environmental deterioration as a result of increased density, the following principles will be applied:

- The development should provide the optimum layout for the site.
- The reasonable privacy and amenity (including daylight and sunlight) of neighbouring areas and buildings and potential users of the new proposals, should not be unduly affected.
- The land should not be reserved or zoned for non-commercial purposes, and the proposed activity should not prejudice the development of adjacent land.
- The character and amenity of the area should not be adversely affected by the proposed development through additional noise, dust, smoke, fumes, smells or parking problems, or through the appearance or scale of the proposal.

2.4 Quality Design and Design Statements

One of the aims of the National Development Strategy is to ensure that good quality design is given a high priority. Development promoters should therefore, as part of any application submission, demonstrate clearly how the important issues of design (as discussed in this document and relevant Design and Technical Sheets) have been addressed in their proposals.

Information submitted with a permit application should include a short statement setting out the development and design principles of the proposals, and how they relate to the site, its context, and how they have responded to stated aims and objectives of national and local planning policy, including all relevant Design Guidance.



2.5 Access, Circulation & Parking

2.5.1 Access

The developer should demonstrate that existing and proposed road accesses are capable of adequately serving the traffic generated by the proposed activities. The developer is responsible for ensuring that a Transport Assessment (TA) is provided with any application if the relevant authorities determine that the scale and complexity of the proposals warrant such a study.

2.5.2 Parking

The provision of parking and delivery areas should generally be adequate to cater for the traffic likely to be generated by the development, except where the provisions of the proposals or the relevant statutory plan for the area dictate otherwise. Examples where more flexible on-site car parking requirements may be applied include:

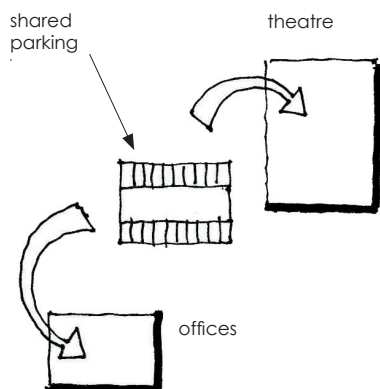
- The creation of "Parking Restraints Areas" where special development control policies may apply, and car parking provision is considered as a whole, rather than for individual sites and uses, and in relation to public transport strategies. Such strategies may require developer contributions towards such items as off-site parking and public transport facilities provision.
- The "dual use" of parking spaces within mixed use schemes. This would be particularly relevant where uses proposed have differing peak parking demands (e.g. offices and residential use).
- Accessibility criteria such as proximity to public transport facilities, where frequency and reliability of service, network of routes and location of public transport facilities provide an opportunity to reduce car parking requirements, and to promote public transport usage.

In order to create high quality road frontages and public spaces, it is essential that well designed buildings should front such areas. The provision of forecourt parking in key frontage areas should therefore be discouraged. Where forecourt provision is unavoidable and does not generate a highway danger, the visual impact of the area should be minimized through the careful location and design of landscaping.

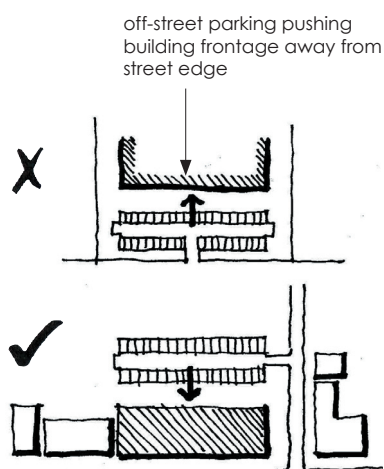
Car parking areas will also not normally be permitted alongside main roads (A or B class roads) or other busy roads, unless they are designed in a way that ensures safe access and egress to the satisfaction of relevant authorities.

2.5.3 Pedestrian Facilities

New development is expected to improve conditions for pedestrians in commercial centres by providing sidewalks of adequate width, and canopies and landscaping (e.g. street trees) to give shade and shelter. In addition, promoters and developers are encouraged to provide well designed and landscaped open spaces that contribute to the variety, amenity, character and interest of the townscape.

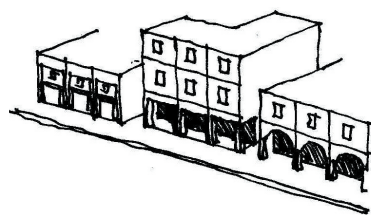


Compatible activities can make dual use of parking areas



Off-street parking should not destroy the continuity of active street frontages

Maintaining active street frontages





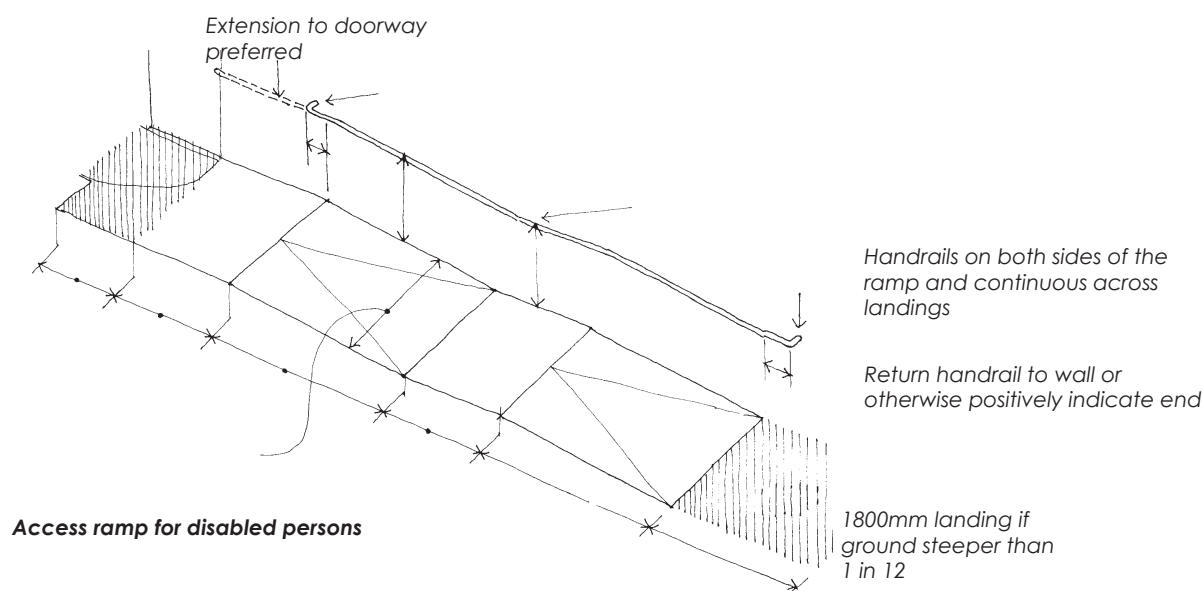
DESIGN GUIDANCE Commercial Development

2.5.4 Access for Disabled Persons

The requirements of those members of society having a mobility impediment need to be considered, in order to provide relatively easy and direct access within commercial and other areas. Care must be taken in the layout of pedestrian routes and the choice of paving materials, and ramps should be at a suitable gradient and be of a suitable width.

Development proposals should take into account the difficulties experienced by those with a mobility impediment in negotiating kerbs and steps. The improvement of access and provision of facilities to ease the passage of mobility impaired people will be considered as an integral part of development proposals.

Reference should also be made to Technical Sheets - Industrial and Commercial Roads, and - Access for People With Disabilities.





3 PLANNING FOR COMMERCIAL DEVELOPMENT

3.1 Planning & Design Principles

3.1.1 Design Process

The design of a commercial development layout involves consideration of the following issues:

- analysing the site context
- determining the appropriate intensity of development
- establishing the broad framework for development, including consideration of connectivity and cohesiveness
- studying appropriate massing to enhance legibility and accessibility
- incorporating traffic management systems

3.2 Locations

Commercial development occurs in a number of different locations, and each of these has its own demands and solutions. It is also the case that certain commercial or fringe activities may be considered more appropriate in one location rather than another.

The following typical locations are covered by this document:

- central business district (CBD)
- edge-of-centre and out-of-town
- local centres
- corner shops

3.2.1 The Central Business District (CBD)

It is important to ensure that an urban centre's core shopping function is not undermined. For this reason non-retail uses should be discouraged on ground floors in the retail core areas, unless they can be shown to provide essential service to shoppers.

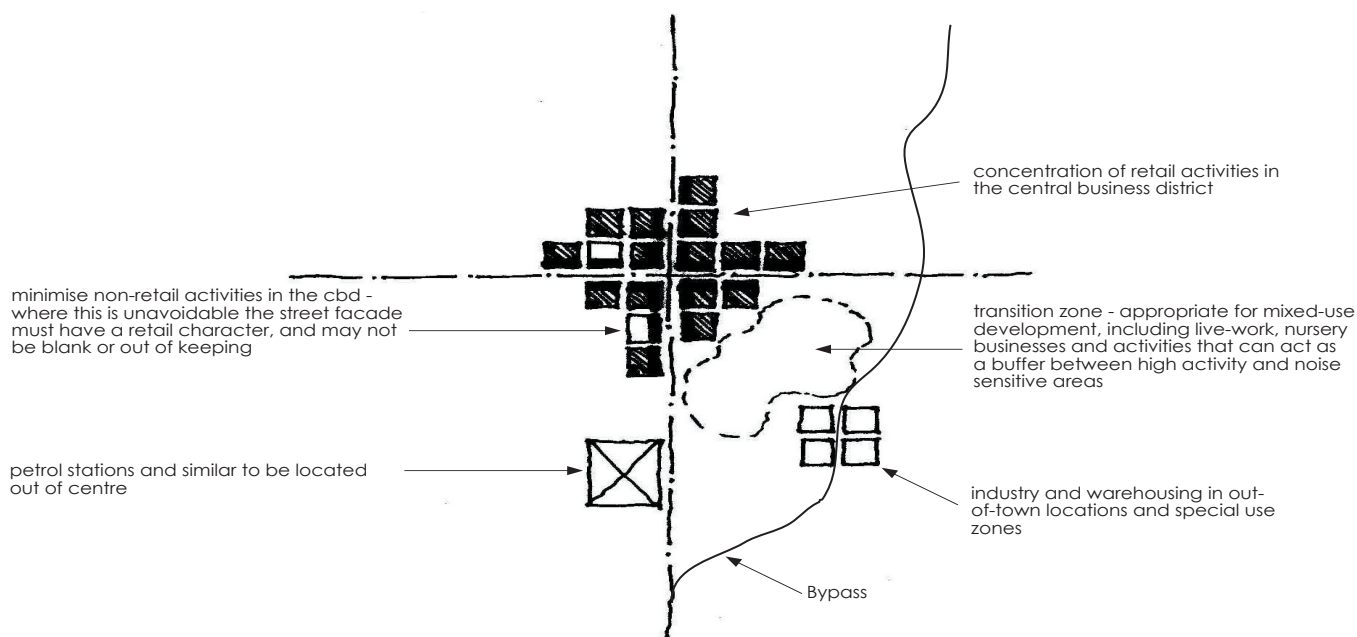
Furthermore, warehousing, petrol stations and industrial activities should also be actively discouraged - these should generally be clustered in accessible out-of-town locations.

The transition zone between the commercial core and the urban edge is appropriate land in which to locate mixed-use development, such as live-work areas. This zone can also act as a buffer between noisy active areas, and noise-sensitive residential or rural areas on the fringe.

The diagram overleaf illustrates these concepts.



DESIGN GUIDANCE Commercial Development

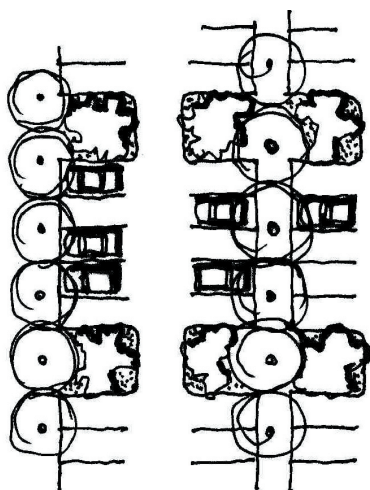


3.2.2 Edge-of-Centre and Out-of-Town Locations

Planning policy on major edge-of-centre and out-of-town commercial development is set out in the National Development Strategy and revised Planning Schemes, and these should be consulted to determine under what circumstances this kind of project may be permitted. Reference should also be made to the "sequential approach" to development as summarised above.

The main site considerations are as follows:

- The proposals should be of a high design quality.
- Road access to the development should be capable of taking the traffic generated by the proposed development without causing congestion, hazards, or nuisance to residents along the route.
- The site should be highly accessible, well served by public transport and other infrastructure.
- Sufficient car parking spaces should be provided to cater for peak demand. Where extensive areas of car parking are necessary these should be "broken up" visually by landscaping.
- The proposals should not unduly affect the viability and vitality of existing commercial centres, nor the public transport facilities serving them.
- Environmentally Sensitive Areas and areas of significant landscape value should not be adversely affected by the proposals.
- Sites surrounded by housing are unlikely to gain planning acceptance.



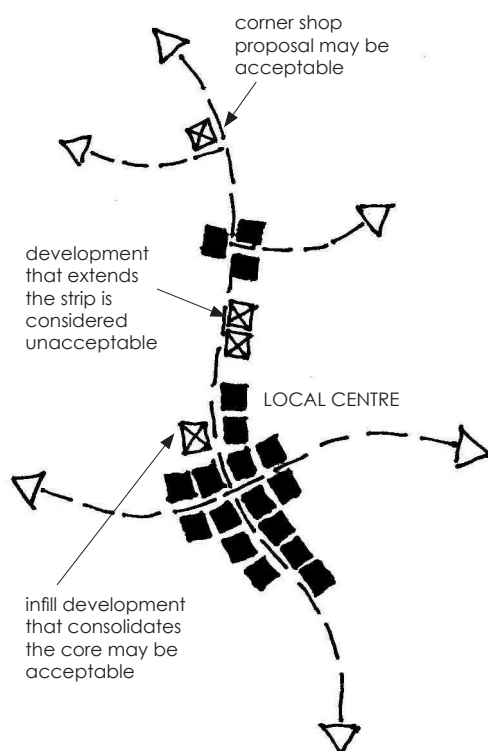
Break up large areas of off-street parking with landscaping



3.2.3 Local Centres

New commercial development other than in the central business district (or involving major commercial edge-of-centre or out-of-town development) will be encouraged to locate in existing local centres. These might serve a district of the town (district centres) or a small locality (neighbourhood centres). Apart from the newly developing areas, most of these centres should be built around existing clusters of commercial activities. In determining appropriate development locations account will be taken of:

- the need to consolidate existing clusters of commercial activities
- the scope and appropriateness of expansion through infill
- accessibility, particularly for the pedestrian and public transport user
- the need to have a good spatial distribution of centres without unnecessary duplication, or the creation of large developments lacking necessary commercial facilities



Development in Local Centres

3.2.4 Corner Shops

New corner shops will not normally be permitted if they have a gross floor area in excess of 60m².

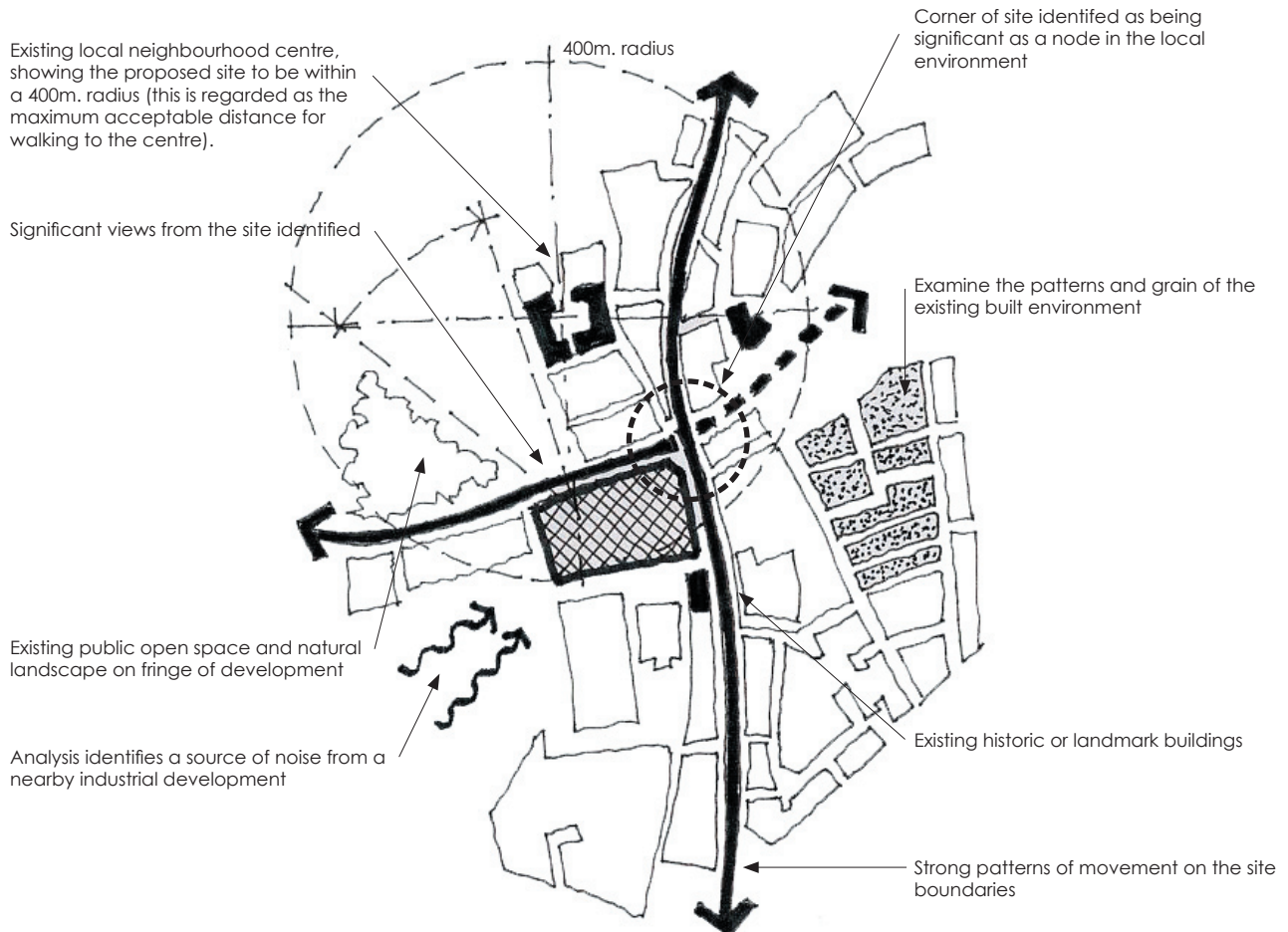
Corner shops rarely generate much vehicle traffic and those few customers coming by car can normally park on-street or in front of the premises. However, if the street is a busy one or it is thought likely that the shop will be heavily patronised by car owners, then provision needs to be made for off-street parking. The car park should be designed to ensure that drivers can enter and exit the site and associated car parking areas in forward gear.



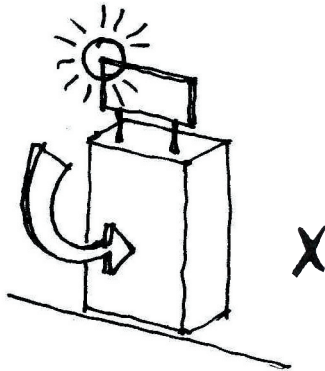
3.3 Analysis of Context

The context of a development is the character and setting of its surrounding environment.

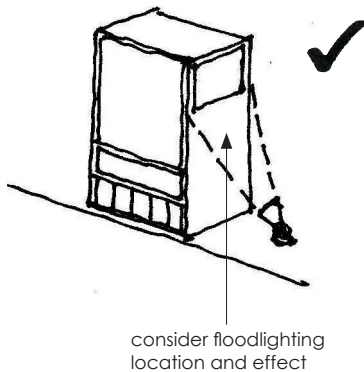
Some elements of context analysis that are of particular relevance in the context of residential developments are illustrated in the following diagram.



Site location and context analysis



Acceptable & Unacceptable Signage



3.4 Fences and Walls

All fencing and walls, whether for security or screening purposes, should be constructed of approved, appropriately durable materials for the intended use, and be of a minimum height sufficient to serve their function. The precise heights and overall design shall be agreed on a case by case basis taking into account visual quality and adjoining property. Plans should indicate position, height and design of all fences and walls.

Long blank walls on active retail streets should not be proposed.

3.5 Signs

Commercial buildings should not be used as advertisement hoardings especially where they front major roads. The design of signs on commercial buildings should be considered as an integral part of the building onto which they will be placed, with particular consideration being given to the number, location and proportion of any proposed sign in relation to the building. The proportion of proposed signs should not dominate the building, nor should they be unduly visually intrusive in the street scene. Where signs are to be illuminated, the nature, intensity and colour of illumination should not create a traffic hazard, or adversely affect local residential amenity.

3.6 Floodlighting

Applicants should indicate whether they intend to floodlight buildings, perimeter fencing, car parks or grounds. Any such flood-lighting should not cause a traffic hazard on adjoining roads or cause a light pollution nuisance to neighbouring property occupiers.

3.7 Landscaping

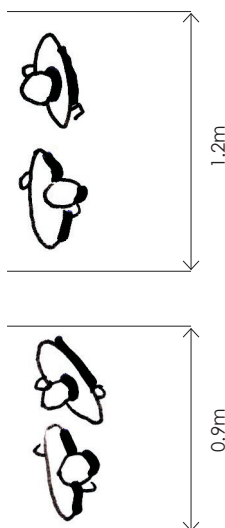
It is recommended that commercial premises be landscaped, especially those in rural settings. Provision for landscaping shall be determined in agreement with the permit authority at the Development Permit stage. A landscaping plan, a schedule of landscaping materials (hard and soft), and details of all major land forming proposals, should normally accompany a commercial development permit application.

Landscaping should also be considered as part of a broader environmental setting for the buildings and activities proposed.

3.8 Pedestrians

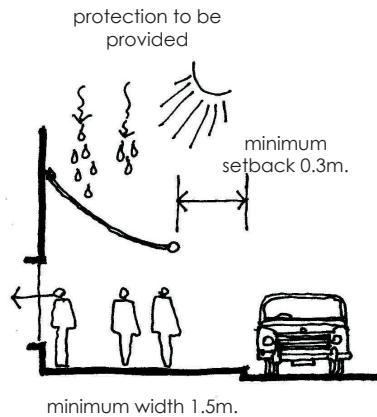
Careful consideration should be given to pedestrian movement patterns. The following principles apply:

- Connections - Connect the places where people want to go
- Convenience - Direct routes, easy to use crossing places, minimal obstruction and delay to pedestrian movement
- Convivial - Attractive routes, well lit, safe, and with variety along the route

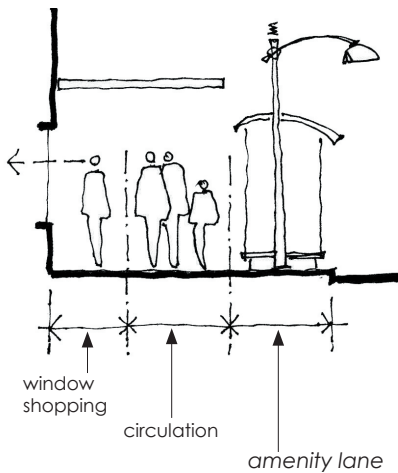




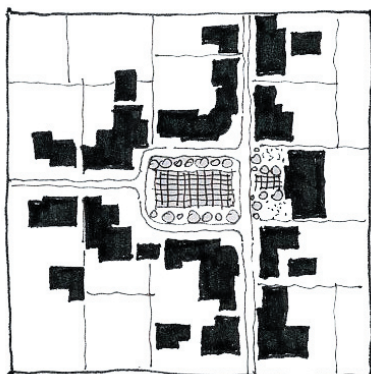
DESIGN GUIDANCE Commercial Development



Sidewalk Design



Sidewalk Zones



Small Open Spaces

- Comfortable - Quality and width of the footpath, careful attention to locations where pedestrians congregate e.g. crossing points, building entrances, corners etc, what obstructions exist e.g. street furniture, lamp columns, planting etc
- Conspicuousness - Routes that are easy to find and follow e.g. use of surface treatments, planting to guide pedestrians

3.8.1 Sidewalks

New development should improve conditions for pedestrians in commercial centres, by providing sidewalks of adequate width, and canopies to give shade and shelter.

New sidewalks should link well with existing sidewalks in front of the adjacent buildings. Persons walking past the face of the building should not be faced with awkward steps or other obstacles.

In commercial areas space should be allowed on the sidewalk for people to window-shop in comfort. Development may be required to be set back from the building line in order to provide the sidewalk width deemed appropriate.

For heavily-trafficked sidewalks on major shopping streets, three distinct zones are required:

- a window-shopping space (minimum 1.5m.)
- circulation space (minimum 1.8m.)
- an amenity lane for street trees, seating, bus shelters, telephone kiosks, etc. (minimum 1.5m.)

Entrances to large buildings should be made to 'funnel-out' to meet the sidewalk, so that the exit flow can more easily be absorbed on the sidewalk.

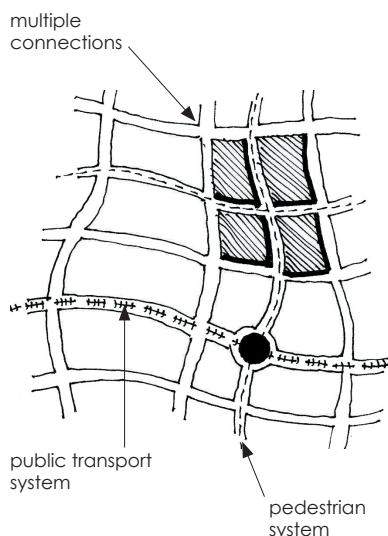
Reference should also be made to Technical Sheet - Access for People with Disabilities.

3.8.2 Canopies

Developers are encouraged to provide sun and rain protection to the sidewalk, either by lightweight canopies, cantilevers or overhangs. Where there is a canopy or other covering, it should be set back a minimum of 0.3m from the kerb line.

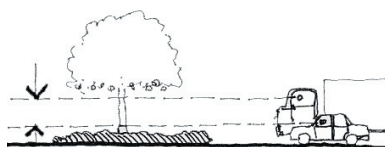
3.8.3 Open Spaces

Towns and villages need small, well-designed public open spaces to add variety to the street scene and provide somewhere for shoppers and others to rest and chat. These areas also provide scope for planting, public art, fountains, statues, and open-air cafes.



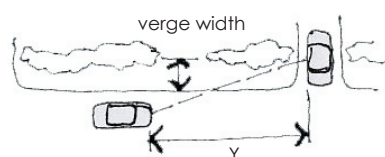
Modes of Connectivity

Sightline requirements for different vehicles



keep clear between 0.6 and 2.0m.

Speed	Stopping distance (Y in metres)
5	5
30	20
40	30
50	40
60	55



Stopping distances related to vehicle speed

There is often scope to incorporate small open spaces in commercial development, especially around the entrance to a shopping centre or major office complex. Developers will therefore be encouraged to give greater consideration to this component, especially in the case of large developments in the main commercial centres. To benefit as many people as possible these spaces are best located in areas of high pedestrian activity. The risk of vandalism and anti-social behaviour can be minimised through mixed use, careful design, overlooking, and security lighting.

3.9 Traffic Management

3.9.1 Connectivity

Any new development should be linked to the existing surrounding environment, and the success of the connections will depend on the quality of the links and the possibilities of choice of movement that are created.

It should be possible for people to choose to make local journeys on foot, by bicycle, or by public transport, rather than using private vehicles, and the development should aim to create a comfortable balance of travel modes, both in its connections with the external environment and internally within the project.

3.9.2 Road Design

The layout and dimensions of roads in a specific commercial development should also be considered as an element of the design character of the scheme. For example, it may be desirable to reduce standard dimensions to lessen the impact of the roads in a rural area or increase them to facilitate on street boulevard tree planting.

Further information is provided in Technical Sheet - Industrial and Commercial Roads.

3.9.3 Traffic Calming and Traffic Safety

It is important to ensure that road design facilitates safe use by pedestrians, cyclists, children, and the disabled. This means:

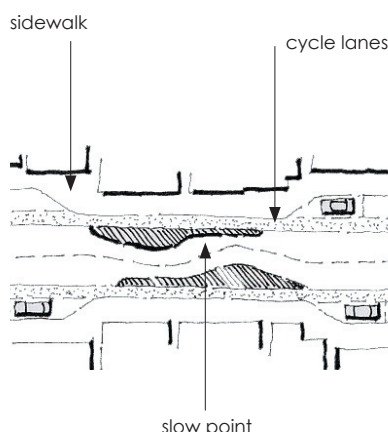
- creating road widths that permit safe travel at the recommended design speeds
- taking into account the space requirement for, and design of, on-street parking
- using the alignment of the road to discourage excessive speed
- giving consideration to pedestrian and cyclist safety in streets and at crossing points, by using traffic calming techniques
- ensuring vertical and horizontal sightlines are kept free from visual obstructions.

Traffic calming can be achieved in a number of ways:

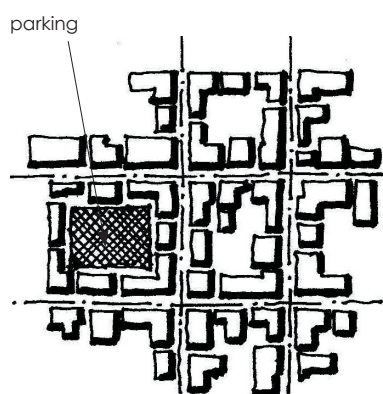
- creating slow points by reducing the width of the carriageway



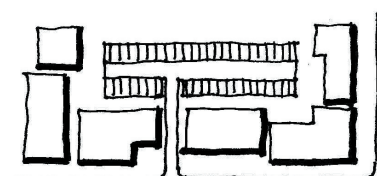
DESIGN GUIDANCE Commercial Development



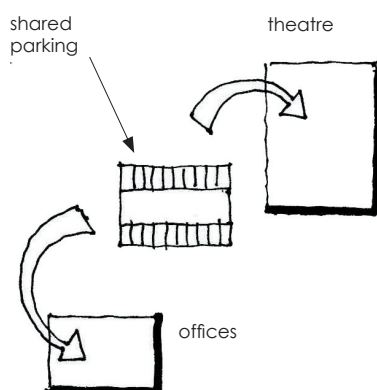
Traffic calming with cycle lanes and parking



Centralised parking facilities in CBD



Parking shared by group of buildings



Compatible activities can make dual use of parking areas

- using on street parking and landscape elements to constrict the carriageway
- designing the roadway so that its alignment is determined by the plot layout rather than vice versa

Further advice can be sought from relevant road and traffic authorities

3.10 Parking

Adequate space should be provided to enable users of buildings to park their vehicles conveniently and safely.

Developers of adjoining plots will be encouraged to make collective provision for car parking, to avoid an unnecessary proliferation of small car parks, each with their own access from the public street. In cases where the local authority makes provision for centralised public parking, individual developers may be required to make a financial contribution towards the cost, perhaps in lieu of providing independent on-site car parking.

In the larger commercial centres the provision of private parking may need to be controlled to support the wider area traffic management strategy. Prospective developers should refer to the appropriate statutory Planning Scheme to determine applicable parking policies.

3.10.1 Operational and Non-Operational Parking

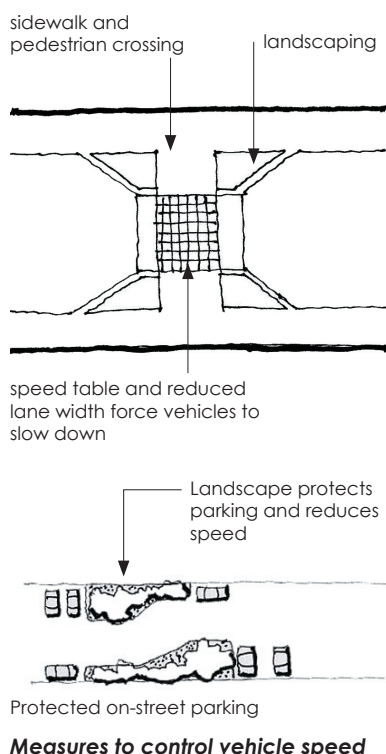
The car parking standards set out below refer to two categories of demand. Operational parking space is the space required for the cars and vehicles regularly and necessarily involved in the business carried out on the site. Non-operational space is the space for vehicles which do not need to park at the site, and includes the cars of commuting employees, shoppers, and business visitors. The developer should refer to the appropriate Planning Scheme for details of policies regarding operational and non-operational parking in particular centres.

3.10.2 Operational Parking Requirements

Sufficient conveniently-located space should be provided to allow the maximum number and size of delivery and maintenance vehicles likely to serve the development at any one time to manoeuvre with ease and stand for loading and unloading without inconveniencing adjacent streets. The minimum standard as specified in the "CAR PARKING - General Guidelines" table below should be adopted unless there are sufficiently justified reasons for deviation.

3.10.3 Mixed Uses

Where the development combines several different uses, such as shopping and offices, the parking needs of each element should be calculated and then added together to get the overall requirement. This is not necessary however, if the uses or activities take place at different times, such as would likely be the case with shops and a casino, or offices and residential use, where the opportunity for the dual use of spaces may be an appropriate solution.



3.10.4 On Site Car Parking Provision

Typical requirements for car parking provision are set out in the table below. They are based in large part on data from surveys of peak parking demand at existing commercial buildings in Mauritius. Considerable variations in parking demand per unit floor area were observed, so the guidance specified here is broad. The standards for net areas (e.g. sales area, seating capacity) should always be used in preference to those for gross areas.

The validity of the guidance for each proposed development should be reviewed in the light of information of the precise nature of the activity, the type of clientele, location, accessibility, proximity to efficient and convenient public transport facilities etc. The desirability of sizing the car park according to the specific activity proposed should however be weighed against the possibility that the use of a building might subsequently change (e.g. from a furniture showroom to a supermarket). The car parking guidelines provided make some allowance for the likely growth in car ownership and use over the next fifteen years.

Small sites in commercial centres – The requirement for on-site parking and delivery space may be waived where the site is too small to accommodate it, provided that (a) it is feasible for service and delivery vehicles to park on-street, and (b) that employees and customers can park nearby without causing traffic problems or nuisance to neighbours. The permit authority may wish to require the developer to make a financial contribution to the provision of public off-street car parks or other relevant associated facilities in the vicinity of the site.

3.10.5 Design of Off-Street Car Parks

Location

The positioning of the car park on the site is often critical, especially in the case of shops, restaurants, and entertainment facilities. Car parks should be easy to find and convenient to use. Customers will avoid using car parks that are awkwardly located and some distance away from main centres of activity.

Entrances and Exits

These should be located well clear of road junctions and at points where there is adequate visibility, both for drivers turning into the car park and for those coming out onto the public road. Entrances should be positioned so as to minimise the risk of traffic having to queue on the public road or street while waiting to get into the car park.

Standard dimensions for the main types of car park layout are illustrated in relevant Design Sheets.

Design considerations

In designing the car park consideration should be given to the following:

- Minimising pedestrian/vehicle conflict, ensuring a legible and "pedestrian friendly" layout



DESIGN GUIDANCE Commercial Development

CAR PARKING - General Guidelines

Residential

1 car parking space per residential unit plus 1 additional visitors space per 5 residential units
Visitors spaces should remain unassigned (i.e. not limited to a particular residential unit and remain available for all visitors) and be located conveniently close to associated residential units.

Hotel and Guest House

1 car parking space for every 3 bedrooms. Where conference or function facilities are provided, additional car spaces shall be provided at the rate of 1 space for 15m² of conference or function space. A hotel dining room (or dining rooms) shall be provided with additional car spaces at the rate of 1 space for each 30m² of dining space.

Offices

1 car parking space per 60m² gross floor area.

Banks

1 car parking space per 75m² gross floor space for staff and 1 car parking space per 25m² public floor area for customers

Shops

1 car parking space per 30m² gross floor area (subject to a minimum of 1 space/shop unit)

Supermarkets

1 car parking space per 18m² gross floor area.

Restaurants, Cafeterias, Eating Houses

1 car parking space per 8m² dining area.

Bars

1 car parking space per 6m² of the predominant drinking area.

Discoteques

1 car parking space per 8m² public floor area

Industry

1 space per 115m² of gross floor space but with no less than 2 car spaces per industrial unit. If offices are included in the development then their requirements will be assessed separately at 1 space per 60m² gross floor area.

Heavy goods vehicle parking should be: Light Industry/Service industry - 1 space per 500m² gross floor space or part thereof. General Industry - 1 space per 200m² gross floor space or part thereof.

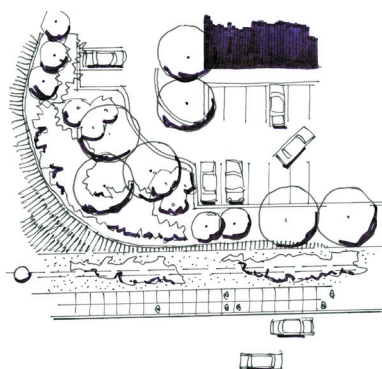
Cinemas, Theatres, Concert Assembly and Wedding Halls

1 car parking space per 4m² public floor area.

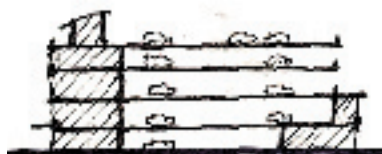
Note. In all employment premises, a proportion of car parking spaces should be designed for specific use of disabled people at a ratio of 5% of all spaces (minimum of 2 spaces).

The above parking guidance will be applied in a manner appropriate to local circumstances together with local and national trends in transport policy making. For example reduced on plot provision may be acceptable where it can be demonstrated that spaces are not required e.g. highly accessible locations, locations well served by public transport, specific user/operational requirements etc.

For the purpose of calculation, fractions of car spaces shall be rounded up to the nearest whole number.



Reduce the visual impact of car parking areas through the use of landscaping



Access to parking should not be from any principal street that has an active retail frontage. In addition, multi-level car parks should be carefully designed to blend with their surroundings, and screened from principal streets by frontage buildings, perhaps occupied by shops and offices.

- Landscaping, reducing the perception of "seas" of car parking, identifying pedestrian routes, defining street frontages; "hiding" service yards etc
- Lighting and security
- Drainage
- Provision for disabled persons, including the convenient location and layout of an appropriate number of disabled parking bays (e.g. 5% of overall provision).

3.10.6 Parking Provision within a Building

Parking space for cars can be provided in a basement or on other floors in the building, provided that the access arrangements are easy and safe. Stall and aisle dimensions should be the same as for surface level car parks. Ramps should be no steeper than 1 in 10. Care should be taken to ensure that vehicles emerging from the ramp are not a hazard to passing pedestrians. Car users should be able to get access to the parking floor by means of stairs or lifts, and should not have to use the vehicle ramps.

Parking provision within buildings and other multi-storey car parks may provide part of the solution, but their visual impact on the overall appearance and liveliness of centres should be reduced as much as possible by fitting them behind single aspect buildings suitable for e.g. commercial uses or apartments, and in any case avoiding long, horizontal, "layer cake" elevations. On-street car parking may also be an acceptable and sensible answer, especially if associated with highway improvements and for example, can be limited to one side or alternating sides of a well landscaped traffic calmed street.



4 PLOT DEVELOPMENT CRITERIA

4.1 Plot Layout

In determining the layout of individual plots a number of elements require consideration. These include:

- Intensity of development
- Floor Area Ratio
- Coverage
- Building Height
- Setbacks
- Security and privacy
- Designing for climate

4.1.1 Intensity of Development

The maximum development potential for a site is dependent on the capacity of existing or proposed roads and utilities. Increasing the quantity of building will usually increase the on-site population (workers, shoppers, tourists, etc) which, in turn, places increasing demand on services. The developer should therefore demonstrate that proposals are adequately served by roads and utilities.

The quantity of development also impacts on the character of the project and on its surrounding environment. The developer should therefore use a combination of bulk, coverage and building height (see below) to achieve a result that responds appropriately to its context. It follows that permission will not normally be granted for a development proposal that impacts negatively on its context - whether by exceptional intensity, massing or building height.

Various factors combine to determine the final appearance of the development. These include:

- The type of development proposed (retail, office, low or high rise).
- The quantity of building (FAR).
- How much of the site is covered by building (coverage).
- The number of floors (building height).

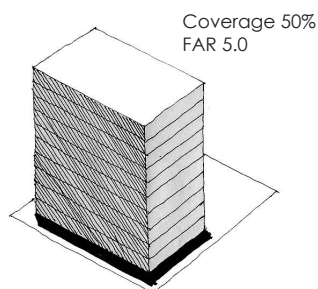
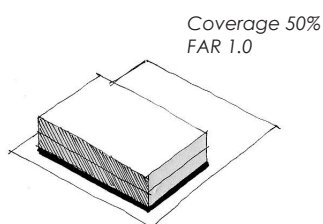
4.1.2 Floor Area Ratio (FAR)

This is a factor that relates the sum of the gross enclosed area of all the floors of the development, to the area of the site. An FAR value therefore dictates the total development bulk permitted on a site. For the purposes of calculating development bulk the following areas are excluded:

- Buildings services, sited in basements, on purely 'service' floors, or on roof tops
- Basement car parks



DESIGN GUIDANCE Commercial Development



Increasing the FAR increases development bulk

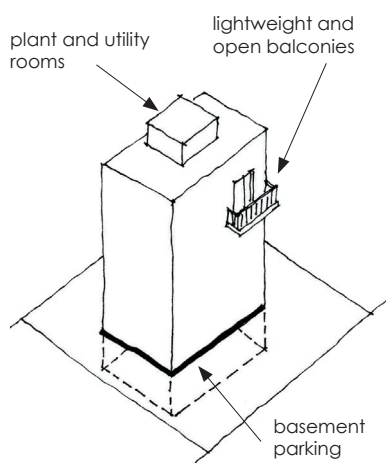
- Lightweight balconies (whether covered by a roof or not), with the proviso that a covered balcony, enclosed on three sides, and considered capable of being easily enclosed will be calculated at full area
- The well of an internal atrium is to be taken at half the plan area for each floor, but any surrounding corridors are to be calculated at full area.

The FAR Criteria table below indicates typical permissible FAR factors for development in the major centres.

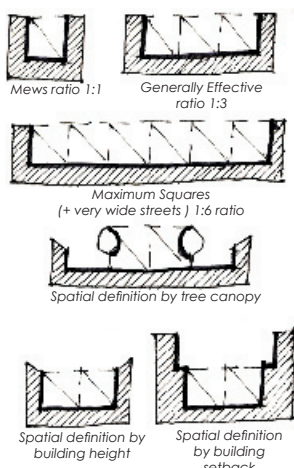
4.1.3 Coverage

The amount of land that may be covered by building is a function of what is available for building after provision has been made for open space, setbacks, on-site parking, and sewerage systems. It may also be controlled by the specific demands of sensitive locations - for example it may be necessary to reduce allowable coverage in sensitive areas so as to retain larger areas of landscaped open space. Conversely a development in a town centre may be built with high levels of coverage to match the existing grain of the area.

Commercial development outside central business districts will not normally be permitted to cover more than 35% of the plot.



Exclusions from FAR calculations



4.1.4 Building Height

Generally speaking building height is controlled by the context of the development, the type of building being erected, the quantity of building and the site coverage. In certain key locations it may also be advantageous to increase building height to provide legibility or focus for the development (see Design Sheet - Tall Buildings in this regard).

Height is measured from street level to the roof parapet of the uppermost commercial floor. Roof structures and services above this level (such as tanks or lift motor rooms) must be no more than 3m. in height above parapet level and should be set back at least 3m. from the edges of the building.

Maximum height of buildings outside Central Business Districts and in residential areas should normally be Ground + 1 floor but, in larger urban centres, Ground + 2 floors may be permitted.

4.1.5 Maximum Height at Street Frontage

The maximum permitted height of a building at its street frontage is calculated as a specified multiple of the street width. The street width is defined as the distance between the proposed building line and the property line of sites across the fronting street. The figures in the FAR table illustrate sample profiles.



DESIGN GUIDANCE Commercial Development

Location	Floor Area Ratio	Maximum Height	Maximum Height at Street Frontage
Rose Hill, Vacoas, Curepipe, Quatre Borne CBD	6.75	55m	2.0 x street width. An additional penthouse floor is appropriate provided that it is set back a minimum of 2.5m. from the street frontage. In the case of a tower on a podium the maximum height of the tower is to be: 1.8 x the distance from tower façade to the property line across the fronting street.
Centre de Flacq, Rose Belle, Goodlands CBD	5	45m	1.8 x street width, plus one penthouse floor set back a minimum of 2.5m. A tower on a podium is appropriate on an island site only, and the tower should have a maximum height of 1.4 x the distance from the tower façade to the property line across the fronting street
Mahebourg, Triolet, Bel Air, Quartier Militaire, Chemin Grenier, Riviere du Rempart, St Pierre, Bambous, Bon Accueil, Beau Bassin, Point aux Sables, Grand Baie CBD	4.25	20m	1.5 x street width, plus one penthouse floor set back a minimum of 2.5m.
Terre Rouge, Riviere des Anguilles, Tamarin, Surinam, L'Escalier, Pamplermousses, Piton CBD	3.5	15m	1.2 x street width
Other shopping centres not covered above	2.75	10m	1.2 x street width

Floor Area Ratio (FAR) Table

4.1.6 Setbacks

Setbacks serve to protect the amenity of adjoining properties, to provide spatial barriers against fire spread, to reserve utility and road corridors, and to assist in the establishment of street character.

In the context of this document setbacks refer to distances between front, side and rear facades and their respective boundaries.

Setbacks are generally measured to the outer wall surface of the building. However, small encroachments may be acceptable in respect of overhanging roofs and canopies over windows. These should not project further than 1m. into the setback reserve.



DESIGN GUIDANCE Commercial Development

The objectives of urban design encourage the placing of buildings close to the street. In order to achieve this it is essential to reduce the building line to the minimum that is appropriate for the context.

In established areas and infill sites, the building line should normally reflect the norm for the existing context. In this case the line should normally be equal to the average setback of existing buildings in the same street.

Indicative setbacks are provided within the table opposite. However, cognisance should also be taken of specific design objectives and safety restrictions in respect of overhead power lines and other utilities.

The siting and scale of buildings is a function of the way the buildings relate to their boundaries, and their overall massing. By adjusting setbacks these aspects can be controlled so as to ensure adequate daylight penetration, ventilation, and reasonable protection of neighbouring amenity (privacy and noise).

Setbacks should normally increase with additional building height (see adjacent table), and also in relation to the particular requirements of an existing context. Where a setback is created it will normally be acceptable for minor architectural elements such as overhanging roofs and lightweight window canopies to encroach into the established side space up to a maximum of 1m.

Building to plot boundaries may be permitted in locations where this is not in conflict with the existing context, and where it can be demonstrated that the buildings have been designed to ensure the provision of adequate daylight to habitable rooms, sufficient natural ventilation, and private open spaces of the plot and adjacent plots are not overlooked.

Indicative Building Setbacks to Road Frontages

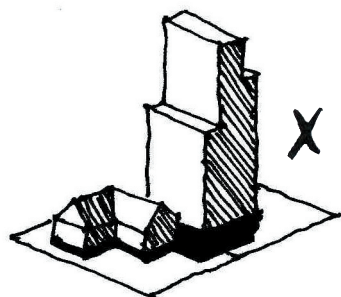
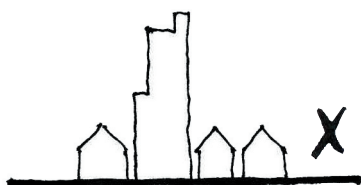
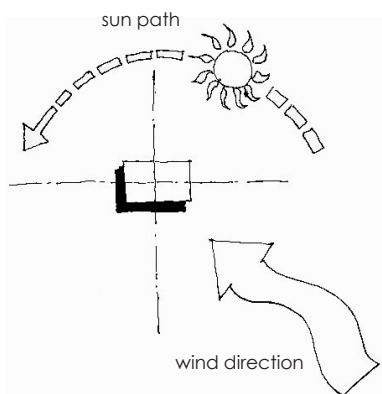
Motorways	15.0m
A Road	6.0m
B Road	6.0m
Other Roads	3.0m

Building height (m)	Minimum setback (m)
7.5	2.0 side 3.0 -15.0 front
15.0	3.0 side 3.0-15.0 front
25.0	5.0 side 6.0-15 front
Setbacks for buildings over 25m. to be agreed with Local Authority	
Note. The setbacks provided are indicative. In highly urbanised areas, such as in the city centre, setbacks will be determined on a case by case basis and will be governed by the existing context, the optimising of valuable city centre land, the creation of safe, comfortable and convenient public areas etc.	

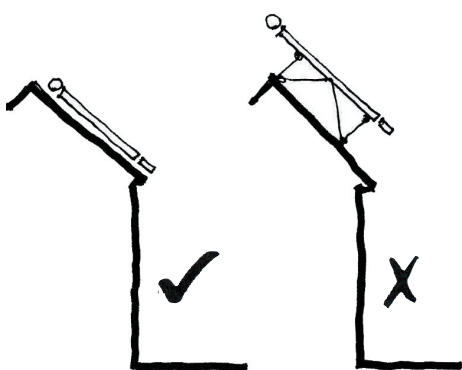
4.2 Security

Planning can contribute to security if plots and buildings are laid out and designed such that users can make a contribution by collective surveillance of public areas. For this concept to operate successfully the following criteria must be satisfied:

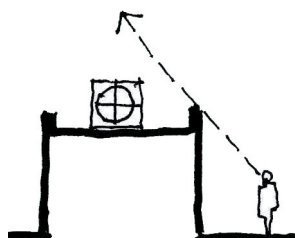
- There should be a clear distinction between public and private space.
- Building design and plot layout should encourage observation of public areas.
- The design should avoid ambiguous spaces and hidden corners.
- Windows should be placed so that it is possible to observe the public areas.
- Public accessways, pedestrian routes and cycleways should be open, attractive, and well-lit.
- Real or symbolic barriers should be used to prevent access to areas intended only for local usage.



Scale to be appropriate to context



Fix rooftop solar panels flush with roof slope



Conceal rooftop plant and equipment

4.3 Micro-climate Aspects

The layout of buildings on plots and the grouping and design of the buildings can have a significant impact on the energy efficiency of the buildings, and on internal user comfort levels.

Factors to be considered include:

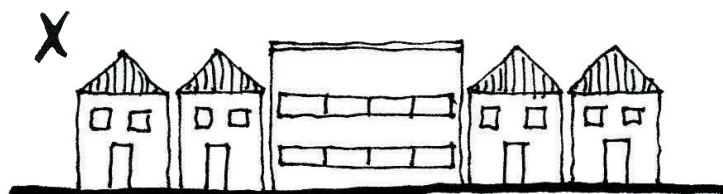
- Compact, attached building forms are more energy efficient than detached buildings.
- Buildings should be positioned so that the long axis extends in an east-west direction, and should be designed with a shallow depth that encourages cross ventilation.
- Sun penetration into the working areas of the buildings should be controlled so that it is screened off during the summer months and allowed to penetrate during the cooler months. This can be achieved with types of landscaping, or with overhangs that only cut off steeper angle rays.
- East and west walls of the building should be protected from the sun where possible.

4.4 Building Design

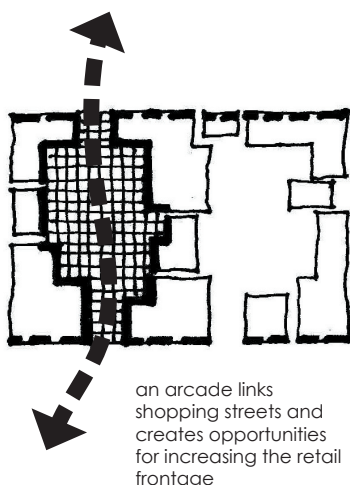
The form, rhythm and massing of buildings are significant elements of developments, especially in the context of an existing built-up environment. They should be designed to harmonise with surrounding developments and to take particular cognisance of existing landmark structures.

In designing commercial buildings particular attention should be paid to the following criteria:

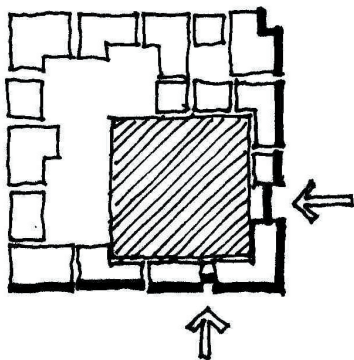
- the rhythm and scale of building blocks
- the design of roof shapes and organisation
- the use of appropriately designed fenestration
- the control of extensions such that they are subordinate to and compatible with, the main building
- the application of an architectural style that is in harmony with any local traditions
- the concealment of mechanical plant and utilities
- the positioning of solar panels so they are flush with sloping roofs.



Scale, rhythm, roof shapes, fenestration, and architectural style to be appropriate to context



Arcades



4.5 Arcades

Arcades and "internal shopping streets" that create linkages between existing streets and optimize the use of the interior of commercial blocks should be encouraged. The advantage of arcades if well located and designed, is that they can offer enhanced pedestrian movement through commercial centres, linking primary shopping areas and "opening up" central areas of development blocks that might otherwise remain obscured. Where lightweight glazed roofing is incorporated arcades can provide comfortable and convenient shopping opportunities within traditional urban centres, enhancing footfall and thus town centre competitiveness, comfort, convenience, viability and vitality.

4.6 Active Edges, Accommodate the "Big Box" into the Mix

Commercial and retail parks should, wherever possible, be provided within traditional urban centres in order that they can make a positive contribution to providing an attractive and viable urban mix.

This has fundamental implications for form, density and parking, particularly how to accommodate "big box" development such as superstores, shopping malls and retail warehouses into urban centres. The developer should confirm that the provision of such facilities is appropriate to the needs of the locality, and that they do not impose socio-economic costs on the community in terms of traffic generation, adverse visual impact or the undermining of the viability of established centres.

Where such development is considered appropriate, it should be absorbed into the fabric of the retail core, possibly by "wrapping" the large structures with a skin of smaller units that match the form and scale of the existing urban fabric.

Siting such uses within the walkable catchment for a public transport node or corridor (e.g. transport interchange, traffic centre) also encourages sustainable transport patterns, and reduces reliance on private transport.

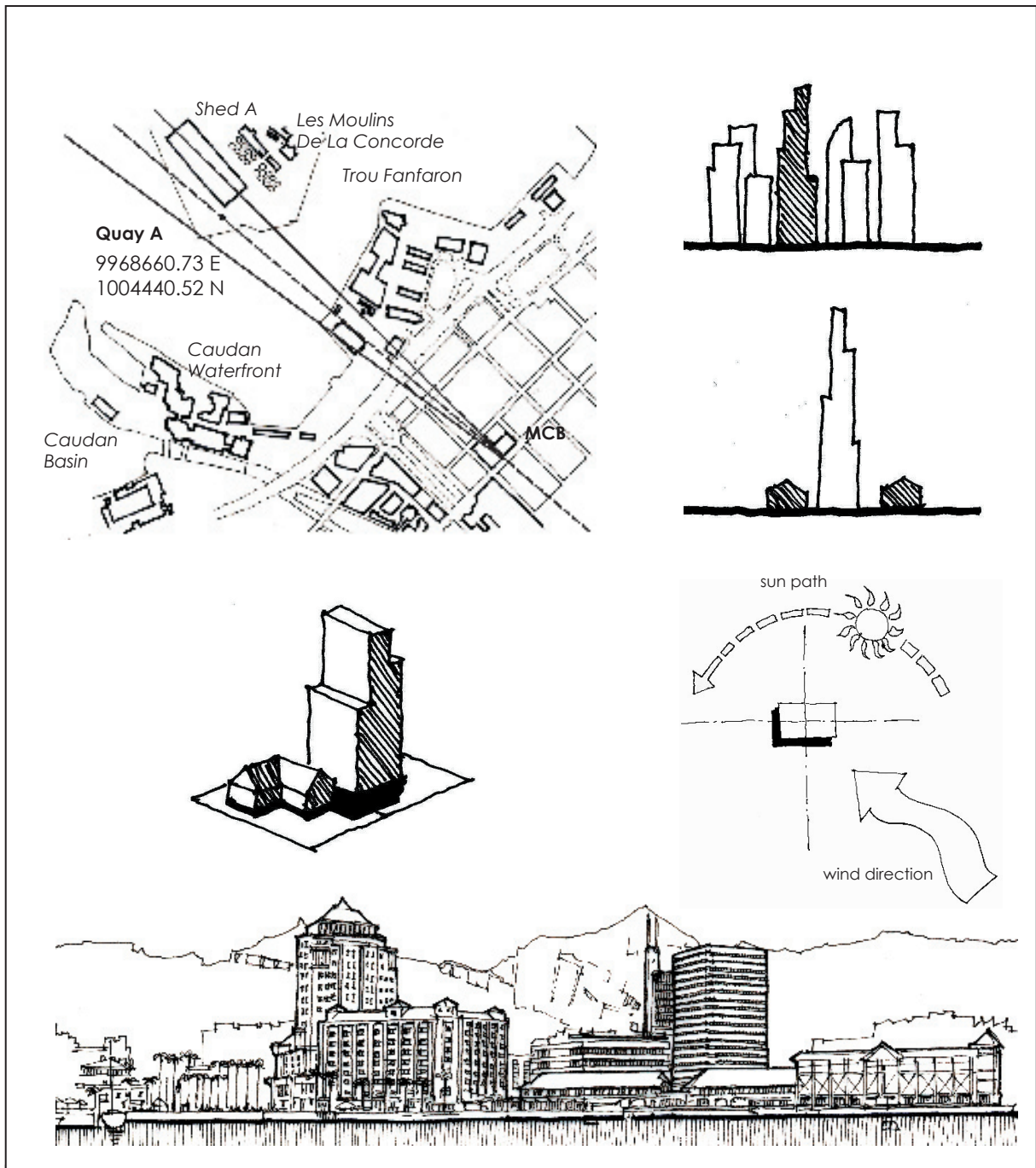
Where central business district sites are not available, alternative options should be studied. These may include absorbing the development into the transition zone on the fringes of the urban core.

4.7 Fire Safety

Clearance should be obtained from the Fire Services Department on all aspects of fire safety and fire fighting.



Design Sheet



Tall Buildings

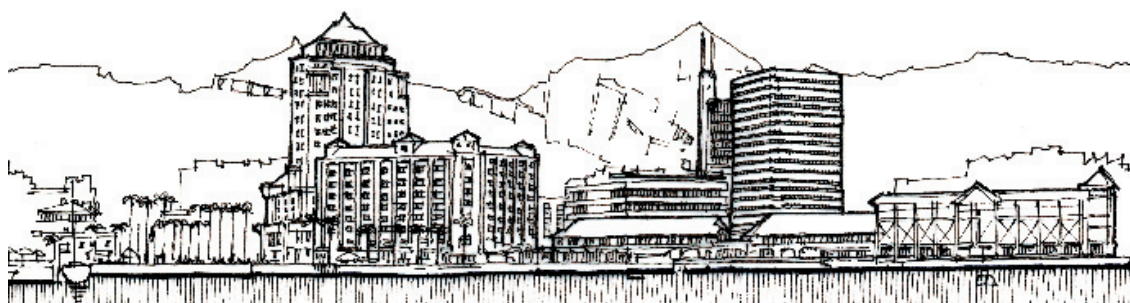
November 2004





Tall Buildings

This Design Sheet provides advice on the planning and design for tall buildings. Key considerations are identified and important “prompts to thinking” about the location, layout and design of tall buildings are offered.



In Mauritius, and particularly Port Louis, there is increasing interest in and pressure for commercial and residential developments that individually and collectively have a significant impact upon the environment due to their height.

This impact is:

- Visual: affecting the skyline, street environment, important views and vistas
- Functional: affecting local pedestrian movement patterns, micro-climate and telecommunications.

There is also the potential long-term incremental impact of a series of tall building proposals.

Early discussion with the permit authority is recommended as this will assist in clarifying planning policy aims and objectives from the outset and help to reduce potential difficulties when a formal permit application is submitted for determination.

Although there is no presumption that the impact of tall buildings will be predominantly positive or negative for individual or groups of tall buildings, there are locations that are more appropriate due to the local context and levels of infrastructure provision, particularly public transport interchanges. It is also important to ensure that wherever tall buildings are located they relate to the existing urban context and are of the highest design quality.

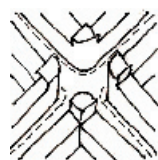
Definition

For the purpose of this Design Guidance, a tall building is defined as “any structure that breaks the skyline or is significantly taller than its surrounding built fabric”.



Tall Buildings

In the Port Louis Central Business District area, for example, this is likely to apply to buildings or structures that are significantly taller than 5 storeys (G+4 or approximately 18 metres), while in some of the inner urban and suburban areas it is likely to apply to buildings or structures that are significantly taller than 3 residential storeys (G+2 or approximately 9+ metres).



locate tall buildings to emphasise important junctions and public spaces

Design Statements

Proposals for tall buildings should always be accompanied by a design statement. The greater the size and likely impact of a proposed tall building the more comprehensive the statement should be. Because of the likely intensity of use and the likely degree of change to the environment which their construction will bring about, all significant tall building proposals should be presented in the context of a rationale of their immediate and wider area, based on a full character appraisal of the area, including the impact on local, medium and long distance views and places. The submission of design statements should illustrate how the various "prompts to thinking" highlighted in this guidance have been addressed.

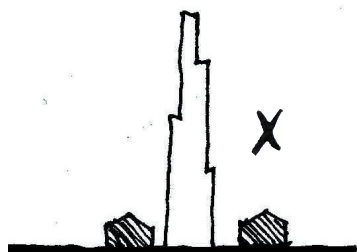
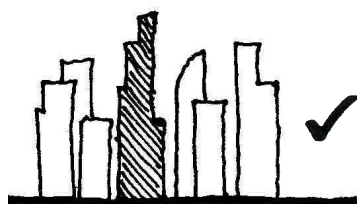
Transport and/ or Environmental Assessments may also be necessary and early discussion with the relevant statutory authority about potential requirements is recommended.

Where it is known that there are concurrent proposals for other tall buildings, the implications of these should also be addressed.

Locating Tall Buildings

Tall buildings can provide important design options for raising densities and the intensification of mixed uses on accessible sites in the city and elsewhere. The most travel intensive uses, such as retail, commercial and leisure will be encouraged in areas that are well connected to major public transport facilities and interchanges. The most appropriate development sites will be within reasonable walking distance of public transport facilities (e.g. traffic centres, proposed transit stations) where ideally an acceptable 5 minute walk is approximately 400 metres, but no more than a leisurely 10 minute walk or 800 metres distance.

Tall residential buildings, particularly where part of a mixed use, provide diversity to the public and private housing stock for city and town centres and thus an improved choice of living environment for city and town residents. Tall buildings can have security benefits, assist in developing a sense of community and, by raising residential densities, help to make local services more sustainable.



Appropriate Scale



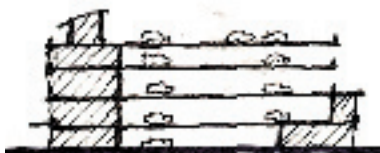
Tall Buildings

Impact on Existing Highway Infrastructure and Parking Facilities

Any tall building development will have some level of impact on existing highway infrastructure, traffic movement, public transport usage and parking facilities. This will need to be investigated as part of the development proposal and presented as a Transport Assessment that will enable realistic traffic and public transport planning proposals to be submitted as part of a complete tall building proposal package.

Car Parking

This may involve for example:



Access to parking should not be from any principal street that has an active retail frontage. In addition, Multi-level car parks should be carefully designed to blend with their surroundings, and screened from principal streets by frontage buildings, perhaps occupied by shops and offices.

Option 1

The interim provision of on-site car parking to minimum standards until such time an upgraded viable, attractive, efficient public transport service is provided (e.g. light rail transit) alongside other complementary measures (e.g. city centre park and ride, public car parks, traffic management schemes and bus priority measures).

Where on-site car parking is provided this should be designed so that it can be converted to valuable usable retail/commercial/residential floorspace when future public transport and traffic management initiatives make other options (that allow reduced levels of on-site car parking) more attractive and practical.

Option 2

The provision of only operational car parking on-site and associated developer contribution in-lieu of on-site spaces, like contributions to off-site car parking provision (e.g. town or city centre car parks and other traffic management improvements and public transport facilities (park and ride, light rail transit, bus priority measures etc.)).

Design Considerations

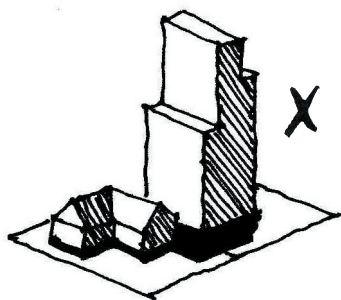
The proposed development should:

- Be of high architectural quality
- Be able to secure a complete and well designed setting, including hard and soft landscaping, so that the development interacts with and positively contributes to its surroundings at street level
- Emphasise or contribute to a point of civic or visual significance or a centre of urban activity or renaissance, both locally, in relation to the immediate area and the wider area from which it would be visible



Tall Buildings

- Achieve a positive relationship with topographical features and other buildings nearby, and contribute to the image and built environment of Mauritius.
- Enhance the skyline by ensuring the roof top design is of high quality.



Scale to be appropriate to context

Relationship to Context

This should include topography, built form (including e.g. immediately adjoining buildings, those that form a group, are visible from the site, define the street or public space), urban grain (e.g. block size, pedestrian routes, gaps etc.), architectural rhythm (windows, doors, cornice lines, bay windows, balconies etc.), and potential effect on the skyline.

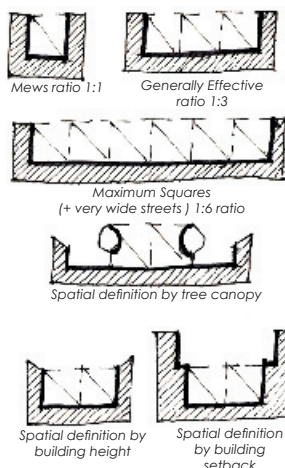
Historic Environment

The juxtaposition and close interplay between buildings of different ages, styles, scales and materials often creates a dynamic and interesting cityscape

Whilst it is recognised that it is the overall composition that needs to be assessed, there will be a general presumption against tall buildings that have a negative impact upon the fabric and setting of historic buildings, especially National Monuments.

It is essential that proposals conserve or enhance listed National Monuments and their settings, historic open spaces, landscapes important views, prospects and panoramas.

The formation of urban street enclosure



It is important to consider the relationship to the street and public spaces. Buildings define public space and create enclosure.

Architectural Quality

Consideration should include scale, form and massing, silhouette, facing materials as well as the relationship to other structures.

Materials

Materials should be of high quality and elevation details should respond to orientation, be animated with fenestration, lightweight balconies and provide visual interest.

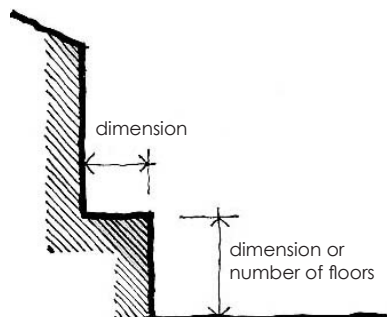
Balconies

The provision of balconies can help to create more interesting building elevations, enhance occupier amenity (i.e. an "outdoor room"), create opportunities to provide canopies, shade and shelter in public areas, and reinforce the sense of safety and security through natural surveillance.

Within the city, an increasingly common feature is the enclosing of balconies to create additional internal floorspace. In some situations and locations this may not be an issue e.g. where the street is wide and the additional resultant building mass is not significant.

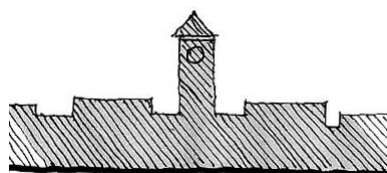


Tall Buildings



Vertical setback

Building height (m)	Minimum setback (m)
7.5	2.0
15.0	3.0
25.0	5.0
Setbacks for buildings over 25m. to be agreed with Local Authority	



In other locations, where the street space is relatively narrow and building facades are already close or the balcony is excessively large, the enclosing of balconies can dramatically erode the quality and amenity of the street. The enclosing of balconies on significantly tall buildings can also add considerably to their bulk and change what once may have been an elegant structure into an eyesore. Whilst the provision of balconies on most buildings would not be resisted, their design should generally be lightweight.

There should be a general presumption against the enclosure of balconies where this would compromise the integrity and architectural form of the tall building and unacceptably add to its bulk or result in significant narrowing of the street space either individually or in combination with opposing balconies.

Contribution to Public Spaces and Facilities

It will be important to consider both internal and external spaces and facilities within the area, including the provision of a mix of uses, especially at ground level. The development should interact and contribute positively to its surroundings at street level. It should contribute to diversity, vitality, social engagement and a sense of place. Port Louis, for example, relies on active street fronts for its vitality. High rise building design that presents blank facades (for parking or services) to the street are not normally acceptable. Ground floor retail and other active uses that contribute interest and vitality within the streetscene are essential.

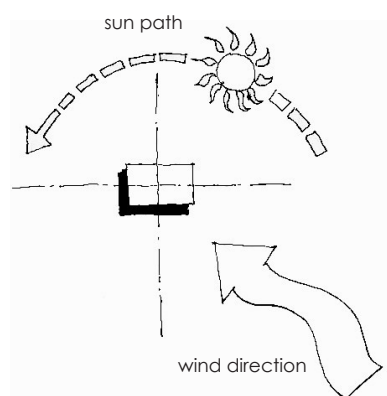
Micro-climate Aspects

Tall structures can have a significant impact on the local micro-climate, particularly wind effects and overshadowing of neighbouring buildings and areas.

Proposals for tall buildings will need to include the assessment of such potential environmental effects on public spaces (including adjoining streets) and surrounding buildings, including eddies and turbulence at street level, light reflection from glass facades, vertical sheets of rain running down facades, privacy for adjoining property occupiers (particularly residential), night time appearance, vehicle movements and the environment for those in the vicinity of the building.

Any landscaping proposal should make a serious attempt at effectively mitigating the negative impact a tall building may have on local microclimate.

Daylight and sun will not penetrate narrow streets unless high rise towers are designed with appropriate setbacks.





Tall Buildings

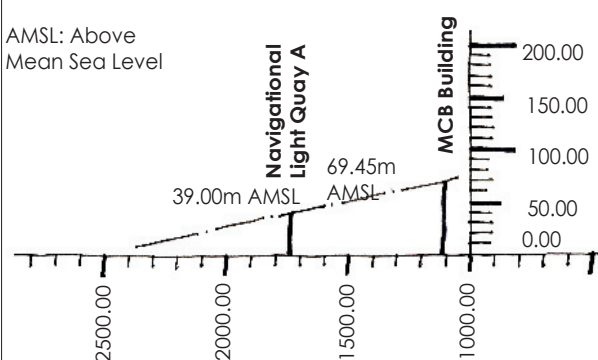
Permeability and Pedestrian Movement

This includes the contribution proposals may make to pedestrian movement networks, the permeability of the site and surrounding area, opportunities for improved links on foot.

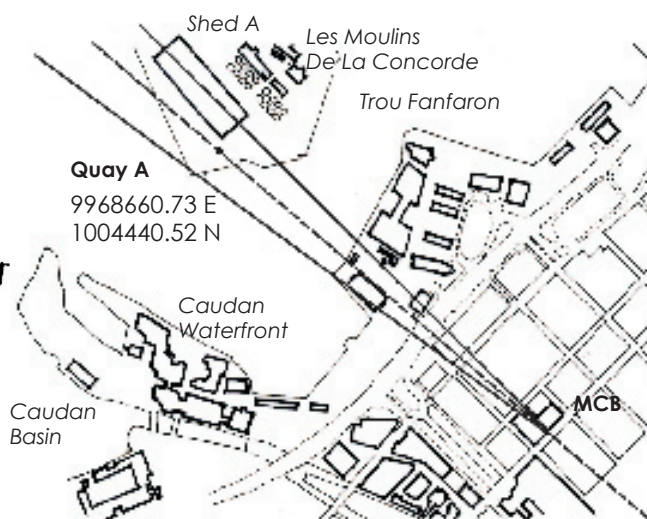
Functional Considerations

- Harbour navigational requirements i.e. sector light sight lines
- Telecommunications - potential interference affecting telephones, television, radio etc.
- The impact on services infrastructure, including, water, electricity, sewerage, telephones etc.

AMSL: Above
Mean Sea Level



**Consider functional
requirements such as harbour
navigation**



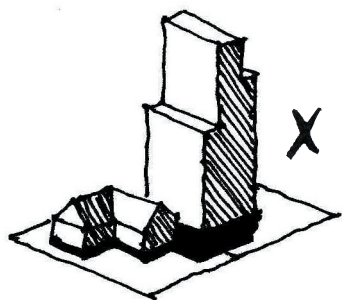
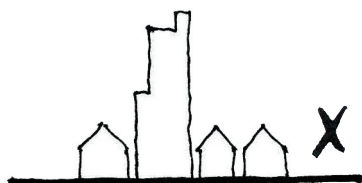


Tall Buildings

Tall Buildings in Residential Areas

Proposals for tall buildings located within residential areas, particularly on small sites, need careful consideration in order to ensure that it takes place without detriment to the character and amenity of surrounding properties and the local street scene. Criteria to consider include:

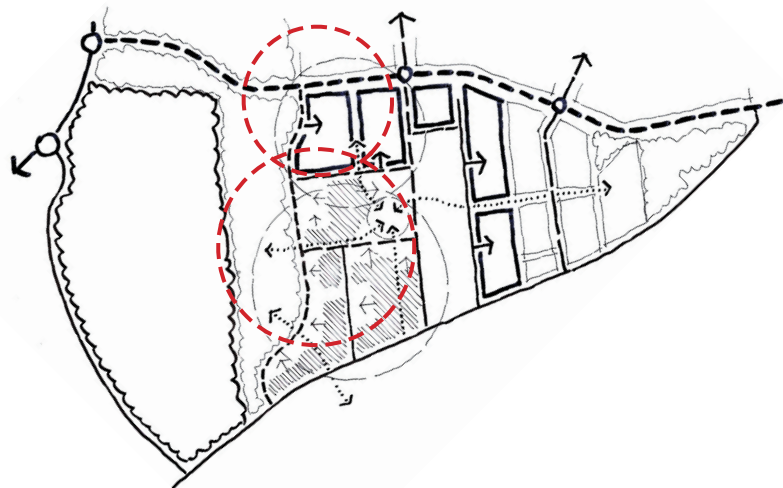
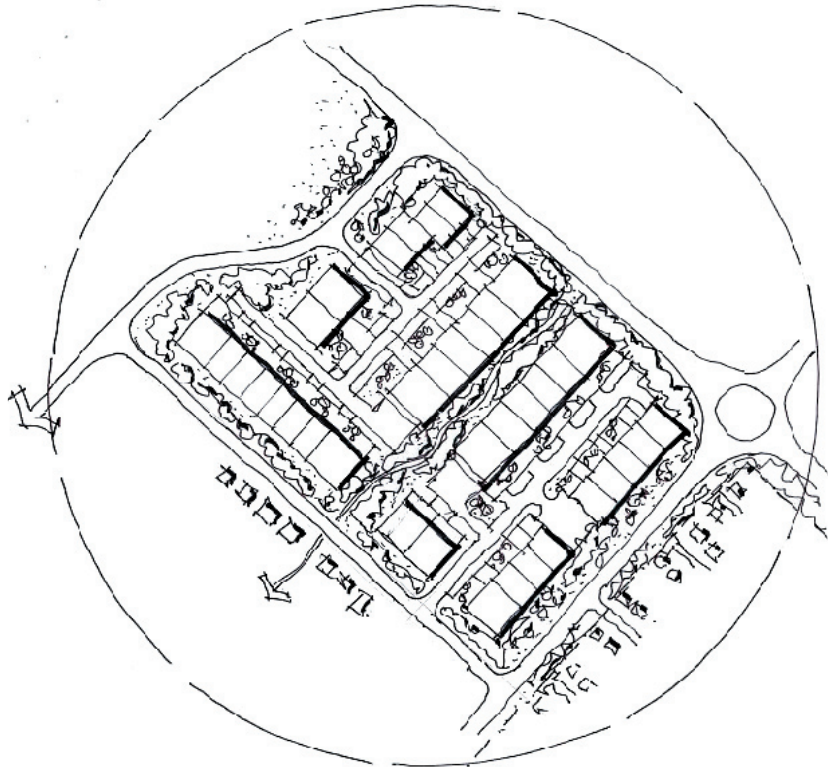
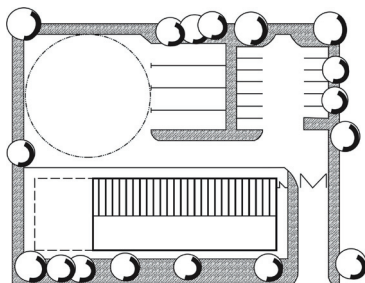
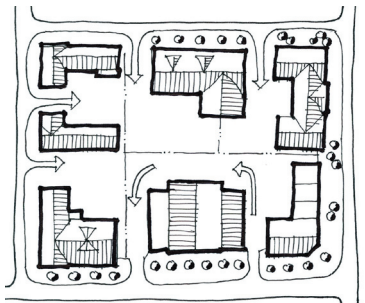
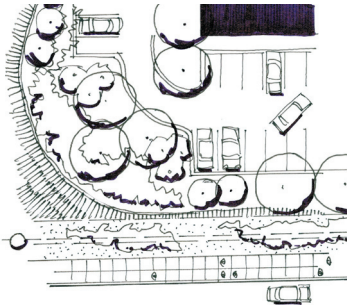
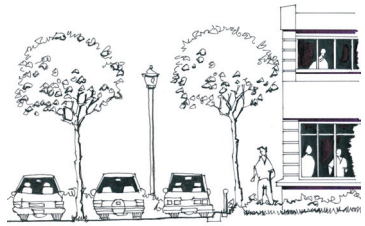
- The design, bulk and density of development should respect the character and appearance of the surrounding area
- The development should not be detrimental to the privacy, daylighting and amenity of neighbouring dwellings nor will there be a reciprocal impact on the proposed development and
- The development should provide adequate access and car parking and where appropriate, on-site turning facilities to serve proposed and existing properties.



Scale to be appropriate to context



Design Guidance



Industrial Development

November 2004



Ministry of Housing and Lands



1 INTRODUCTION

1.1 Definitions

2 INDUSTRIAL DESIGN

- 2.1 The Design Process
 - 2.2 Industrial Development Framework
 - 2.3 Layout: Quality of the Public Realm
 - 2.4 Plot Ratio
 - 2.5 Building Setbacks
 - 2.6 Priority Plots
 - 2.7 Landscaping
 - 2.8 Walls and Fences
 - 2.9 Building Design
 - 2.10 Screening
 - 2.11 Signs
 - 2.12 Lighting
 - 2.13 Small Industrial Workshops and Home Working
 - 2.14 Fire Risks
-

DESIGN SHEETS

Industry Adjacent to Sensitive Sites
Industry in the Countryside



Your proposals may also require the submission of a Preliminary Environmental Report, Environmental Impact Assessment and/or a Transport Assessment. You should discuss the need for these with the Ministry of Environment and the Ministry of Public Infrastructure

Informal discussion with the permit authority prior to detailed design may help to avoid abortive work and can result in a speedier formal planning assessment

S Note that where this symbol is placed, the guidance provided alongside it is considered to be the minimum/maximum acceptable and should normally be provided.

1 INTRODUCTION

This document provides design guidance for **Industrial Development** in Mauritius.

The objective is to create a set of performance criteria and design standards that are applicable to most forms and scales of industrial development. The Design Guidance is equally appropriate for use by individual site owners as well as developers of large industrial schemes.

Design Sheets have also been produced that consider special design circumstances and supplement the Industrial Development Design Guidance. The Design Sheets include:

- Industry Adjacent to Sensitive Sites
- Industry in the Countryside

Although the design guidance is based on performance criteria where possible, there are situations where certain standards or technical requirements must be maintained, for reasons such as health and safety. A series of **Technical Sheets** have been produced and reference should also be made to these. The Technical Sheets include:

- Residential Roads
- Industrial and Commercial Roads
- Access for People with Disabilities
- Drainage
- Water Supply
- Mains Sewerage
- On-Plot Sewage Disposal
- Electricity
- Telecommunications
- Combined Utilities Summary Plans

1.1 Definitions

This Design Guidance is concerned with aspects that have to be considered when preparing or assessing applications for Development Permits under the Town and Country Planning Act and/or any addition, remodelling, relocation, or construction requiring a Building Permit.

Industrial activities are classified into five broad groups:

- | | |
|---------|---|
| Group 1 | Home Industry |
| Group 2 | Light and Service Industry |
| Group 3 | General Industry |
| Group 4 | Extractive Industry |
| Group 5 | Special Industry (i.e. noxious), and Water Intensive and Polluting Industry |



2 INDUSTRIAL DESIGN

2.1 The Design Process

The design of an industrial development involves three recommended steps :

Step 1 - Contextual Analysis

Understanding the site is the first step in the process of good design. The initial "sequential" analysis should confirm the appropriateness of the site for development and suitable land uses.

A contextual analysis is a factual account using text, drawings (to scale), illustrations and photographs to explain the site and the surrounding locality. The site must be visited to do this, it cannot be done as a desktop exercise. Constraints that will influence development should be highlighted as well as opportunities for improving the surrounding area through development of the site.

The scope of an analysis should be tailored to the location and scale of development. At its most exhaustive, a site analysis would document the site in terms of contours and existing vegetation, buildings (any of which should or could be retained), their scale, height, mass, views to and from the site, access and connection points, drainage and services, orientation, microclimate, any "bad neighbour" potential nuisance sources, any sensitive uses, fences and boundaries and any other notable features.

The contextual analysis identifies which particular features of the setting affect design and why.

Step 2: Development Objectives Assessment

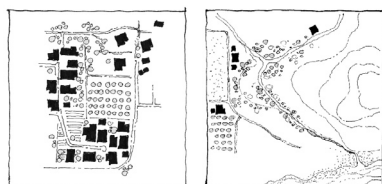
Certain development objectives may be foremost in the mind of scheme promoters, e.g. desired mass, minimum floor space/unit requirements, financial outlay, positive commercial image, minimising harm to neighbours, taking account of the character of existing buildings and landscape, the creation of private areas etc.

Development objectives should be assessed against constraints. The designer should work within the parameters of budget and practicality and will need to assess for example, what form of layout would help to achieve a particular objective within the site context.

Certain commercial and personal objectives may be at odds with important contextual features and character identified. An effective assessment will explain how any apparent conflict may be resolved and high quality design achieved.

Step 3: Working Up Design Solutions and Design Statements

The design should be worked up after the principles for development have been established.



Urban fringe and out of town locations are focus areas for this document

STEP 1 - Site Context

STEP 2 - Design Objectives

STEP 3 - Design Solutions

An effective assessment will explain how any apparent conflict may be resolved and high quality design achieved.



It may help to discuss preferred design solutions with a planning officer before an application is formally submitted. If you seek an appointment to discuss development proposals, it is essential to have a short statement on the contextual analysis ready beforehand so that the site opportunities and constraints and design parameters can be discussed before detailed design work is undertaken.

Plans submitted in support of a permit application should typically include:

- **Plot coverage**
- **Provision for expansion**
- **Site access**
- **Building(s) orientation and use (i.e. manufacturing processes, storage, office, canteen etc) as appropriate**
- **Building(s) height**
- **Building(s) setbacks**
- **Circulation arrangements within site curtilage**
- **Loading and unloading arrangements**
- **On-site parking provision for lorries, staff and visitors**
- **Landscaping**
- **Adjoining buildings, uses and landscape/ecological areas**
- **Solid waste storage, collection and disposal**

2.2 Industrial Development Framework

Effective development planning for most industrial land use types requires the consideration of:

- Flat land or large flat terraces.
- Good access to major traffic routes, preferably direct access to trunk roads or main roads wherever possible, to avoid causing nuisance to adjoining sensitive uses (such as residential areas).
- Good accessibility to port facilities and airport.
- Convenient access to business centres in existing urban areas and proximity to other support services.
- Good opportunities to "cluster" development.
- Access to an available labour force within convenient commuting distance.
- Sited to avoid adverse environmental effects (e.g. noise, odour, dust, development scale etc) on residential and other sensitive land uses and between industrial uses, or incorporate design features to mitigate such effects.
- Sited to avoid despoilation of Environmentally Sensitive Areas and/or Areas of Landscape Significance.
- Adequate provision for water supply, sewage disposal and waste water treatment, drainage, electricity supplies and telecommunications.
- Pollution control measures.

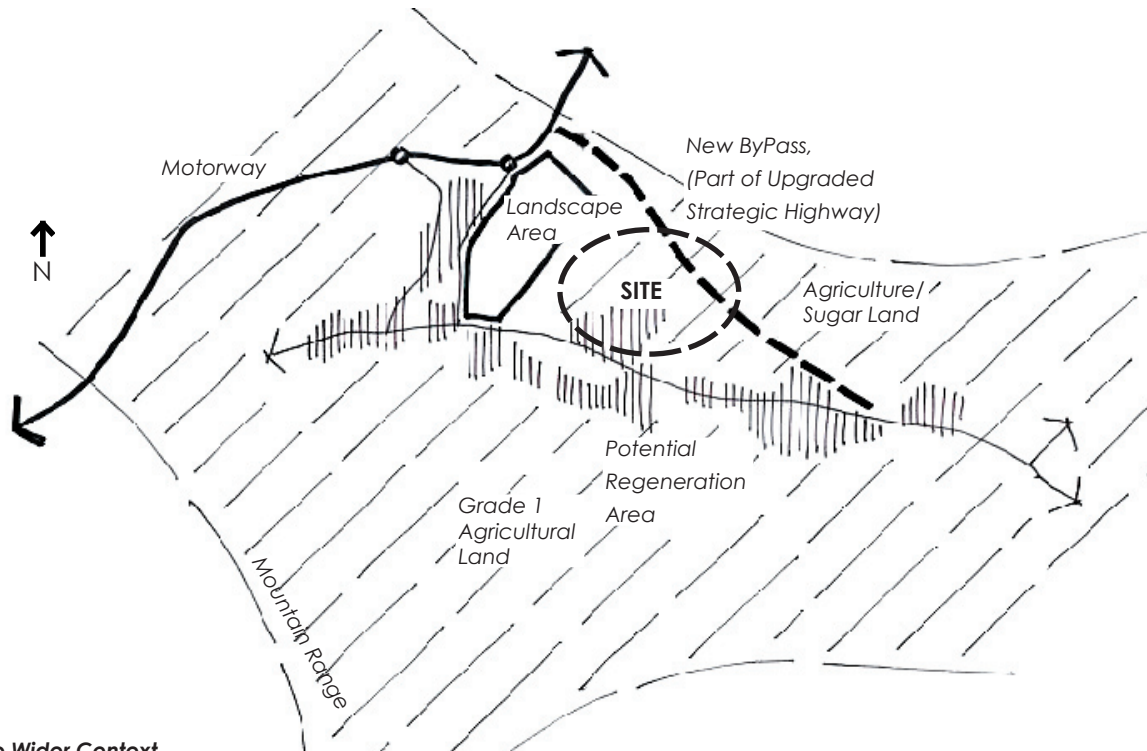
The main elements of sound industrial design include the following:

- Extensive landscaping used to unify a scheme, create a quality setting and provide screening.
- Controlled site access and individual plot security (avoiding an over hostile appearance);
- Convenient and adequate access, visitor parking and on-site circulation;
- Service areas located at the sides and rear of buildings;
- Screening of loading areas, outdoor storage, work areas and equipment;
- Emphasis on quality building forms.

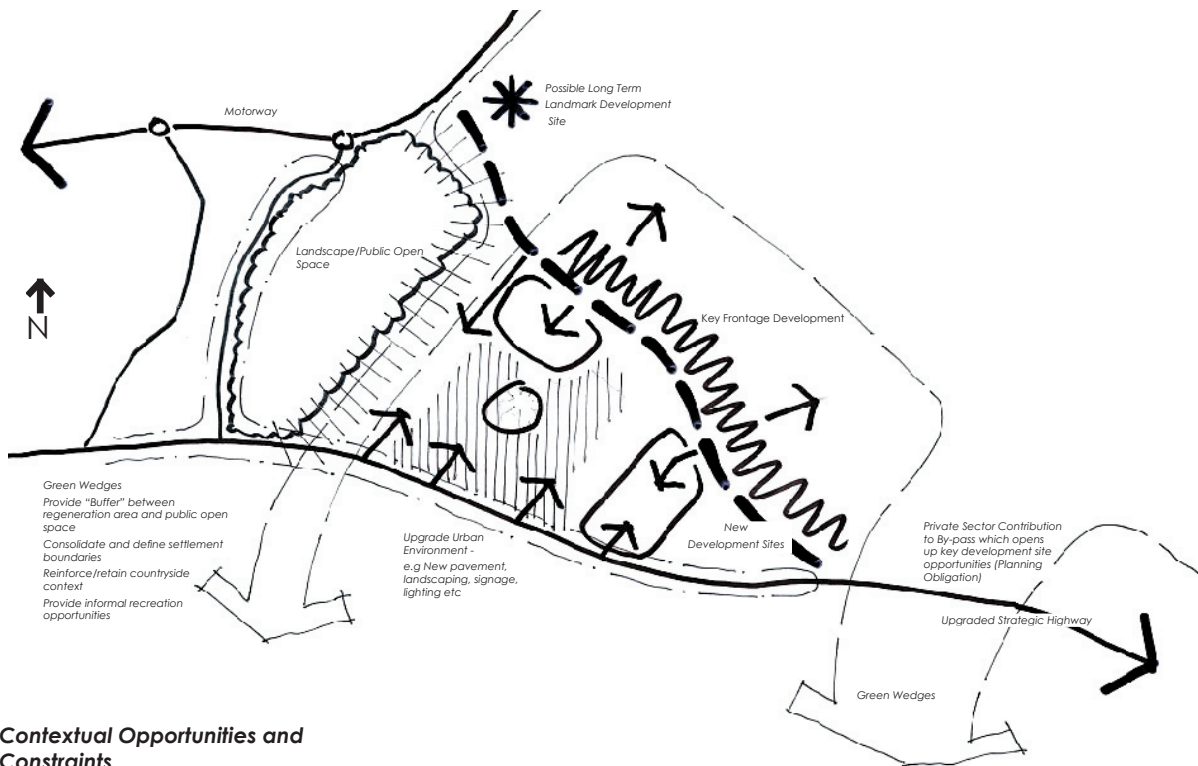
**FOR INDUSTRIAL ROAD
DESIGN SEE ALSO :
TECHNICAL SHEET
- Industrial and
Commercial Roads**



The Design Process - Indicative Industrial Framework



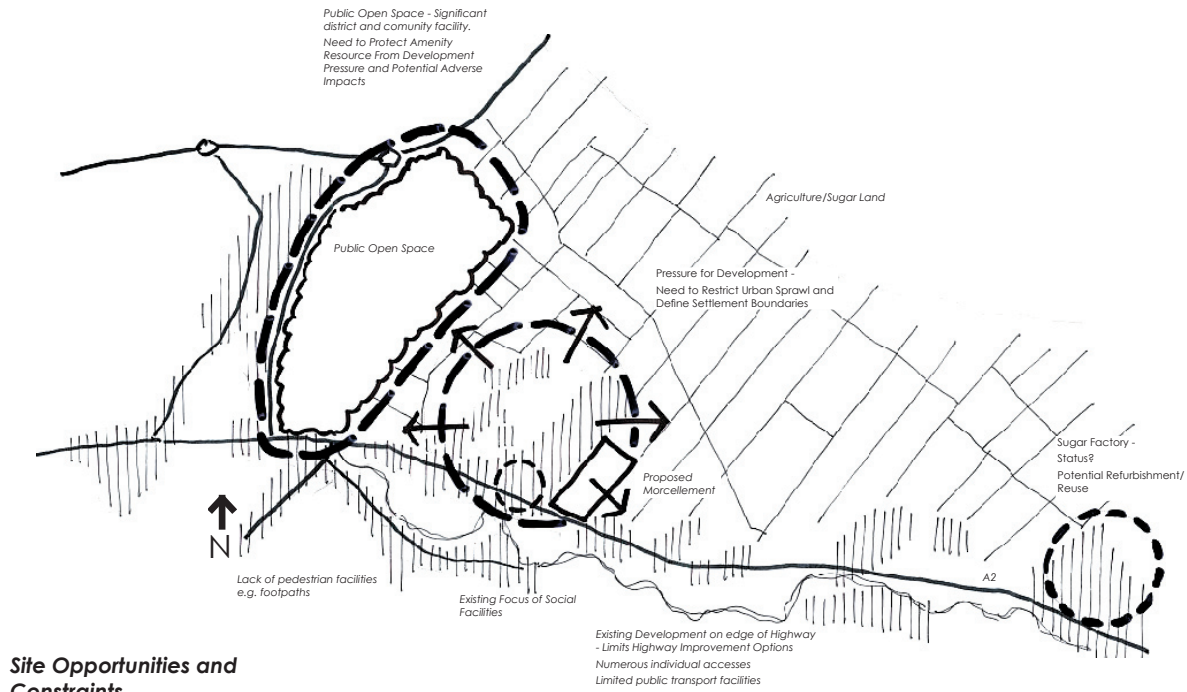
The Wider Context



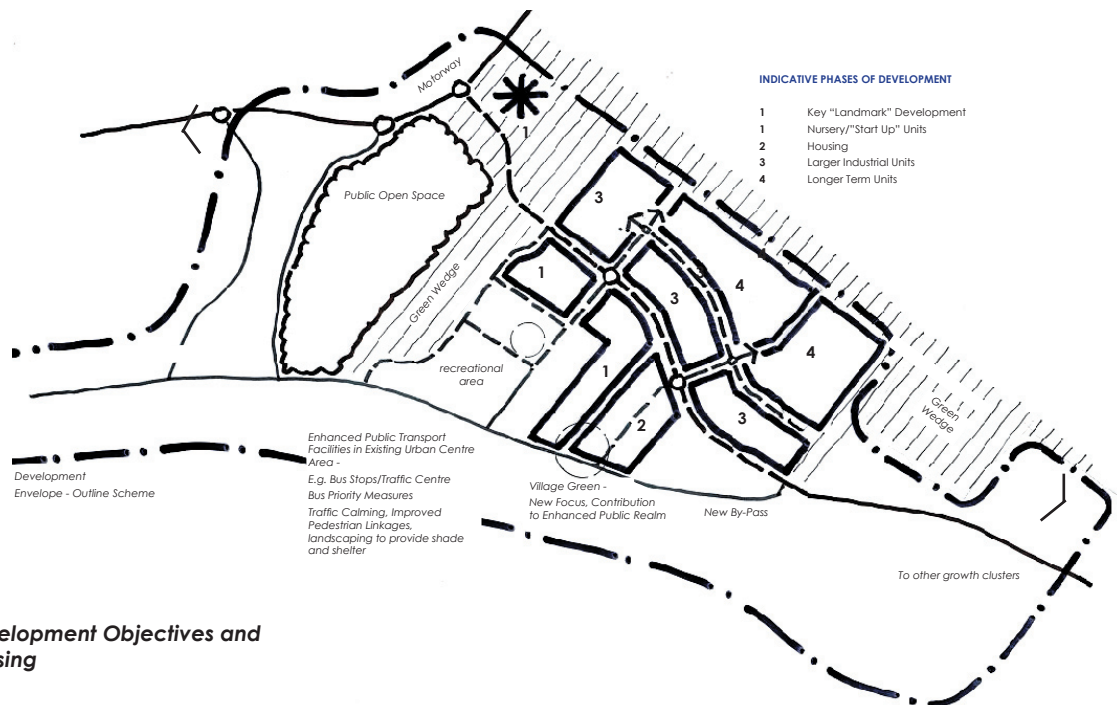
Contextual Opportunities and Constraints



The Design Process - Indicative Industrial Framework



Site Opportunities and Constraints

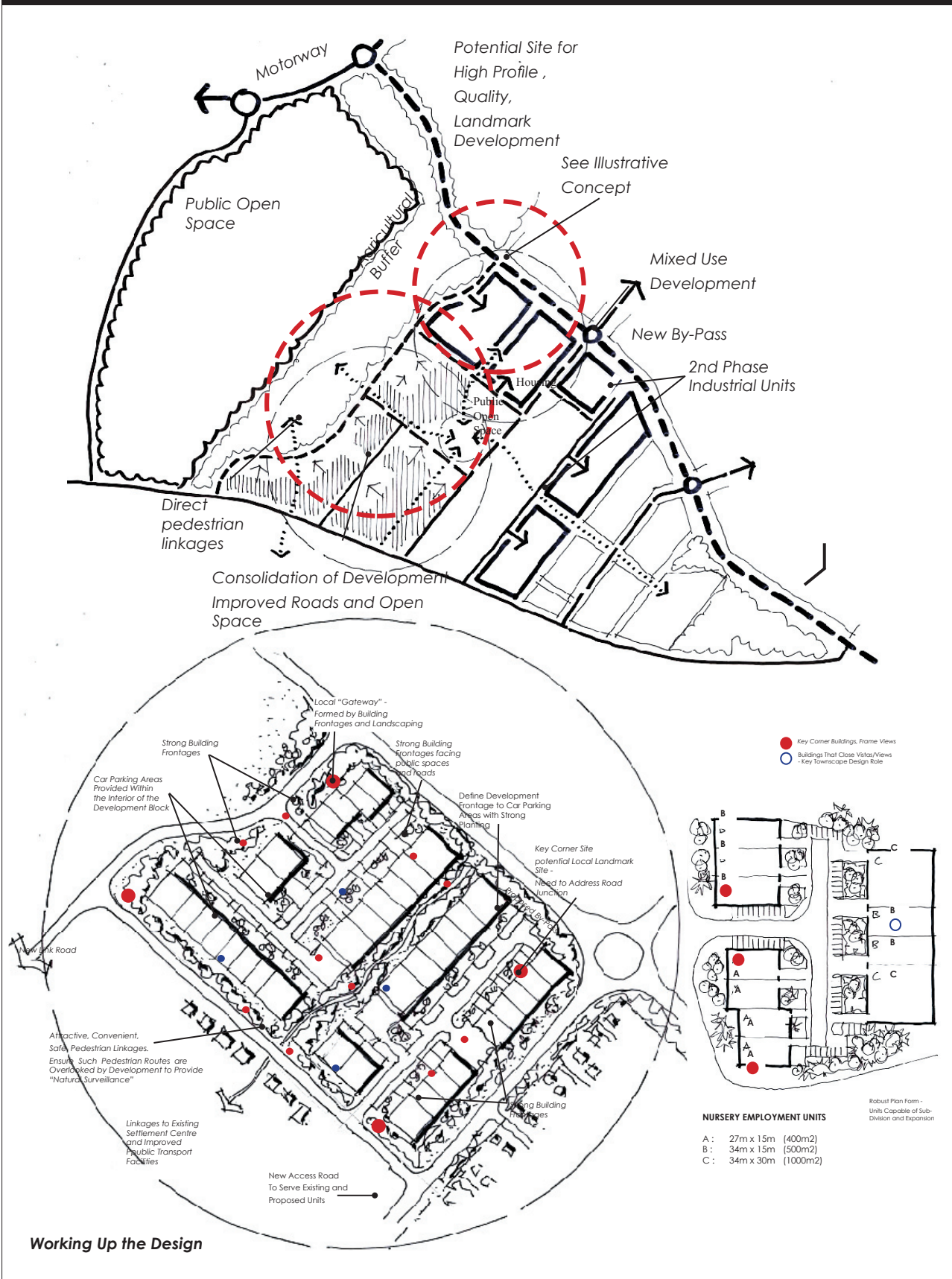


Development Objectives and Phasing



DESIGN GUIDANCE Industrial Development

The Design Process - Indicative Industrial Framework

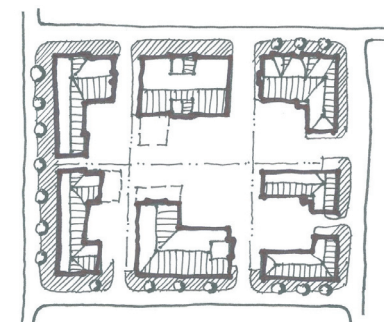




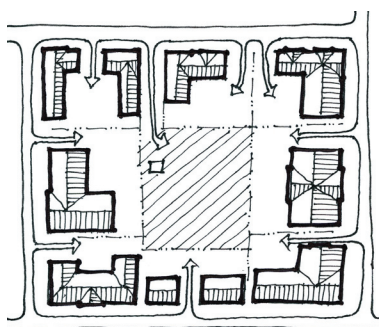
2.3 Layout: Quality of the Public Realm

Careful attention should be given to areas visible from public streets and highways. Wherever possible the layout and design of new industrial plots will be expected to front buildings onto the public realm and to enclose "private" external spaces, such as yards and service areas (which are most often the source of disturbance) behind them.

The illustration left shows the perimeter block principle applied to a small industrial development. The public "fronts" which require most architectural attention are shown shaded. Design advantages to this approach include:



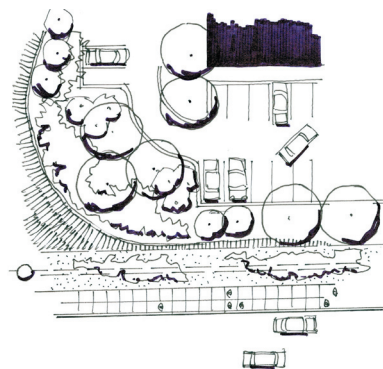
Perimeter Block



Storage areas and service yards are in the centre of the block and enclosed from public view

- Buildings can better screen noise and other disturbance, thus reducing potential conflicts between neighbouring businesses and activities.
- Storage yards, service and parking areas are more effectively enclosed from public view behind building fronts.
- Gaps between building frontages and the need for security fences and walls to public boundaries are minimised. Well designed building elevations are more secure and more attractive than long lengths of blank wall or fencing.
- General security can be further enhanced where industrial buildings provide windows (to offices, canteens, or other active rooms) that overlook the public street and provide surveillance.
- Business signage can be readily accommodated on front elevations. The business activity can be clearly advertised, whilst avoiding the need for free standing signs, flags and banners, which can often result in unsightly and distracting clutter.

This is a very different approach to the "pavilion" form of layout used in some industrial developments, which have large buildings set in the middle of plots and in isolation to other buildings. One of the features of the "pavilion" form of development is that it requires substantial landscaping to provide an attractive setting and to break up the large expanses of hardstanding needed for service areas and car parks that are exposed to public view. But for some industrial businesses, extensive landscaping within the plot can conflict with basic operational needs, and often requires high maintenance costs.



Street frontage car parking areas are "softened" by landscaping

2.3.1 Street frontage and Parking Areas

Visitor and short term parking spaces may be sited between the street and building entrances provided the parking area created is not the dominant visual element. Smaller parking areas should be provided separated by buildings and landscaping. Where parking occurs along public streets, landscaping buffers should be provided to minimise views of parked cars. The landscape buffer should be at least 3 metres wide and include tree and understorey screen planting.



2.4 Plot Ratio

The size of the plot will depend upon the nature and size of the industrial activity.

Most modern industrial and storage uses favour a single floor level, although the building heights may well be the equivalent of three or more storeys. The relationship between the gross external area of buildings and the site area is often referred to as the plot ratio, and expressed as a percentage. It has been estimated ("Industrial and Commercial Estates: Planning and site development", English Estates et al, 1986, p.2) that most industrial activities have a plot ratio of between 30% and 50%, with a typical overall average of 35% to 40%.

The need for at least half of an industrial plot to be free of buildings reflects the demands on external space for storage, landscaping, car parking and standing and manoeuvring for large goods vehicles.

Problems can arise when growing businesses extend buildings and reduce open yards. Activities that should be contained within the plot, usually the parking of vehicles, spill out into the street. This not only causes congestion and problems for other businesses, but can also damage the quality of the industrial estate for example by damaging landscape verges.



For new industrial developments it will be expected that plot ratios will generally be between 35% to 40%, and no greater than 50% on any one plot.

Permit applications to extend or provide new buildings within existing industrial plots will be expected to maintain plot ratios below 50%.

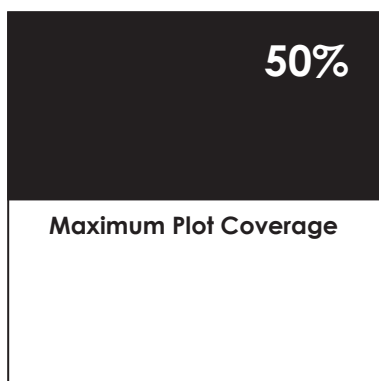
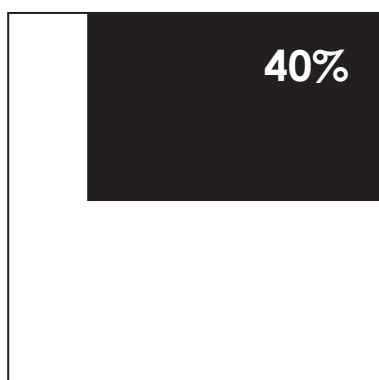
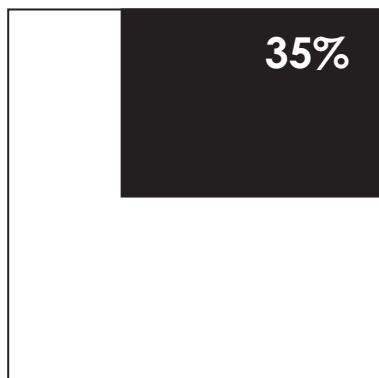
Where a new industrial site is planned with a plot ratio above 40%, it is recommended that structural options for extending the buildings into first floor or mezzanine levels be considered at the outset. This may allow a business to grow, without prejudicing the need to maintain an adequate plot ratio.

Exceptions to the above guidelines should only be considered where, in order to meet the needs of a particular occupier, it can be clearly demonstrated that all future on-site landscaping, servicing, storage, parking etc can be adequately accommodated with a plot ratio above 50%.

2.5 Building Setbacks

The setback is the distance between the plot boundary and the building wall or the kerb edge to parking spaces, access roads or pedestrian routes. Generally, the purpose of setbacks are to provide:

- Adequate space for landscaping to provide an appropriate setting to industrial development and/or act as a "buffer" between development and sensitive areas.
- Minimum reserves for essential utility services.
- Sufficient space for light and ventilation.
- Separation from noise sources.



Plot Ratios



DESIGN GUIDANCE Industrial Development

- Adequate distance between buildings to minimise the potential danger of fire transfer and provide access opportunities for fire escape and fire fighting.

S

FRONTAGE AREA

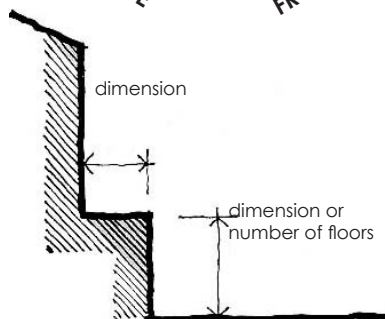
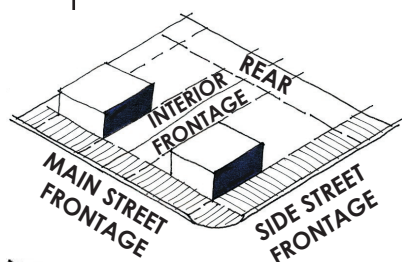
Main Street frontage	Building	6 metres
(& A and B Roads)	Car Parking/Internal Access Driveway	3 metres

SIDE AREA

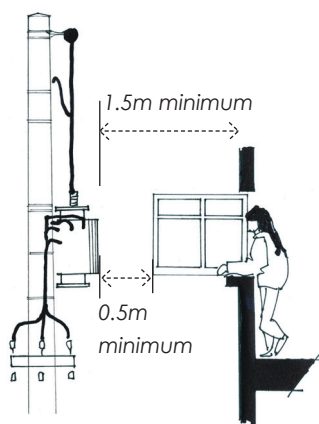
Side Street Frontage	Building	3 metres
	Car Parking/Internal Access Driveway	3 metres
Interior Frontage	Building	2 metres
< 9 metres	Car Parking/Internal Access Driveway	2 metres
> 9 metres	Car Parking/Internal Access driveway	0 metres

REAR AREA

Building	2 metres
Car Parking/Internal Access Driveway	2 metres



Vertical setback



Clearance from insulated electricity cable and/or transformer

It must be noted however, that building setbacks should be provided proportionate to the scale of the structure and in consideration of existing adjoining development:

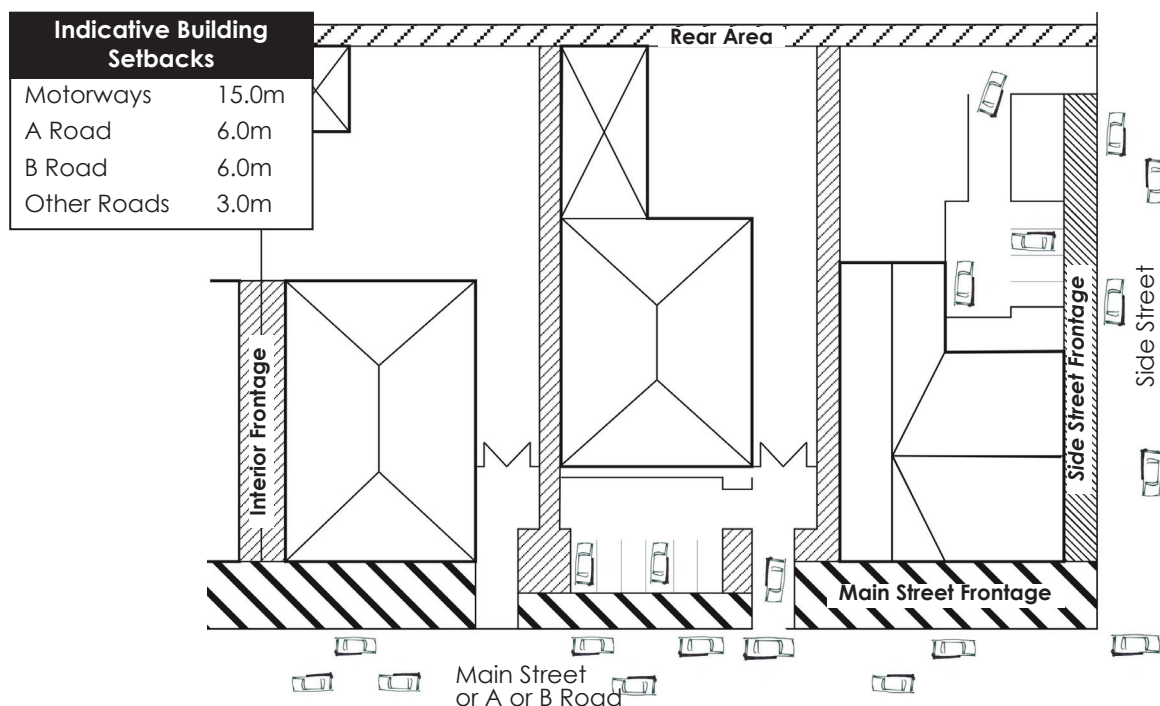
S

S

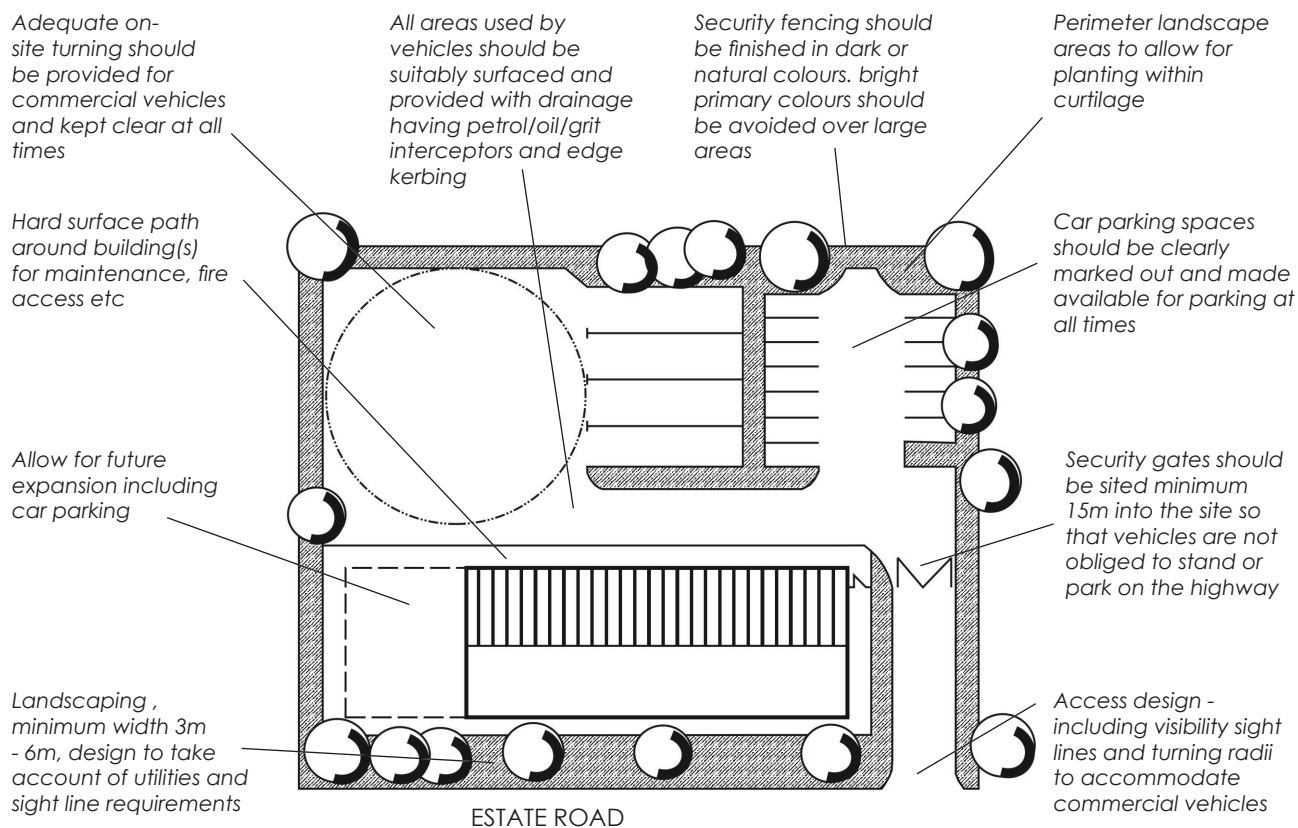
- Larger structures require more setback area for a balance of scale and so as not to impose on neighbouring uses. Generally, a 2 or 3 metre side and rear set-back is adequate for a one floor factory building of no more than about 4 metres high.
- For taller buildings the set-back must be increased by half a metre for each additional floor - e.g. for two floor buildings a 2.5 metre set-back is required, and for three floor buildings, 3.0 and so on.
- Buildings housing hazardous materials or activities may also need wider set-backs.
- Development adjoining Environmentally Sensitive areas will need to provide site specific setbacks.
- Industrial development adjoining sensitive uses, such as residential, will require increased setbacks (see Design Sheet Industry Adjacent to Sensitive Uses).
- Minimum setback requirements should also be informed by specific service and utility needs (See Technical Sheets).



DESIGN GUIDANCE Industrial Development



Industrial Plot Setback Areas

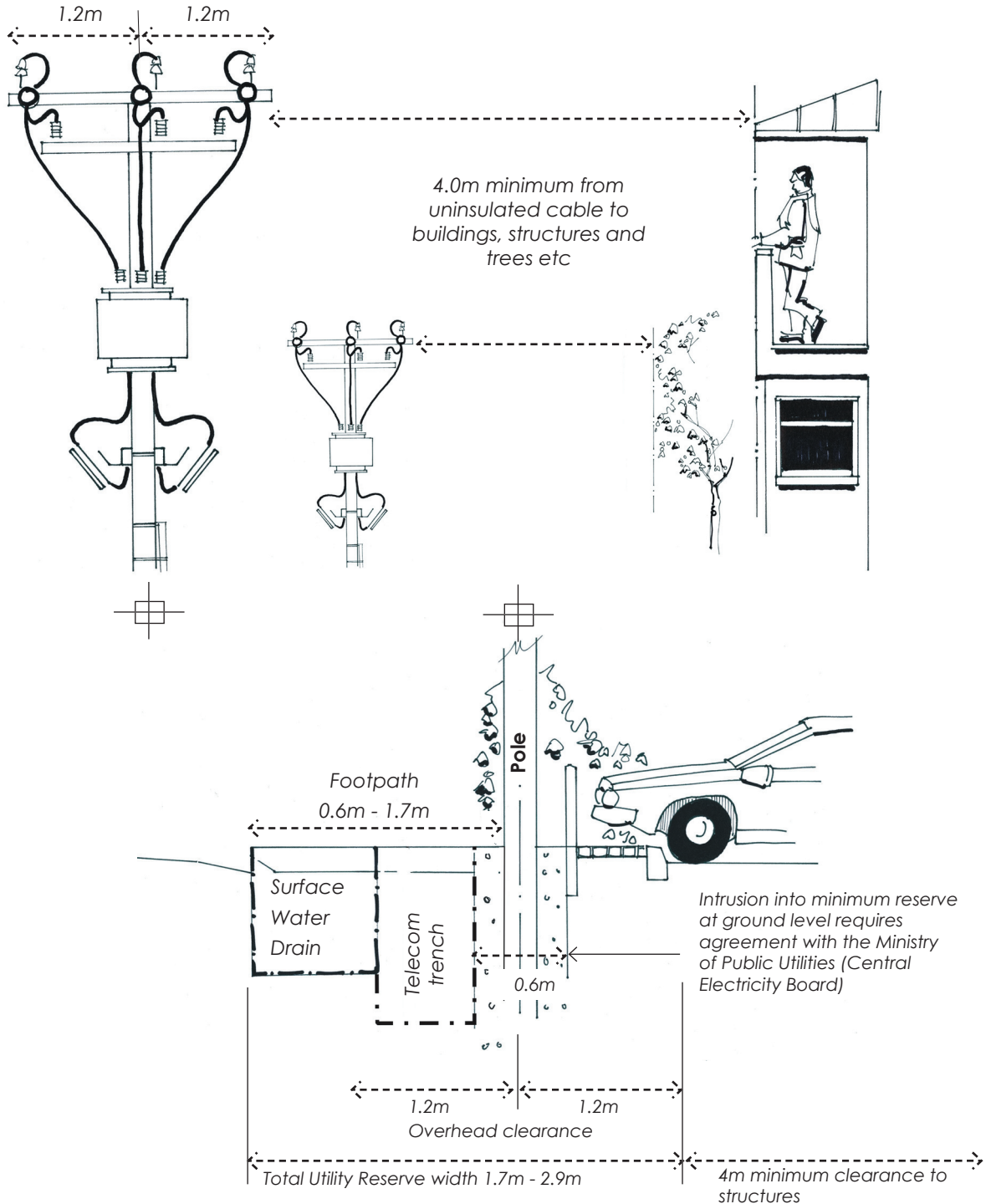


Industrial Plot General Layout Considerations

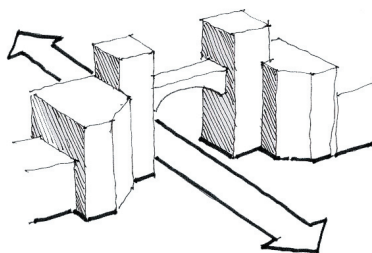


DESIGN GUIDANCE Industrial Development

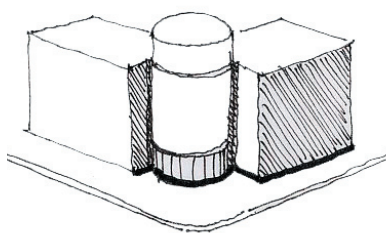
Uninsulated overhead cables



Minimum clearance and indicative reserve requirements for uninsulated overhead cables alongside other services



Gateway

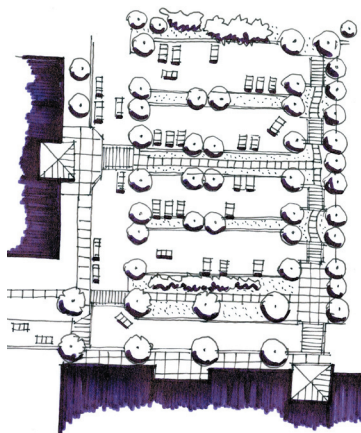


Prominent corner



End view landmark

Priority plots



Use landscaping to improve the visual quality of large car parking areas

2.6 Priority Plots

Special consideration should be given to designing industrial buildings on Priority Plots for their layout, massing, materials and landscaping. Such blocks of high visibility are key in maintaining the image of industrial areas both from external vantage points and internally as part of a visitors' perception and passage through the streetscape.

Priority Plots are designated as follows:

2.6.1 Gateway Plots

These are sites framing each side of the industrial area entry streets. Architecturally, the buildings should have a significant design treatment and be the best quality in the industrial area. Also recommended is some form of architectural or landscape feature oriented to the corners at the entrance.

2.6.2 Corner Plots

These are sites which are located on all corners.

2.6.3 End View Plots

These occur for example, where a T-junction or a curve in the street focuses views to them, or they occupy one end of a public space. End view blocks will be reviewed for their architectural interest.

Where possible, land use should relate to the nature of the street and access conditions. Although prestigious industrial uses fit readily in most industrial locations, priority plots are most prestigious and thus higher level uses should occupy these locations. Major corner sites, such as at the intersection of two major highways are critical, and should be reserved for land uses which typically generate significant building masses appropriate to the location, such as office or office/industrial uses.

2.7 Landscaping

Landscaping can have a dramatic impact upon the appearance of industrial areas and can be an essential foil to the scale and appearance of industrial buildings.

Given the scale of many modern industrial buildings, it is essential to consider at the outset how landscaping can be used to positively integrate the development with its surroundings.

A guiding principle should be that the type, size and location of landscaping should be appropriate to the scale and layout of the plot and buildings. Small, narrow and isolated planting areas are of limited value, and are likely to be ineffective in creating a landscape framework.

Priority should be given to hard and soft landscaping in the following areas:

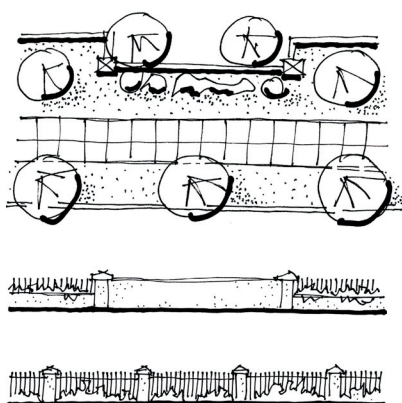
- Entrances to the site
- Focal points within the site
- Frontage areas and exposed exterior loading and storage areas



- Buffers between sites
- Parking areas.

An overall landscape plan should be provided illustrating a schedule of design elements, landscaping materials and details of earthmoving requirements.

2.8 Walls and Fences



Walls and fences should be designed to avoid long monotonous facades and should be open as much as possible

Walls serve a major function in the industrial landscape and will be used for security purposes and to screen cars, servicing and storage areas, and utility structures. The intent should be to keep the walls as low as possible while performing their screening and security functions.

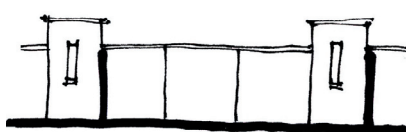
Where walls are used as property frontages, or screen walls are used to conceal storage and equipment areas, they should be designed to be consistent with the design of the whole project. Both sides of all perimeter walls should be architecturally treated.

Generally, landscaping should be used in combination with short solid wall segments, solid pillars and wrought iron grill work.

Along street frontages, long expanses of uninterrupted fences and walls should be avoided. Long expanses of wall surfaces should be offset and architecturally designed to prevent monotony. Techniques to achieve this may include: raised planters, openings, material changes, staggered sections, and pilasters or posts. Openings should be provided that connect pedestrian routes directly to the street and avoid circuitous routes. These pedestrian "gateways" should be announced by pilasters, trellises, special landscaping, or other special features.

2.9 Building Design

Industrial buildings can often present unattractive and monotonous facades.

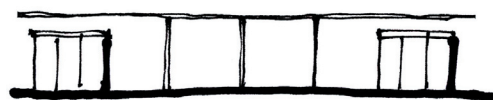


Building Ratio 1:3



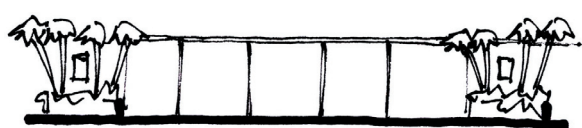
A single, dominant mass should be avoided. Typically, horizontal masses for building elevations less than 200 lineal metres should not exceed a height:width ratio of 1:5 without a substantial architectural element that projects up or away from the building, such as towers, bays, lattices, or other architectural features.

Buildings greater than 200 lineal metres should not exceed a height:width ratio of 1:6 without massing variations.

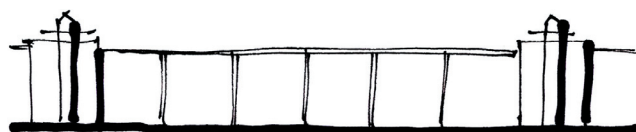


Building Ratio 1:4

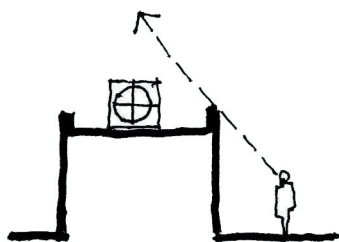
Entries and windows are encouraged to face streets and pedestrian walkways. Entries and active areas should be placed near the street to avoid long "unguarded" walkways.



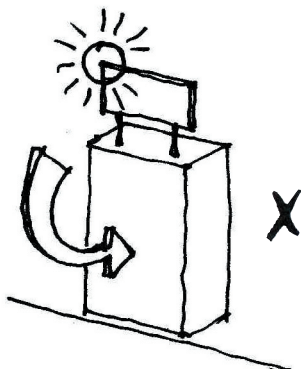
Building Ratio 1:5



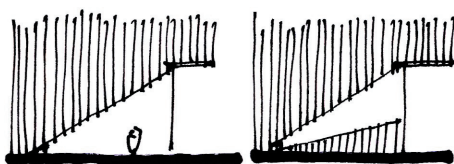
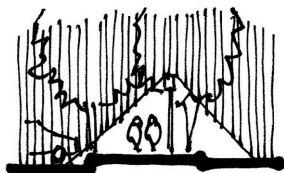
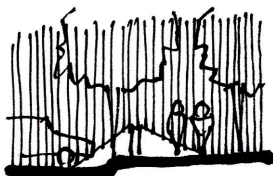
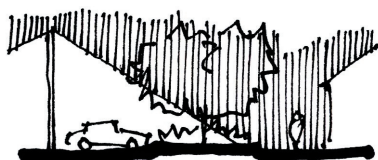
Building Ratio 1:6



Plant and equipment should be adequately screened



Buildings should not be used as advertisement hoardings



External lighting should be designed to reduce glare, improve safety and security and be of an appropriate scale.

2.10 Screening

Any equipment, whether on the roof, side of building, or ground, should be screened. The method of screening should blend with the building design in terms of materials, colour, shape, and size.

S

Screening for outdoor storage should be a minimum of 1.8 metres (6 ft.) and a maximum of 3.65 metres (12 ft.). The height should be determined by the height of the material being screened. Materials being stored should remain below the height of any screening provided. Exterior storage should be confined to portions of the site least visible to public view. The intent is to keep walls as low as possible while performing necessary screening and security functions.

Where screening is required, a combination of elements should be used including solid masonry walls, berms and landscaping.

The need to screen rooftop equipment should be taken into consideration during the initial design phase for the structure.

2.11 Signs

For most industrial activities, signage is required to identify the presence of the business and can be an important public signature for the business.

Poor quality, badly sited, or excessive signage can have an adverse impact upon the image of both the wider area and the individual business. Industrial buildings should not be used as advertisement hoardings.

On new buildings, the location for signage should be identified and "designed in" from the outset. Signage should be designed as part of front elevations where buildings face the street. Where mounted on buildings, signs should be framed within the elevation and should not protrude beyond walls, eaves, roof verges and any other architectural elements.

As a general guide, one sign per plot frontage, if sited carefully, should be sufficient to identify an industrial business.

Where several tenants occupy the same site, individual wall mounted signs are appropriate in combination with a monument or "menu" type sign identifying the development and occupants.

2.12 Lighting

The need for security lighting should be balanced with the need to reduce both light pollution and the nuisance caused to others.

Lighting should be used to provide illumination for the security and safety of on-site areas such as parking areas, loading and unloading facilities and pathways.

Applicants should indicate whether it is intended to floodlight buildings, perimeter areas and fencing, car parking or service areas. Any such lighting should not cause a traffic hazard on adjoining roads nor cause a nuisance to any neighbour. As a security device, lighting should be adequate but not overly bright. All building entrances should be well lit and all lighting should be shielded to confine light spread within site boundaries.



2.13 Small Industrial Workshops and Home Working

Small scale enterprises that are carried out in the home without modification of the dwelling may in some locations be acceptable, but stringent criteria are necessary to ensure that surrounding residential amenity is not compromised.

Industrial uses such as panel beating and spray painting, manufacture of furniture and vehicle repairs are not normally acceptable uses within residential areas due to dust, noise, fumes, vibration and other adverse environmental effects.

Examples of potentially acceptable small scale enterprises include cooking of sweets and food preparation, sewing and small scale clothing manufacture, repairs to electrical goods, minor car/mechanical and bicycle repairs, artists studios, offices such as book keeping, administration etc.

In order to provide for the start up of small scale enterprises the use of home as a small scale enterprise may be appropriate, but only where for example:

- daily vehicle movements associated with the enterprise are limited (less than 8 vehicle movements in total, to and from the site).
- there would be no adverse external nuisance such as noise, dust, fumes, vibration etc.
- loading and unloading are not disruptive to the amenity of the surrounding residential neighbourhood.
- the operator of the enterprise should normally reside at the premises and the numbers of staff employed on site is small (typically less than 3 in total).
- adequate parking is available for staff and visitors.
- all materials can be safely stored on site and stored materials are not unduly visible or intrusive in the street scene.

For both the use of home as office or other small scale enterprise the key consideration is whether the overall character of the dwelling and surrounding amenity will change as a result of the proposed use? If the answer to any of the following questions is "yes", then the proposed enterprise, by reason of its nature or scale is likely to be unacceptable:

- Will the home no longer be used mainly as a private residence?
- Will the enterprise result in a marked rise in traffic or people calling?
- Will the enterprise involve any activities unusual in a residential area?
- Will the enterprise disturb your neighbours at unreasonable hours or create other forms of nuisance such as noise, dust, fumes or smell?



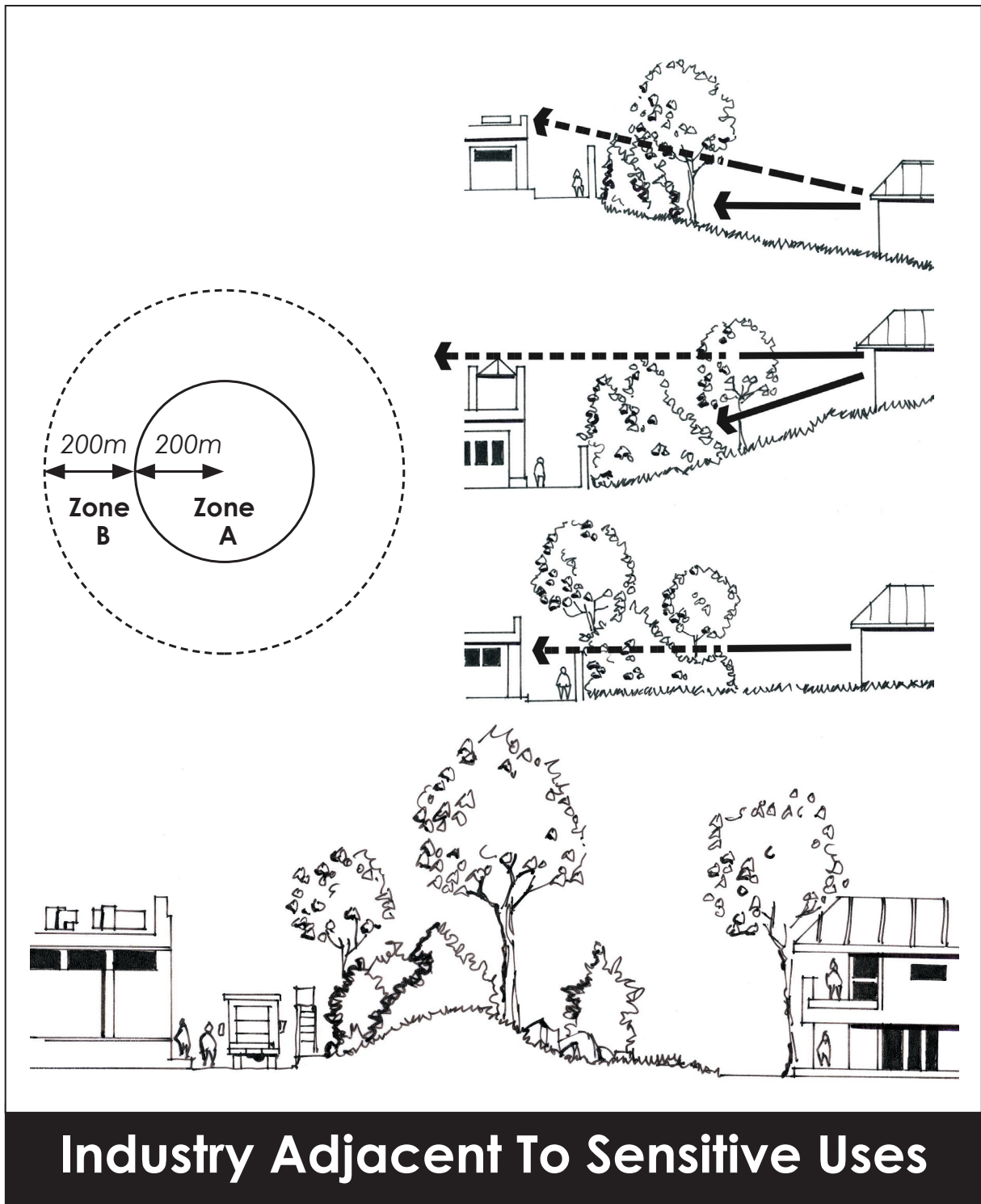
2.14 Fire Risks

Industries employing more than 15 persons or occupying more than 250m² of floor space should obtain clearance from the Fire Services Department on all aspects of fire safety, prevention and fighting.

In the case of hazardous processes or materials, a perimeter roadway may be required on every side of the building to allow for fire fighting access from any external point. A setback of 12.5 metres would in such a case be required. The roadway should be at least 4 metres from the building, so that fire tenders may be sufficient distance from any fire. A landscaping strip of no less than 3 metres should be provided between the roadway and any site boundary road frontage.



Design Sheet

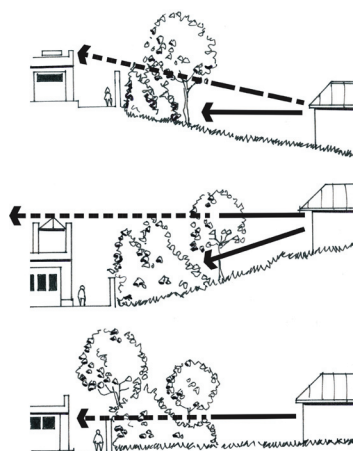


November 2004





Industry Adjacent To Sensitive Uses



S Note that where this symbol is placed, the guidance provided alongside it is considered to be the minimum/maximum acceptable and should normally be provided.

Where industrial areas are adjacent to non-industrial uses, appropriate buffering techniques such as setbacks, screening, and landscaping need to be provided to mitigate any negative effects of industrial operations.

The amount and type of buffer depends upon several characteristics including the land use and type of operation (nature of potential nuisance - noise, smoke, fumes, odour, dust etc), visibility between uses, existing topography, natural features and vegetation, building size and layout, amount of buffer provided by adjacent uses etc.

Bad Neighbour Buffers

Special consideration should be given to the particular requirements for buffer zones between sensitive land uses and bad neighbour industries. Buffer zones may need to extend up to 1 km distance. Sensitive land uses include housing, education and health facilities.

Indicative Buffer Distances between Bad Neighbour Industry and Sensitive Land Uses

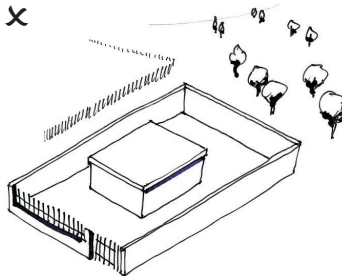
S

Use	Acceptable Distance of Sensitive Land Use from Boundary of Bad Neighbour Industry	Other Considerations
Poultry/Livestock Farm	200 metres	Not in irrigation zone Located in agricultural areas >200m from any slaughter house
Piggery	500 metres	
Slaughter House	500 metres	Offal must be stored below room temperature
Landfill	Up to 1 kilometre	50m from the coastline, 35m from river, up to 1 km from lake
Sewage Treatment Plant	200/200 metres	Zone A - Exclusion Zone Zone B - Notification Zone
Quarry, Stone Crushing Plant, Asphalt Mix Plant, Concrete Batching Plant	Up to 1 kilometre	50m from the coastline, 35m from river, up to 1km from lake
Hazardous Installation including Power Station, Tank Farm	Determined on case by case basis	Hazards include - fire, explosion, toxic release etc



Industry Adjacent To Sensitive Uses

Light and Service Industrial On-site Buffers



Avoid a compound appearance

Generally, on-site buffer areas should include a combination of natural features, landscaping, berms, walls, fencing, hedges, water features, and other attractive elements. Buffer plans that create walled sub-divisions with a "compound" appearance are discouraged.

Potential Impact on adjacent sites can also be reduced by ensuring appropriate building design, for example by the careful positioning of doors or the installation of appropriate ventilators, filters or noise insulation.

In some instances, it may be appropriate to site smaller units in front of larger ones to reduce apparent scale.

Creative site design, building arrangement and design is strongly encouraged.

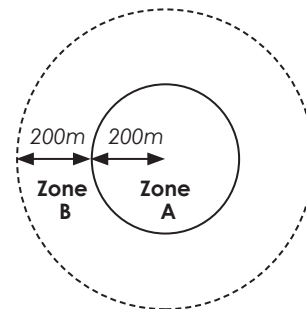
INDICATIVE ON SITE STANDARDS FOR LIGHT & SERVICE INDUSTRY

Minimum 6.0 metre landscape buffer alongside a minimum 6.0 metre building setback.

The landscape buffer should include a 2 metre high wall, berm or screen and dense understorey planting and trees.

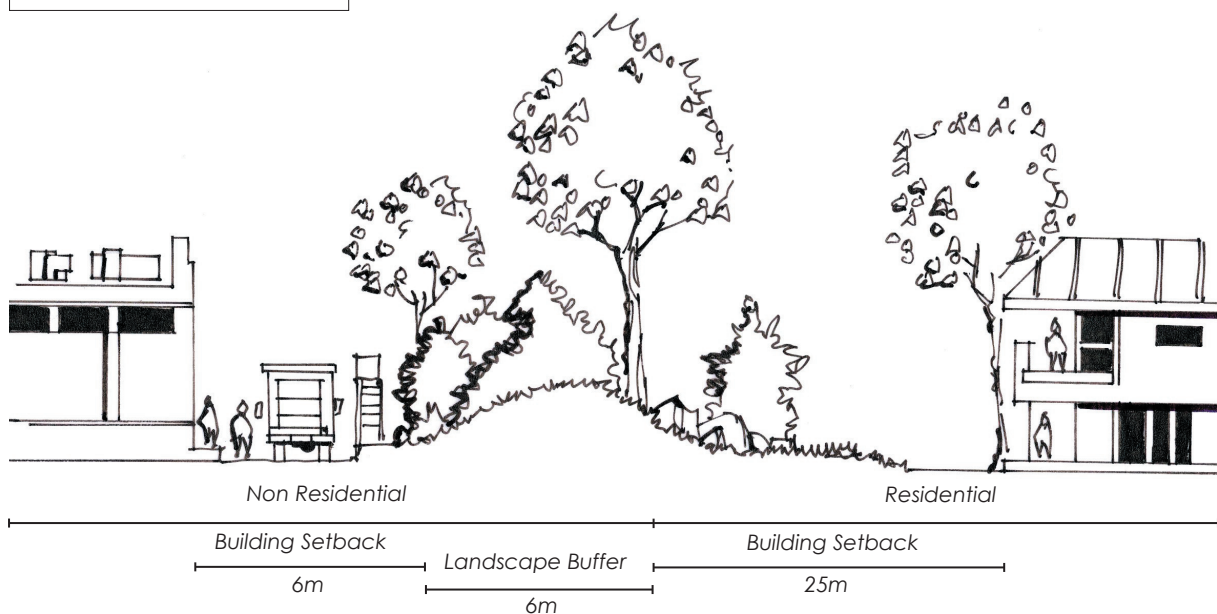
INDICATIVE ON SITE STANDARDS FOR RESIDENTIAL DEVELOPMENT

A 25 metre building setback.
The setback could include parking, paving, and carport/garage structures if a minimum of 10 metres of landscape buffer is maintained adjacent to industrial uses.



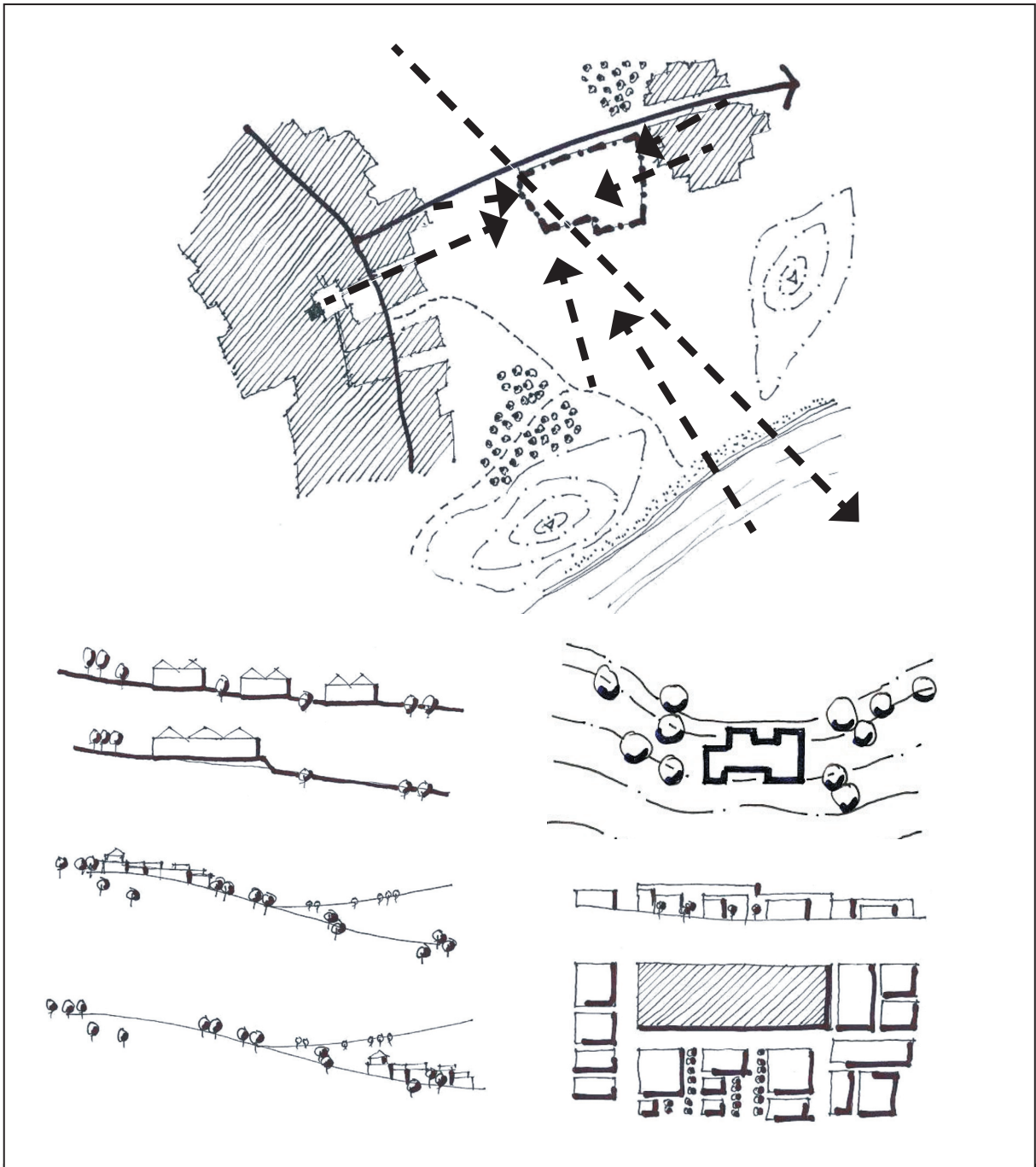
Buffer Zone Around Sewage Treatment Plants

Zone A: Exclusion Zone for nuisance sensitive uses such as housing, schools and hospitals
Zone B: Notification Zone.





Design Sheet



Industry In The Countryside

November 2004

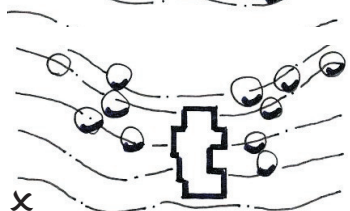
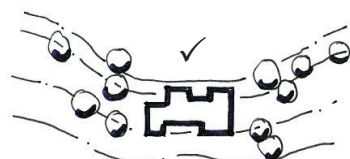


Ministry of Housing and Lands

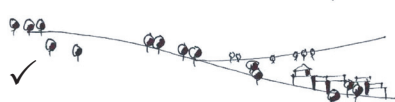


Industry In The Countryside

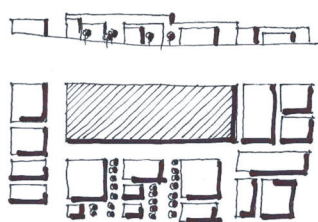
Your proposals may also require the submission of a Preliminary Environmental Report, Environmental Impact Assessment and/or a Transport Assessment. You should discuss the need for these with the Ministry of Environment and the Ministry of Public Infrastructure



On sloping sites align buildings parallel with the contours



Avoid developing industry on the crest of hills



Front large industrial units with smaller units to reduce apparent bulk



Where possible create smaller floorplates and step down slopes

Changes in the sugar industry and rural economy and the need for local employment are likely to see increasing demand for small scale industrial development in the countryside. If it is to be acceptable to local communities, such development must make a positive contribution, not only to the economy, but also to the character and appearance of rural areas.

The design approach for the majority of industrial development in rural areas should be one that seeks to contain buildings and sites within the existing topography and landscape, where the landscape character is predominant and enhanced where necessary.

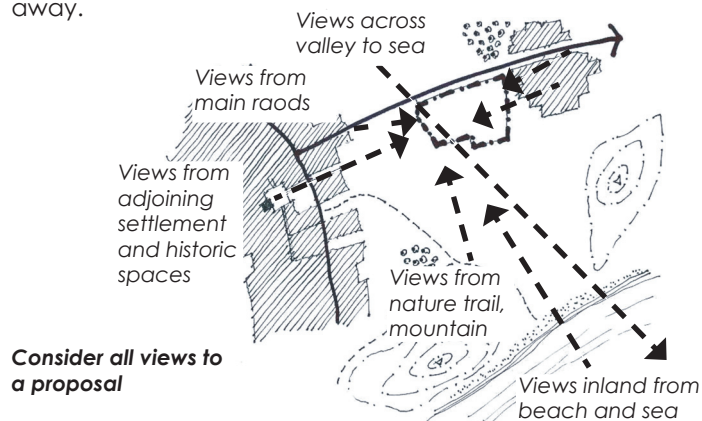
It is important to consider the appearance and impact of new industrial building from a number of view points and distances. Because of the likely size of industrial buildings, long distance views are important. From afar, size and outline may be more important than detail.

In seeking to reduce the visual impact of new development in the countryside, breaking the skyline with buildings should be avoided. Avoid locating buildings on the crest of hills. Where this is unavoidable, tree planting belts or groups can create a screen and break the building silhouette on the skyline. This is especially important for larger buildings in exposed rolling countryside.

Consider siting smaller industrial units in front of larger ones to reduce apparent scale.

Extensive floorplates are better broken into smaller sections and stepped down a slope. On sloping sites align buildings parallel with the contours.

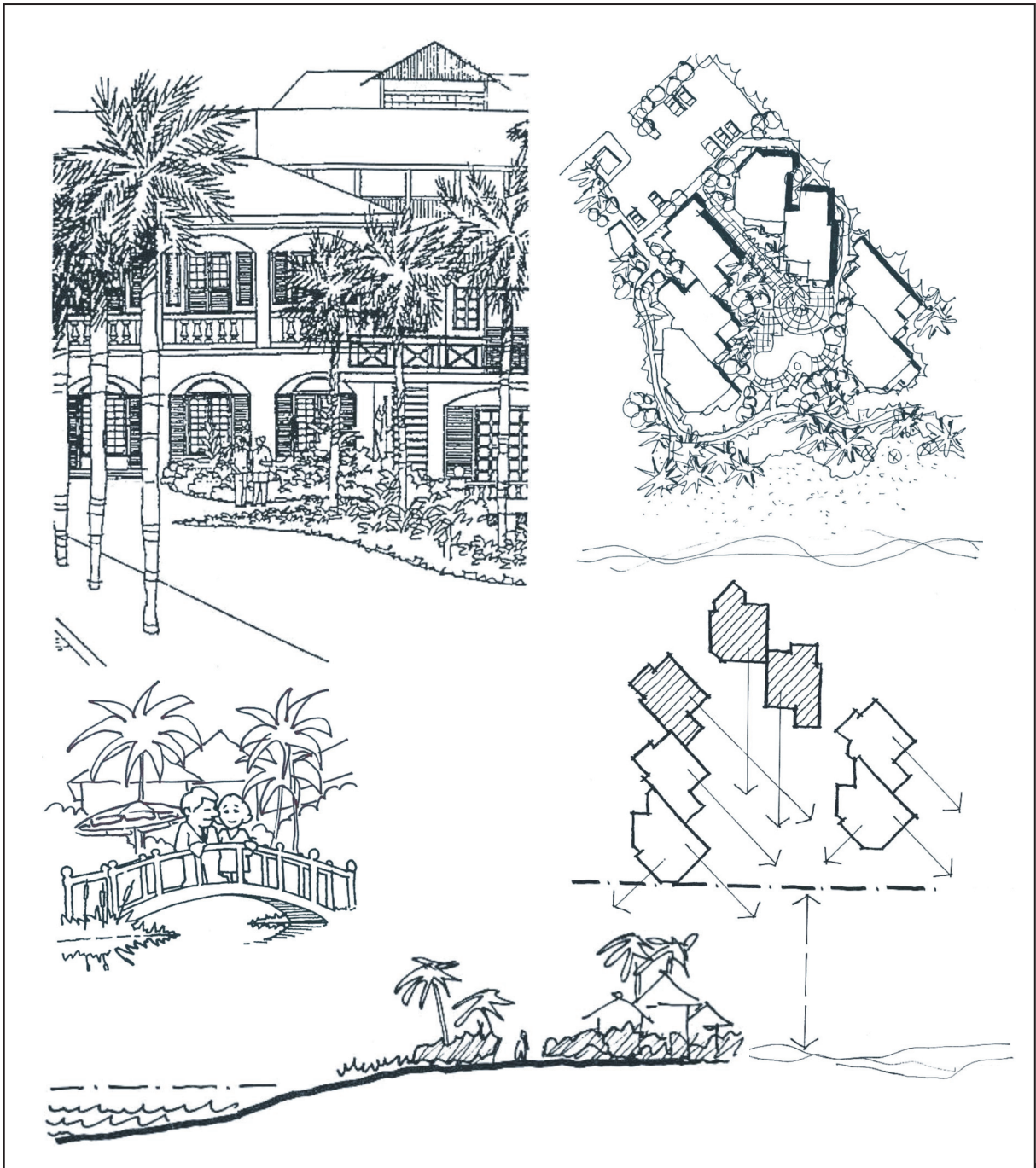
In locations where a new industrial building is exposed to wider views, natural, dark and non-reflective finishes will generally be more appropriate than light colours. Light colours are more prominent over longer distances and are less likely to be characteristic in the landscape setting of rural areas. Light colours or reflective material can also make a building appear larger than if darker, more recessive colours are used, and can have an adverse impact from many miles away.



Consider all views to a proposal



Design Sheet



Resort Hotel Development

November 2004



Ministry of Housing and Lands



Resort Hotel Development



S *Note that where this symbol is placed, the guidance provided alongside it is considered to be the minimum/maximum acceptable and should normally be provided.*

Beachfront resorts will continue to be the most desirable locations. However, these locations need accessibility to other attractions or be planned as part of the overall resort development to offer a variety of amenities, including golf, sports, entertainment and shopping.

Trends in resort development include:

- Families continuing to look for more flexibility in the location and timing of their vacation – short getaways or longer stays in destination resorts.
- Demands for convenience and reliability in amenities.
- Needs for physical security and privacy.
- Demands for environmental quality in design and operation.
- Increasing emphasis placed on learning and self enrichment opportunities in active recreation and lifestyle (understanding nature, golf, tennis, diving etc).
- The entertainment component growing in importance, putting pressure on resorts to meet increasing expectations with respect to resort design and operation.
- The concept of time share/vacation ownership is becoming more popular once again.

Major hotel and resort operators throughout the world have helped to raise the image of vacation ownership and advance its operating technology.

Future resort development will therefore likely include the following elements:

- Hotels, apartments and villas with a more residential 'feel' versus a commercial atmosphere – the appeal of 'home from home'.
- Access to excellent golf courses in a superb tropical landscape setting.
- Waterfront development.
- Theme/festival shopping and themed resort/residential developments.
- Quality of room design, space and furnishings with flexibility in unit configuration.
- Different types of themes within rooms – dark wood panelling to modern design.
- Commercial centres offering indoor and outdoor shopping experiences with on site food and beverage outlets.
- Pool areas for day time and evening social focus.



Resort Hotel Development

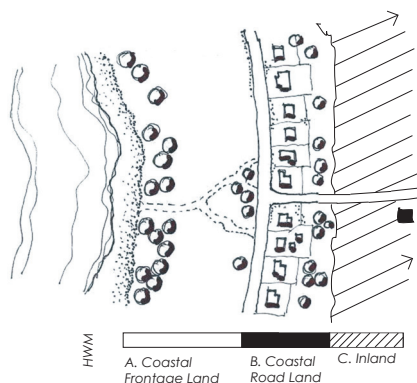
- Convention and conference facilities for corporate meetings/retreats.
- Learning programmes targeted at children and adults, responding to the growing desire of people on holiday to enrich their lives with learning experiences.
- Sports academies, health and fitness programmes, tennis instruction, nature tours and other learning activities.
- Good quality landscaping and site amenities with thematic elements in building and site design.
- Alternative forms of transportation – 'golf carts' and paths for bicycling in addition to footpaths.
- Security will become more of a design factor.

The aim will be to provide a unique and different resort environment and experience for all the family.

Smaller hotels and tourism apartments along the coastal road within 'resort centres' and close to tourism support facilities (restaurants, shops, banks etc), will also become popular. Such locations include Grand Baie, Mahebourg, Flic en Flac and Trou d'Eau Douce. Specific development briefs for new larger 'urban' hotels such as in Port Louis, should be prepared as part of detailed Action Area Plans.



Definition of Coastal Development Land



Development Types

Hotel/Resort - typically more than 4,000 m² in site area

Type A: Coastal Resort – Coastal Frontage Land

Quality/luxury (4 - 5+ star), either small boutique type developments of 8-30 rooms to say 200+ room up-market properties.

Type B: Coastal Resort – Coastal Road Land.

Value/quality (2 - 3+ star), usually new or redeveloped sites and used to upgrade existing product.

Type C: Inland Resorts

Value (2 – 3 star), usually edge of settlement and outside settlement and including hillside retreats and ecotourism lodges.

Tourism Apartments – apartments are self contained/self catering, often with swimming pool.

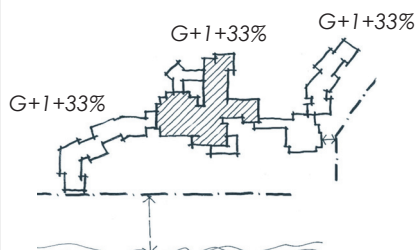
Type A: Coastal Apartment – Coastal Frontage Land

Type B: Coastal Apartment - Coastal Road Land

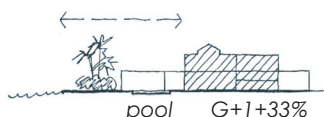
Type C: Apartments - Inland, town centre and edge of settlement.



Resort Hotel Development



Set back from cliff to be determined on site but not less than 30 m



High buildings set back from the coast

Coastal Frontage Land

Design Factors

Building Height

Measured both in numbers of storeys and height in metres. Restrictions are imposed on the proportion of building volume that may reach the maximum height expressed as a percentage of the total building ground floor area. This guidance is intended to promote variety in building volumes and form. Maximum height will also be related to location, existing built environment and natural site features.

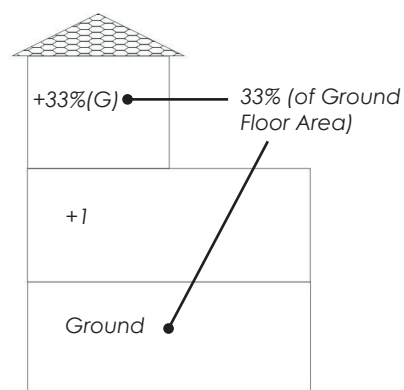
Plot Coverage

The percentage of the site area that may be covered by buildings at ground level.

Minimum Room Size

The net area of a typical double bed room, excluding bathroom, balcony, entry etc. It is emphasised that this figure is an absolute minimum standard. Larger areas of up to 30 m² should be considered for luxury resorts.

HOTEL RESORT	A Coastal Frontage	B Coastal Road	C Inland	S
Max Building Height	G + 1 + 33%(G)	G + 2	G + 2 + 50%	
Max Building Height in metres	13m	15m	18m	
Max Plot Coverage	20%	40%	40%	
Min Room Size (double bedroom, net room area)	18m ²	14m ²	14m ²	



For Type C Resorts – the guidance may be applied generally to most inland sites but with emphasis on type of development, location and site conditions. For example, for lodge development located in the countryside, maximum height restrictions may be imposed to respect the natural features (landscape setting, hillside etc). Higher densities may be appropriate near town centres, with height increased for special 'downtown'/waterfront locations.

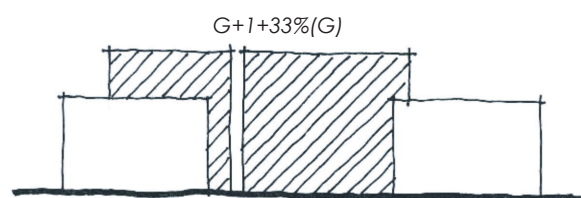
For Type C Apartments – residential/morcellement guidance should be applied with specific plots identified.

Note. The additional 33% should be used to ensure an interesting and varied roofline is achieved.

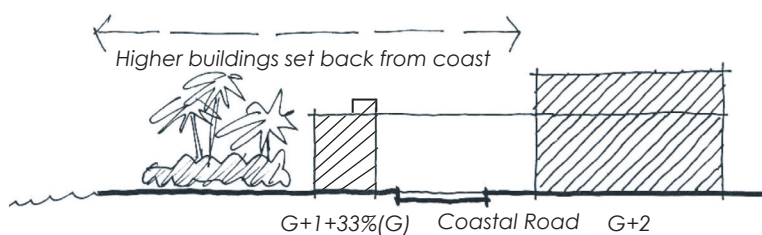
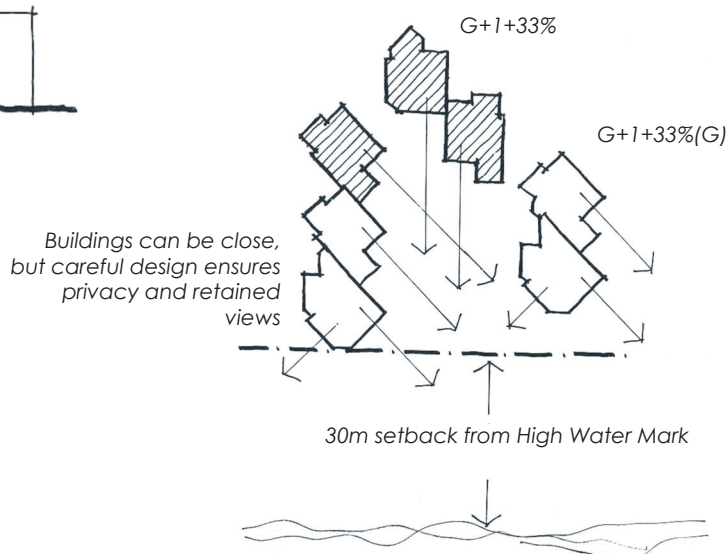
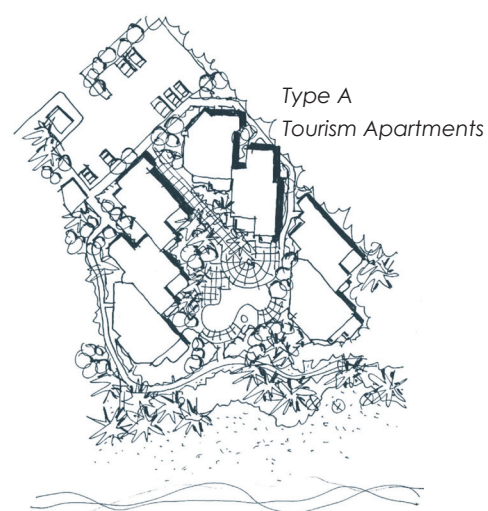


Resort Hotel Development

TOURISM APARTMENTS	A	B	C	S
	Coastal Frontage	Coastal Road	Inland	
Max Building Height	G + 1 + 33%(G)	G + 2	G + 2+ 50% (G)	
Max Building Height in metres	13m	15m	18m	
Max Plot Coverage	20%	40%	40%	



Coastal Frontage Land





Resort Hotel Development

Indicative Building Setbacks to Road Frontages

Motorways	15.0m
A Road	6.0m
B Road	6.0m
Other Roads	3.0m

Building height (m)	Minimum setback (m)
7.5	2.0 side 3.0 -15.0 front
15.0	3.0 side 3.0-15.0 front
25.0	5.0 side 6.0-15 front
Setbacks for buildings over 25m. to be agreed with Local Authority	
Single storey buildings should generally be no less than 0.9m from the side boundary but account must be taken of the likelihood of extending to provide additional floors. If this is likely then increased setbacks indicated above should be provided.	

Setbacks

Buildings and structures should be located as far back as practicable from the shoreline. The setting of structures back from the shoreline offers various advantages:

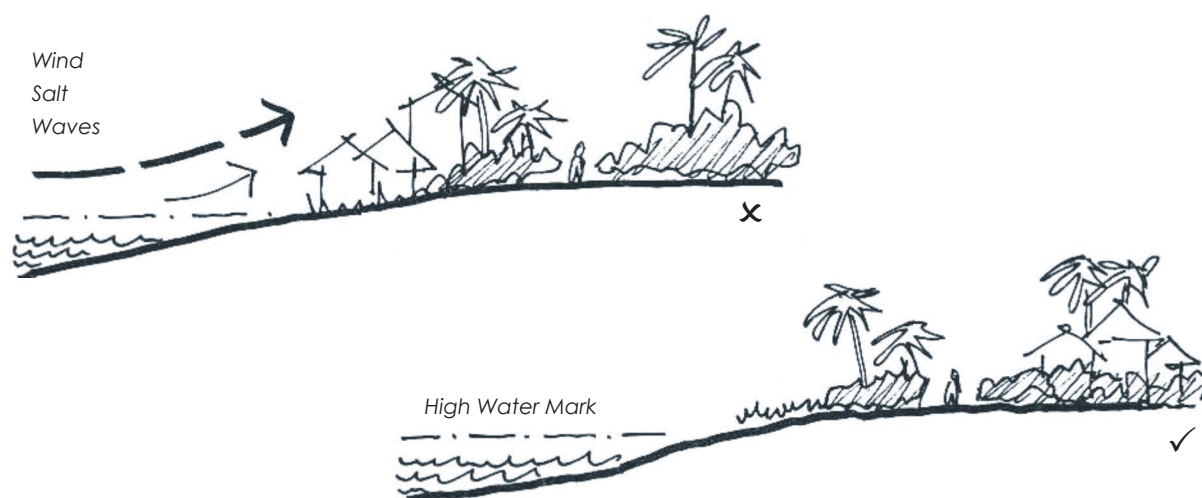
- Efficient connection to hinterland service systems.
- Reducing wind, salt and sand impact on structures.
- Reducing impact on unstable soils.
- Reducing interference with the flow of littoral sediments.
- Optimising pedestrian accessibility.
- Minimising overshadowing.

Setback from HWM should be determined on a site by site basis but should normally be a minimum of 30 metres. The beach space in front of the hotel may be permitted to be used as a beach facility reserved for the hotel, with the proviso that an area no less than 15 metres from the HWM should remain free of obstruction. All the facilities in this reservation should be removable.

- (S) Setback from roads should normally be 6 m from main road (A or B) and 4.5 m from adjoining public road. On local, access and lightly trafficked roads the setback may be 3.0m.
- (S) Setback from side and rear boundaries should be 2 m. In urban areas, this may be relaxed to achieve a continuous street frontage.

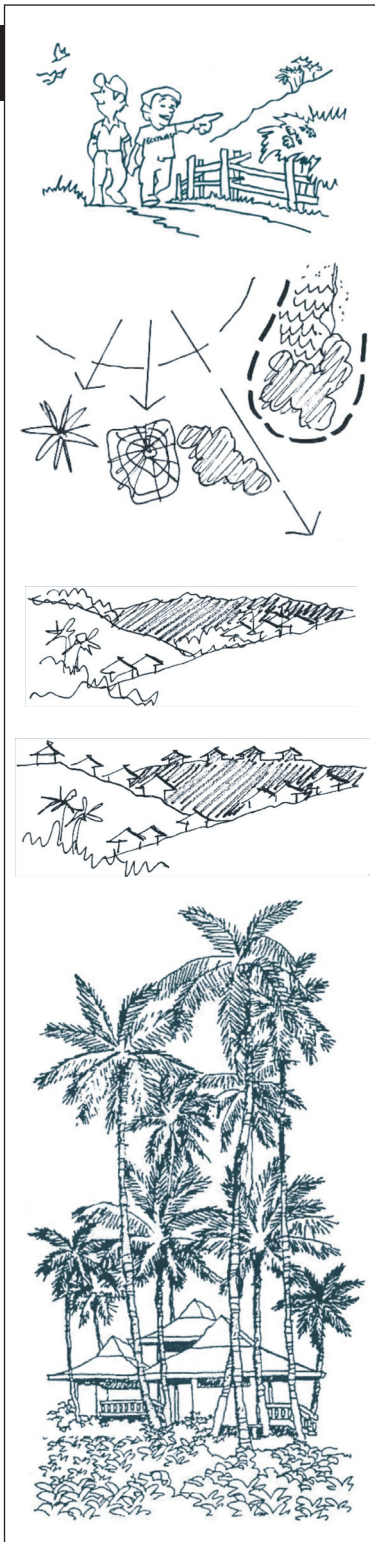
Car Parking

- (S) Provision should normally be made for up to 1 space per 3 rooms and 1 space per apartment.





Design Guidance



Hotels & Integrated Resorts

November 2004



Ministry of Housing and Lands



DESIGN GUIDANCE Hotels & Integrated Resorts

1 INTRODUCTION

2 THE DESIGN PROCESS

- 2.1 Integrated Resort Schemes
-

3 CONTEXTUAL ANALYSIS

- 3.1 Site Location
 - 3.2 Development Context
 - 3.3 The Site
 - 3.4 The Tourism Market
-

4 CONCEPT DEVELOPMENT

- 4.1 Character Areas
 - 4.2 Access and Circulation
 - 4.3 Activity Centres and Facilities
 - 4.4 Open Space and Landscaping
 - 4.5 Services
 - 4.6 Preliminary Master Plan
-

5 MASTER PLANNING

6 DESIGN FACTORS

- 6.1 Architecture
 - 6.2 Landscape Architecture
 - 6.3 Street Furniture
 - 6.4 Maintenance
-

7 OPERATIONS AND MANAGEMENT

- 7.1 Environmental Awareness
 - 7.2 Monitoring and Evaluation
-

DESIGN SHEETS

Resort Hotel Development
Golf Development
Marina Development
Eco Tourism Development



1 INTRODUCTION

This document provides design guidance for **Hotels** and **Integrated Resort Development** in Mauritius.

The objective is to create a set of performance criteria and design standards that are applicable to most forms and scales of development. The Design Guidance is equally appropriate for use by individual site owners as well as developers of large resort schemes.

Design Sheets have also been produced that consider special design circumstances and supplement the Hotels and Integrated Resort Development Design Guidance. The Design Sheets include:

- Resort Hotel Development
- Golf Development
- Marina Development
- Eco Tourism Development

Although the design guidance is based on performance criteria where possible, there are situations where certain standards or technical requirements must be maintained, for reasons such as health and safety. A series of **Technical Sheets** have been produced and reference should also be made to these. The Technical Sheets include:

- Residential Roads
- Industrial and Commercial Roads
- Access for People with Disabilities
- Drainage
- Water Supply
- Mains Sewerage
- On-Plot Sewage Disposal
- Electricity
- Telecommunications
- Combined Utilities Summary Plans



2 THE DESIGN PROCESS

2.1 Integrated Resort Schemes

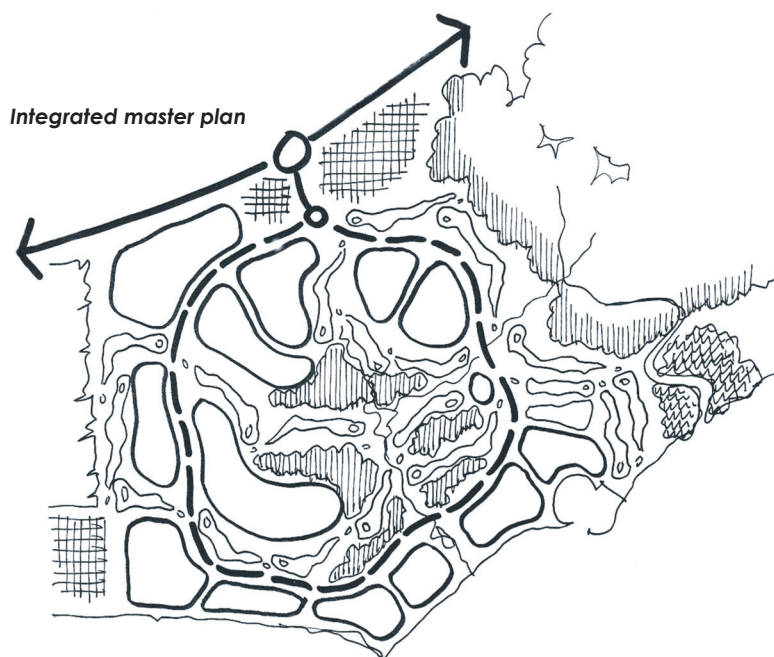
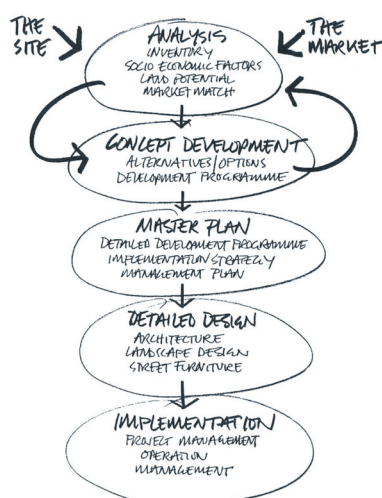
The following Design Guidance provides advice on the development design process for hotels and integrated resorts and identifies relevant issues at each stage.

The emphasis is not on a prescribed solution for each site or redevelopment scheme, but on a process through site and market analysis, conceptual planning, implementation and management to achieve a quality and sustainable tourism development project.

To illustrate the process, an example of the various stages of planning and design for a resort hotel within an overall integrated resort development is presented.

Future large-scale tourism projects in Mauritius are likely to include Integrated Resort Schemes (IRS) which may contain hotels, golf courses and associated residential development. It is expected that these IRS will attract local and international buyers alike.

Not all IRS projects however will include golf; the villa/golf frontage concept may not be appropriate or viable for all sites. Some projects will include a grouping of hotels (sharing the same infrastructure/utility provision and amenities) in a high quality landscaped setting, developed around themes such as horse riding, health, sporting academies or marinas. Other small scale projects may involve no more than a single hotel building.





DESIGN GUIDANCE Hotels & Integrated Resorts

The inclusion of golf in a project however, if well conceived, designed and maintained can contribute to environmental conservation and protection policies. Golf courses can provide, for example, a landscaped buffer between housing and hotel development, agriculture, natural vegetation, wetlands and the coastal zone.



3 CONTEXTUAL ANALYSIS

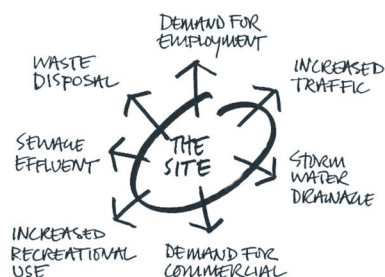
It is important that there is consultation with Government and other relevant agencies in the planning and design process. This consultation will allow developers to assess if a proposed development is compatible with planning policies for the area, surrounding patterns of development, access and the provision of services. Community consultation is also essential if a development proposal is to receive local support.

Development proposals will be assessed not only on internal characteristics but also on likely effects on resources outside a particular development site.

The analysis stage is therefore key and should consider the following aspects:

3.1 Site Location

The tourism zones outlined in the National Development Strategy (NDS) and Tourism Development Plan (TDP) take on their own characteristics. This should be acknowledged in the positioning of future integrated resorts. If golf is included in the project, then the proximity to other courses will be beneficial so as to feed off the already established golf destination. The most appropriate areas for new golf may therefore be:



Impacts outside the site



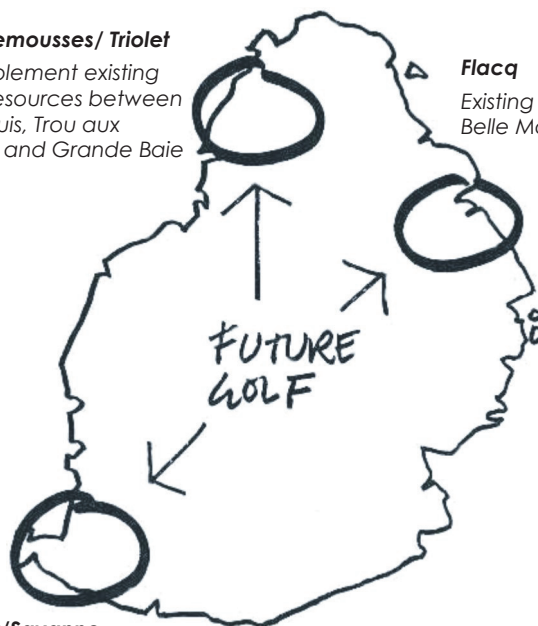
A special place

Pamplemousses/ Triolet

To supplement existing hotel resources between Port Louis, Trou aux Biches and Grande Baie

Flacq

Existing cluster around Belle Mare/Île Aux Cerfs



Black River/Savanne

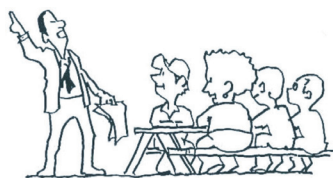
From Wolmar to Le Morne cluster and surrounding areas

Outside these areas, it is still possible to develop provided the project offers something extra special in terms of service and environmental quality. The development of inland sites, with high land and water availability, will take pressure away from the coastline. Also, some degraded areas may provide opportunities for resort development, allowing more options for site restoration.



DESIGN GUIDANCE Hotels & Integrated Resorts

An Action Area Plan should be developed with key stakeholders to investigate opportunities for involvement and benefits from the project.



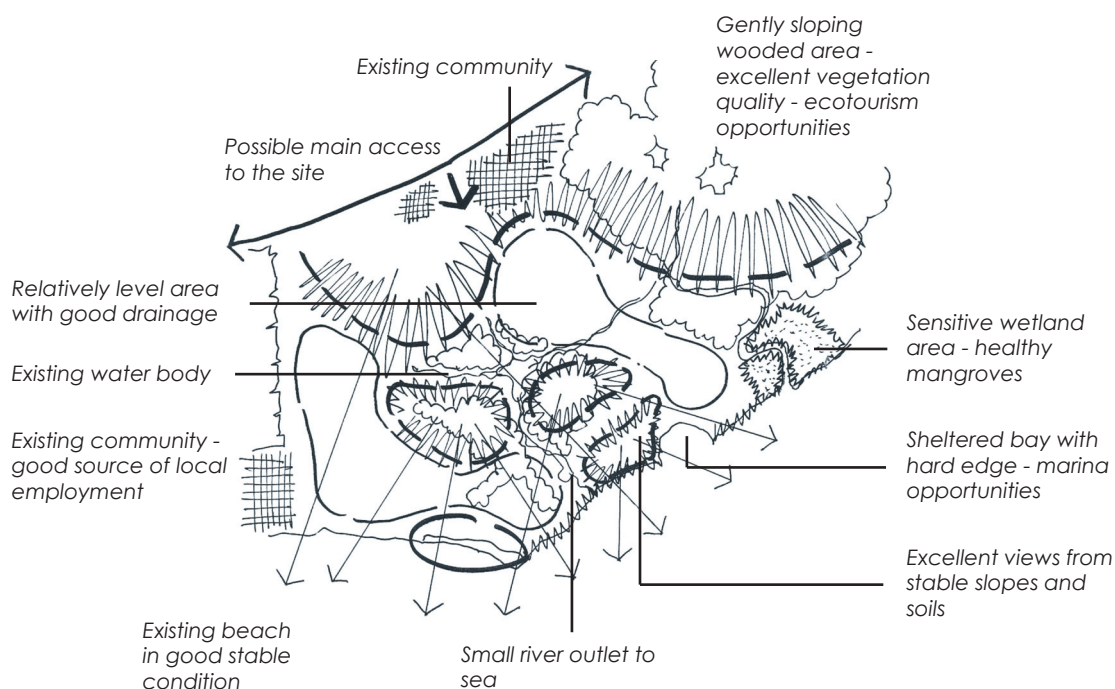
Stakeholders involvement early on is key

However, some sites are not appropriate for large-scale development:

- Prime sugar producing land.
- Sites where water resources are insufficient.
- Unspoilt scenic landscape value areas.
- Environmentally Sensitive Areas such as wetlands.
- Areas which are of socio-economic importance to the Government and community.

3.2 Development Context

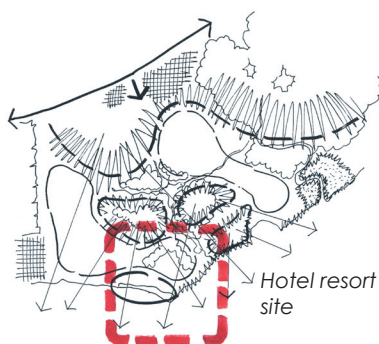
Recognition of the site's surrounding resources, provides the opportunity for the creation of a unique and sympathetic project which is central to a successful tourism development. Questions of environmental setting, views, pollution, scale of adjacent and nearby development, all need careful attention. For example, the development is likely to be more successful if it can retain a sense of identity with the area rather than contributing towards local conflicts, or place extra burdens on the community.



3.3 The Site

The prominence given to thorough site analysis acknowledges the importance of environmental awareness and responsiveness. Site analysis should include investigation of, and response to, a broad range of environmental factors and issues.

A coastal site within the overall integrated resort area is selected to illustrate the planning and design process.

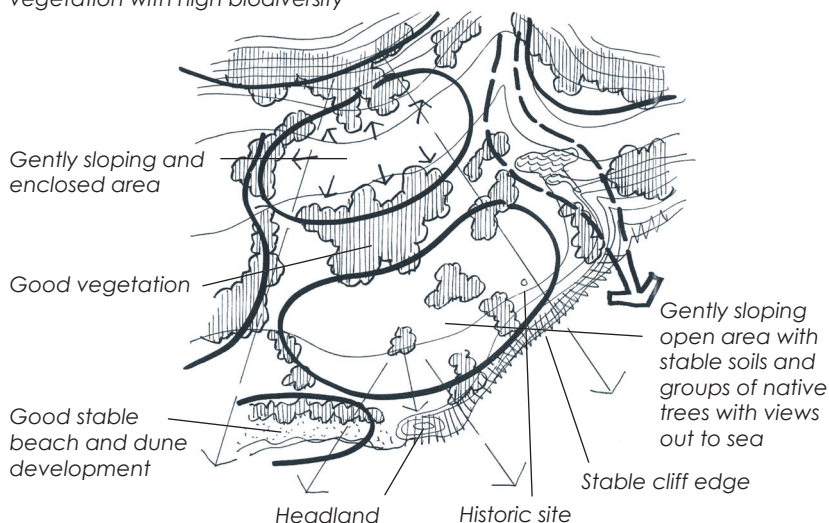


The Site



DESIGN GUIDANCE Hotels & Integrated Resorts

Steep slopes with rock outcrops - excellent vegetation with high biodiversity



3.3.1 Capacity

As difficult as it can be to determine, every site has a carrying capacity for development. A detailed site analysis should determine this capacity based on the sensitivity of site and coastal resources.

Note: If golf is proposed, the site needs to accommodate this use comfortably. A good 18 hole golf course, driving range and club house facilities would typically occupy between 80 – 100 ha. Add to this the resort and villa development, the total site area may be 400 ha plus.

3.3.2 Landscape and Ecological Value

It is important to carry out an early environmental assessment of the site and surrounding area. As much naturalised vegetation as possible needs to be retained to secure biodiversity and the integrity of the site. Local vegetation can suggest unique themes which may offer good design opportunities.

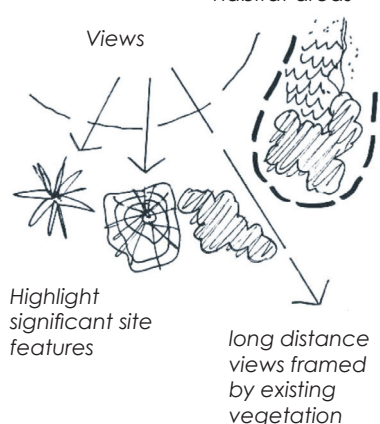
Unbuildable natural features, such as rock outcrops and groups of mature trees can be incorporated as open space and treated as an amenity and as a resource for developing the new site character as well as preserving natural wildlife habitats. Encouraging wildlife to remain close to human activity centres can enhance the visitor experience.

Views are critical and reinforce a visitor experience. Site utilisation should maximise views of natural features.



Try to ensure vegetation is conserved

Protect sensitive habitat areas



Respect scenic quality of an area

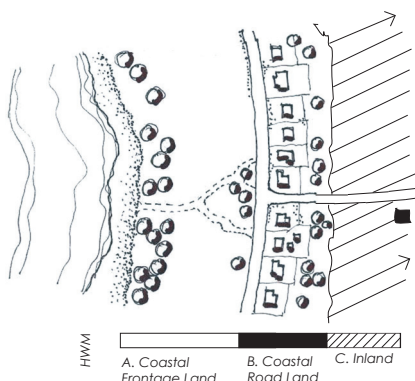


DESIGN GUIDANCE Hotels & Integrated Resorts

Site conditions may result in excessively high construction, operating and maintenance costs



Definition of Coastal Development Land



3.3.3 Land and Coastal Issues

A detailed assessment of the land characteristics of the site is required. Underlying rocks and stability will have a strong bearing on construction costs and methods.

Climatic conditions should also be noted such as rainfall, flood risk and wind. Prevailing winds could have a major bearing on water uses and design of irrigation systems.

Soil type, depth, drainage patterns and possible erosion problems, as well as oceanographic characteristics of the adjoining lagoon (if appropriate) are all vital considerations for long-term management of the site.

On Coastal Frontage Land constraints need to be carefully considered. Environmentally Sensitive Areas (beaches, wetlands, watercourses) need to be protected with buffer zones.

A. Coastal Frontage Land

Normally the strip of land between the high water mark and the nearest coastal road.

Consists of extremely fragile land where considerations of visual impact, environmental disturbance and pollution control are paramount. It is a key element in Mauritius's tourism product and it is equally popular with local people, but the emphasis should be on sustainable development in harmony with the environment.

B. Coastal Road Land

This includes those plots immediately fronting the coastal road and located on the inland side of the road.

C. Inland

This includes those areas that may not have a coastal road frontage but may still be visible from or relate to the coastal road.

3.3.4 Historic Features

Heritage, historic and archaeological sites all need to be identified. An archaeological survey prior to development is imperative to preserving resources. Once resources are located, they can be incorporated into designs as an educational or interpretative tool. If discovered during construction activities, work should be stopped and the site re evaluated.





3.4 The Tourism Market

Tourism development requires sound business planning to sustainably manage the environment, satisfy market needs and generate long-term profits. Careful planning and appropriate market research will help translate a new tourism development or existing facility into a well designed, market oriented and financially feasible project.

Successful developments for example, are those that provide what the market wants. Market forces are the central backbone to commercially successful tourism projects and therefore it is crucial that the planning process involves the market feasibility of projects from the outset. Issues include:

3.4.1 Market Audit

An initial evaluation of the potential of the destination in terms of visitor numbers, seasonality, length of stay, spending levels and airlift (seats on planes) to support the proposed project.

3.4.2 Market Forecasts

Surveys should be undertaken for both short and long term visitor forecasts to include potential volumes by geographic area and demographic characteristics. These forecasts should take into account marketing activity, both current and proposed, socio-economic conditions, trends in travel, destination preferences and style of facility.

3.4.3 Competitive Analysis

This will indicate the size, positioning and phasing that would be most appropriate. Analysis, taking into account both local and foreign competition should be undertaken on such project features as location, facilities, quality/positioning, pricing policies, linkages, occupancy levels and revenues and existing and future capacity. For example, many golf projects purport to be championship courses. Realistically, there are very few opportunities. If this is the intention, how will such expectation be realised?

3.4.4 Consumer Needs

Visitor forecasts, guest mix, activity preferences and trends in facility expectation provide a benchmark for market match analysis. Again, using golf as an example, many projects over estimate golf round targets, which could lead to failure to meet returns on investment targets.

3.4.5 Finance/Investment

Only those projects that are perceived as being potentially viable financially and meet market needs will have a chance to successfully secure investment funds for development.



3.4.6 Conclusion and Recommendations

The physical and market data will be analysed and synthesised into a definition of development potential based on site and market opportunities and constraints. The development summary should identify:

- Development and preservation zones.
- Potential programme and marketing concepts;
- Specific development sites having special location or physical characteristics; and
- Further data/specialist advice required for more detailed planning and design.

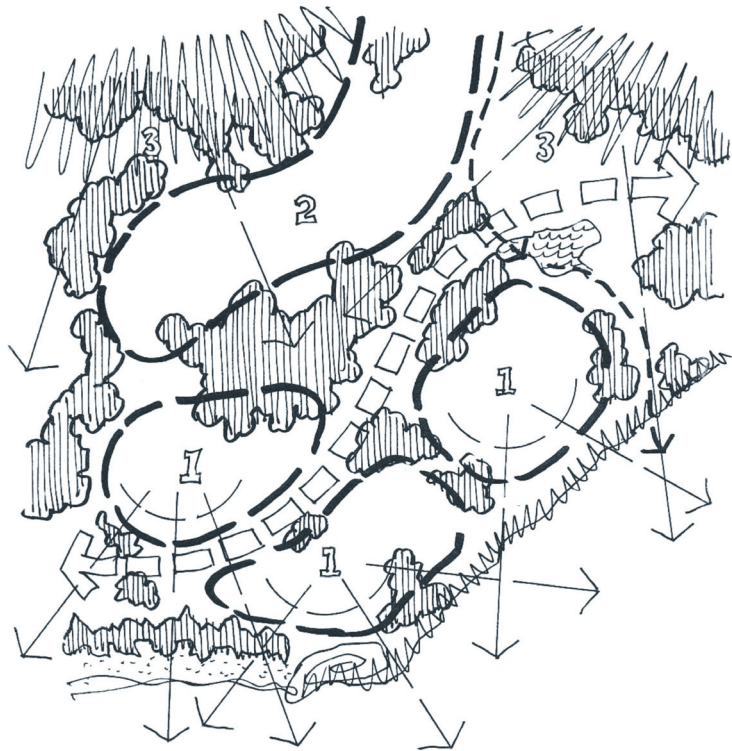


Development Potential

Zone 1 - Excellent

Zone 2 - Suitable

Zone 3 - Marginal



4 CONCEPT DEVELOPMENT

This can be broadly described as the conceptual design and image creating stage of the project, building upon the physical and market analysis.

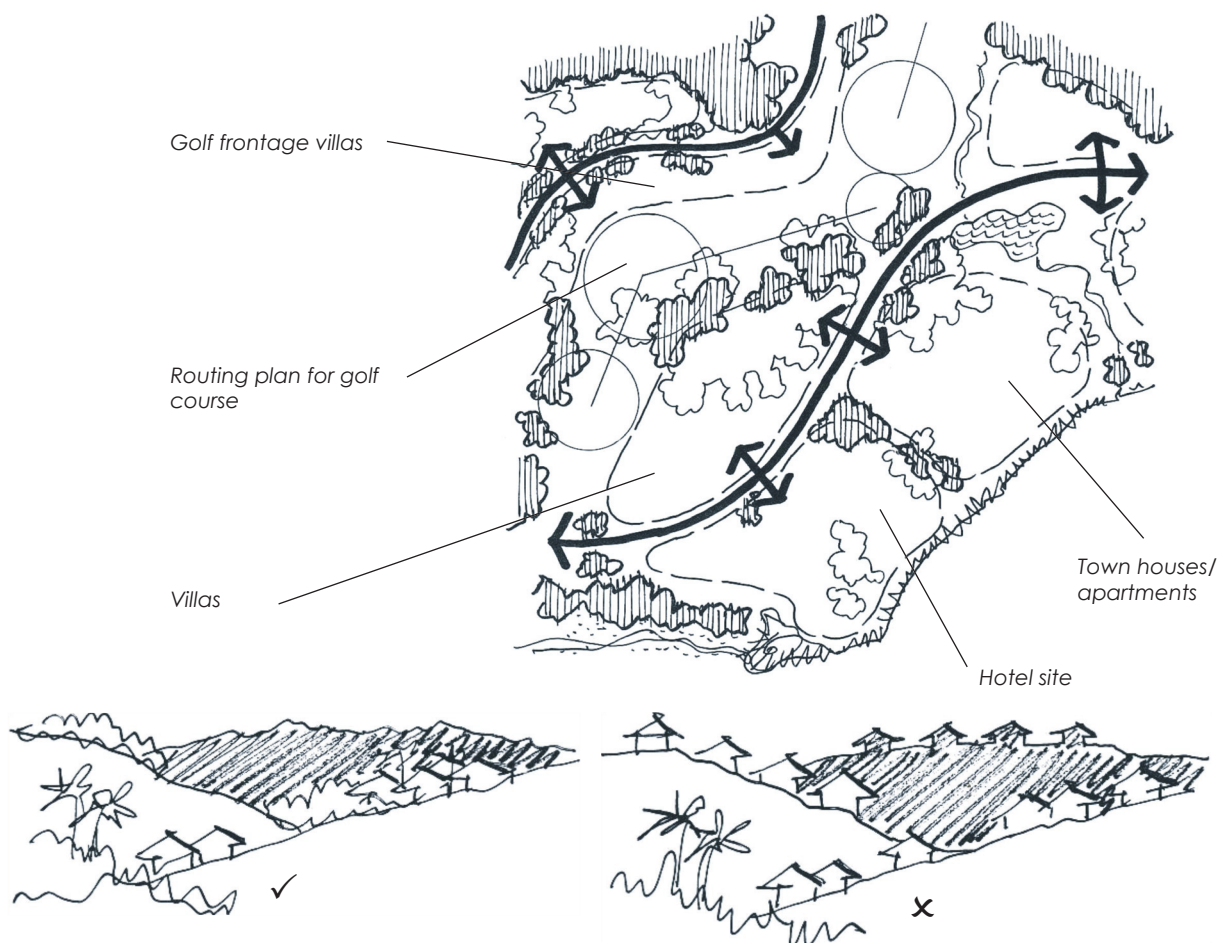
This stage of the project will therefore include:

- Testing alternative development scenarios and programme concepts (hotels, commercial, villas and apartments, golf, sports etc.).
- Interpreting and refining the programme.
- Establishing appropriate design criteria and standards and preparing alternative architectural massing character studies for the project.
- Preparing detailed studies to include: geological, natural water resources, utilities, vehicle circulation, road realignment and related infrastructures, beach engineering, construction materials and sources, and landscape material.

Relevant planning issues include:

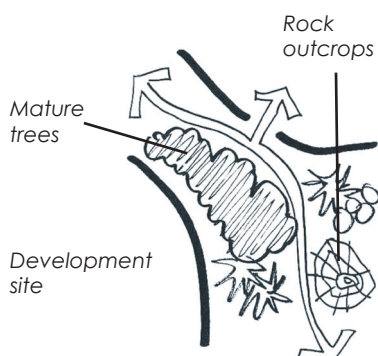
4.1 Character Areas

The distribution and relationship of amenities and facilities across the site, and in relation to one another. These should be organised to maximise the potential of the site's environment and designed to present a unified, cohesive appearance. One way to achieve this may be by separating the overall development into smaller elements and using landscaping to link buildings and provide a consistent theme or image.



Keep development off ridges and skylines and develop more sheltered and less visible sites

Natural buffers and small openings can be used for privacy rather than artificially produced through planting and clearing. Hilly topography and dense vegetation can provide natural ways of separating site components.



4.2 Access and Circulation

4.2.1 Site Access

Site access refers to not only the means of physically entering a tourism development but also the en route experience.

Other considerations for enhancing the experience of accessing a site include:

- Selecting corridors to limit environmental impacts and control development along the corridor leading to the facility.
- Providing anticipation and drama by framing views or directing attention to landscape features along the access route.
- Creating sequential gateways.
- Providing a sense of arrival at the destination.



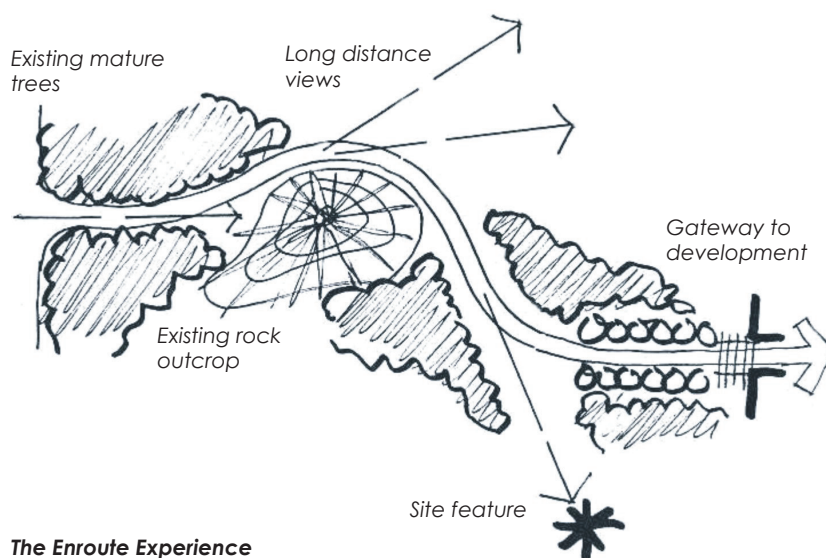
DESIGN GUIDANCE Hotels & Integrated Resorts

4.2.2 Circulation

The development of a coordinated circulation system for cars and pedestrians is crucial. For golf/villa development, the layout should try to achieve a balance between efficiency (setting out, infrastructure) and the desire to create an attractive place to play golf and to live. For example, long straight runs of plots are most efficient in terms of infrastructure, but give a monotonous and unattractive environment, whereas courtyards or clusters create protected environments and form coherent spaces and maximise golf frontage.



Optimise opportunities to enhance the visitor en-route experience



The Enroute Experience

4.3 Activity Centres and Facilities

These areas can be used to develop focal points of activity within the development. The links between these areas often become the underlying structure of the master plan. However, siting facilities, paths and roads to direct use away from sensitive areas such as critical habitats, is important.

Conflicts between uses should be avoided.

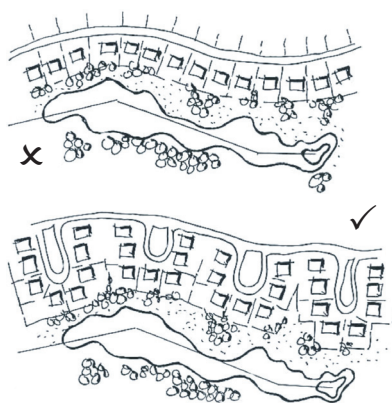
Parking should be designed to minimise the impact of cars, taxis, buses and service vehicles, both within the project and generally hidden from the resort area.

4.4 Open Space and Landscaping

Open space should be used as a form of value creation rather than treated as left over space.

Water storage areas can be integrated into the design of golf courses and be designed to create attractive water features.

Landscaping should be used to reinforce and enhance the development character - for example, it should be remembered that in a tourism project, paying guests are buying an environment rather than a collection of buildings.



Create attractive environments and form coherent spaces



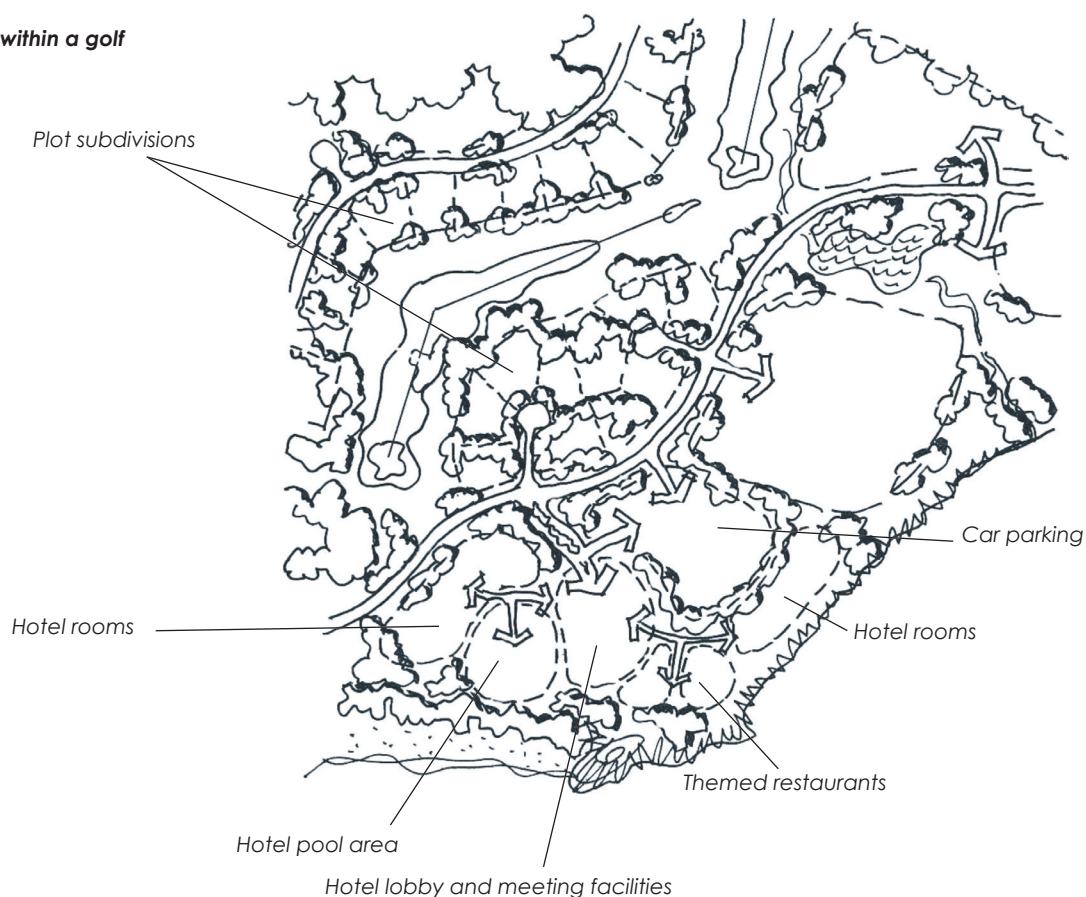
Water storage areas within a golf course

4.5 Services

Services should have little or no visual or audible impact on resort residents and visitors. Safety, visual quality, noise and odour are all factors that need to be considered when siting support services and facilities. These areas need to be separated from public use and circulation areas.

4.6 Preliminary Master Plan

After initial concepts have been evaluated, the design direction is established. Adjustments by each discipline are incorporated into the plan.



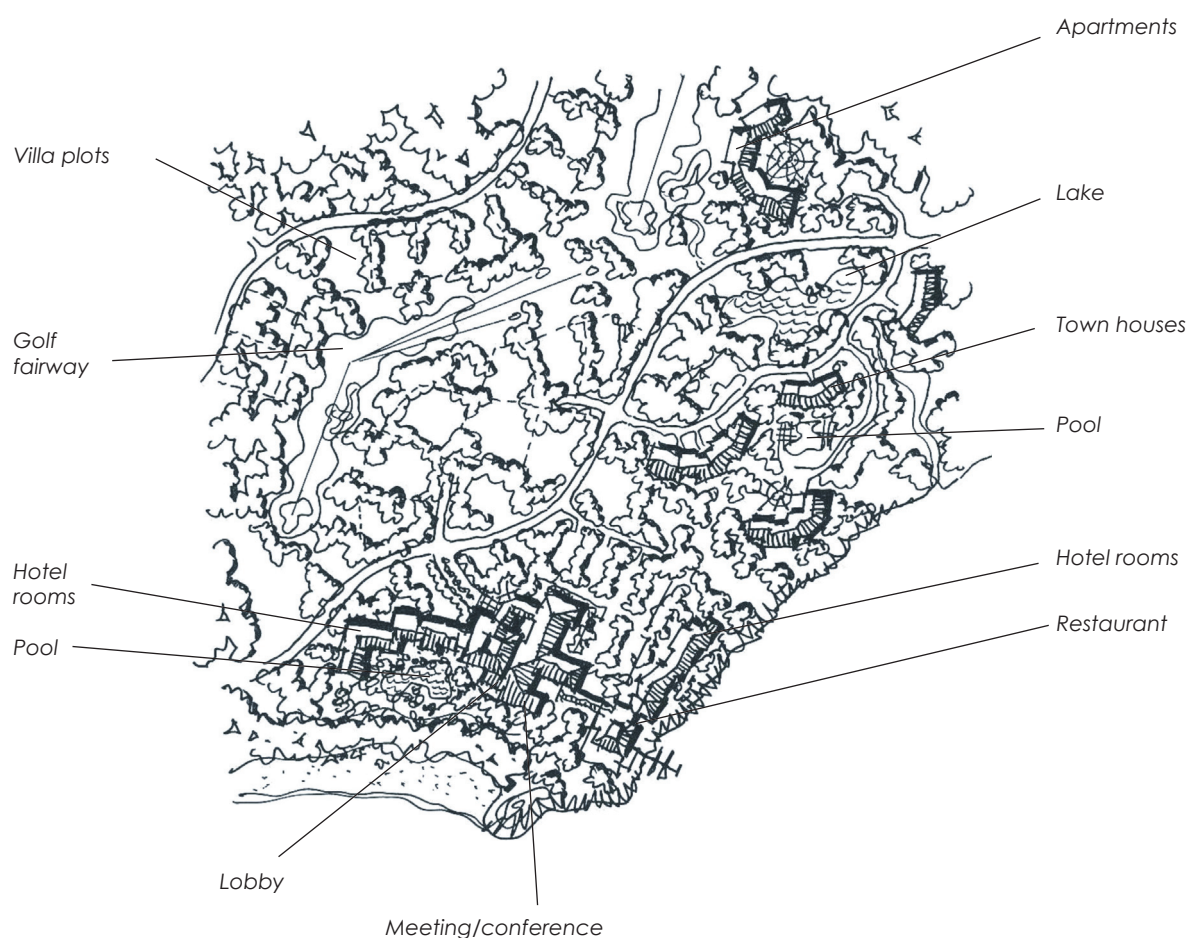


5 MASTER PLANNING

Based on the land-use plans and market-based product and facilities programmes developed in the conceptual design phase, this Master Planning phase should include a detailed development programme which considers market, financial and site planning opportunities and constraints.

The Master Plan should be an innovative expression of comprehensive planning and design and will be financially and economically sound and workable. It should include:

- Full description of project.
- Market sectors.
- Project costs.
- Financial projections/viability.
- Financing plan.
- Project implementation arrangements.





DESIGN GUIDANCE Hotels & Integrated Resorts

An overwhelming reason why tourism developers should act responsibly towards the environment and insist on high design standards, is that it is in their best financial interest to do so.

Pursuing an approach as set out in this guidance document makes good business sense and will help ensure the long-term viability of the individual project and of the tourism industry in Mauritius in general.

Sufficient graphic material and market/financial analysis should be prepared to describe the project. In addition to the Illustrative Master Plan, the following documents should be assembled:

- Illustrative/thematic sketches describing the design character of the development and marketing concept(s).
- Detailed site plans of selective typical land use types, golf course, products and densities.
- Design sketches, sections and elevations illustrating the design intent of the Master Plan.
- Phasing plans.
- Utility master plan showing location, size and phasing of major utility systems.

These plans and documents should be assembled into a Master Plan Report.





6 DESIGN FACTORS

The site analysis, concept development and master planning process should not prescribe architectural and landscape style but aspects of the analysis should aid various design decisions.



6.1 Architecture

Climatic characteristics establish the basic factors that need to be taken into account in terms of building features related to resort architecture in a tropical climate. Mauritius does not have a specific vernacular style - buildings represent a mix of cultures.

However, it is particularly important to achieve a high standard of development using fundamental factors that affect the design of tropical buildings.

6.1.1 Image

This should evolve in the planning stage as a consequence of the physical and market analysis. Each site is unique and hence should influence its own characteristic image.

6.1.2 Building Form and Layout

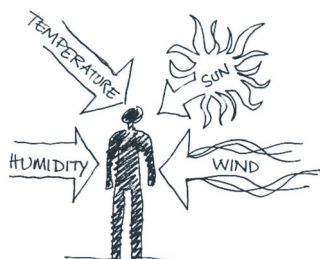
It is accepted that most rooms will be air-conditioned but guests should also be able to benefit from outdoor breezes.

Key objectives should be to encourage breezes to pass through non air-conditioned communal buildings and outdoor spaces.

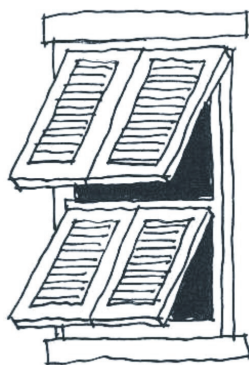




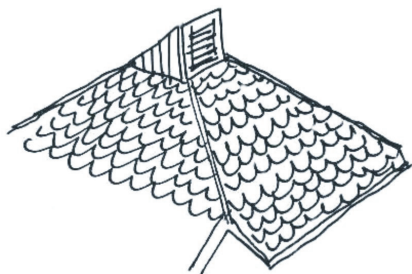
DESIGN GUIDANCE Hotels & Integrated Resorts



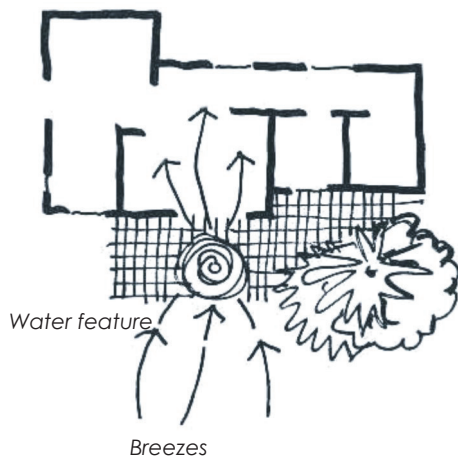
Climatic conditions will influence design



Shuttered windows



Wind scoops



Breezes over water = cooling effects

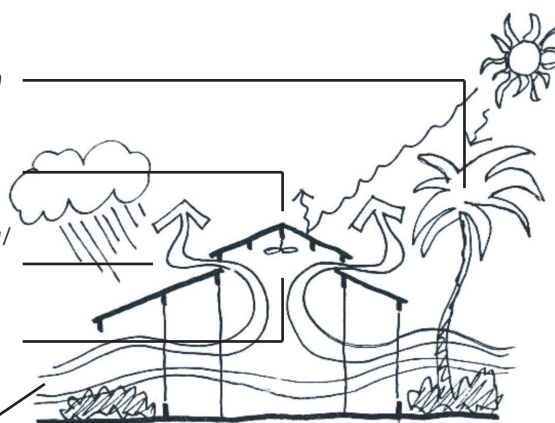
Sun control
reduced glare with
landscaping

Insulated roof

Protected opening/
terrace

High ceilings with
ceiling fan

Cross ventilation



Building design option for natural ventilation

The orientation and construction of buildings to exploit the maximum amount of air movement is very important. The broad factors to be considered are:

- Major buildings should be designed with relatively open, elongated plan form with rooms generally distributed in single rows to allow cross ventilation and penetration of breezes.
- Main living and communal facilities should be accessible from open verandas or galleries.
- Projecting canopies or broad overhanging eaves should provide shading to verandas or outdoor sitting and circulation areas. Shading devices can provide both essential protection and a means to define and articulate architectural characteristics.
- High ceilings or use of double roof construction should be considered.
- Window openings should ideally be considered in relation to sunlight i.e. the integration of shading devices that minimise direct radiation, reduce sky glare, permit adequate natural lighting and allow outward views.
- The use of water can also be employed to cool the environment.

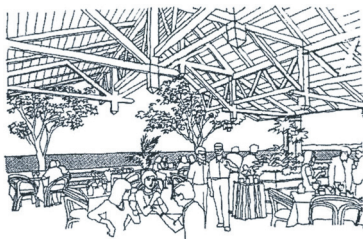
6.1.3 Materials

These should reflect the development image, visual context, the site's setting within the area and degree of harmony, or contrast, being sought.

High quality materials and furniture, road, footpath and hard open space surfaces, shade structures, fencing, walls, lighting, bollards, rails and the like, can make an immense difference to the quality of development.



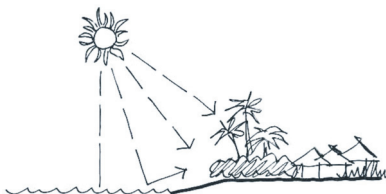
DESIGN GUIDANCE Hotels & Integrated Resorts



Quality materials



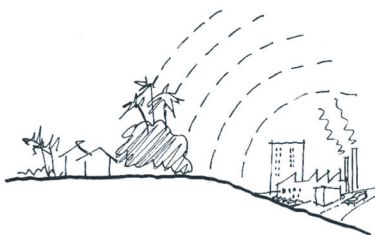
Quality Landscaping



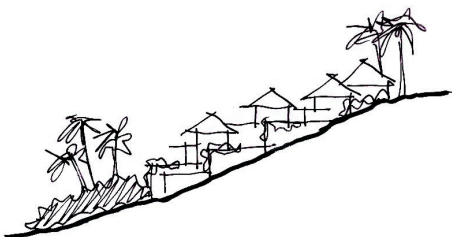
Protection from sun and glare



Protection from wind and rain



Protection from noise, pollution and ugly views



Stabilise Slopes

6.2 Landscape Architecture

One of the strongest marketing features for tourism developments is environmental quality. Successful developments carefully blend landscaping and architecture to achieve a consistent, unified and unique project character.

Considerations for resort developments in particular, include:

6.2.1 Thematic Design

This should be related to the planning and architectural elements of the facility. For example, the use of boulders, rock outcrops and local trees can provide both a sense of enclosure and integration with the existing landscape while lush courtyards can help extend interior spaces outward.

6.2.2 Open Space

Each resort development requires some form of appropriate open space which should be dedicated for the use and enjoyment of all visitors. These should ideally be designed around existing vegetation and landforms. Even the smallest planting pockets, if well designed, can offer elements of form, texture, shadows, fragrances and colour.

People will enjoy external spaces for passive recreation and socializing in a sunny climate if the space is well shaded and correctly orientated.

The appropriate use of water, its sight and sound, can enrich the enjoyments of the environment and resort facility immensely and be employed to cool the environment.

6.2.3 Planting

Besides the above elements, vegetation can be used for shelter and reduction of glare. The cost of running air conditioning can be reduced by using vegetation to shield roofs and walls from direct sunlight.

- Planting can also be used to:
- Screen substations and garbage bins.
- As a barrier to prevent people straying.
- To stop soil erosion and stabilize slopes.
- As a space definer.

The use of naturalised plant species can also reduce water usage.

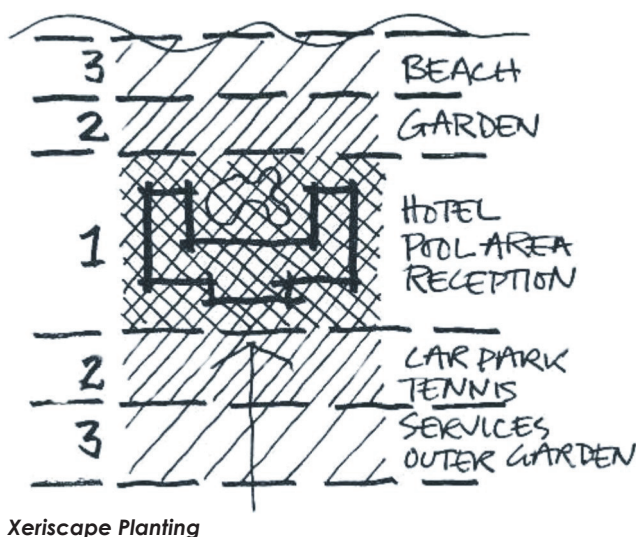
"Xeriscape" landscaping is the selection and zoning of plants according to their water requirements. This design strategy is very cost effective, as maintenance and watering are minimised.

It is also aesthetically and ecologically sound in principle since plants are selected to harmonise with their environment. Landscaping schemes should therefore attempt to group plants according to water and maintenance requirements as follows:



DESIGN GUIDANCE Hotels & Integrated Resorts

1. Exotic/ornamental - high profile areas, such as public open space, courtyards, focal points etc. Introduced ornamental plant material that will require a high level of maintenance and permanent irrigation.
2. Transition - areas between natural and ornamental landscape such as edges of development, roads etc. Naturalised and hardy plant material which will require some maintenance. Watering may be necessary. Permanent irrigation is not necessary.
3. Natural - areas of natural landscape such as beaches, wilderness etc. Indigenous plant material that will grow in the natural environment and which can be used to recreate native habitat. Plants will require little maintenance and once established will withstand drought. Most plants in this category, such as La Coluche and Badamier can be used in the semi-dry/transition and exotic/ornamental zones.



Plant material can be further subdivided according to:

- Height (tree/palm, shrubs, small shrubs/ground cover, climbers and accent plants).
- Botanical characteristics, design applications and tolerance to drought, wind and salt.



Quality Hard Landscaping

6.2.4 Hard Landscape

The selection of hard landscape material depends on purpose. The selection of materials can help to define changes of use (vehicles/pedestrians), level, ownership and approaches to focal points. Attention should be given to colour, pattern, noise, sunlight, heat and maintenance.



6.3 Street Furniture

The overall quality of any development depends upon all aspects being sympathetically designed within an overall approach. For example, ill considered detail can impact unfavourably upon the overall impression of a project. Elements requiring particular attention for resort projects include:

6.3.1 Signs and information panels

Signage should not dominate or block views and is more effective if a simple, easy to read design is used and the chosen materials and colours blend in with the natural setting.

Outdoor displays are a good way to introduce the visitor to the local flora and fauna in the area.

6.3.2 Lighting

Lighting should be chosen to emphasise moods, themes and create a relaxed atmosphere. The night time sky can be dramatic. Light intrusion and glare can obscure what little night vision is available. Care is therefore required to limit night lighting to the minimum necessary for safety. Light fixtures should remain close to the ground to minimise eye level glare.

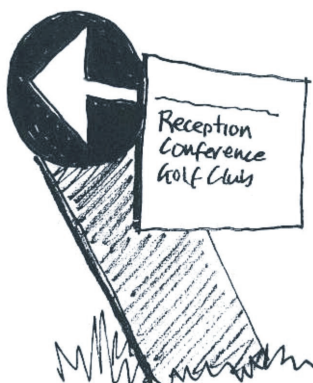
6.4 Maintenance

A realistic maintenance programme is crucial in the continuing promotion and success of a project's image. It must be remembered that even the best designed developments can be seriously compromised by poor maintenance.

Recognition of the close links between the environment and long term economic viability will promote commitment towards improved environmental management of tourism development.

Effective environmental management practices may involve recycling and waste management programmes, energy and water conservation, staff training and visitor education and involvement.

Monitoring of the construction and operation phases of development can improve the effectiveness of environmental management practices and minimise adverse environmental or social impacts.



Signs chosen to fit the theme/image of the project



7 OPERATIONS & MANAGEMENT

Good planning and design of a tourism resort is only as good as the operation and management of the facility. Sustainable development requires an ongoing environmental management programme that covers environmental awareness, good practice, staff training, visitor education and environmental monitoring and evaluation procedures.

7.1 Environmental Awareness

Environmental awareness is growing throughout the world and more and more tourists are attracted to destinations that take care of their environment. The promotion of sustainable development in Mauritius can only bring positive results. It can provide a basis for achieving sustainability in the planning and design of tourism facilities, encourage responsible decisions in energy and water conservation and waste management, and emphasise the importance of bio-diversity.

7.1.1 *Environmental Management*

A proactive approach to environmental management may include a commitment to continuous improvement in the areas of tourism management. Planning agreements between government, tourism operators and the community should be established such as sponsoring environmental management and/or conservation education activities and monitoring sensitive ecological sites.

7.1.2 *Staff Training*

Producing an environmental management manual or plan is an essential factor in developing a proactive approach. A clear environmental policy statement or code of ethics which is adopted and endorsed by management will ensure compliance to environmental management standards. This policy would guarantee responsibilities of key personnel towards the environment, along with the training and communications procedures employed to inform and educate employees about the policy.

A policy statement could include realistic environmental management objectives and targets. Procedures and targets may be specified for environmental issues such as environmental protection, waste management and recycling, energy and water conservation, education and research, purchasing or cleaning policies, landscaping and visitor education.



For large-scale tourism developments, it may be necessary to employ an environmental officer to establish environmental procedures and supervise and monitor their practice. Consequently, the impact of tourism development upon the surrounding environment could be monitored. Staff training will ensure how to improve environmental performance. Fostering innovation within the development and amongst staff will encourage improvements in environmental management and performance.

7.1.3 Visitor Education

In tourism developments that are properly planned, the environmental work often becomes part of the marketing package, as environmental constraints - such as landscape features, inland waters, bird life - become blended into the development and gradually become part of the attraction to tourists.

7.2 Monitoring and Evaluation

If possible, baseline data should be collected before any construction or development commences. If the development has been in operation for some time, an environmental audit, or an audit of some aspects of performance (such as energy or water conservation and efficiency, or waste management practices) may be useful in providing baseline data and in identifying specific areas where alternative practices can contribute towards improved environmental performance.

A monitoring programme should record regulatory requirements and set realistic management and performance targets or standards, such as for example, 10% reduction in electricity use.

It should also establish performance indicators that are easy to measure and that might indicate specific problems preventing the achievement of specific targets. Regular data collection, record keeping and reporting procedures to examine actual performance will need to be established.



Design Sheet



Golf Development

November 2004





Golf Development



Mauritius is considered as a golf destination among the golf tourism industry with a reputation for excellence. There is potential to attract further markets of high end golfers by:

- Building stand alone golf courses.
- Using golf as the anchor in an Integrated Resort Scheme (IRS) around which many activities are established.

There are also excellent opportunities to develop golf in partnership with conservation opportunities such as habitat restoration and wetland rehabilitation. This would benefit the environment and also could represent an important marketing tool.

Design Guidance

In the concept development stage of the project, a choice has to be made between developing a stand alone golf course with development set back from the fairways, or an integrated golf course, maximising golf frontage development.

Physical/environmental site constraints and potential markets will determine the best option – a golf led development or a resort led development.

Assuming the development of an 18 hole course with club house and practice green only, a minimum area of at least 80 hectares (200 acres) is required. A 9 hole course is only considered as an 'add on' to the overall tourism product.

If the golf course is part of a resort development, the type of resort to be developed will also dictate land area:

- Resort course with hotel.
- Residential course with villas and apartments.
- Resort development course with hotel(s), villas, apartments and amenities.

In addition, recent research suggests the development of 'only' 18 holes of golf within a resort area is considered too restrictive. Conflicts can occur between members and guests playing the same course. Members feel that it is 'their' own course and generally don't like to be held up by slow play and for 'their' greens to be damaged. Resort players on the other hand tend to take more time to play a round of golf and don't like to be rushed. A member will usually take four hours to play 18 holes where as a guest will think nothing of spending up to six hours on the course.



Golf Development



Clustering Development

It is therefore of considerable benefit to have a site that can accommodate at least 27 holes and if possible, two 18 hole courses. This will then allow for holes to be blocked for conventions, members' tournaments and maintenance and also to add variety to the play. The other alternative is to create associations with neighbouring golf courses within the 'golf cluster'.

Site Requirements for Golf/Resort Development:

- Minimum area required for resort development (to include 18 hole course, hotel, villas, club house): 160 ha (400 acres)
- Recommended area required for resort development: 300 - 400 ha (750 -1000 acres) is more feasible.
- For resort development including 27 or 36 holes: Over 400 ha (1000 acres).

Planning Factors for Golf/Resort Development

For resort led developments, key elements include:

- Developing small housing parcels between 25 – 70 units/plots per cluster.
- Maximising unit/plot frontage/views of the course.
- Designing a layout more conducive to a range of housing product that can be phased.
- Designing a hierarchical road system.
- Placing the club house in a central location, allowing returning front and back nines.
- Provision of practice fairway at the club house.
- Utilising and incorporating natural site features such as woodland and wetland areas.
- Using some fairways for storm water retention.



Core



Single Fairway Continuous



Single Fairway Returning Nines

Golf Course Design Options (18 holes)

Core

Oldest type, usually least expensive to build, most economical to maintain.

Single fairway continuous:

Most land consumptive but greatest amount of development frontage. Can adapt most easily to difficult sites.

Single Fairway Returning Nines

Most flexible for play, slightly less frontage due to concentration of tees and greens for holes 1, 9, 10 and 18.



Golf Development



Double Fairway Returning Nines

Double Fairway Returning Nines

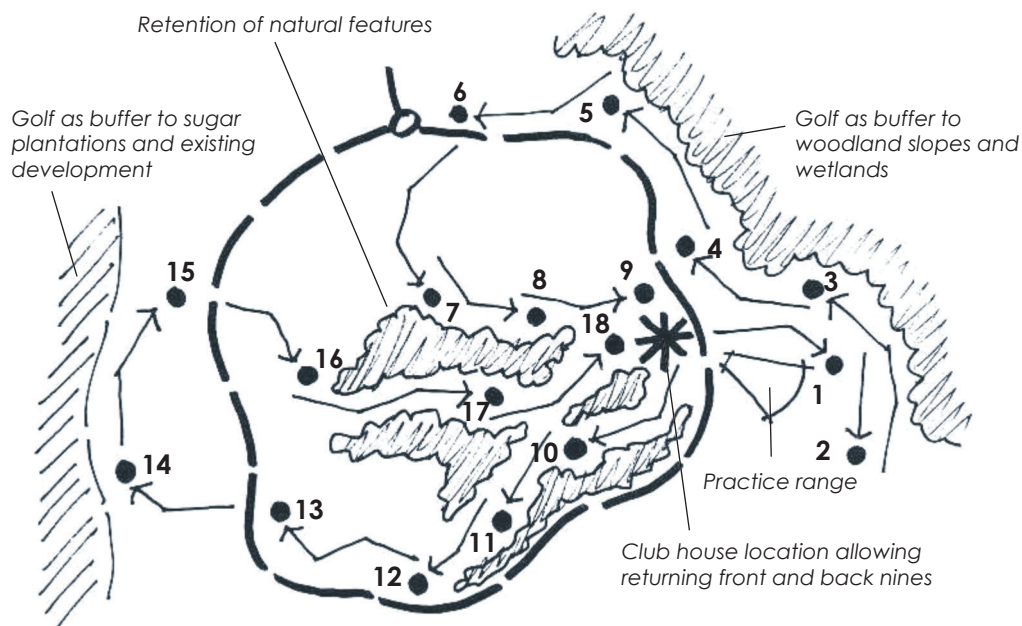
Second most economical to maintain. Can usually accommodate taller buildings along the fairways.

Note

Both overall length and distribution of individual lengths of holes will be a compromise between site factors and design. A total length between 5,800 and 6,520 metres is very satisfactory. Ladies tees are set forward to produce perhaps 5000 metres - a reduction of approximately 15%.

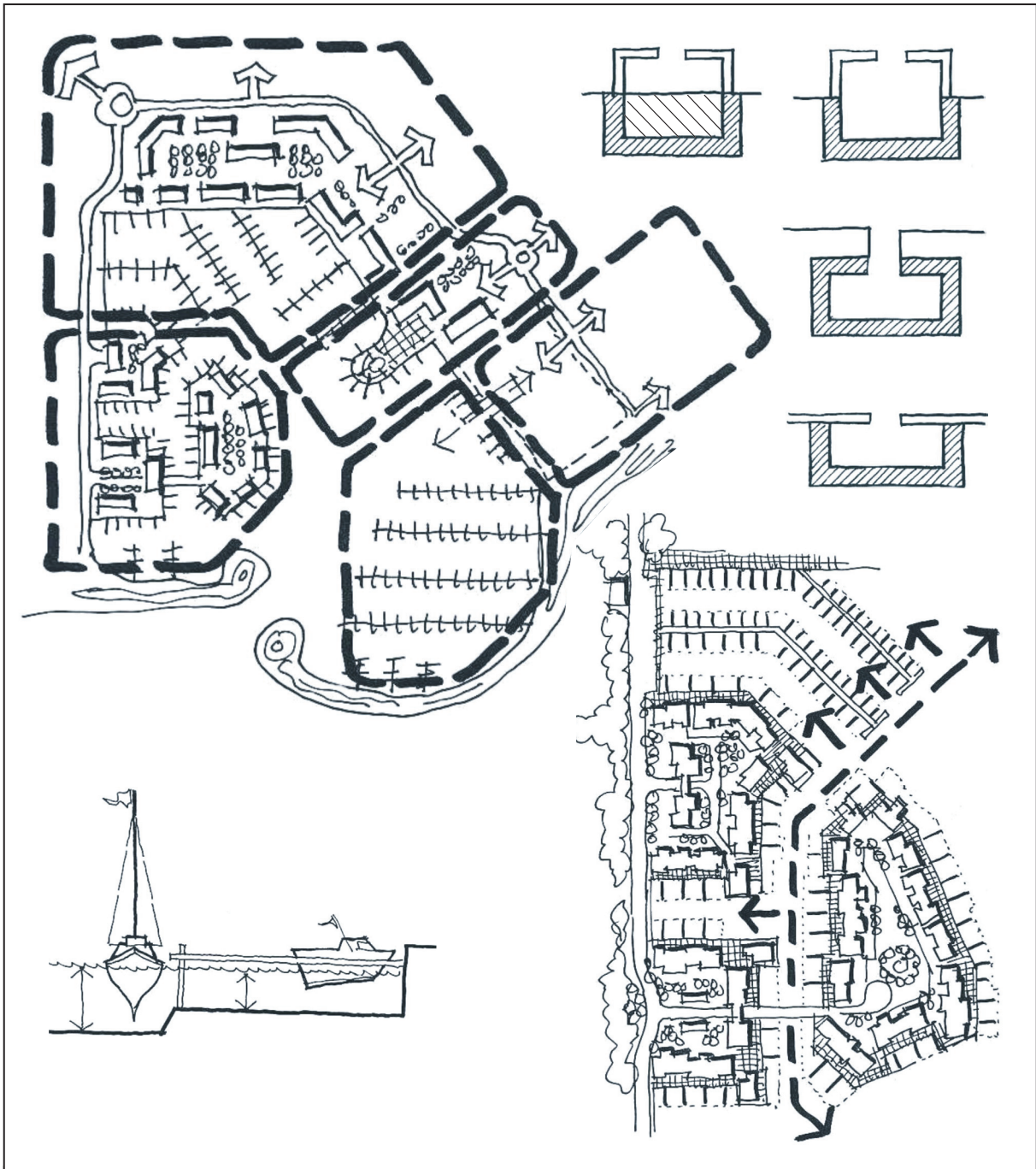
Hole	Length (m)	Par	Hole	Length (m)	Par
1	350	4	10	450	4
2	150	3	11	300	4
3	500	5	12	200	3
4	300	4	13	550	5
5	300	4	14	350	4
6	300	4	15	450	4
7	500	5	16	150	3
8	350	4	17	500	5
9	400	4	18	400	4

Indicative length of holes to assist route planning





Design Sheet



Marina Development

November 2004



Ministry of Housing and Lands



Marina Development

Currently, facilities for yachting (moorings, berths, on-shore showers and laundry etc) are limited in Mauritius. The worldwide yachting market is however very large and continues to expand.

The potential for expansion of the deep-sea fishing and scuba diving markets is also great because the international community is only just discovering Mauritius as a fishing and diving destination. All these activities require berthing facilities.

It is also important to note that waterfront development represents the most highly prized real estate. However, more information is required on the market before a major investment is made in marina development, such as demand, characteristics, existing supply, facilities, capacity and quality.

Design Guidance

A marina can be a community pier with a handful of boats or a large commercial enterprise. Today, there are two conflicting forces affecting marina development:

1. A growing demand for boat slips and marina facilities due to the growing market for yachting.
2. Environmental issues/regulations and extremely high costs of coastal development.

Initial technical feasibility studies should include:

- Water depth (minimum 2.3 metres).
- Water level fluctuations.
- Soil characteristics.
- Sea bed (benthic) material.
- Environmental constraints.
- Wind, wave action, storm surges (particularly critical in offshore marinas).
- Water quality/flushing action (particularly critical in land locked, inland basins).

For profitability reasons, the minimum size of a marina/pleasure harbour should cater for between 150 and 250 boats. This works out at approximately 75 to 100 boats per ha of water plus an equivalent space for car and light boat parking.

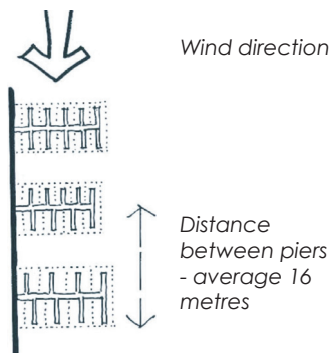
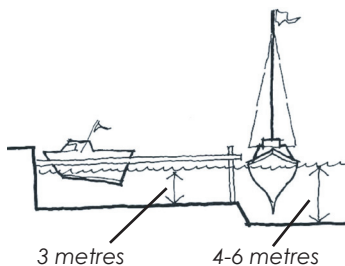
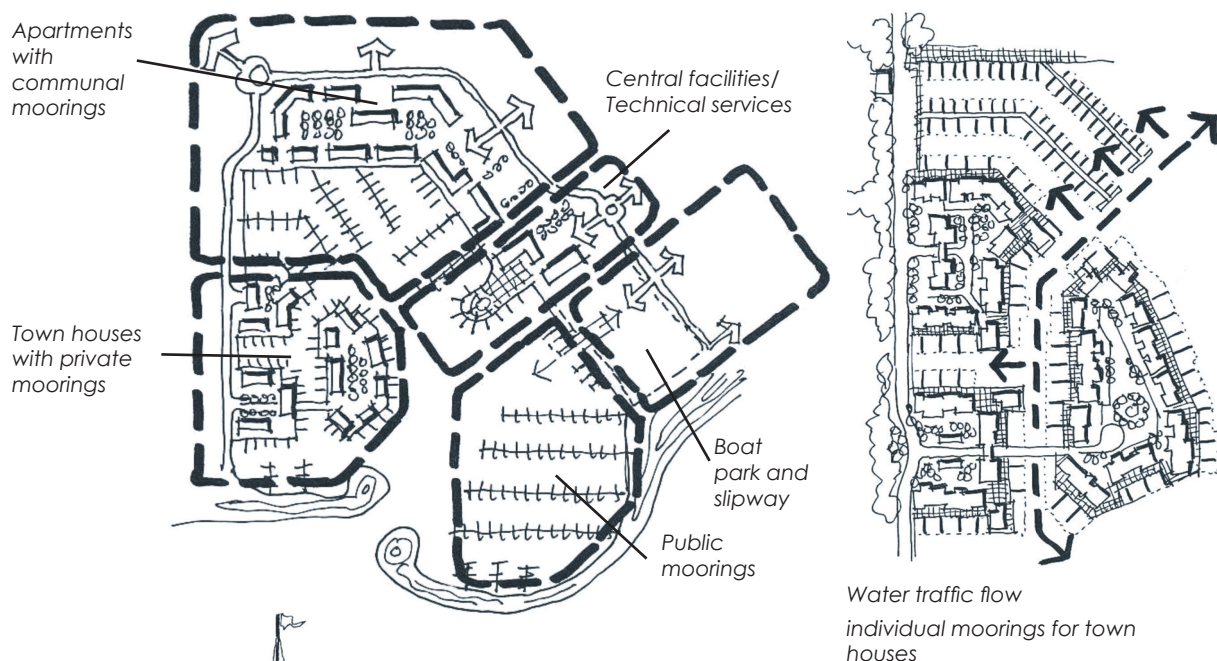
Boat parking should be paved and have an average space of at least 6x3 metres per boat. For larger boats: 15x3.6 metres.



Marina Development

In resort areas, the planning of the marina also has to take into consideration its function as a centre of activity and visual attraction. Prime locations around the water are allocated to public quays, coffee shops, restaurants and tourist accommodation. The technical services are limited in number and located in less conspicuous areas.

The key is to maximise the marina amenity by designing as many accommodation units (villas, condominiums, apartments) with waterfront views and/or access.



Design Factors

The following guidance may be applied to the development of marina facilities:

- Distance between piers from axis to axis, should be 4.5 times the length of boats.
- Place per boat along the pier should be from 2.5 to 5 m, the average being 3.5m. A greater length is required if finger piers are provided, boats of Class I (the most numerous) requiring up to 5.0m and those of Class II from 5 to 8m.
- Orientation of the piers should be at right angles to the prevailing winds (the boats lying parallel with the winds).
- Depth of the main basin channel should be a minimum of 4.6m and for berths from 2.3 to 3.7m.



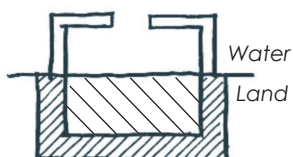
Marina Development

- Moorings should be connected to water supply, electricity and drainage services if possible. This is essential for larger boats.
- Separate areas for sailing boats (with wider moorings for catamarans and other broad-beamed multi-hulls), power boats and, if required, fishing boats.
- Moorings for visiting boats should be located near the entry to the marina.
- Car parking to be provided at the ratio of 0.5 places per boat berth but increased where local usage is high.
- Trailer park to be provided near the slipway, plus some larger spaces for cars with trailers.

Basic marina types

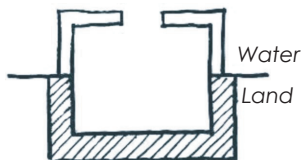
Offshore

Generally the least costly, minimises dredging and bulk heads. May require expensive breakwaters.



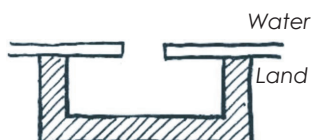
Recessed

Allows for balance of dredge and fill material. Feasibility depends on the composition of sea bed material.



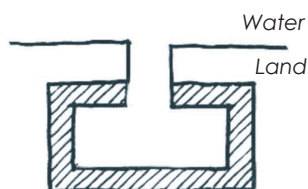
Built-in

More shoreline stabilisation required, more expensive than protruding types, less navigation hazards, water quality is a critical factor.



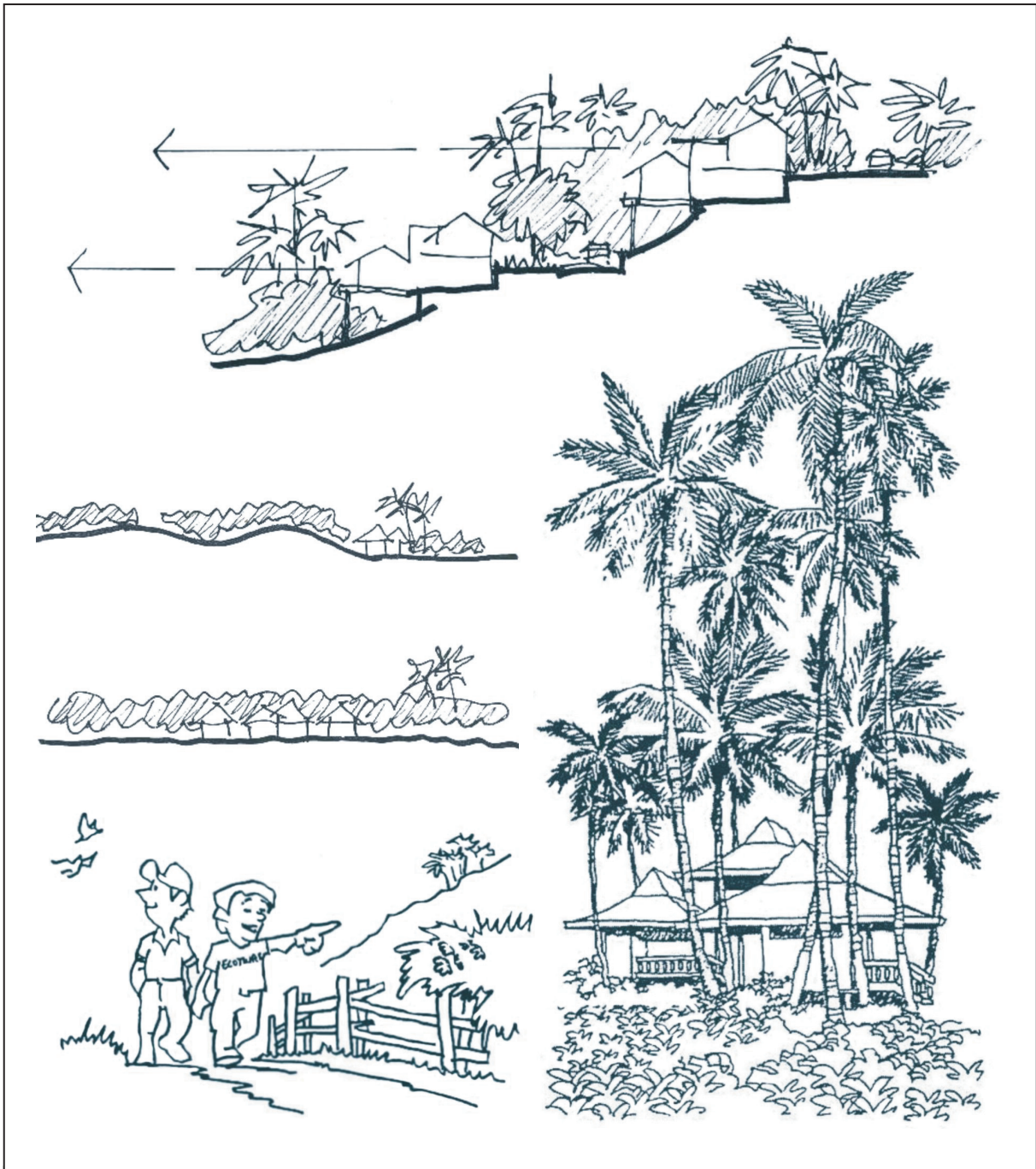
Land-locked

Most costly type, usually the safest. Water quality critical, flushing configuration required.





Design Sheet



Eco Tourism Development

November 2004



Ministry of Housing and Lands



Eco Tourism Development

"Ecotourism must contribute to the conservation of natural areas and the sustainable development of adjacent areas and communities, and it should generate further environmental and conservation awareness among resident populations and visitors."

World Tourism Organisation 2000



Ecotourism is concerned with sustaining the environment, as well as communities and cultures, and in educating stakeholders – in other words adhering to a set of principles of ecotourism. It is the application of the principles of ecotourism which is the objective.

Many destinations are recognising the importance of promoting a quality environment and capitalising on the growing market for ecotourism.

Ecotourism will always remain a niche form of travel, relevant only in the relatively few areas of the world that still possess valuable natural attractions. So it should be viewed as just one possible solution in a range of strategies for more sustainable development. Thus these guidelines will not be confining advice to the purest form of ecotourism. Rather, they will seek to identify how to make more sustainable the many forms of tourism in Mauritius which are related to ecotourism. It is the application of the principles of ecotourism (harmonizing social, economic, environmental and educational goals) which is the objective. It also embraces specific principles which distinguish it from the wider concept of the traditional resort development (see following table).

The ecotourism market cannot be developed in isolation. Its formulation has to be firmly grounded in what the market wants on the one hand and on the other, what Mauritius can offer. Further, there is no answer to the question 'who is an ecotourist', because ecotourism markets continue to evolve there is a spectrum of interest and types of markets:

- Some are committed or highly specialised (planning a vacation around the natural experience, participating in educational courses, etc.);
- Some are interested (but not committed, usually also having a high level of environmental and social awareness);
- Some are casual (planning a more general vacation, but influenced by the product offerings once they are at their destination); and
- Some ecotourists may have a multitude of other non-ecotourism interests.

For Mauritius, they are likely to be interested in a one or two night stay or day trip to an ecotourism destination as part of their vacation.

Design Guidance

A number of tourism products in Mauritius may incorporate elements that are often present in ecotourism (e.g., wildlife viewing, adventure, nature, culture, learning, etc.) But since ecotourism is a subset of sustainable development it is the way in which the activities are undertaken that makes them ecotourism.

The key objectives should involve:



Eco Tourism Development

INDICATOR	ECOTOURISM	TRADITIONAL RESORT
Objective	Focus on the preservation and interpretation of indigenous natural and cultural resources. Basic objective is to help visitors appreciate the natural and cultural uniqueness of a site by bringing them physically closer to it.	To make visitors comfortable in familiar surroundings and manipulated environments. Typically, much of the site is totally reconfigured with pools, terraces and imported vegetation.
Scale	Small to middle scale, slow growth. Development at a human scale and the sensory features of the native landscape, such as sights, smells and sounds are appreciated and preserved.	All scales, fast progression to large scale.
Investment Strategy	Moderate/low investment, balancing supporting infrastructure, needs of access and environmental impacts.	High investment. Extensive supporting infrastructure. Priority to allow for fast, easy and comfortable access.
Development Goals	Promote conservation objectives. Provide funding for protected area management. Earning potential for local communities.	Promote national development objectives. Distribute funds to central government. Private sector involvement/partnership.
Planning	Unique location. Stays within carrying capacity of the area.	High guest capacity
Activities	Research. Wildlife watching with interpretation facilities and services. Nature photography. Voluntary environmental programmes (inventories and monitoring). Low impact/low intensity adventure/sports activities.	High impact/high intensity adventure/sports activities. Non individual, high comfort nature tours (e.g. air conditioned bus).
Key Attraction Focus	Natural surroundings first. Facilities second. Education/activity focus.	Natural surroundings and facilities equal.



Eco Tourism Development

- Environmentally sound development, actively contributing to the conservation and enhancement of natural and cultural heritage.
- Benefits to local communities, through such means as participation in decision making, employment, management, ownership, education, self-reliance and fulfillment, or strengthening culture.
- Economic benefits to tourism industry participants.
- Education and interpretation, to provide participatory and respectful experiences for the visitor.

Ecotourism Activities

It is often less the activity and more how a tourism activity is practised, that makes it ecotourism – in other words supporting the principles of ecotourism. Thus one can find a range of types of tourism activity which might be categorised in other ways (by nature, or adventure, or culture) being described as ecotourism, because of how they are practised.

The following will guide in evaluating ecotourism projects:

1. The project is located within a natural and cultural heritage area.
2. The project will generate local employment as well as promoting active participation of the local community.
3. The project will provide for management of risks related to health, safety and security.
4. The project will promote environmental education and protection through appropriate plans, standards, policies and practices.
5. The project will promote cultural preservation and respect for local knowledge and practices.
6. The project will provide for visitor satisfaction.
7. The project is technically and financially viable.

Site Development

Ecotourism experiences are characterized by a respect for the integrity of the resource, which also instil a sense of appreciation for the visitor. Within this context, certain site development principles are important to note. These are applicable to any site and are regarded as essential to maintain the integrity of the resource and offer a quality experience to the visitor.

Key ecotourism development principles are:



Eco Tourism Development



Development located in prominent position

X



Location and form result in visually well integrated development

✓



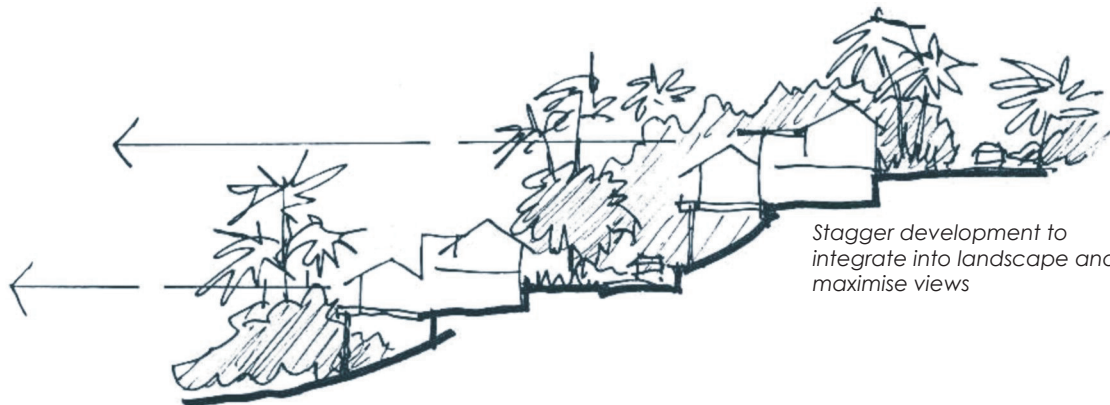
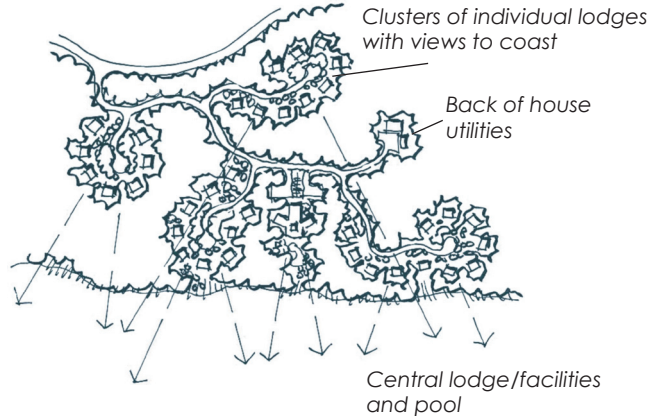
Development breaks line of tree canopy thus increasing visual prominence



Line of tree canopy remains intact and development blends into the site



Lodge development with minimal disturbance to landscape



- From a tourism perspective, ecotourism sites should be designed and developed to offer an 'experience' for the visitor. It is not just a matter of developing a tourism product or attraction. The most important design consideration is the quality of the experience offered;
- The experience offered must not compromise the integrity of the resource and must impart a sense of respect for the resource through site treatment and interpretation activities;
- The experience must also consider the needs of the visitor for ancillary services, again without compromising the integrity of the resource; and
- Interventions on the site to create the experience must follow internationally accepted practices and/or standards for resource management and protection as appropriate and must clearly demonstrate resource sustainability.

Increased ecological knowledge is the key therefore to ecotourism design. Instead of human functional needs driving the site design, site components need to respond to the special character, climate, topography, soils and vegetation as well as be compatible with the existing cultural context.



Eco Tourism Development

Designing with geological features such as rock outcrops can enhance the sense of place. For example, integrating rocks into the design of a timber deck or boardwalk brings the visitor in direct contact with the resource and the uniqueness of a place.

If road access is required, a curvilinear alignment should be designed to flow with the topography and add visual interest. The road should have low design speeds (with more and tighter curves) and a narrower width to minimise cut and fill disturbance. Over-engineering of roads in resource-sensitive areas should be avoided. It is also better to service a group of buildings with a circular one way flow with a parking area set to one side than to have two way traffic.

Access corridors should be provided for multiple purposes - for example, visitors, maintenance, security, emergency vehicles, underground utilities. Using the same road during construction can limit site degradation and re landscaping.

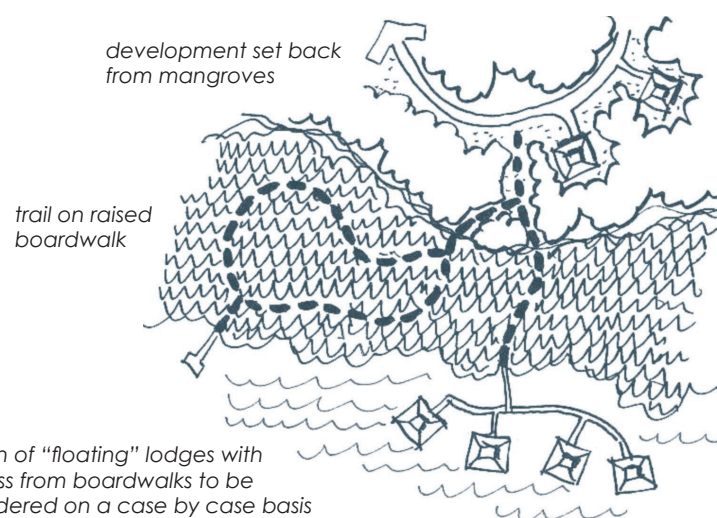
Buildings should utilise, as much as possible, local construction techniques, materials and images in harmony with the natural environment. Use simple design solutions wherever possible. Accommodation may be modest but comfortable, clean but unpretentious.

Wetlands

By their very nature, ecotourism sites will often contain some of the most sensitive and highly prized natural resources, such as wetlands. Mauritius is a signatory of the Ramsar Convention on Wetlands. In this context, development on or around wetlands should not normally be permitted.



Simple buildings and structures





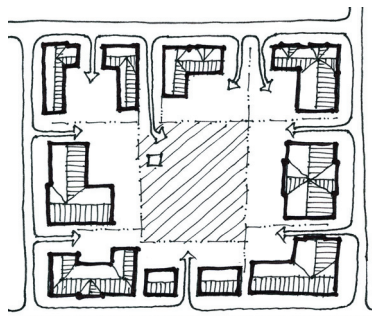
Eco Tourism Development

In special cases, consideration may be given to development near wetlands and other water bodies, based on careful assessment of sensitive resources and processes. For example, mangroves have high value for maintaining stocks of fish, combating coastal erosion, wildlife conservation as well as ecotourism. Through good practice, it is possible to minimise impacts and incorporate trails or develop close to mangrove areas. In these cases, protective measures must be taken to address indirect environmental impacts, including:

- Mangrove areas should be zoned to separate out incompatible activities, such as canoeing versus motorised fishing boats.
- Wherever possible, tourist access should be either by boat, or by raised boardwalk - felling of trees to clear routes for boardwalks and other structures should be minimised and the seaward lines of trees should not be disturbed.
- Buildings should be confined to the dry inland edge of the mangrove belt, not within the mangroves and they should be raised on stilts. Only in exceptional locations should buildings be constructed (or floated) on the seaward side of the mangrove belt.
- Buildings should generally be no higher than the tree canopy, and the concept of buildings and boardwalks should be that they become structures within the forest.
- Observation towers may protrude above the tree canopy, but should be few in number, and unobtrusive in appearance.
- Biting insects must be accepted as part of the mangrove ecosystem, and visitors should avoid the problem by using appropriate clothing and repellents.
- Toilet facilities should be sited as far inland as possible.

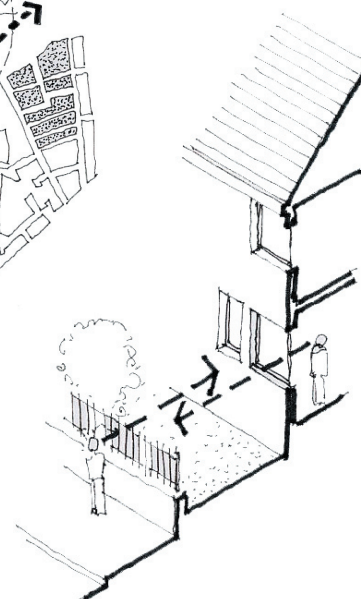
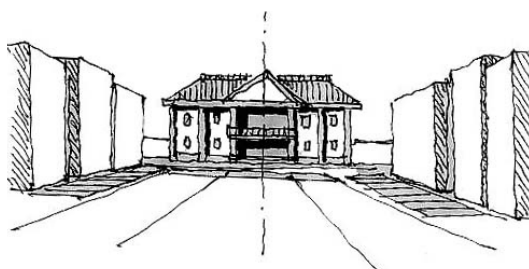
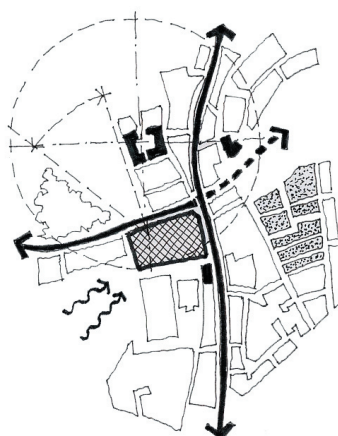
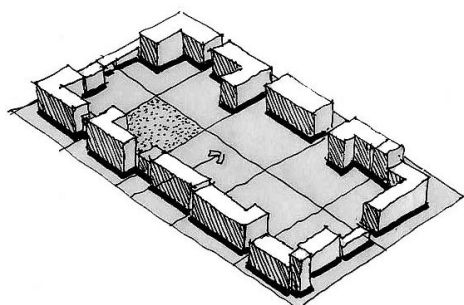
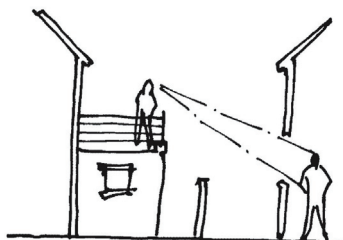


Design Guidance



This Glossary of Terms has been produced to support and aid understanding of the Planning Policy Design Guidance.

Reference should also be made to the Planning and Development Act, 2004 for legal definition. Where inconsistencies exist then the provisions of the Act will prevail.

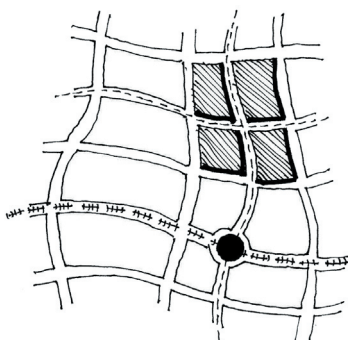


Glossary of Terms

November 2004



Ministry of Housing and Lands



Accessibility

Accessibility

The word 'accessible' is defined in the Oxford English dictionary as 'able to be reached'. As a strategic theme in local transport planning, it is appropriate to consider its broadest meaning. Accessibility is more than transport; it is the means of access to facilities with or without travel.

Appropriate Uses

Uses for the essential requirements of agriculture, forestry or other uses appropriate to a rural area.

Bad Neighbour Use

Bad neighbour uses are those considered a potential nuisance to adjoining development by reason of noise, dust, smoke, fumes, smells, parking or excessive loading problems, or through the appearance and/or scale of the proposal. Defined to include those uses requiring a Preliminary Environmental Report or an Environmental Impact Assessment as listed in the First Schedule (Section 15(2)) Parts A and B of the Environment Protection Act 2002, or as subsequently amended.

Brownfield Site

A site which has previously been developed and has not been restored to agriculture, forestry or recreation land. The definition includes residential gardens but does not include agricultural land or buildings.

Buffer

A safeguard between unneighbourly/ bad neighbour uses and other uses (e.g. residential uses). Buffers may be separation distance between uses, landscaping, walling and other acoustic barriers or a combination of such elements.

Bulk

The combined effect of the arrangement, volume and shape of a building or group of buildings, Also called massing.

Character Assessment

An area appraisal identifying distinguishing physical features and emphasising historical and cultural associations.

Coastal Frontage Land

Normally the strip of land between the high water mark and the nearest coastal road.

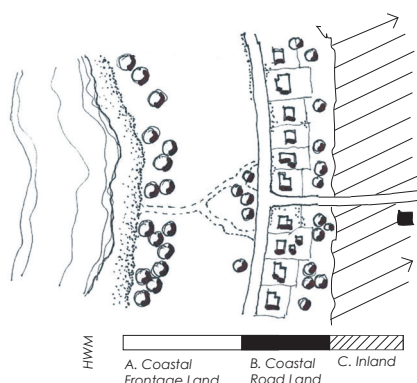
Consists of extremely fragile land where considerations of visual impact, environmental disturbance and pollution control are paramount. It is a key element in Mauritius's tourism product and it is equally popular with local people, but the emphasis must be on sustainable development in harmony with the environment.



Definition of Coastal Development Land



Glossary of Terms



Coastal Road Land

This includes those plots immediately fronting the coastal road and located on the inland side of the road.

(Coastal) Inland

This includes those areas that may not have a coastal road frontage but may still be visible from or relate to the coastal road.

Consolidate

See diagram in margin

Context

The setting of a site or area, including factors such as traffic, activities and land uses as well as landscape and built form.

Context (or site and area) Appraisal

A detailed analysis of the features of a site or area (including land uses, built and natural environment, and social and physical characteristics) which serves as the basis for an urban design framework, development brief, design guide or other policy or guidance and informs a detailed planning application.

Design-Led Approach

An approach to preparing a development proposal to ensure an appropriate design quality, the use of the site is optimised and the effect of development on the character of the area is positive.

Design Principle

An expression of one of the basic design ideas at the heart of an urban design framework, design guide, development brief or a development.

Design Statement

A design statement sets out the design principles that the applicant has adopted in relation to the site and its wider context as part of a development permit application.

Development

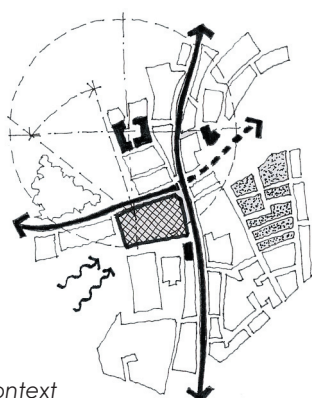
The carrying out of building, engineering, mining or other works or operations in, on, over or under land, or the making of any material change of use of any buildings or other land or morcellement.

Development Brief

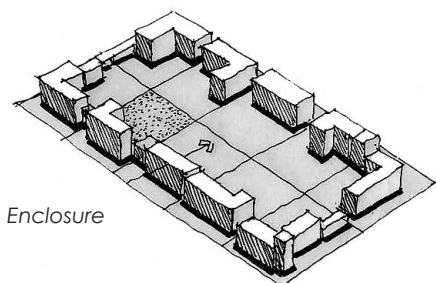
A document produced by the planning authority, or jointly with a developer, providing guidance and setting principles for the development of a particular site.



Consolidate



Context



Enclosure

Distributor Road

A road that distributes traffic within an area and forms the link between main roads and local roads.

Edge of Centre

A location within reasonable walking distance of a town centre (generally up to 400 metres).

Enclosure

The use of buildings to create a sense of defined space.

Environment

As defined in the Environment Protection Act, this Includes:

1. Land, air, water, or any one of, or combination of, these media;
2. All living organisms;
3. Any built up environment.

Environmental Impact Assessment (EIA)

Required for certain developments identified under the Environment Protection Act 2002 (Act No. 19 of 2002), (Part B) or as subsequently amended. This is a process involving the identification and analysis of the environmental effects of a project and appropriate mitigation measures, prior to a decision being taken on a development permit application.

Environmentally Sensitive Area

Areas which may be locally, nationally or internationally important for nature protection, conservation, and/or landscape value.

Greenfield Site

Undeveloped land, that has not previously been built upon, at least in recent history, often of agricultural use.

Government Commitment

Where there has been formal prior commitments given by relevant authorities, duly supported by clear and satisfactory evidence.

Gross Floor Area

The total area of a building as measured externally.

Growth Zones

The concentration of major employment generating activities and other high intensity uses at strategic locations, both in urban areas and major settlements elsewhere - Urban Renaissance Zones, Rural Regeneration Zones, Tourism Zones and Special Use Zones, as identified within the National Development Strategy and Outline Planning Schemes.



Habitat

The customary dwelling place of a species or distinct community of plants and animals, having particular characteristics (for example: sand dunes, wetlands, mangroves).

Hardship Justification

Hardship cases, small owner and close kin are defined within guidelines produced by the Town and Country Planning Board, 1998, or as subsequently amended, and generally involve:

1. A small owner should normally own no more than 2 hectares of land and, if he is seeking residential property for himself, none of his properties should be located within settlement boundaries.
2. Close kin could include ascendants and descendants (parents and their children, grandparents and grandchildren) up to the level of first cousin (i.e. a cousin, an uncle or an aunt, a nephew or a niece) who do not own a plot of land within the settlement boundaries and who would benefit from the sale or donation and thus benefit from exemption of Duties.
3. The plot to be released should not normally exceed 422m² (10 perches) per beneficiary.
4. The development permit should specify clearly the policy being used in the grant of the permit, so that there is no confusion."



Infill development

Infilling/Infill Development

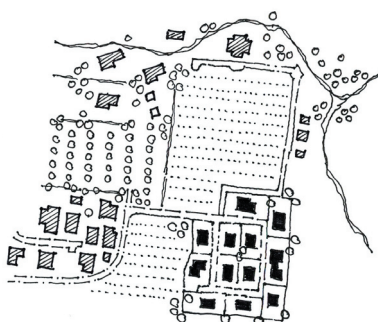
New development which occupies gaps within predominantly built-up areas between existing developments/buildings.

Infrastructure

The system of communications and utility services (roads and drainage, water supply, sewerage treatment and sewage disposal, telecommunications, electricity and waste disposal) which serves developments.

Integrated Transport

An approach that co-ordinates land-use and transportation planning. It identifies the transportation requirements for an area taking into account economic, environmental and social needs. Proposals developed may include public transport, walking, cycling, traffic management and highway improvements.



Island Development

Island Development

See Diagram in margin



Landmark

Landmark

A building or structure that stands out from its background by virtue of its location, height, size or some other aspect of design.

Landscape

The character and appearance of land, including its shape, form, ecology, natural features, colours and elements and the way these components combine. Landscape character can be expressed through landscape appraisal and maps or plans. In towns "townscape" describes the same concept.

Layout

The way buildings, routes and open spaces are placed in relation to each other.

Local Distinctiveness

The positive features of a place and its communities which contribute to its special character and sense of place.

Massing

The combined effect of the arrangement, volume and shape of a building or group of buildings. Also called bulk.

Master Plan

A plan providing comprehensive guidance and instruction on the location, mix, type, design and layout of new development, including infrastructure requirements, and setting out guidance on the phasing, timing and co-ordination of a development scheme.

Material Planning Consideration

A factor to be taken into account when making a development permit decision.

Mixed Uses

A mix of uses within a building, on a site or within a particular area. "Horizontal" mixed uses are side by side, usually in different buildings. "Vertical" mixed uses are on different floors of the same building.

National Development Strategy

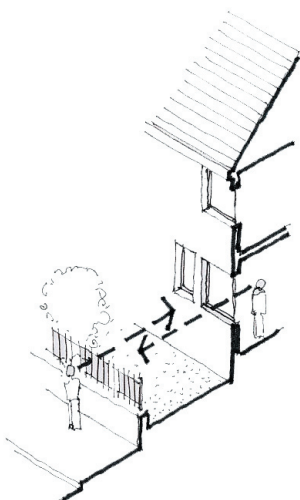
A planning instrument as defined in section 12 of the Planning and Development Act which sets the strategic land use planning context for Mauritius.

Natural Surveillance

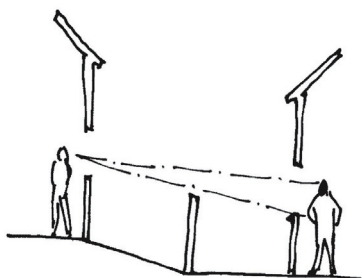
The discouragement of wrong-doing by the presence of passers-by or the ability of people to be seen out of surrounding windows.



Master Plan



Natural Surveillance

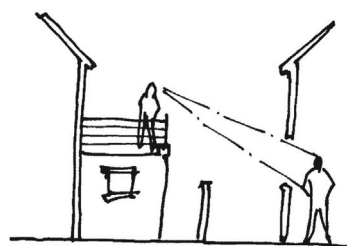


Operational Parking

That level of parking (cars and/or service vehicles) essential to enable the proposed use to function.

Out-of-Centre

A location that is clearly separate from a town centre but not necessarily outside the urban area.



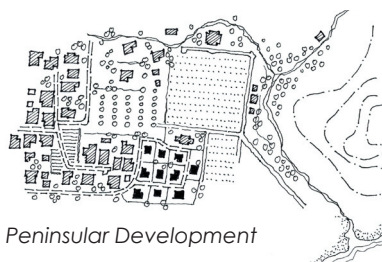
Overlooking

Overlooking

Overlooking is where people can look into the garden/open area of a neighbouring property from the main living rooms of their own home/buildings.

Overshadowing

Overshadowing occurs when a structure blocks out daylight/sunlight from neighbouring properties. It can affect the amount of daylight let into neighbouring properties when the shadow cast falls across windows or glazed doors.



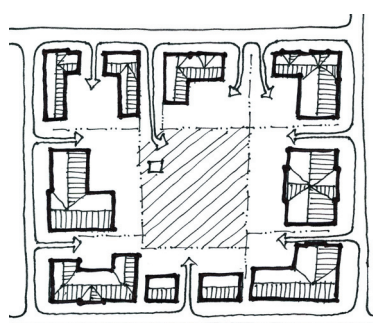
Peninsular Development

Peninsular Development

See Diagram in margin.

Performance Criteria

A means of assessing the extent to which a development achieves a particular requirement (such as maintaining privacy). This contrasts with a standard, which specifies how a development is to be designed (by setting out maximum height, or setbacks, for example). The art of good design lies in balancing principles which may conflict. Standards may be too inflexible to be of use in achieving a balance. Performance criteria, on the other hand, make no prior fixed assumptions about the means of achieving a balance.



Perimeter Development

Perimeter Development

Development that is located around the edge or outside of a site.

Permeability

The degree to which an area has a variety of pleasant, convenient and safe routes through it, particularly for pedestrians and cyclists.

Plot Ratio

A measurement of density generally expressed as gross floor area divided by the net site area.



Pollution

Pollution is the release of substances into the environment. This may harm human health, property or organisms supported by the wider environment. Pollution can be released into the air or water or can contaminate land.

Preliminary Environmental Report

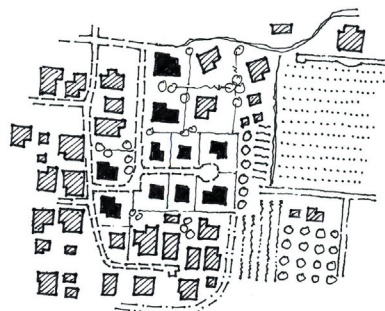
Means a "Preliminary Environmental Report" as required under section 16 of the Environment Protection Act 2002, or as subsequently amended.

Public Realm

The parts of a settlement (whether publicly or privately owned) that are available, without charge, for everyone to use or see, including streets, squares, parks, beaches etc. Also called public domain.

Round Off

See diagram in margin



Round Off

Note that where this symbol is placed, the guidance provided alongside it is considered to be the minimum/maximum acceptable and should normally be provided.

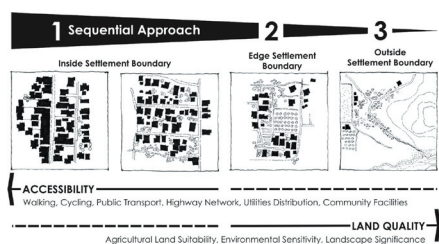


Scale

The impression of a building when seen in relation to its surroundings, or the size of parts of a building or its details, particularly as experienced in relation to the size of a person.

Sequential Approach

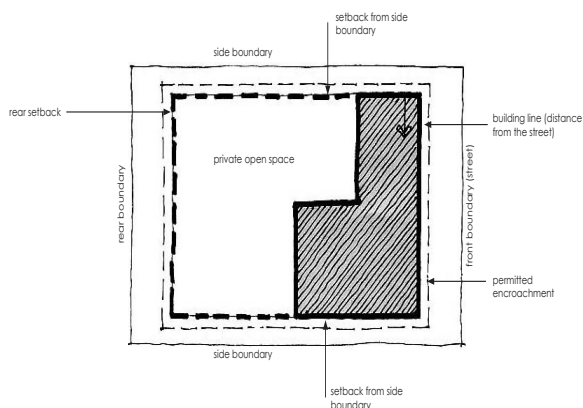
A systematic approach to deciding which sites are the most appropriate for development and the sequence in which development should take place. There is a general presumption in favour of development within and adjacent to identified Growth Zones and within settlement boundaries. This presumption in favour of development diminishes as locations become more remote from settlements, services and facilities, with a general presumption against development outside growth zones and settlement boundaries.



Sequential Approach

Sensitive Uses

Uses, such as residential, health and education that are sensitive to potential nuisance from noise (including vibration), smoke, dust, fumes etc.



Setback

Setback refers to the distance between a front, side or rear facade and their respective boundaries. Setbacks are generally measured to the outer wall surface of the building.

Settlement Boundaries

These usually contain the built-up area of a settlement and define the area within which there is a presumption in favour of suitable development.

State Significant Development

Development as defined in section 24 of the Planning and Development Act 2004.

Topography

A description or representation of artificial or natural features on or of the ground.



Traffic Calming

Traffic Calming

Measures undertaken to control and manage the movement and speed of vehicular traffic in the interests of pedestrian and general highway safety. They may be either physical measures (e.g. ramps, speed tables) or regulations, but are usually a mixture of both.

Urban Design

The art of making places. Urban design involves the design of buildings, groups of buildings, spaces and landscapes in settlements, and establishment of frameworks and processes that facilitate successful development.

View

What is visible from a particular point.

Vitality

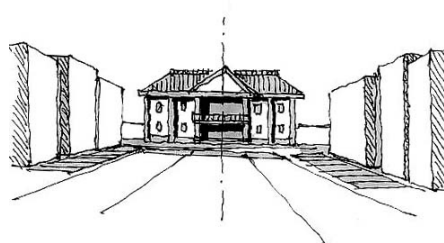
In the context of settlement or town centre, vitality refers to the liveliness of the area, reflected in the amount of activity at different times and in different parts.

Vista

An enclosed view, usually a long, narrow one.

Wetland

Area of marsh or water, whether natural or artificial, permanent or temporary, with water which is static or flowing, fresh or brackish or salt including areas of marine water.



Vista



PPG 1 - TECHNICAL SHEETS

RESIDENTIAL ROADS

INDUSTRIAL AND COMMERCIAL ROADS

ACCESS FOR PEOPLE WITH DISABILITIES

DRAINAGE

WATER SUPPLY

MAINS SEWERAGE

ON-PLOT SEWAGE DISPOSAL

ELECTRICITY

TELECOMMUNICATIONS

COMBINED UTILITIES SUMMARY PLANS



Residential Roads

S *Note that where this symbol is placed, the guidance provided alongside it is considered to be the minimum/maximum acceptable and should normally be provided.*

New Road Planning and Design

In planning and designing new roads, a hierarchical approach is proposed, consistent with current Government/ RDA practice, the road's functions and its anticipated future traffic volume. The hierarchy would include motorways, main roads (A+B class) and local access/ residential roads. Within this hierarchy motorways and main roads are likely to continue to be designed and built via Government agencies (i.e. RDA) using current standards and are thus not considered further in this Design Sheet.

Local Access/ Residential Roads

When planning and designing new roads within residential development, consideration should be given to the structure, function and traffic volumes on adjacent roads.

The aim of this approach is to:

- Help road users identify the difference between main roads and local roads so that they can use them safely
- Discourage the use of residential roads for through travel
- Create safe conditions for all users of residential roads, and especially young pedestrians
- In appropriate circumstances, give priority to pedestrians especially young, old and infirm members of society over motorised vehicles (other than emergency service vehicles).

Vehicular Access

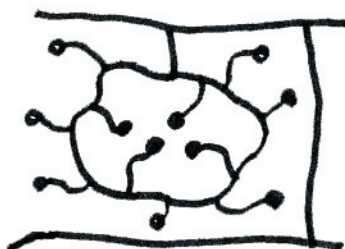
Access arrangements should be planned in conjunction with adjoining sites, and where feasible new accesses should be connected to existing major junctions.

In designing accesses for residential development the following requirements should be met:

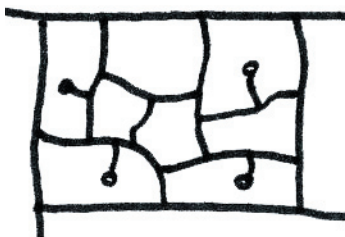
- Access points should be in a safe location for all road users
- Adequate visibility splays should be provided
- Adequate vehicular turning radii should be achieved.

Road Layout

As a general principle, road layouts for residential areas should avoid the use of culs-de-sac, wherever possible. Cul-de-sac within residential areas can limit ease of movement. A network of connected loop roads can help to avoid this problem.



Typical cul-de-sac layout



More appropriate road layout - incorporating distorted grid and minimal culs-de-sac



Residential Roads

Residential roads and footpaths should be an integral part of housing layout designed to create a safe and nuisance free environment. The road layout should be designed to ensure that:

(S)

- Through vehicular traffic finds adjacent main roads more convenient to use than residential roads
- Vehicle flows are low in the immediate vicinity of homes
- Vehicle speeds are restrained along residential roads
- For economy, every effort should be made to ensure that most stretches of road in a layout directly serve dwellings
- Residents' needs for fire, ambulance, other emergency and servicing can be met promptly and efficiently
- Residents' needs for conveniently-located public transport facilities can be met.

(S)

There should be no possibility to use the residential road as a speedy, straight short cut across the development in preference to using other adjoining main roads.

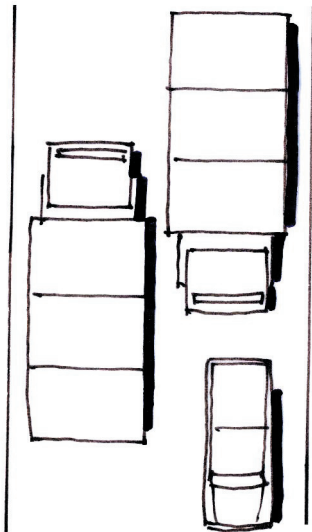
Road gradients should normally not exceed 12.5% (1 in 8).

Cross roads should be avoided where crossing volumes are likely to be large, speeds are high and/or visibility is poor. Staggered T - junctions are preferred.

Road Widths

The dimensions of roads, junctions and turning spaces will normally be determined in consultation with RDA, in part by the size and geometric characteristics of vehicles. A range of vehicle types and their turning and manoeuvring characteristics are given over the page. The vehicles chosen are those that would generally be expected to use residential roads.

A 6 metre road width is generally preferable. 5 metre road width is considered to be the minimum acceptable.



A 6 metre road width is generally preferable



Residential Roads

ROAD WIDTHS - General Provisions			All dimensions in metres S
Road Type	Road Width	Max no. of Plots served	Frontage Access
Main Road	7.0m	400+	Normally only shops, schools, apartments
Residential Access 1	6.0m	81-200	Residential acceptable
Residential Access 2	5.5m	21-80	Residential acceptable
Residential Access 3	5.0 - 5.5m	1-20	Width depending on local circumstances; Residential acceptable

Kerb Radii

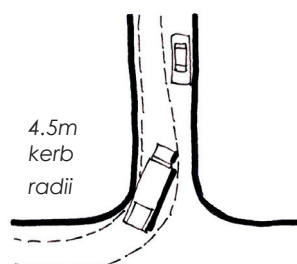
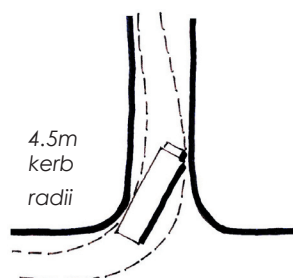
As a general guide it is suggested that:

Kerb radii should be 10m at junctions with Class A and B and other main roads, and 6m at junctions between residential roads where either road serves more than around 50 houses.

4.5m kerb radii may be used at junctions between residential roads where roads are 6m wide and the non-priority road serves no more than 50 houses.

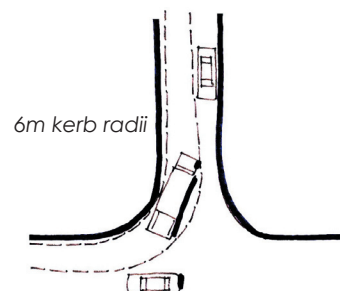
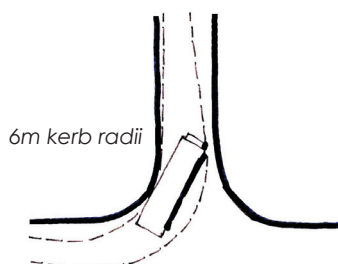


Residential Roads

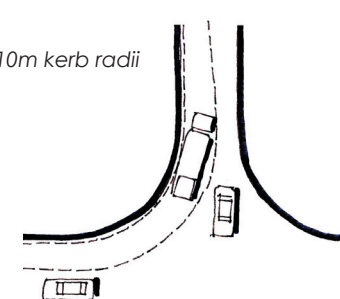
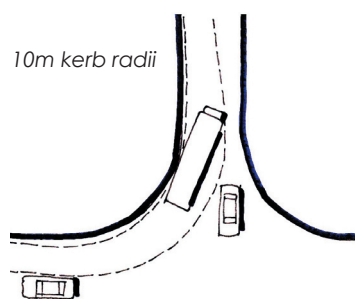


Junctions with 4.5m radii. These allow all vehicles to turn into and out of the junction but require vehicles larger than private cars to use most of the width of both roads. Junctions of this radii should be used only for carrying very low traffic volumes.

Suggested kerb radii



Junctions with 6m radii. This allows heavy goods vehicles (HGV) to turn into and out of the junction using most of the width of both roads, and allows refuse vehicles to turn without interfering with traffic on the priority road. Radii of this order will normally be sufficient for junctions within the residential road layout.



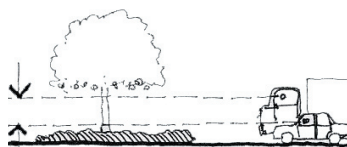
Junctions designed to the recommended radius of 10m for junctions with main Class A and B roads. This radius allows refuse vehicles and HGV's to turn without interfering with traffic on the priority road. HGV's may have difficulty in turning past vehicles on the non-priority road and may have to wait until the junction is clear. Where the non-priority road is a residential road however, the lightness of traffic volumes and infrequency of vehicles of pantechinon size mean that such delays will be infrequent and of short duration. Radii of this order should normally be sufficient for most junctions between residential and main Class A and B roads.

Dimensions of some typical vehicles and the space required for parking areas	Car	Light Van	Coach (60 seats)	Heavy Goods Vehicles	
				Rigid	Articulated
Vehicle Dimensions (metres)	3.8 x 1.7 5.0 x 2.0	Up to 6.0 x 2.6	Up to 12.0 x 3.0	Up to 11.0 x 3.0	Up to 15.5 x 3.0
Recommended Dimensions of Parking Space (metres)	5.0 x 2.5	5.5 x 3.0	14.0 x 3.5	14.0 x 3.5	18.5 x 3.5
Overall Area per Parked Vehicle (square metres), including access and manoeuvring space	20 to 25	20 to 30	100 to 150	100 to 150	150 to 200

Typical vehicle dimensions



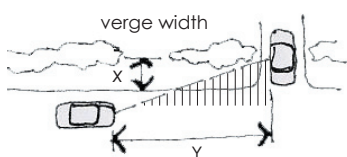
Residential Roads



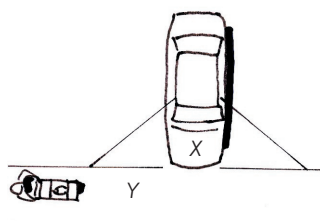
keep clear
between 0.6
and 2.0m.

*Sightline requirements for
different vehicles*

Traffic Speed	Y Dimension
50 Km/hour	70m
60 Km/hour	90m
70 Km/hour	120m
85 Km/hour	160m



*Stopping distances related to
vehicle speed*



*2.4m X and Y dimensions should
be provided where a driveway
meets the back edge of a
footway.*

Visibility

To enable drivers to see a potential hazard in time to slow down or stop comfortably before reaching it, it is necessary to consider the drivers' line of vision, in both the vertical and horizontal planes, and the stopping distance of the vehicle.

The eye level of drivers can vary from 1.05 metres above the carriageway in a standard car to approximately 2.0 metres in commercial vehicles. Unobstructed visibility should be provided at least between these heights above the carriageway.

To enable drivers emerging from a non-priority road to see and be seen by drivers on a priority road, unobstructed visibility is needed within the hatched area shown opposite.

For residential roads where traffic flows are likely to be low, a distance of 4.5 metres is the minimum X dimension necessary to enable a driver to see down the priority road without encroaching onto it.

Where the non priority road is likely to be busy (e.g. where it serves as the main connection between a Main, Class A or B, Road and a residential estate development) an X distance of 9 metres may be required to allow following vehicles to see down the priority road whilst slowly moving up to the junction point, thus allowing two or more vehicles to exit in a stream.

The Y dimension will depend upon the speed of traffic on the priority road and this is illustrated in the table opposite.

X and Y dimensions of 2.4 metres should be provided where a driveway meets the back edge of a footway. There should be clear visibility at a level of 0.6 metres above road level in areas where there may be children.

Turning Spaces

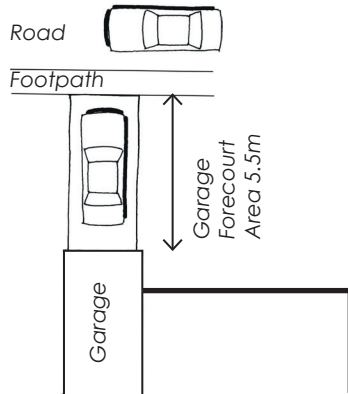


Where culs-de-sac are proposed these should normally have a maximum length of 150 metres. Turning space should be provided whenever vehicles would otherwise have to reverse over long distances or whenever they might otherwise turn in locations which could cause damage to adjacent footway or utility reserves. As general guidance, it is suggested that turning space should be designed to:

- Allow for refuse vehicles to turn where they would otherwise have to reverse more than 40m
- 6 m kerb radii should be provided
- Ensure that parking spaces are provided outside the area required for turning.



Residential Roads



Vehicle Parking Areas

- S** All plots should allow for a car to be parked on site, and in the case of plots on A or B Class roads and other main roads, reversing onto or out of plot should be avoided i.e. on plot vehicle turning facilities should be provided.
- S** Driveways serving garages within house curtilages should normally be long enough to accommodate a car and enable the garage door to be opened. The length of driveway should preferably be 6m or at least 5.5m. In order to enhance security through natural surveillance, all parking spaces should be visible from the interior of the adjoining buildings, especially entrances.

CAR PARKING - General Guidelines Residential Development

1 car parking space per residential unit plus 1 additional visitors space per 5 residential units

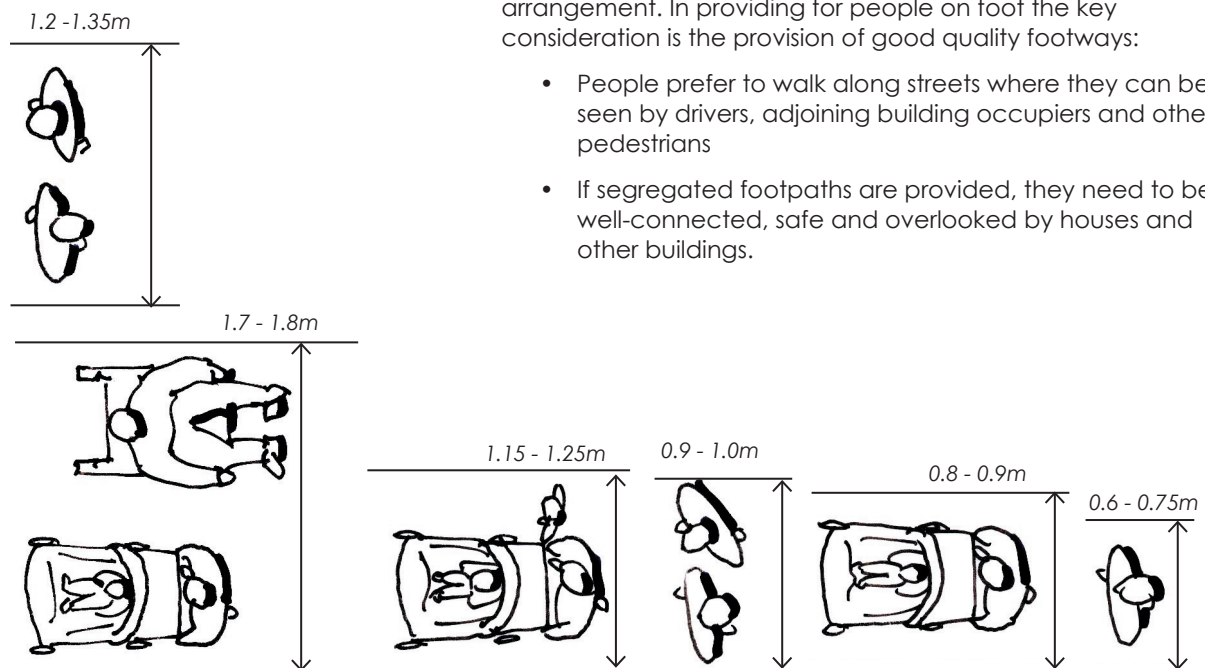
Note. Visitors spaces should remain unassigned (i.e. not limited to a particular residential unit and remain available for all visitors) and be located conveniently close to associated residential units.

Pedestrian Circulation

Provision for pedestrians and walking is too often forgotten. In residential areas the way that people get around on foot should never be left to chance. Initial site development design should consider pedestrian circulation patterns in equal importance to that of the vehicle and building arrangement. In providing for people on foot the key consideration is the provision of good quality footways:

- People prefer to walk along streets where they can be seen by drivers, adjoining building occupiers and other pedestrians
- If segregated footpaths are provided, they need to be well-connected, safe and overlooked by houses and other buildings.

Minimum footway widths for different users

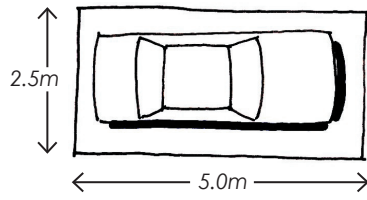




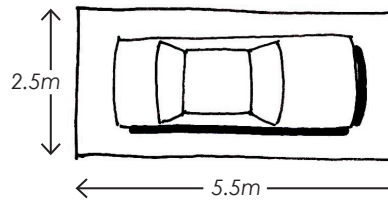
Residential Roads

S

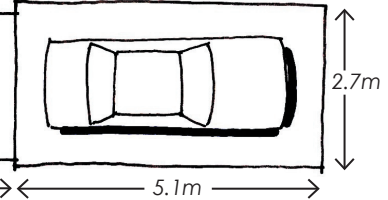
Parking space, garage and forecourt dimensions



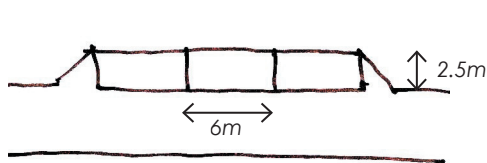
Standard Parking Space



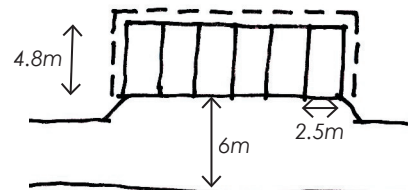
Standard Forecourt Space



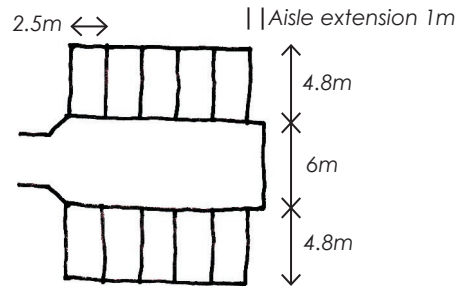
Standard Garage Space



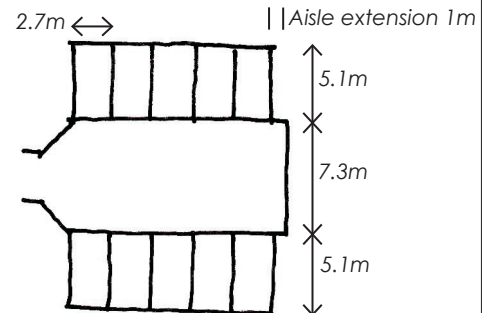
Minimum Parallel Parking Bays



Minimum Perpendicular Parking Bays

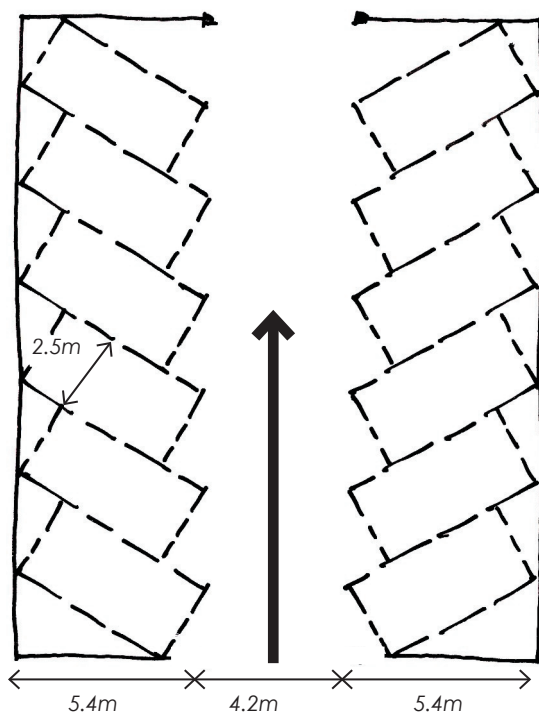


Minimum Grouped Parking Bays

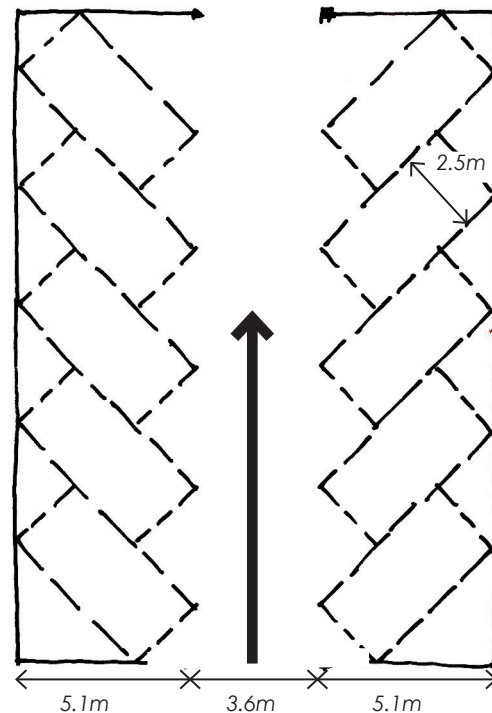


Minimum Garage Court Area

60 Degree Parking



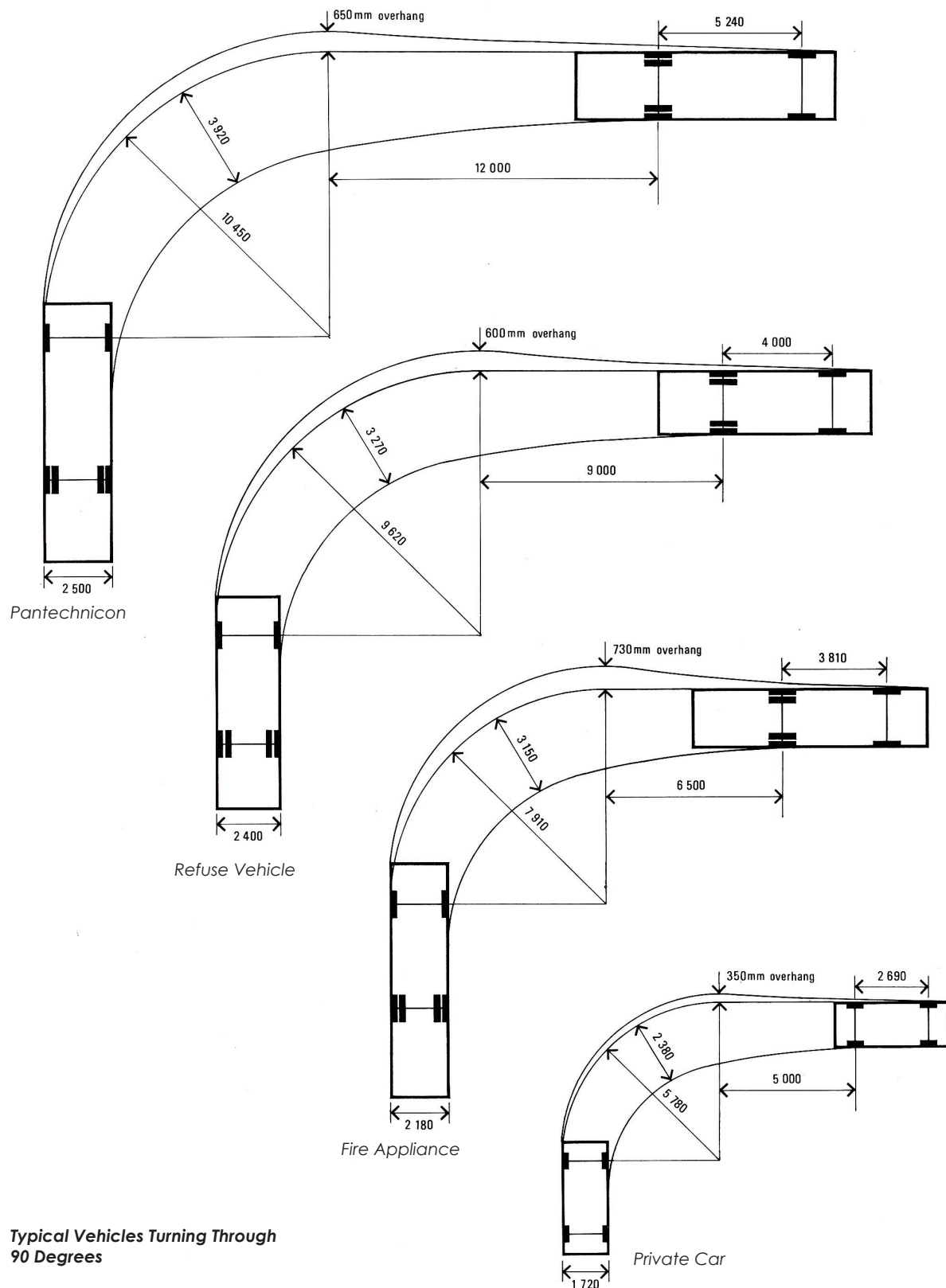
45 Degree Parking

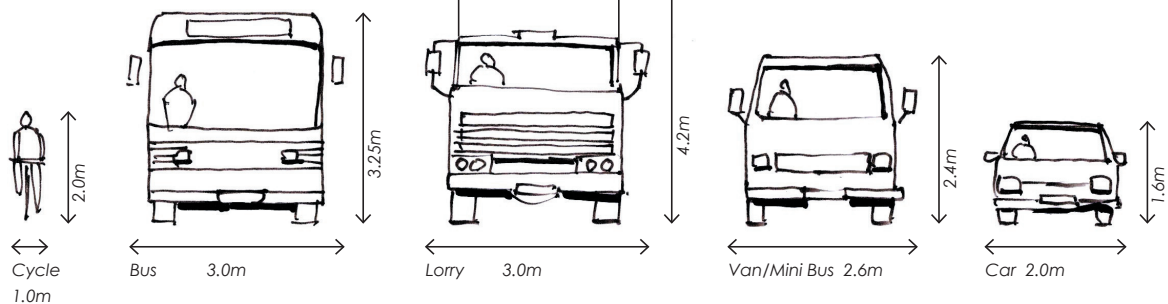
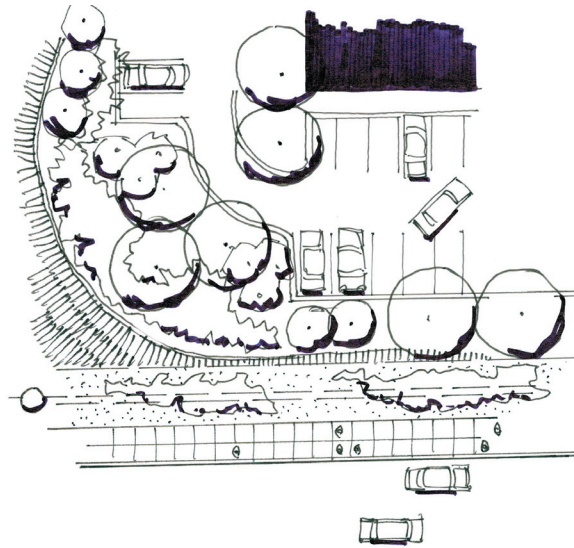
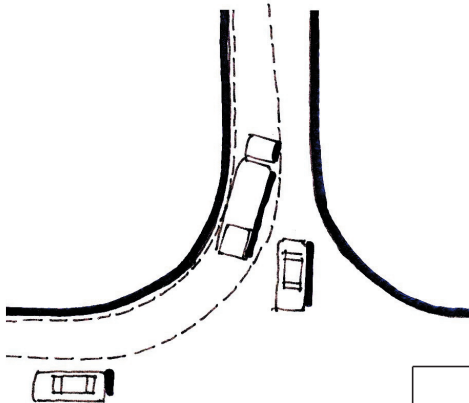
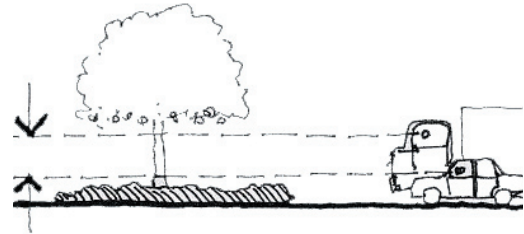


Note. Angled parking spaces should be on a one way system.



Residential Roads





November 2004





Industrial & Commercial Roads

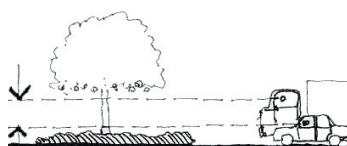
Vehicular Access and Layout

Individual direct access will not normally be allowed off a motorway or other main (Class A or B) roads. Access arrangements should be planned in conjunction with adjoining sites and where feasible, connected to existing major junctions.

In designing accesses for industrial and commercial development the following requirements should be met:

- Access for all road users should be in a safe location
- Adequate visibility splays should be provided
- Adequate vehicular turning radii should be achieved
- Access gates should open inward and normally be set back a minimum of 15 metres from the edge of the carriageway of the road to allow vehicles to draw off the road while waiting for the gates to open
- Large industrial plots where there is a significant fire risk may require more than one point of road access
- It may be appropriate to provide a separate pedestrian route, especially for large industrial uses generating frequent vehicle movements.

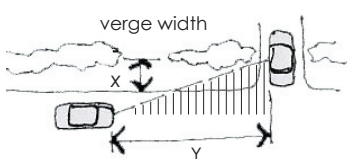
S Note that where this symbol is placed, the guidance provided alongside it is considered to be the minimum/maximum acceptable and should normally be provided.



keep clear
between 0.6
and 2.0m.

Sightline requirements for
different vehicles

Traffic Speed	Y Dimension
50 Km/hour	70m
60 Km/hour	90m
70 Km/hour	120m
85 Km/hour	160m



Stopping distances related to
vehicle speed

S A 7 metre carriageway is generally preferable. 6 metres is considered an absolute minimum. It is important that industrial premises should have direct access to roads of this standard.

In general, culs-de-sac are not appropriate in industrial areas due to the space requirements for commercial vehicle turning areas. Cul-de-sac within industrial areas can cause serious problems if they become congested or blocked. A network of connected loop roads or grid layout can help to avoid this problem.

Visibility

To enable drivers to see a potential hazard in time to slow down or stop comfortably before reaching it, it is necessary to consider the drivers' line of vision, in both the vertical and horizontal planes, and the stopping distance of the vehicle.

S The eye level of drivers can vary from 1.05 metres above the carriageway in a standard car to approximately 2.0 metres in commercial vehicles. Unobstructed visibility should be provided at least between these heights above the carriageway.

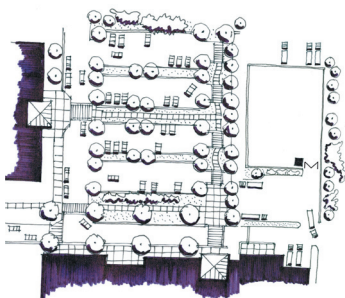
To enable drivers emerging from a non-priority road to see and be seen by drivers on a priority road unobstructed visibility is needed within the shaded area illustrated opposite.



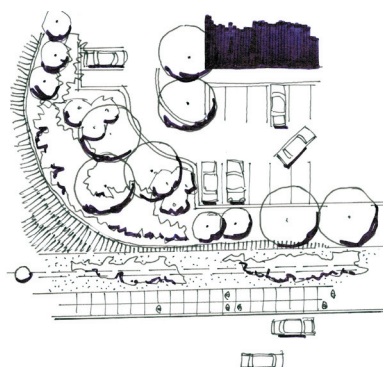
Industrial & Commercial Roads



Ensure car parking areas are overlooked to provide natural surveillance and enhance security



Use landscaping to reduce the visual impact of large areas of car parking



Frontage car parking areas should be no more than two bays wide and incorporate landscaped areas

For industrial roads where traffic flows are likely to be low, a distance of 4.5 metres is the minimum X dimension necessary to enable a driver to see down the priority road without encroaching onto it.

Where the non priority road is likely to be busy (e.g. where it serves as the main connection between a Main, Class A or B, Road and an industrial estate development) an X distance of 9 metres may be required to allow following vehicles to see down the priority road whilst slowly moving up to the junction point, thus allowing two or more vehicles to exit in a stream.

The Y dimension will depend upon the speed of traffic on the priority road and this is illustrated in the table on the previous page.

X and Y dimensions of 2.4 metres should be provided where a driveway meets the back edge of a footway. There should be clear visibility at a level of 0.6 metres above road level in areas where there may be children.

Internal Roads

- S** As a general guide, access roads within an industrial development area should preferably be 7m wide but no less than 6 metres wide.

It is essential to provide sufficient manoeuvring space to enable vehicles to enter, turn around and leave the site in forward gear. There should never be any need for vehicles to reverse out of individual sites onto the public road.

Kerb Radii

- S** As a general guide it is suggested that:

Kerb radii should be 10m at junctions with Main Class A and B Roads and 6m at junctions with local/ access roads.

Vehicle Parking Areas

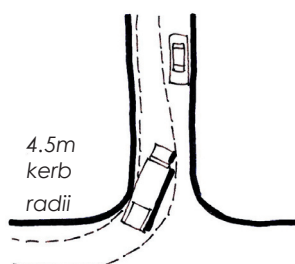
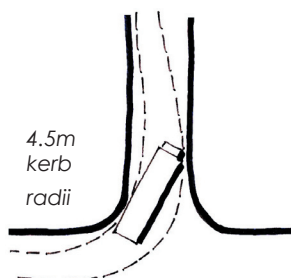
Adequate on-site parking spaces should be provided for both staff and visitors. The car parks should be hard surfaced, clearly laid out and retained for such use.

Table 1 below identifies general guidelines for the provision of on site vehicle parking for industrial development. The guidelines represent the levels of parking normally required to avoid on-street parking.

The industrial site should be a "self-contained" development capable of accommodating its own on-site parking needs. The use of the public street for car parking and staging of service and delivery vehicles is not acceptable unless specific and safe provision has been made for this in the design proposal.

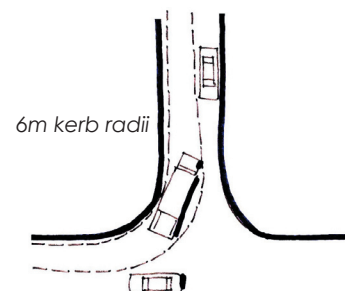
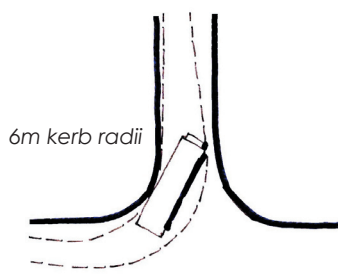


Industrial & Commercial Roads

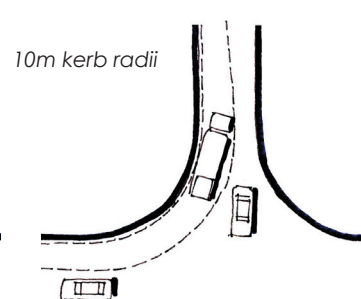
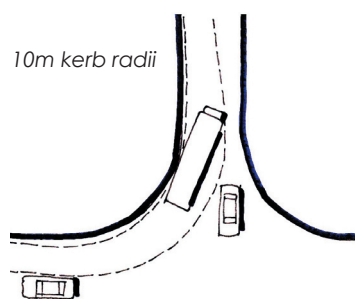


Junctions with 4.5m radii. These allow all vehicles to turn into and out of the junction but require vehicles larger than private cars to use most of the width of both roads. Junctions of this radii should be used only for junctions carrying very low traffic volumes.

Suggested kerb radii



Junctions with 6m radii. This allows pantechincons to turn into and out of the junction using most of the width of both roads, and allows refuse vehicles to turn without interfering with traffic on the priority road. Radii of this order will normally be sufficient for junctions within the residential road layout.



Junctions designed to the recommended radius of 10m for junctions with main Class A and B roads. This radius allows refuse vehicles and heavy goods vehicles (HGV's) to turn without interfering with traffic on the priority road. HGV's may have difficulty in turning past vehicles on the non-priority road and may have to wait until the junction is clear. Where the non-priority road is a residential road however, the lightness of traffic volumes and infrequency of vehicles of HGV size mean that such delays will be infrequent and of short duration. Radii of this order should normally be sufficient for most junctions between residential and main Class A and B roads.

Dimensions of some typical vehicles and the space required for parking areas	Car	Light Van	Coach (60 seats)	Heavy Goods Vehicles	
				Rigid	Articulated
Vehicle Dimensions (metres)	3.8 x 1.7 5.0 x 2.0	Up to 6.0 x 2.6	Up to 12.0 x 3.0	Up to 11.0 x 3.0	Up to 15.5 x 3.0
Recommended Dimensions of Parking Space (metres)	5.0 x 2.5	5.5 x 3.0	14.0 x 3.5	14.0 x 3.5	18.5 x 3.5
Overall Area per Parked Vehicle (square metres), including access and manoeuvring space	20 to 25	20 to 30	100 to 150	100 to 150	150 to 200

Typical vehicle dimensions



Industrial & Commercial Roads

Parking areas and cars should not be the dominant visual elements of the site. Large expansive paved areas located between the street and the building are to be avoided in favour of smaller multiple parking areas separated by landscaping and buildings.

Parking areas adjacent to and visible from public streets should be adequately screened from view through the use of rolling earth berms, low screen walls, changes in elevation, landscaping or combinations thereof whenever possible.

In order to enhance security through natural surveillance, all parking spaces should be visible from the interior of the adjoining buildings, especially entrances.

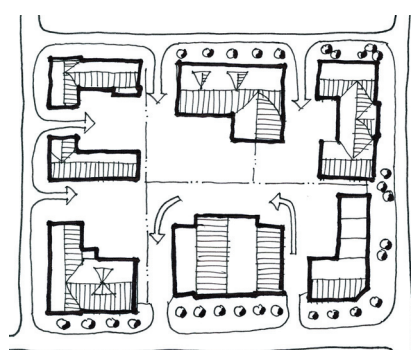
Loading Facilities

An important design challenge is the need to cater for the loading, parking and manoeuvring of light and large goods vehicles likely to visit an industrial area.

The operational requirement for service and delivery on-site parking varies considerably according to type of industrial activity. Typically, a turning head for heavy goods vehicles requires a large area of land, between 800 and 1200 square metres.

Generally, service and delivery vehicle turning facilities will be required within individual plots.

The shape of industrial plots can impact upon the ability to accommodate large goods vehicles. Deep and narrow plots are more likely to cause problems for on-site servicing than those that are roughly square. It is difficult to provide on-site turning space for articulated vehicles where the narrowest plot dimension is below 20 metres (*"Designing for deliveries: an FTA guide for planners"*, Freight Transport Association, 1983).



"In/Out" arrangements may provide an appropriate shared access arrangement for narrow plots

S

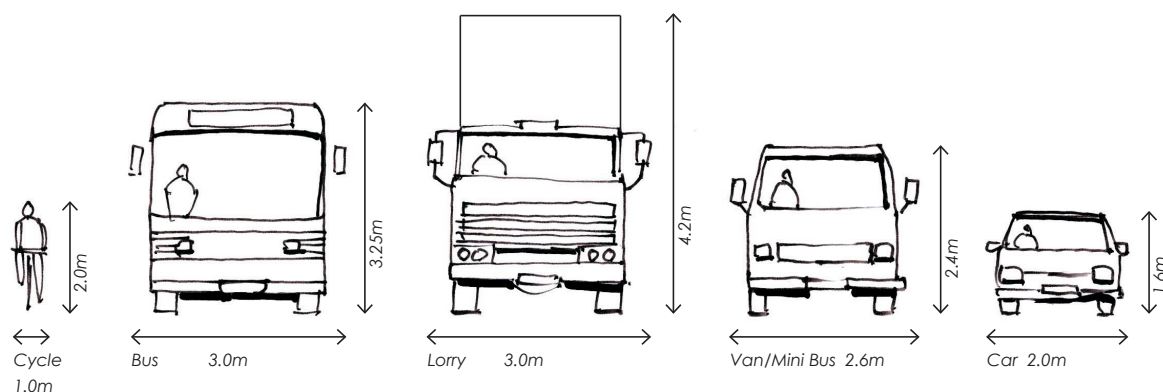
With plots with a frontage that is too narrow to contain a building and site access, joint access easements should be used to create satisfactory access arrangements and allow adequate landscape areas.

"In/out" arrangements can be used to reduce the need for on-site turning space, but this could double the number of openings for each plot, thus potentially exposing more of the rear service yard to public view. However, it may be an appropriate servicing arrangement where an "in/out" access is shared between more than one plot.

Adequate room should be provided for goods vehicles maneuvering or waiting to unload; the area within 36 metres (120 ft.) in front of loading docks should be paved and kept free of obstacles. In addition, loading and storage areas should not conflict with connecting pedestrian footpaths or required parking areas.



Industrial & Commercial Roads



Typical vehicle dimensions

The design objective is to manage noise, disturbance and potential danger from deliveries, servicing and storage in order to reduce their impact on neighbours and the general appearance of the area. The best place for this to occur is within plots, behind frontage buildings.

To alleviate the unsightly appearance of loading facilities for industrial uses, these areas should not be located at the front of buildings where it is difficult to adequately screen them from view. Such facilities are more appropriate at the rear of the site where special screening may not be required.

When it is not possible to locate loading facilities at the rear of the building, loading docks and doors should not dominate the frontage and should be screened from the street.

Public Transport

Sustainable development policies aimed to persuade people to leave their cars at home need to be balanced by the promotion of attractive alternatives. In all but the smallest industrial and commercial developments, provision should be made for public service and company worker bus provision.

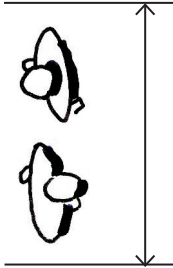
Public Transport Stops:

Major industrial and commercial developments should be designed to take advantage of public transport opportunities. Development edges along local access roads and accessways should provide bus stops, including laybys for bus stops. Public transport stops should be located where they are available to as many people as possible, especially in connection with principal pedestrian routes. Developments which do not allow for public transport facilities and use should be avoided.



Industrial & Commercial Roads

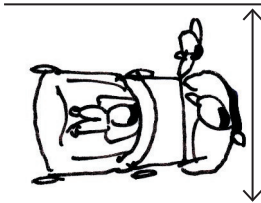
1.2 - 1.35m



Public Transport Shelters:

Shelters should be provided near major concentrations of employees. Where a public transport stop is planned adjacent to a project of at least 2 hectares, the developer should coordinate with the local authority, the Traffic Management Unit, relevant operators and the Road Development Authority to determine a suitable location for a shelter(s) on site. Freestanding shelters should be integrated architecturally with the project with respect to architectural style, materials and colour.

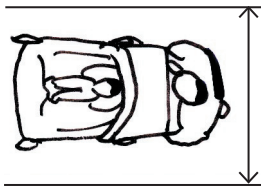
1.15 - 1.25m



Pedestrian Circulation

Provision for pedestrians and walking is too often ignored or forgotten. In industrial areas and within commercial sites the way that people get around on foot should never be left to chance. Initial site development design should consider pedestrian circulation patterns in equal importance to that of the vehicle and building arrangement. In providing for people on foot the key considerations are:

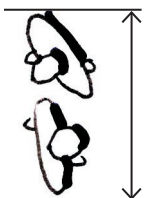
0.8 - 0.9m



The provision of good quality footways:

- People prefer to walk along streets where they can be seen by drivers, adjoining building occupiers and other pedestrians
- If segregated footpaths are provided, they need to be well-connected, safe and well lit and overlooked by businesses and other buildings.

0.9 - 1.0m



0.6 - 0.75m



Ensure pedestrian areas are overlooked to aid security





Table 1 CAR PARKING - General Guidelines

Residential

1 car parking space per residential unit plus 1 additional visitors space per 5 residential units
Visitors spaces should remain unassigned (i.e. not limited to a particular residential unit and remain available for all visitors) and be located conveniently close to associated residential units.

Hotel and Guest House

1 car parking space for every 3 bedrooms. Where conference or function facilities are provided, additional car spaces shall be provided at the rate of 1 space for 15m² of conference or function space. A hotel dining room (or dining rooms) shall be provided with additional car spaces at the rate of 1 space for each 30m² of dining space.

Offices

1 car parking space per 60m² gross floor area.

Banks

1 car parking space per 75m² gross floor space for staff and 1 car parking space per 25m² public floor area for customers

Shops

1 car parking space per 30m² gross floor area (subject to a minimum of 1 space/shop unit)

Supermarkets

1 car parking space per 18m² gross floor area.

Restaurants, Cafeterias, Eating Houses

1 car parking space per 8m² dining area.

Bars

1 car parking space per 6m² of the predominant drinking area.

Discotheques

1 car parking space per 8m² public floor area

Industry

1 space per 115m² of gross floor space but with no less than 2 car spaces per industrial unit. If offices are included in the development then their requirements will be assessed separately at 1 space per 60m² gross floor area.

Heavy goods vehicle parking should be: Light Industry/Service industry - 1 space per 500m² gross floor space or part thereof. General Industry - 1 space per 200m² gross floor space or part thereof.

Cinemas, Theatres, Concert Assembly and Wedding Halls

1 car parking space per 4m² public floor area.

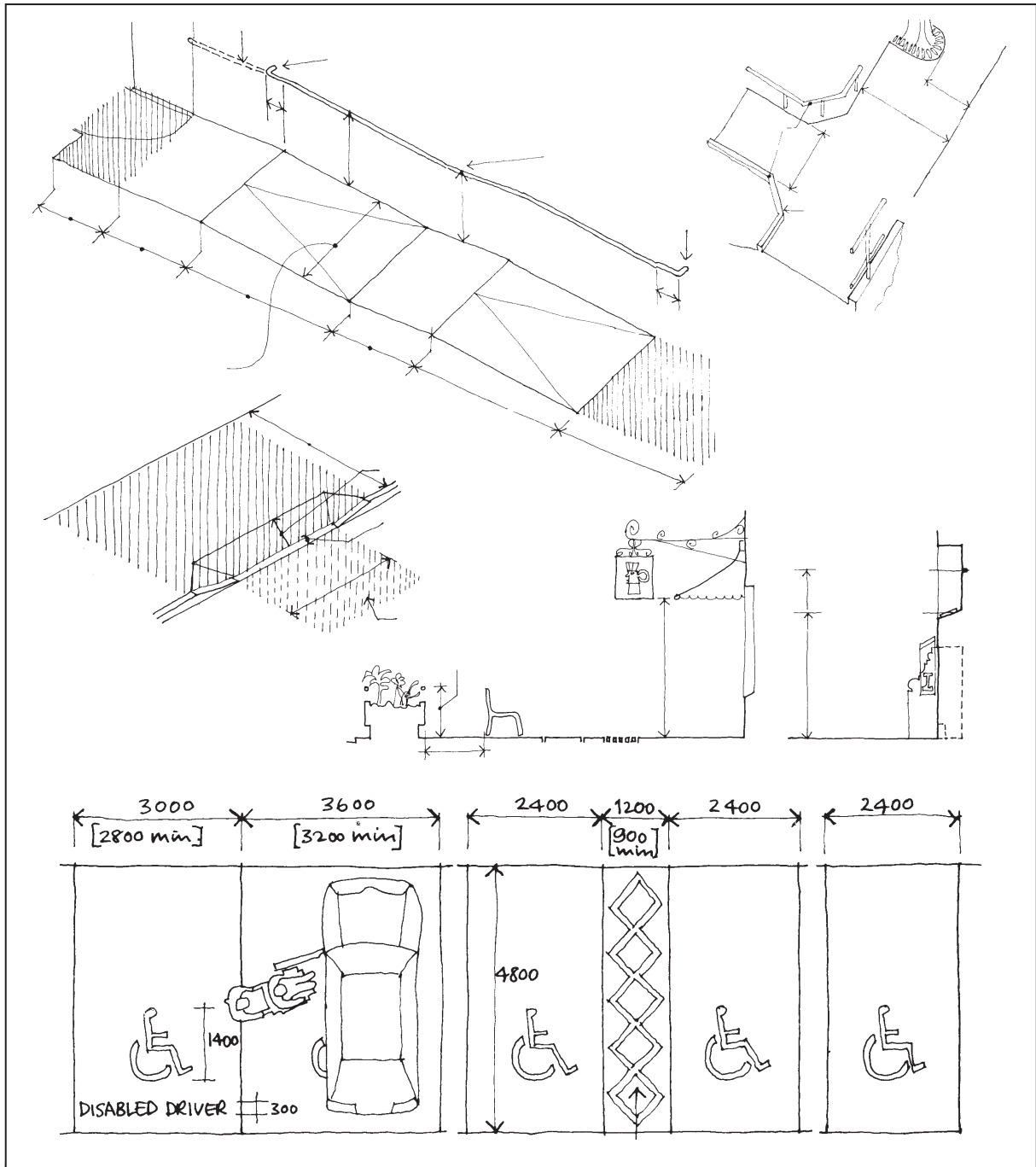
Note. In all employment premises, a proportion of car parking spaces should be designed for specific use of disabled people at a ratio of 5% of all spaces (minimum of 2 spaces).

The above parking guidance will be applied in a manner appropriate to local circumstances together with local and national trends in transport policy making. For example reduced on plot provision may be acceptable where it can be demonstrated that spaces are not required e.g. highly accessible locations, locations well served by public transport, specific user/operational requirements etc.

For the purpose of calculation, fractions of car spaces shall be rounded up to the nearest whole number.



Technical Sheet



Access For People with Disabilities

November 2004



Ministry of Housing and Lands



Access For People With Disabilities

Car Parking for the Disabled

Located close to accessible entrances

Preferably under cover

Parking Bays for the Disabled

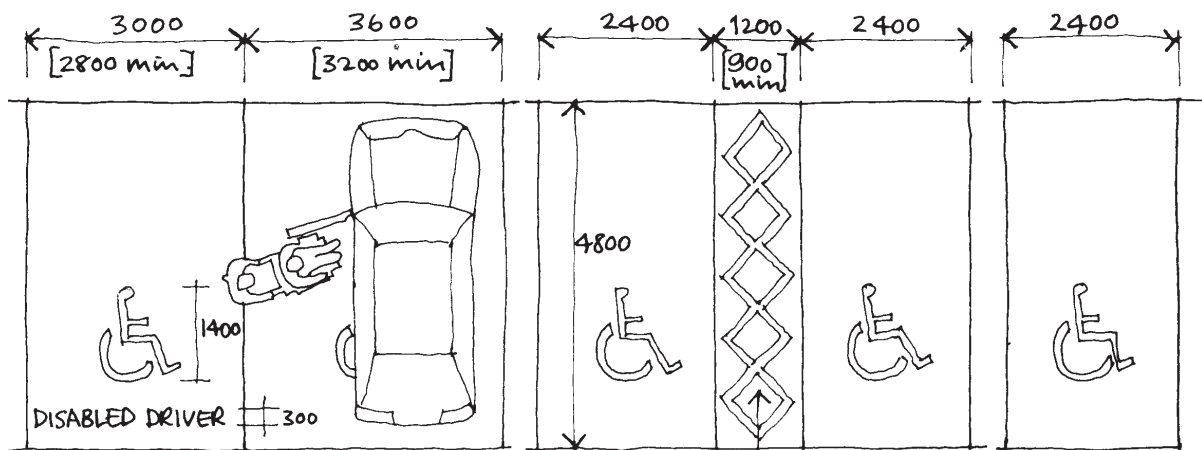
Wide enough for wheelchair transfer to and from the car

Designated for use by disabled people, and clearly signed at entrance

The needs of people with disabilities should be considered as an integral part of the development process.

Car Parking

In all employment premises, a proportion of car parking spaces should be designed for specific use of disabled people at a ratio of 5% of all spaces (minimum of 2 spaces). These should be clearly marked and signed. Where possible, undercover parking should be provided, offering protection from wet weather.



Ambulant disabled user - only where space is limited, full width for wheelchair user preferred particularly in public car parks

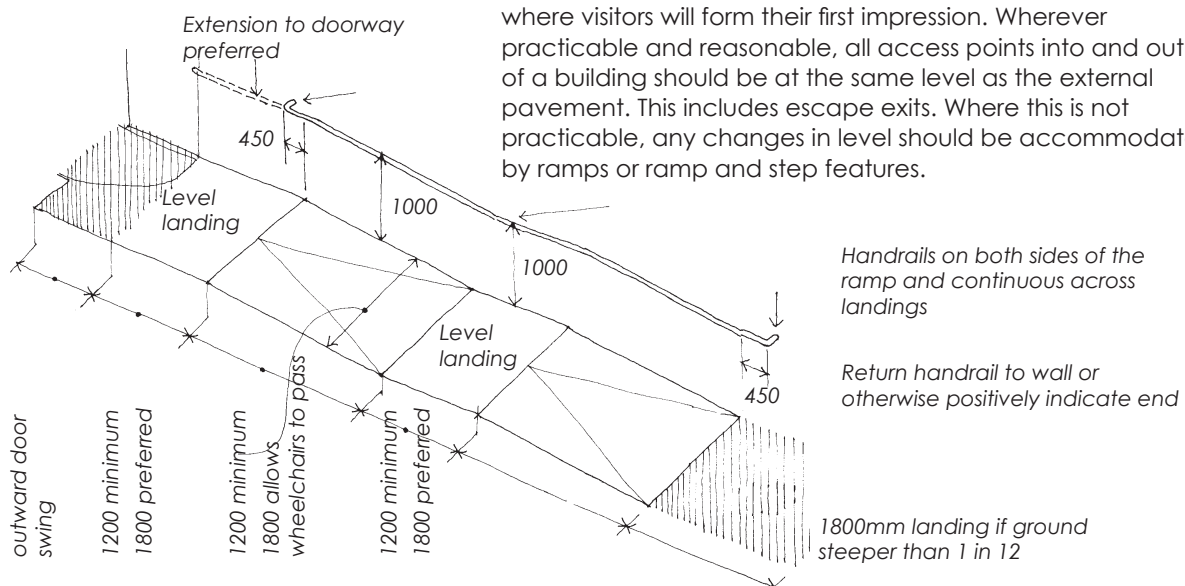
Wheelchair User

Marked out shared space between 2 standard bays

Standard end bay with lay side open for access

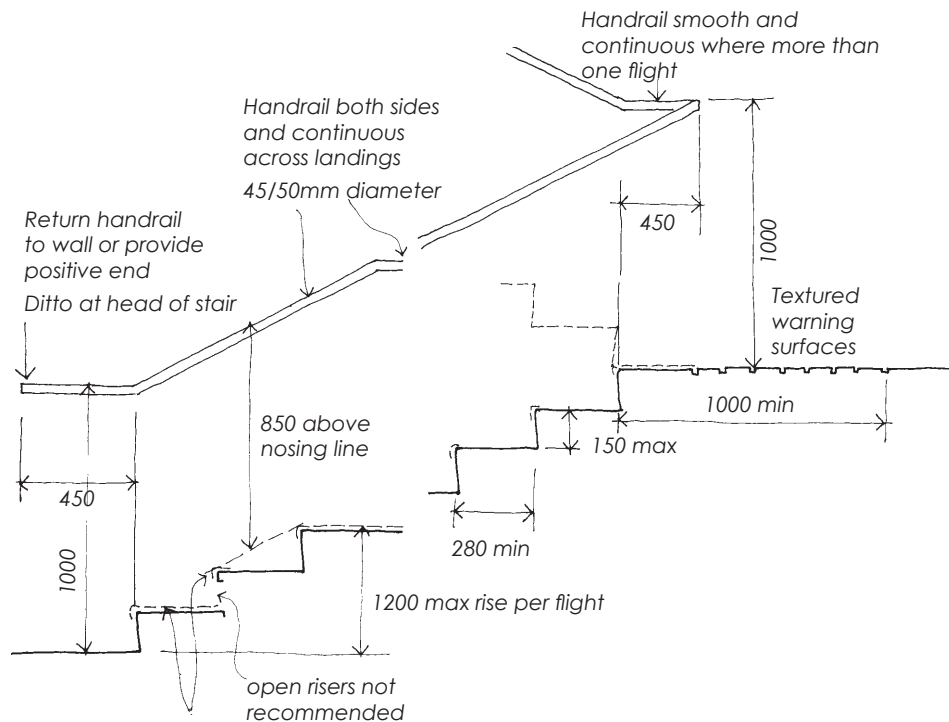
Ramps and Steps

It is important that the entrance to a building is not only accessible, but is seen to be accessible. It is at the entrance where visitors will form their first impression. Wherever practicable and reasonable, all access points into and out of a building should be at the same level as the external pavement. This includes escape exits. Where this is not practicable, any changes in level should be accommodated by ramps or ramp and step features.





Access For People With Disabilities



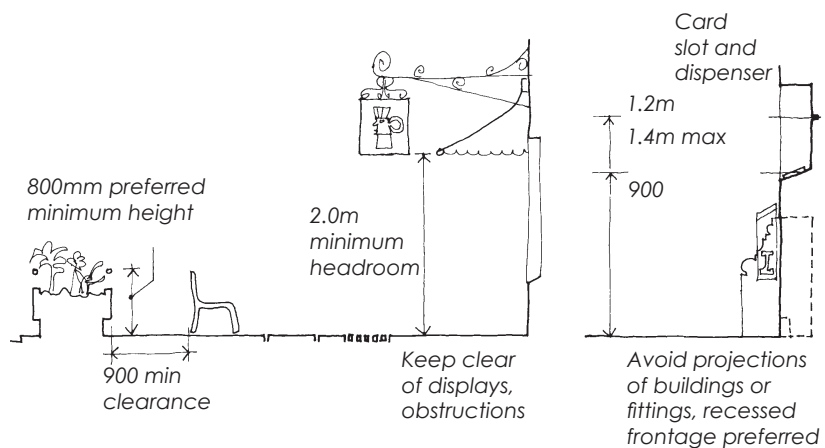
Street Furniture

Street Furniture

Readily distinguishable from surroundings

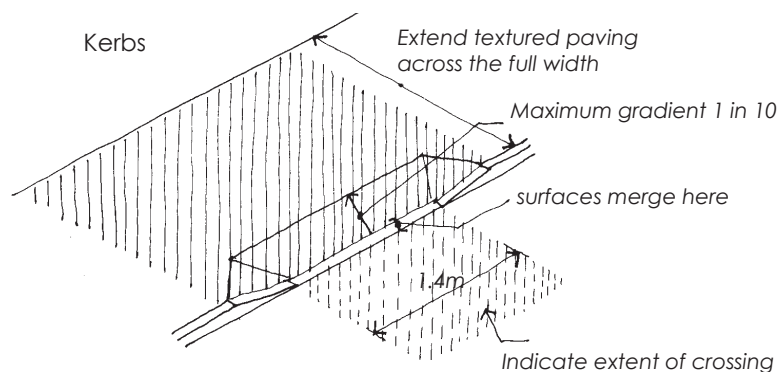
Low projecting canopies, signs, outward opening windows should be avoided

Cash points, letter boxes etc to be accessible to wheelchair users



Kerbs

Textured surfaces can assist blind people





Access For People With Disabilities

Paths

To be firm, non-slip and well laid.

Edges to be defined.

Railings where provided should have a low tapping rail for detection by blind and partially sighted people using canes.

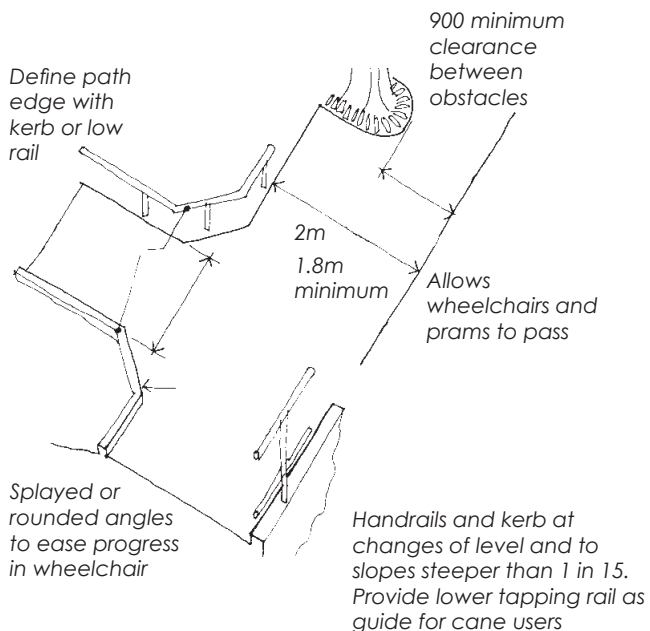
Handrails should extend beyond changes in level.

Colour contrasts can assist partially sighted people.

Paths

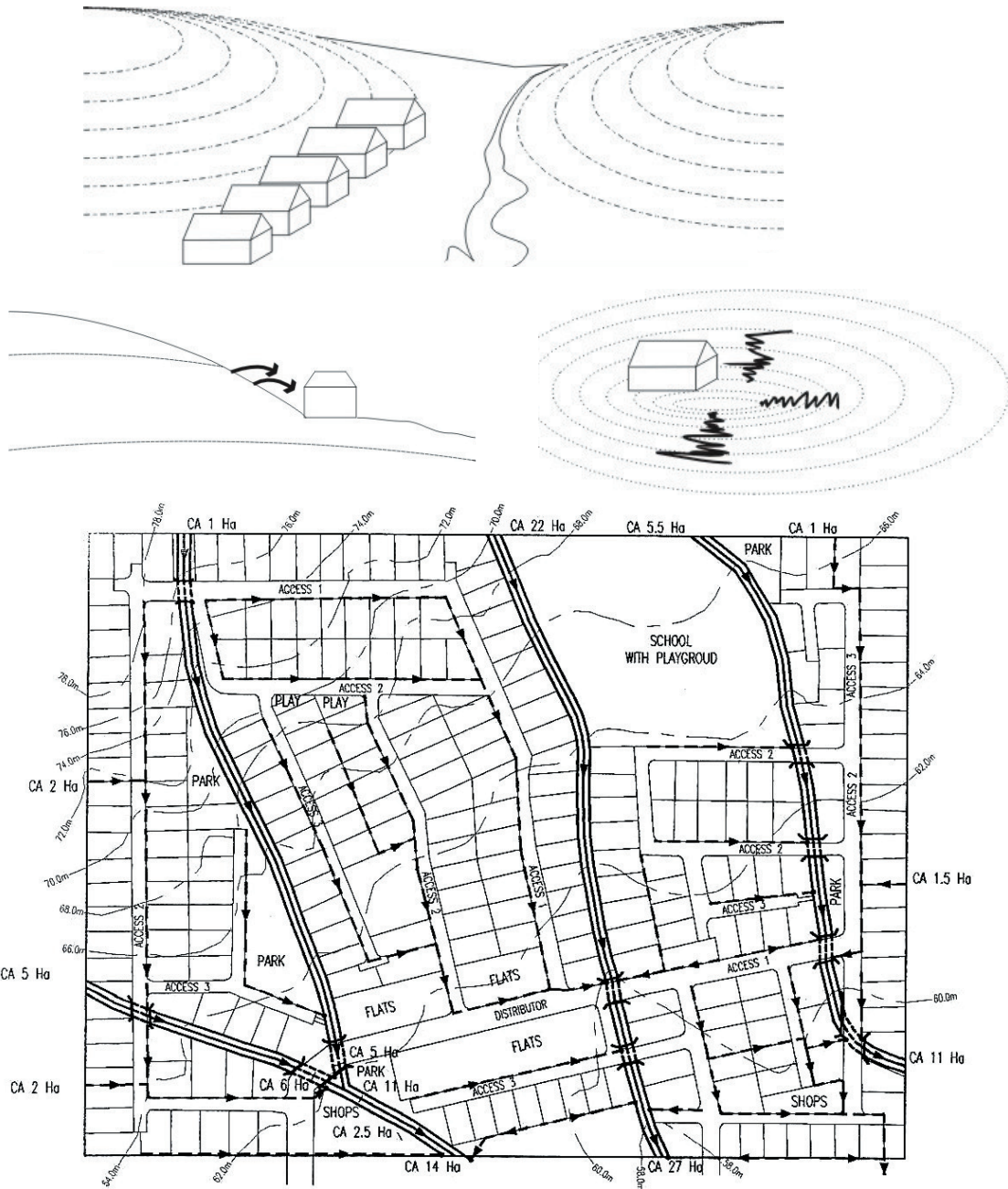
Define path edge with kerb or low rail

Splayed or rounded angles to ease progress in wheelchair





Technical Sheet



Drainage

November 2004





Drainage

A written statement must be secured from the local authority stating that they have no objections to the development with respect to the provision of drainage.

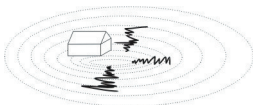
Consideration of the provision of drainage facilities to developments will be undertaken by the Ministry of Environment National Development Unit (MoE-NDU) on a case-by-case basis. There are however, general requirements and guidance that should be considered by prospective developers when preparing development schemes.

Study of the Land Drainage System of the Island of Mauritius

The Ministry of Public Utilities commissioned a study into land drainage issues, which was completed in 2002. The report contains guidance on the control of surface water runoff and suggests how drainage systems should be implemented in development projects.

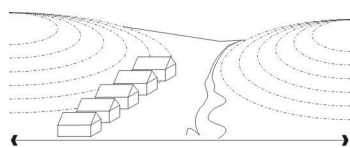
The proposals are recommended for use by developers when planning the layout of proposed developments. Permit applications should include evidence that the drainage system has been designed in accordance with these proposals.

X



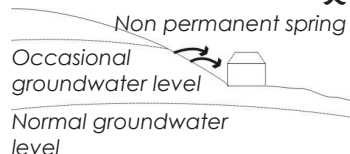
Avoid developing in depressions and other flood prone areas

X



potential floodplain

X



Avoid developing within areas liable to flooding or that may become waterlogged during extreme rainfall events

Need for Drainage Provision

Most new development will change the surface water runoff regime. Changing land use from rural to urban (soft landscape to hard) means an increase in impermeable areas (roofs, drives, roads). Consequently rainwater that falls on the area will run off quicker than it did previously.

A small development of a house or two, taken in isolation, may be perceived to have a negligible effect on runoff. However, when several such developments are added together in one area, a significant change in runoff regime may occur.

It is essential that surface water runoff is adequately controlled to ensure that downstream land and settlements are not adversely affected and that soil erosion and subsequent environmental damage does not occur. (Note. This may require both on site and off-site measures to be implemented).

Areas Liable to Flooding

Whilst it is recognised that it is not normally practical to design for extreme rainfall events, consideration should be given to the areas that are liable to flooding during such events. These areas should be identified as early as possible in the design process and development should be laid out accordingly to minimise any potential damage.



Drainage

Appropriate drainage facilities should be provided to ensure:

- **The site itself does not flood**
- **Other properties are not adversely affected by the proposed development**
- **Essential groundwater recharge potential is not lost**
- **Erosion of ground does not occur**

Property developers should require plot purchasers to:

- **keep all drainage channels free of structures, trees, vegetation and other obstructions**
- **maintain access for maintenance purposes**
- **ensure that any plot access "bridges" do not impede the performance of the drainage system**

General Approach to be Adopted for Drainage Design

The developer should properly map the proposed development (1:2000 scale) and surrounding area (1:10 000 scale) to ascertain the extent of all the catchment areas that contribute to water flows through and from the development. Such mapping should include all streams and show contours at:

- 1m intervals for land with a slope of <5%
- 5m – 10m intervals for land steeper than 5%

The development proposals need to deal with drainage of storm water that flows through the development from surrounding areas and settlements in addition to that which is generated from the development itself. Proposals should also demonstrate that no significant harm will be caused to properties or land downstream as a consequence of the proposed drainage system.

Each property within the development should be able to discharge into the drainage system by gravity. The entire surface water drainage of the development should be achieved by gravity.

The sub-division of land can involve interference with the natural surface drainage patterns of overland flows and flows through small streams.

For small catchment areas, e.g. less than 5 hectares, it may be acceptable to utilise roadside drainage channels to intercept and convey surface water.

For larger catchment areas the construction of suitable drains would be very costly and it would be preferable to plan the road network and plot layouts to integrate with the natural streams and watercourses and use these to continue to carry surface water through the development.

The attached drawings, which have been developed from those included in the Land Drainage Study report, indicate how a drainage system might be laid out in accordance with the above principles.

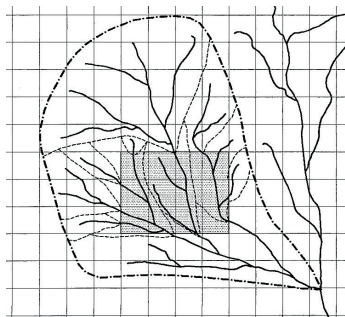
Basic Design Parameters

The following parameters are suggested as general rule-of-thumb criteria that could be adopted. However the overall drainage system will need to be designed by a qualified engineer. The parameters identified are for guidance:

- Open roadside drains should not exceed 400mm width and 500mm depth
- Larger drains should be covered with suitable provision for water to enter and for maintenance access

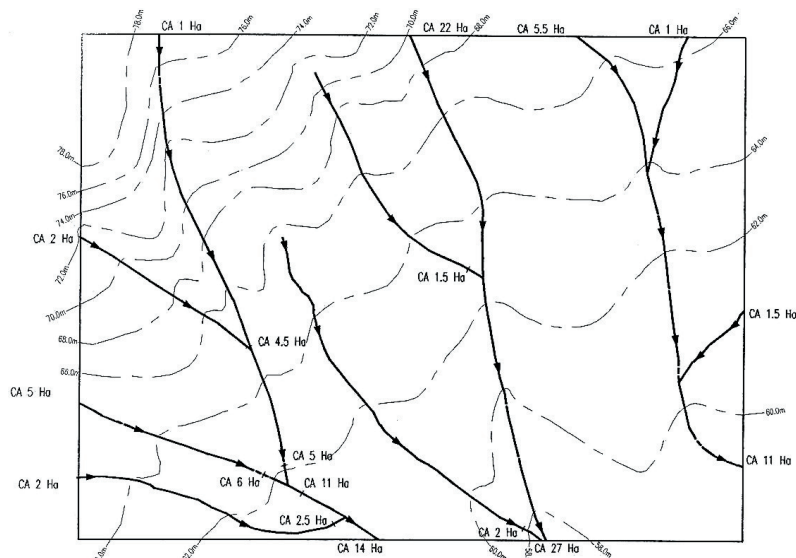


Drainage

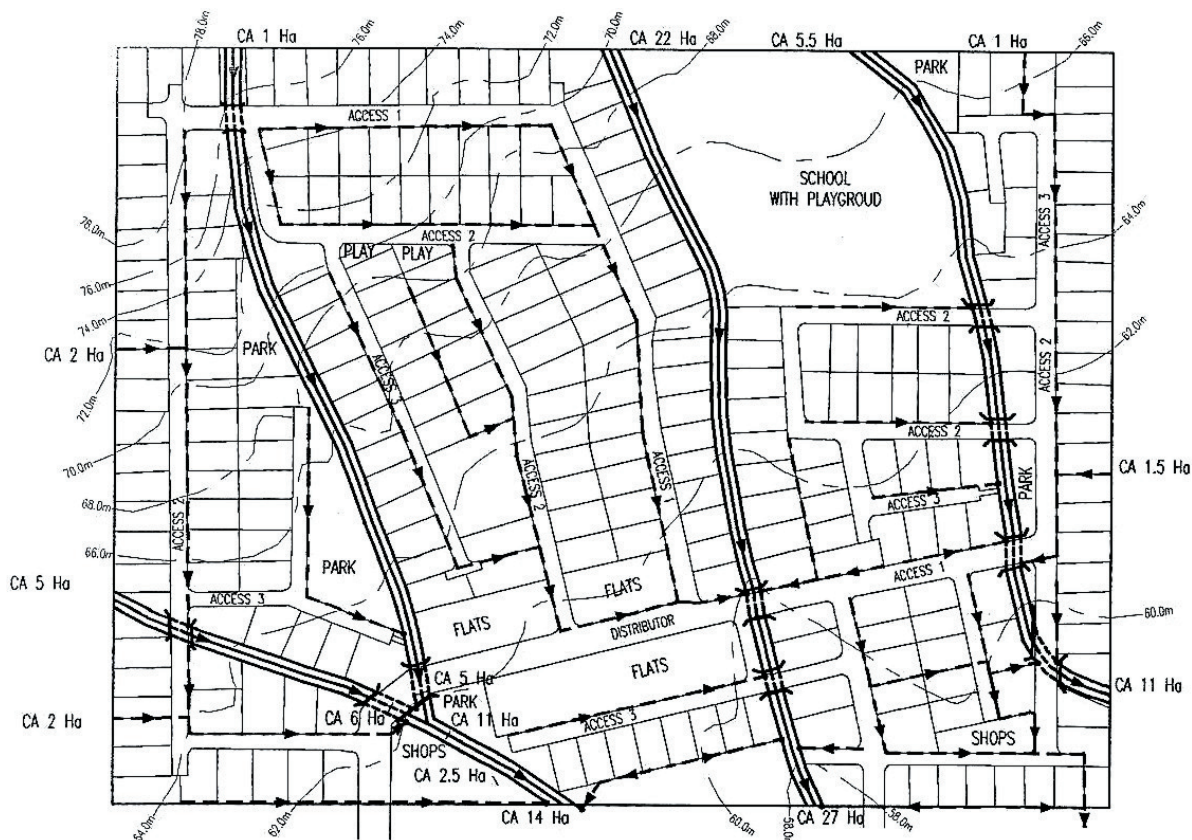


Overall Catchment Plan

Plan the road network and development layout so that the major natural surface water drainage patterns are maintained



Proposed Development Area Within Catchment



**Possible Development Layout
Maintaining Main Natural
Surface Water Drainage Channel
or Route**



Drainage

- Open drains are unlikely to be able to drain areas greater than:
 - 2 ha in flat areas (<1%)
 - Up to 5ha for steeper areas (up to 6%)
- Under design conditions velocities above 0.75m/s must be achieved
- Maximum flow rates must not exceed 4m/s

Possible Arrangement of Services

A separate Technical Sheet: Combined Utility Services Summary plans provides indicative groupings for arrangements of the various utilities that generally need to be laid within the road and utility reserve. These drawings are for **information only** and are not intended to cover every eventuality. They do, however, serve to demonstrate why it is important to consider all the utilities and how they relate to each other when preparing layout plans.

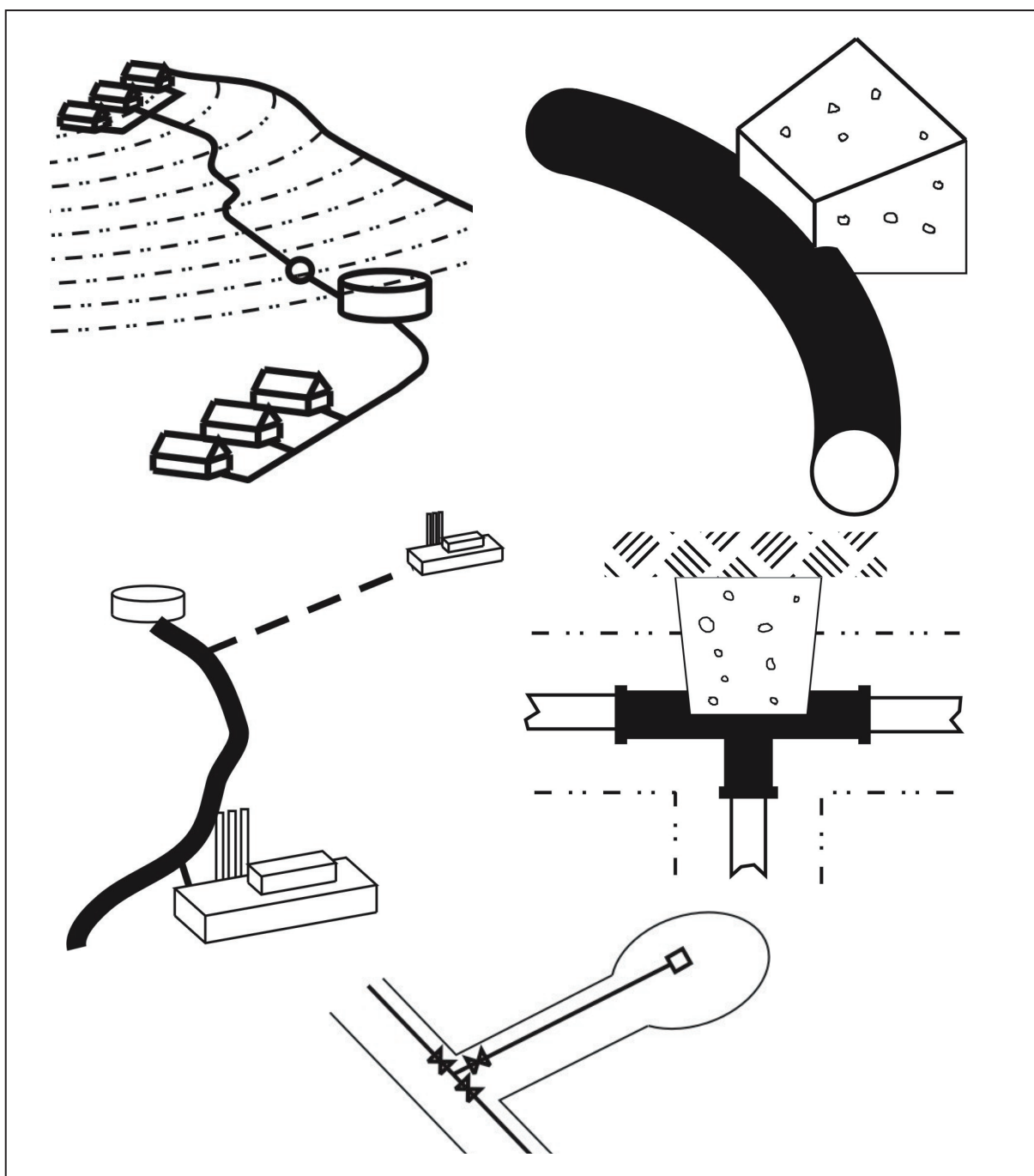
It is important to carefully consider the manner in which roadside drains inter-relate with other services, particularly with regard to:

- the need for other services to pass under the drains
 - so deep drains may have a significant effect on how those services are installed
- the way drains cross roads (for example at road junctions)

Piped drains, for example, may be necessary at some points in order to allow other services to pass under or over the drain rather than channels.



Technical Sheet



Water Supply

November 2004



Ministry of Housing and Lands



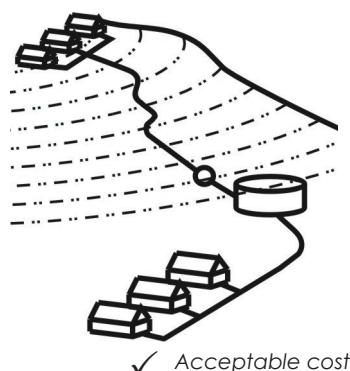
Water Supply

Early discussions should be held with the CWA to determine the complexity and cost of obtaining a water supply.

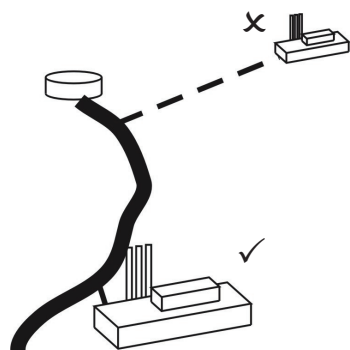
Before any development or building permit is issued the CWA should be provided with full and accurate details of what is proposed.

A written statement should be secured from the CWA stating that they have no objections to the development with respect to supplying the development with water.

High cost ✗



✓ Acceptable cost



The Central Water Authority (CWA) is responsible for water supply networks and water distribution in Mauritius.

Generally, the design and construction of extensions to the water supply network that might be required to serve a development will be undertaken by the CWA. Alternatively design and construction may be undertaken by the developer in accordance with CWA specifications and procedures.

Each request for a connection will be assessed individually and the cost of providing a supply will be advised to the developer.

Developer Contributions and Water Tariffs

It is important to note that water supply costs to development remote from the primary water distribution system, or where there is a scarcity of potable water, will be expensive. In some cases water supply may be impossible to provide at an acceptable cost.

In addition, developments at elevations above existing developments are costly to serve, in terms of both capital and ongoing operational cost. Developments that have a high capital or operational cost to the public purse will not normally be acceptable unless the developer contributes to, or finances all required upgrades. There are separate tariffs for industrial, commercial, domestic and other works.

For morcellement and similar developments the developer will be responsible for the design and construction of all the on-site water supply infrastructure. These installations should be constructed fully in accordance with the standards and conditions of the CWA. In some cases the development may require the construction of water storage reservoirs or pumping stations to satisfactorily meet the needs of the development. Where this is the case the developer will have to ensure appropriate space is available for the required infrastructure.

Small Scale Developments

For small scale developments (residential, commercial, recreational or non-water intensive industrial) close to existing water supply infrastructure, it is likely that no significant problems will be experienced in obtaining a water supply connection. Where the development is some distance from the existing network it may not be possible to provide a supply of adequate pressure without major upgrading of the existing system.

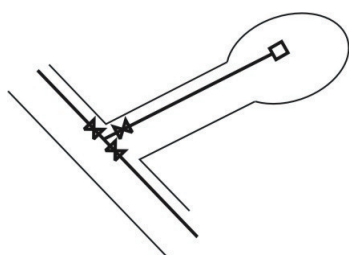


Water Supply

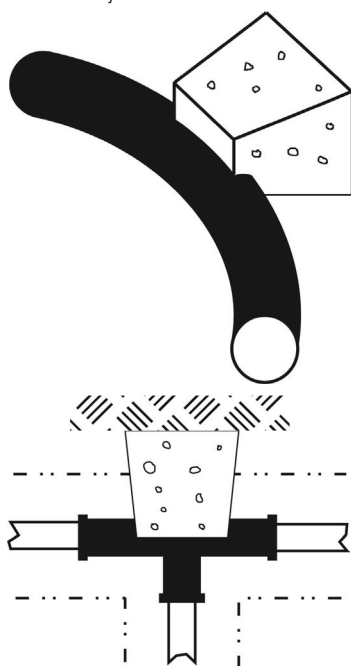
TYPICAL TRENCH WIDTHS

Trench	Pipe Diameter
450mm	up to 100mm
700mm	200mm
900mm	300mm

For larger diameter pipes the width required is about 500mm wider than the nominal pipe bore.



Valves at junctions



Thrust Block

Property developers should require plot purchasers to keep all utility/road reserves free of structures, trees and other vegetation. Access for maintenance and other purposes must be possible at all times.

General Requirements for Water Systems

Main water pipes should be laid in utility reserve wherever possible, and on the opposite side of the road to the main electricity lines. A lateral clearance of 500mm must be maintained between the water main and any other main service. Service pipes should be laid in such a way that they cross over or under the electricity and telecommunications cables with as great a clearance as possible.

The main pipes should be laid at such a depth that there is at least 900mm of cover to ground level from the top of the pipe. The trench width required to allow the correct laying of the pipes varies depending upon the diameter of the pipe.

Various pipeline fittings will need to be provided on the main lines including

- Isolation valves at pipe junctions
- Fire hydrants as required by the Fire Service
- Air release valves and main flushing (washout) facilities

Sufficient space in the utility reserve must be allowed for these items and their associated chambers and shrouds.

For typical developments, with pipelines of up to 150mm diameter, these chambers will normally be less than 900mm by 900mm in plan.

Water mains will generally be laid using "push jointed" pipes manufactured in HDPE or ductile iron materials. As they are pressurised, there will be internal forces that will try and open the joints, particularly at changes of direction, changes of diameter and at isolation valve locations. To counter these forces it is usual to provide mass concrete "thrust" blocks on the various fittings, which are capable of transmitting the force into the surrounding ground. It is important that the integrity of these thrust blocks is not compromised by anyone excavating a trench or similar behind them. For this reason it is considered best for the water mains to be laid as close as possible to the outside edge of the utility reserve. Where it proves necessary for another service to pass close to the thrust blocks then provision needs to be made to extend the thrust block across the line of the other service so that the load is transmitted to undisturbed ground. As an alternative, consideration may be given to using other pipe materials such as electro-fusion jointed HDPE or using special anchor joints.

Service connections are taken off the main pipes using ferrule connections and consist of polyethylene pipe of 20mm diameter for a single property to 40mm diameter for a maximum of 5 properties on one side of the road. The service pipes are laid from the ferrule to inside the individual properties at a minimum depth of 525mm. Stop cocks and meters are installed in small chambers inside the individual plots.



Water Supply

All designs and works that will ultimately be transferred to the CWA must be approved by the CWA.

Possible Arrangement of Services

A separate Technical Sheet: Combined Utility Services Summary plans provide indicative groupings for arrangements of the various utilities that generally need to be laid within the road and utility reserve. These drawings are for **information only** and are not intended to cover every eventuality. They do, however, serve to demonstrate why it is important to consider all the utilities and how they relate to each other when preparing development plans.

Further Advice and Information

For further advice and information please contact:

Chief Engineer (Operations)

Central Water Authority

St Paul

Phoenix

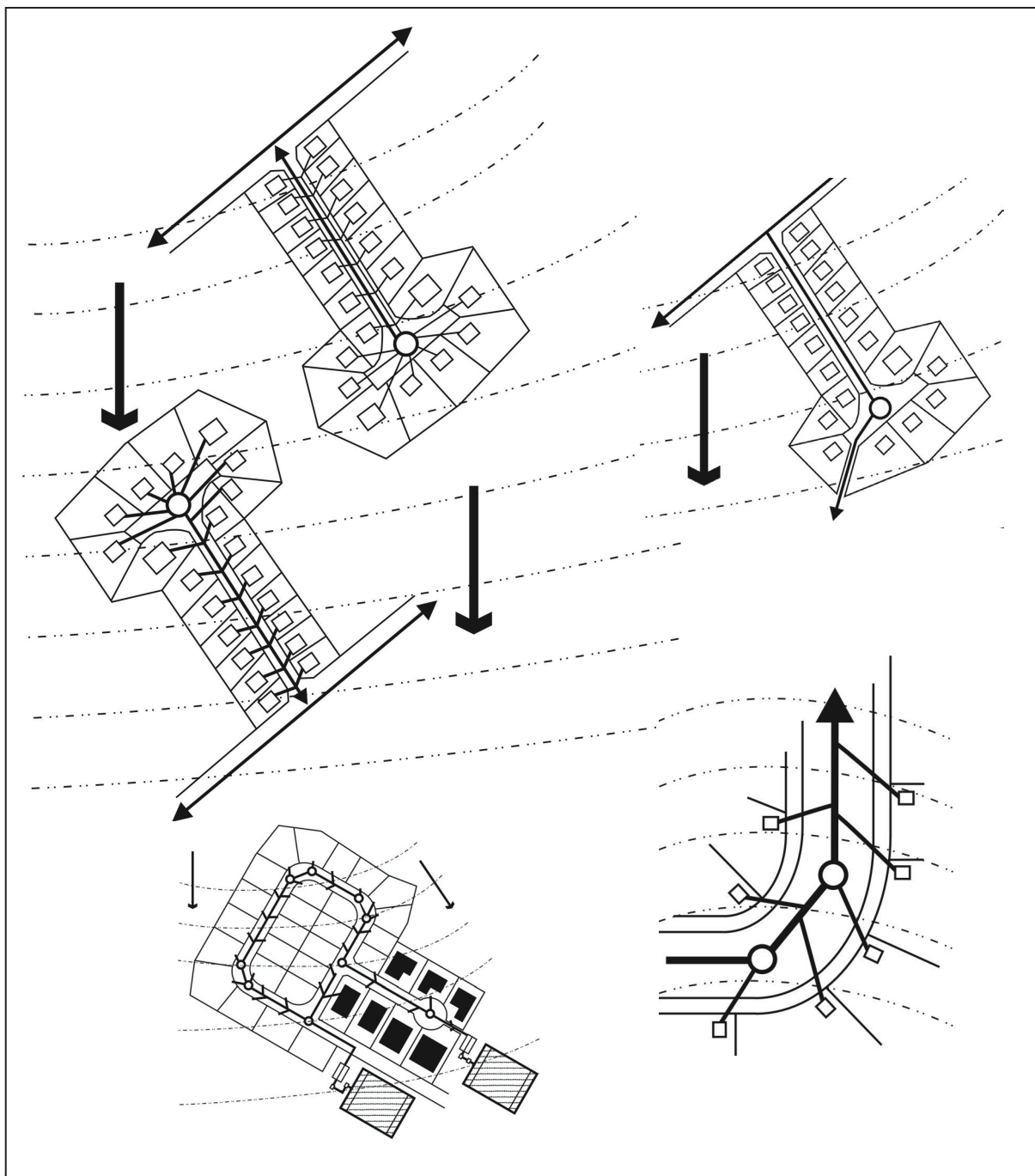
Tel No. 601 5000

Fax: (230) 666 6264

e-mail: cwa@bow.intnet.mu



Technical Sheet



Mains Sewerage

November 2004



Ministry of Housing and Lands
Strategic Planning and Implementation Unit

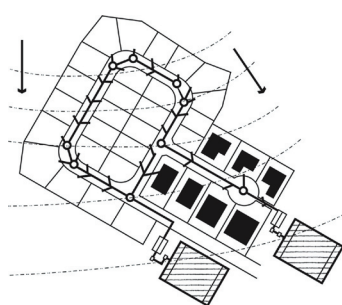


Mains Sewerage

Mains sewerage provision needs to be designed to be in accordance with the WMA's Sewerage Master Plan and relevant standards used by the WMA.

Before any development or building permit is issued WMA should be supplied with full details of what is proposed. A written statement must be secured from the WMA confirming that they are satisfied adequate main sewage disposal facilities will be provided.

Property developers should require plot purchasers to keep all utility reserves free of structures, trees and other vegetation. Access for maintenance and other purposes must be possible at all times.



Communal Septic Tank and Leaching Field System

Note. This Technical Sheet does not consider options for wastewater treatment.

The design and construction of any off-site extensions that might be required to serve a development should be to the approval and satisfaction of the Wastewater Management Authority (WMA).

The design and construction of any off-site and on-site sewerage works will generally be the responsibility of the developer, subject to the approval of the WMA.

Sewerage and Sewage Treatment

Where a development falls within an area that is not included within the Sewerage Master Plan or where the provision of main trunk sewers is not likely to be realised until some time after the development is completed it will not normally be required for a sewerage system to be provided.

Exceptions to this may be where proposed plot sizes are too small to allow the provision of on-site septic tank disposal systems (see Technical Sheet On-Plot Sewage Disposal). In these cases communal systems may be required.

Normally the provision of a sewer system connected to communal septic tanks will be the preferred solution but where the development is large and land is available, some form of waste stabilisation pond system may be appropriate.

In rare cases, and probably only for large and high value developments or where there are particular environmental concerns, consideration may be given to the use of a more sophisticated sewage treatment process, such as extended aeration, rotating biological contactors (RBCs), or membrane filtration plant.

General Requirements for Sewerage Systems

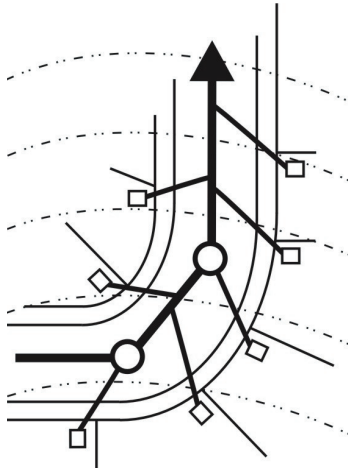
Sewers are generally the deepest of all the services. Typically connections to each plot are laid at a depth of 1.2m or more to allow the sewer laterals to pass under other services.

For individual plots, pipes of minimum 150mm diameter should normally be used. These connect into the main sewer runs that need to be laid along roads (or through dedicated service corridors). Connections may be "Y" branch connectors or link directly into main-line manholes. On-plot sewer lines should generally be constructed using 100mm diameter pipes so that the chances of a blockage in the main sewers is reduced.

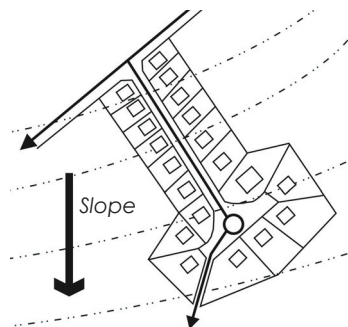
Main sewers serving more than 20 properties should have a minimum diameter of 200mm. The sizing of all main sewers will need to be calculated by a qualified Engineer to take account of flows and gradients of pipes and approved by the WMA.



Mains Sewerage



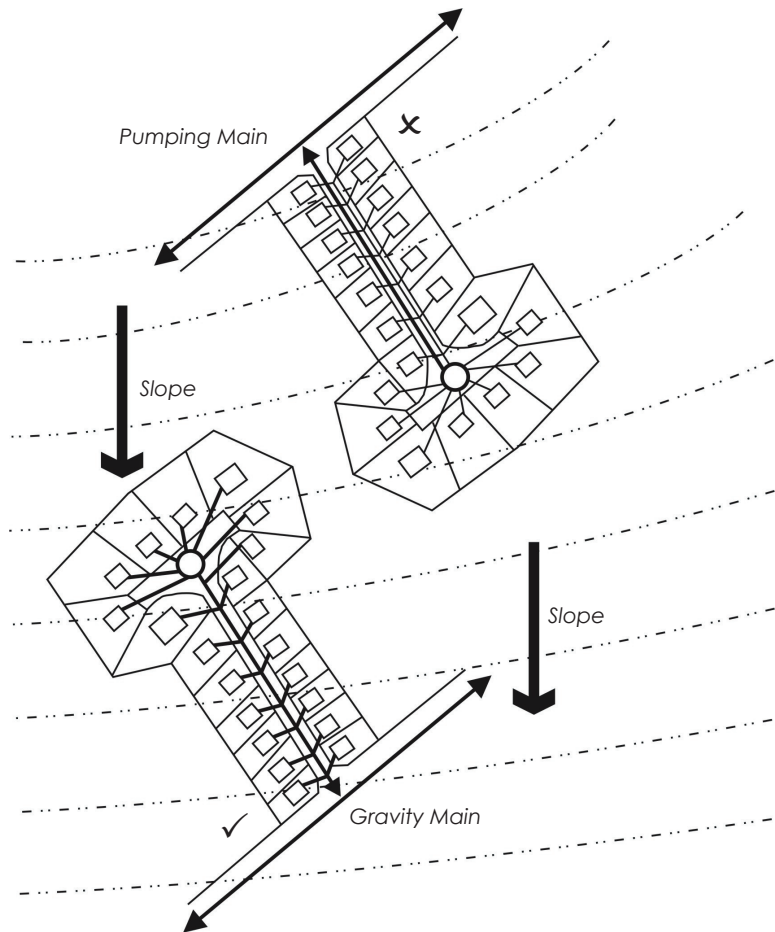
Connections may be "Y" branch or link directly into main-line manholes



Gravity Main Service Corridor

WMA should be consulted early in the development planning stage to ensure that sufficient space is available for the infrastructure that needs to be installed.

As far as possible, developments should be laid out so that sewers can flow by gravity. The use of sewage pumping stations should be considered a last resort as they are expensive to construct, operate and maintain. These can often be avoided if sufficient consideration is given to the comprehensive provision of sewerage at the development design stage.



The WMA will advise on the minimum and maximum pipe gradients that are acceptable for mains sewers. As far as possible developments should be laid out so that the best use is made of the natural ground slopes in order to keep sewers at reasonable depths and achieve satisfactory gradients. For planning purposes a reasonable rule-of-thumb for minimum pipe gradients for pipes of 200mm diameter and above is 1:x, where "x" is the diameter of the pipe in millimetres. Laying pipes at these flat gradients is a specialist operation and in practice, where doubts may exist about the ability to construct sewers at such shallow grades, then much steeper gradients should be adopted. Smaller pipes should be laid at steeper gradients and 1:70 and 1:100 are the practical limits for 100mm and 150mm pipes respectively.



Mains Sewerage

Manholes need to be provided at regular spacing so that access can be achieved for maintenance purposes. Spacing between manholes should not exceed 50m. Pipe runs between manholes must be laid straight and be at constant gradient. Additional manholes may therefore be required if there are bends, junctions or changes of ground slope.

Manhole sizes vary depending upon such things as the depth of the sewer, the materials used for the construction of the manhole, and the diameter and number of pipes that are entering it. Manhole sizes should be as per BS-EN 752.

Possible Arrangement of Services

A separate Technical Sheet: Combined Utility Services Summary plans provide indicative groupings for arrangements of the various utilities that generally need to be laid within the road and utility reserve.

Sewers have not been included in these drawings. However, the drawings indicate probable locations and depths of other services that will inform the sewer design process.

These drawings are for **information only** and are not intended to cover every eventuality. They do, however, serve to demonstrate why it is important to consider all the utilities and how they relate to each other when preparing development plans.

Further Advice and Information

For further advice and information please contact:

Wastewater Management Authority

The Operation and Maintenance Unit and/or

The Pollution Control Unit

5th Floor, Aisha Building

Louis Pasteur Street

Port Louis

Mauritius

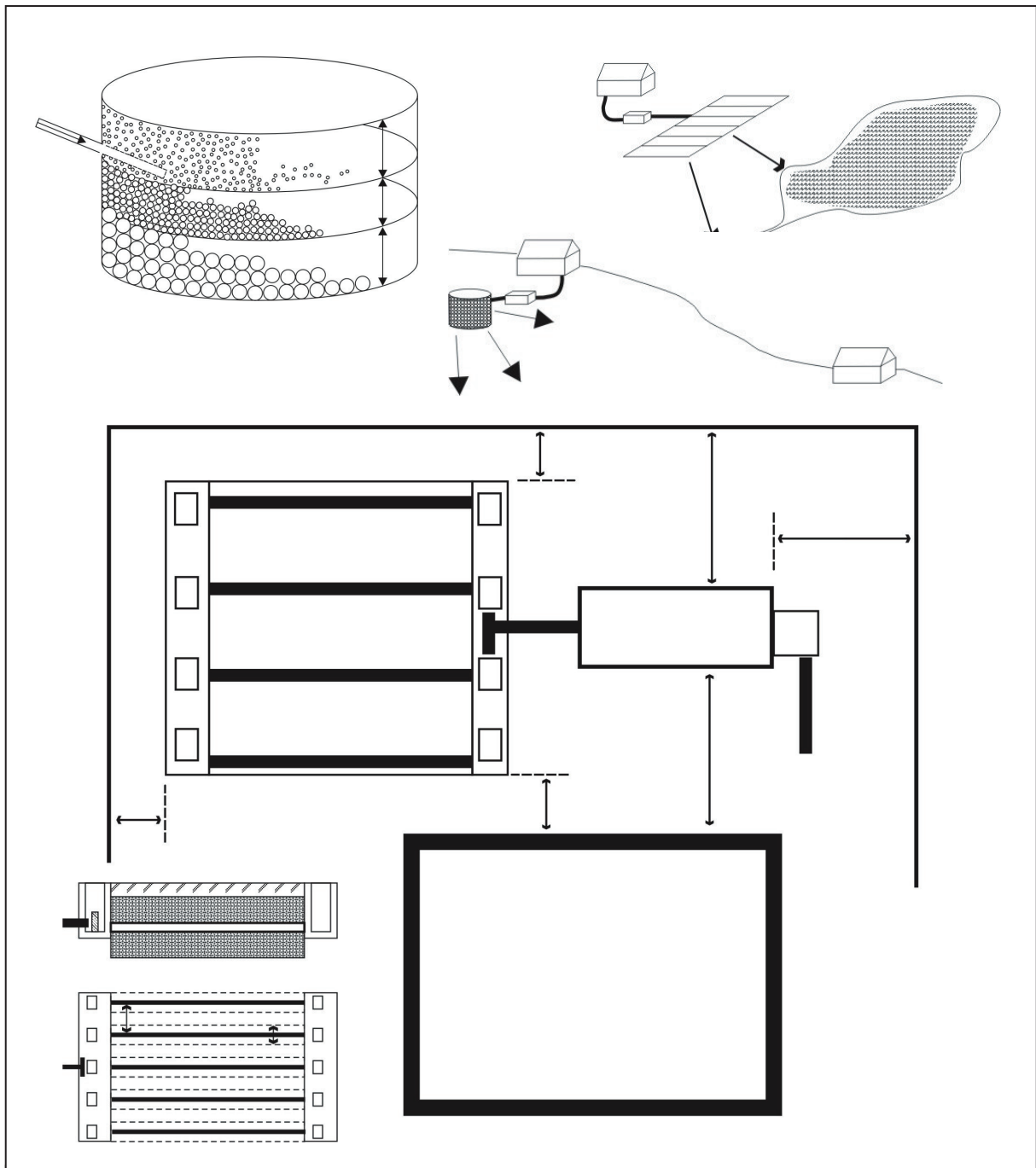
Telephone: 217 0300

Fax: 216 1925

E-mail: wwa@bow.intnet.mu



Technical Sheet



On Plot Sewage Disposal

November 2004



Ministry of Housing and Lands



On Plot Sewage Disposal

Compliance with this Technical Sheet is to be seen as a minimum standard to be achieved and all installations must be approved by the WMA and constructed strictly in accordance with the approved design.

Designs for the treatment of sewage should be prepared in association with the Wastewater Management Authority (WMA) on a case-by-case basis. There are however, general requirements and guidance that should be considered by prospective developers when preparing development schemes.

Septic Tank Installations

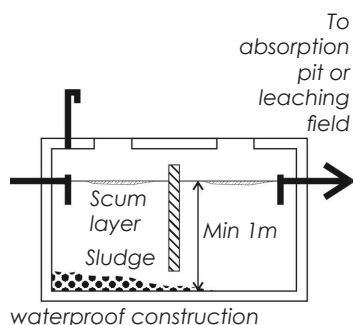
The treatment of sewage using septic tank systems, for developments consisting of more than 20 lots or planned for a population (temporary or permanent) of more than 100 people, will normally only be acceptable where there is no existing mains sewerage system to which sewage can be discharged within a distance of 1000m of the boundary of the development plot.

To ensure that sewage is treated to a standard that will minimise the risk of damage to the environment, it is essential that:

- tanks are correctly sized for the peak sewage flow that will discharge to them, and
- the effluent from the tanks is subjected to secondary treatment in an absorption pit or leaching field.

The decision on which secondary treatment system is appropriate depends upon various factors including:

- the permeability of the soil,
- the location of the site, and
- the level of the groundwater table.



Septic Tank Design

Septic Tank Design

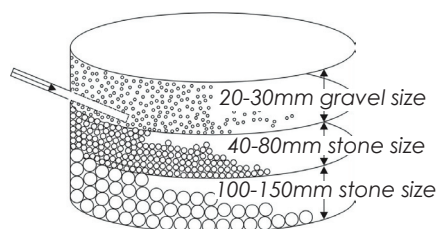
Septic Tanks shall be designed in accordance with the design parameters shown in the table.

Tanks over 25m³ in volume should be constructed as two separate tanks (providing two "streams"), as a minimum, to allow continued operation whilst one tank is being desludged.

Absorption Pit Design

Absorption pits are suitable for the secondary treatment of domestic sewage effluent in areas:

- remote from the coast,
- where the groundwater table is at least 3 metres below the ground, and
- where the permeability of the ground, as proven by percolation tests, is between 6mm/hr and 500mm/hr.



Absorption Pit Fill Sizes

Special designs and ground treatment may allow the use of absorption pits in areas of high permeability ground.

**On Plot Sewage Disposal**

Design parameters and suggested good practice for septic tanks.

PARAMETER	GOOD PRACTICE
Flow rate from dwelling	200 litres per occupant per day
Flow rate from other premises	See Design Flows table below
Required effluent retention time in tank	24hrs minimum
Required retention time for premises not occupied continuously e.g. weekend apartments	24hrs minimum
Minimum tank capacity regardless of above required retention times	3 cubic metres
Minimum effluent (liquid) depth in tank	1 metre
Closest distance to the high water mark of any water course, lake, reservoir etc	30 metres
Maximum distance from closest point of access for emptying tanker	15 metres
Minimum number of compartments	2 for minimum sized tank, 3 for tanks above 3 cubic metres
Minimum diameter of vent pipe	75 millimetres

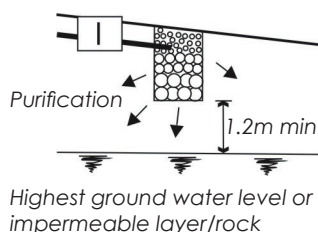
Design flows for premises other than for domestic occupancy

INSTITUTION/PREMISES	WATER CONSUMPTION (Per Day)
Schools	65 litres per pupil and staff
Pensionat, Homes	200 litres per occupant per day
Cinema, Theatre	10 litres per seat
Hospitals and similar	600 litres per patient and staff
Factories and similar*	100 litres per person
Restaurants and similar	30 litres per maximum number of meals served
Hotels	400 litres per room

** septic tanks are only to be used for the treatment of domestic sewage from factories and similar businesses. Industrial effluent should normally be treated using a dedicated wastewater treatment plant to achieve the standards required prior to discharge to the environment.*



On Plot Sewage Disposal



In areas of low permeability ground and higher water table levels it may be possible to utilise a leaching field to still allow the use of a septic tank system, but this will need to be looked at on a case-by-case basis. Conservancy (cesspool) tanks with a capacity for 20 to 30 days storage volume may, however, be the only way to deal with effluent if development must be carried out in an area of unsuitable ground.

Design parameters and suggested good practice for absorption pits.

PARAMETER	GOOD PRACTICE
Effluent infiltration (application) rate (used to calculate the total surface area of the sides and base of the pit in contact with the natural ground)	From the table below: Relationship between soil permeability and infiltration rates
Effluent flow rate	As for the design of septic tank
Invert level of pipe between the septic tank and the absorption pit	Minimum 600mm - maximum 1000mm below ground level
Stone/gravel size in the pit	Minimum 20mm - maximum 150mm
Closest distance of the formation level of the pit to the groundwater table	1.2 metres
Closest distance of the formation level of the pit to impervious layer or rock formation	1.2 metres
Closest distance to the high water mark of any water course, lake, reservoir etc	30 metres
Closest distance to any structure, building or boundary	2 metres
Minimum distance between absorption pits, either on the same or adjacent properties	Twice the diameter of the largest pit, or twice the average of the length and width of the largest pit if rectangular



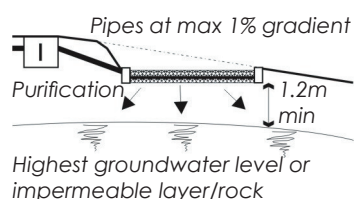
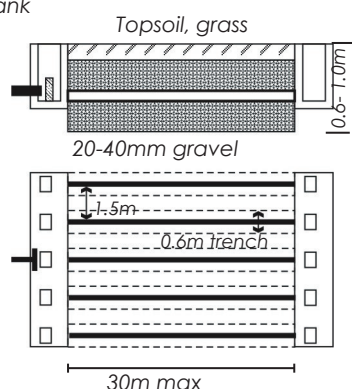
On Plot Sewage Disposal

PERMEABILITY OF SOIL K (mm/hr)	500>K>50	50>K>20	30>K>20	20>K>20	10>K>6
SOIL PERMEABILITY	High	Good	Average	Poor	Very low
INFILTRATION RATE I/m ² /d	50	30	25	20	10

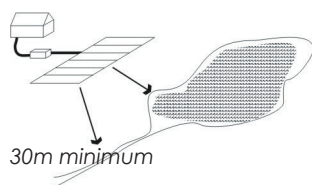
Relationship between soil permeability and infiltration rates

An absorption pit consists of an excavated hole filled with relatively large stone at the bottom and progressively finer material nearer the surface. Treatment is effected by biofilms that grow on the surface area of the stone and which anaerobically break down the effluent as it flows past. Typical dimensions for an installation serving a single dwelling of 5 people, situated in highly permeable ground (typical in Mauritius) and with the groundwater table at least 3.7m below ground, would be 2.5m diameter and 2.5m deep. The ground above the pit must not have any structure built over it and no impermeable surfacing must cover it.

From
septic
tank



Leaching Field Design



Leaching Field Design

Leaching fields treat the effluent from septic tanks aerobically and need to be constructed at a shallower overall depth than absorption pits to ensure that air can penetrate to the bottom of the field. Consequently they are considerably larger in plan area than absorption pits. Leaching fields can be used at any location and, unless the ground is unsuitable, should normally be used in coastal areas (within 1000m of the High Water Mark). As for absorption pits they cannot be used where the groundwater level is too high (at any time of the year) or when the soil permeability is outside the permitted range of 6mm/hr to 500mm/hr. High soil permeability can be overcome by providing a surrounding layer of less absorbent material to bring the overall permeability below 500mm/hr.

A leaching field consists of a network of perforated pipes laid at a shallow depth and at an almost flat gradient and surrounded in gravel. Settled effluent from the septic tank flows to a distributor chamber and thence to the pipes from which it gradually disperses into the surrounding ground and is treated as it does so. The minimum surface area that is required for a single dwelling containing 5 persons is 20m², but if the soil permeability is in the "average" category then the required area would double to 40m², as shown in the table below. Soil of a very low permeability might require the use of a leaching field of 100m², for a single dwelling.



On Plot Sewage Disposal

Principal design parameters for leaching fields

PARAMETER	GOOD PRACTICE
Effluent filtration (application) rate (used to calculate the total surface area of the leaching field)	From the table below: Relationship between soil permeability and leaching field size
Effluent flow rate	As for the design of the septic tank
Level of the bottom of the field	Minimum 600mm - maximum 1000mm
Width of each trench	600mm
Gravel size around the pipes	Minimum 20mm - maximum 40mm
Diameter of pipes	Minimum 100mm
Maximum length of pipes	30m
Maximum gradient of pipes	1%
Pipe perforations	Minimum 5mm slots or 10mm holes
Centre to centre distance between pipes	1500mm
Closest distance of the formation level of the leaching field to the groundwater table	1.2 metres
Closest distance of the formation level of the leaching field to impervious layer/rock formation	1.2 metres
Closest distance to the high water mark of any water course, lake, reservoir, sea	30 metres
Closest distance to any structure, building or boundary	1 metre
Minimum distance between leaching fields, either on same or adjacent properties	2 metres

Relationship between soil permeability, infiltration rates and leaching field size

PERMEABILITY OF SOIL K (mm/hr)	500>K>50	50>K>20	30>K>20	20>K>20	10>K>6
SOIL PERMEABILITY	High	Good	Average	Poor	Very low
INFILTRATION RATE l/m ² /d	50	30	25	20	10
Length of 0.6m wide trench metre per person connected	5	8	10	13	20
Area for leaching field m ² per person connected	4	6	8	10	20



On Plot Sewage Disposal

DESIGN CHECKLIST

- Are there mains sewers nearby or planned for future installation?
- Is the plot large enough to permit on-site sewage disposal?
- Is the plot outside any flood hazard area?
- Is there a sufficient depth of soil to bedrock or any impermeable layer to allow a leaching field or absorption pit to be constructed and used safely?
- Is the groundwater table deep enough to allow an absorption pit or leaching field to be used?
- Is there a minimum distance of 30m to any water body?
- Is there a minimum distance of 200m to any borehole, spring or well?
- Is the ground slope and local geography satisfactory to prevent effluent rising to the surface on the plot or on any nearby properties?
- Is the proposed installation at least the correct minimum distances from other installations and structures etc?
- Is there sufficient space available to allow the construction of a second pit or leaching field when the initial one becomes clogged?

If the groundwater table is too high it may be possible to construct a leaching field by placing it in an area of made ground; such a solution may also overcome the problem of disposal in very low permeability soils. Failing this a conservancy tank (cesspool) will need to be provided, with the effluent carted away whenever the tank fills, or the effluent will need to be piped away to site where a leaching field can be constructed.

No permanent structure or impervious layer shall be allowed above a leaching field and vehicles and the like are not to be parked or driven over it. No trees or shrubs should be allowed to be planted on or adjacent to a leaching field.

Causes and indications of failure of a septic system

If a septic system is not suitably located, properly designed, carefully installed and adequately maintained it can fail. A failing system can threaten the health of the family of the occupier and that of neighbours, reduce the value of the property and potentially contaminate groundwater and surface water sources with bacteria, viruses, nitrates and chemicals. In addition they can be expensive to repair.

Signs of failure include:

- Wastewater draining slowly from basins etc
- Sewage backing up or overflowing around manholes
- Soft areas or liquid over the area of the absorption pit or leaching field
- "Sewage" smells around the property
- Lush growth of grass and plants.

Common causes of failure:

- Leaking taps and overuse of water, causing a flushing through of the septic system
- Excessive scum or solids build up in the tank through an inadequate desludging regime.
- Sludge carry-over from the septic tank to the absorption pit or leaching field causing the pit or field to clog
- Overuse of powerful bleaches, detergents and other chemicals (these destroy the necessary bacteria)
- High water table forcing effluent to the surface

Do's and Don'ts to ensure satisfactory operation of septic tank systems:

Do:

- Direct all wastewater (showers, toilets, sinks) into the septic tank – all potentially contain disease causing micro-organisms
- Only allow grass, flowers or shallow rooting plants to grow over the leaching field or absorption pit



On Plot Sewage Disposal

For further advice and information please contact:

Wastewater Management Authority

The Operation and Maintenance Unit and/or

The Pollution Control Unit

5th Floor, Aisha Building

Louis Pasteur Street

Port Louis

Mauritius

Telephone: 217 0300

Fax: 216 1925

E-mail: wwa@bow.intnet.mu

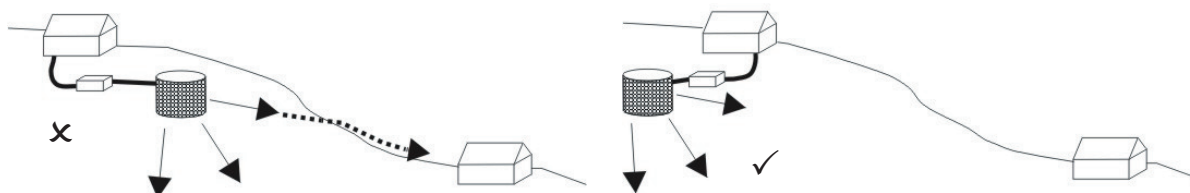
- Keep rainwater from roofs and drives etc away from the leaching field or absorption pit and don't let it enter the septic tank
- Inspect the tank and have it pumped clear of sludge at regular intervals; typically required every 3 to 5 years (failure to do so will result in solids carry-over and failure of the leaching field or absorption pit).

Don't

- Allow vehicles or heavy equipment to drive over the septic tank, leaching field or absorption pit, or pipelines
- Plant trees or shrubs on or near to the leaching field or absorption pit. The roots damage and block the system.

Possible Arrangement of Services

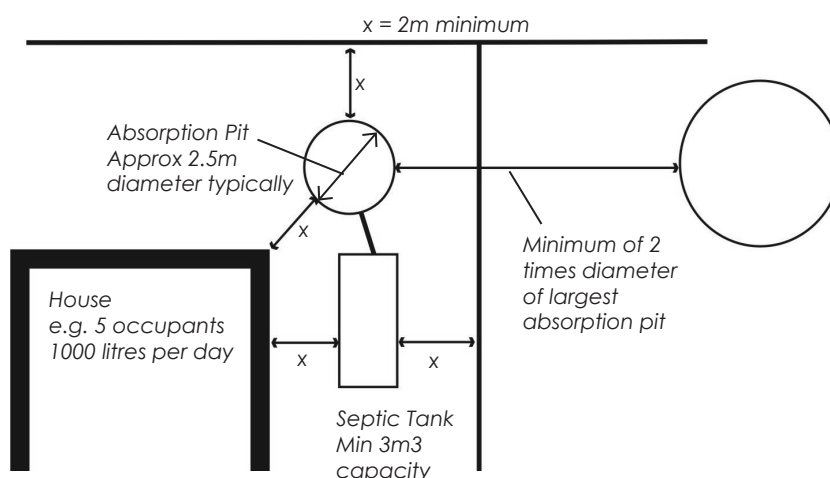
A separate Technical Sheet: Combined Utility Services Summary plans provide indicative groupings for arrangements of the various utilities that generally need to be laid within the road and utility reserve. These drawings are for **information only** and are not intended to cover every eventuality. They do, however, serve to demonstrate why it is important to consider how the various components relate to each other when preparing development plans.



NOTE

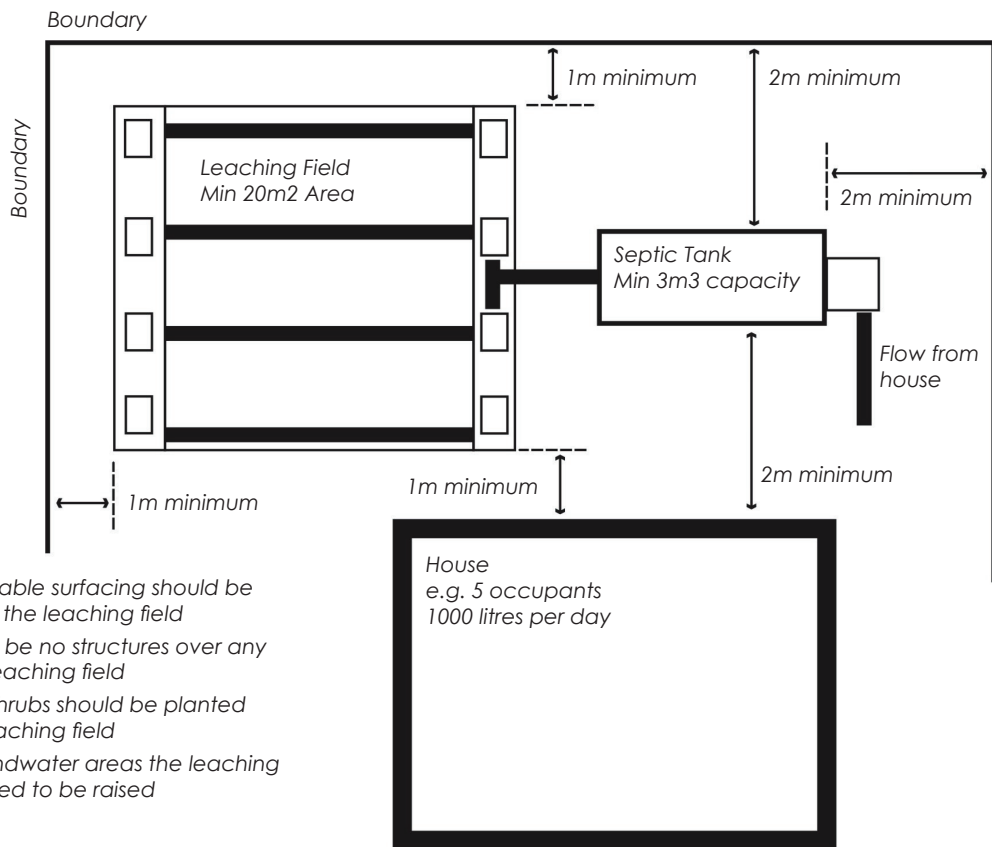
The siting of Absorption Pits can have an effect upon adjoining plot layouts. It is important to be aware of the dimensions of adjoining pits and their locations

Absorption Pit Indicative layout





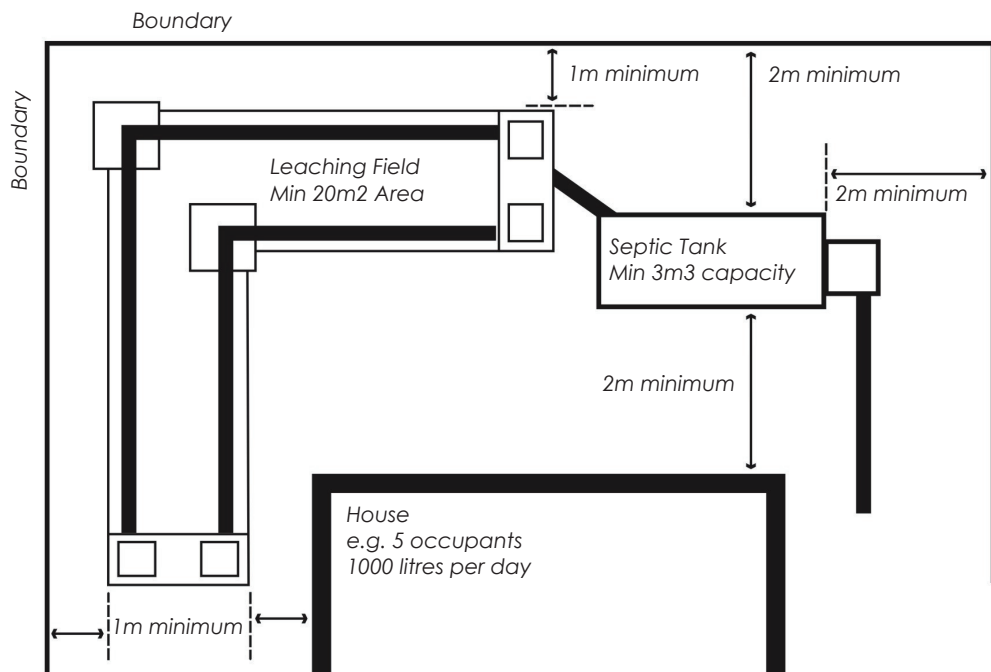
On Plot Sewage Disposal



NOTE

- No impermeable surfacing should be placed over the leaching field
- There should be no structures over any part of the leaching field
- No trees or shrubs should be planted within the leaching field
- In high groundwater areas the leaching field may need to be raised

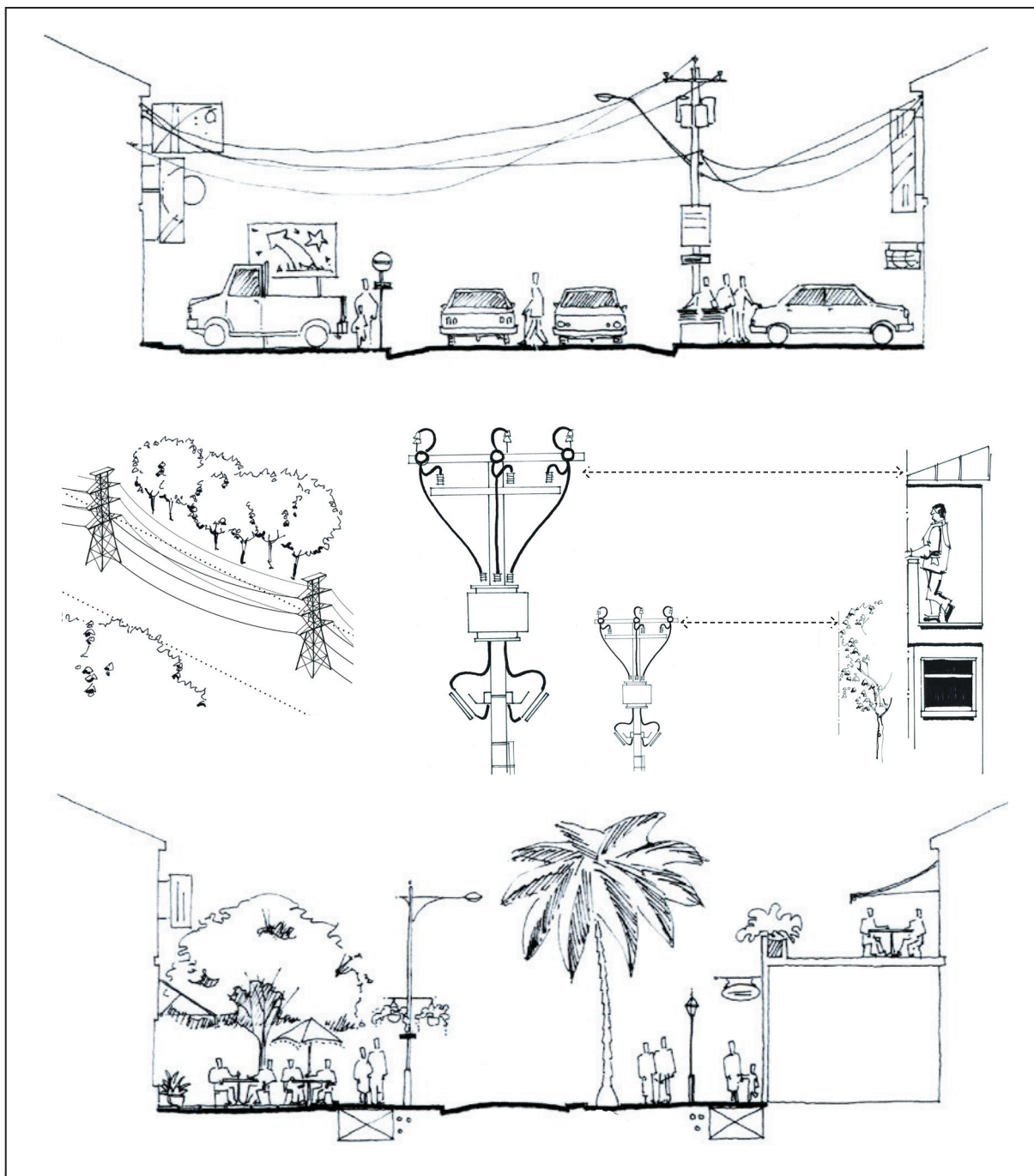
The areas illustrated are minimum. For example, 5 people in poor permeability ground areas may need 100m² leaching fields.



Septic Tank Systems
Indicative layout
options



Technical Sheet



Electricity

November 2004



Ministry of Housing and Lands



Electricity

Before any development or building permit is issued the CEB must be provided with full and accurate details of what is proposed.

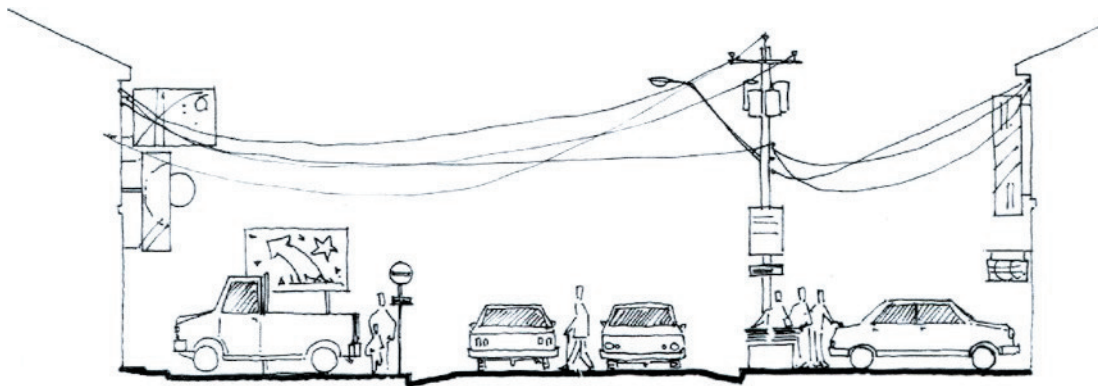
A written statement must be secured from the CEB stating that they have no objections to the development. A "No Objection" statement does not mean that electricity can be provided easily and the developer needs to be aware that the provision of electricity could be very expensive.

Designs for the provision of electrical supplies to developments will be prepared by the Central Electricity Board (CEB) on a case-by-case basis and the developer is urged to hold early discussions with the CEB to confirm that the cost of provision is likely to be acceptable.

There are however, general requirements and guidance that should be considered by prospective developers when preparing development schemes.

Method of Supply

For new morcellement development and other major developments the preference is for underground supply of electricity. In main urban centres where the existing network is already underground any extension of the network will also have to be laid underground.



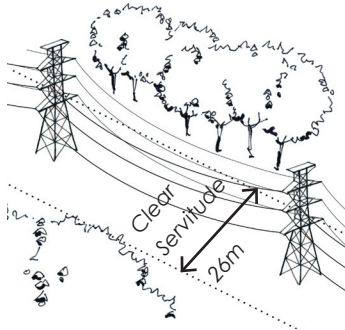
✗ Services overhead - more vulnerable to cyclone damage, likelihood of more outages, more visually intrusive.



✓ Undergrounding of services - less susceptible to damage, less visually intrusive, opportunities to use public space for other things, but more expensive.



Electricity



**Main Transmission Cable
Clear Servitude**

In lower value developments an overhead supply may be appropriate but this manner of supply is vulnerable to cyclone damage, likely to be subject to more frequent outages and is visually more intrusive than an underground supply.

Main Transmission Cables

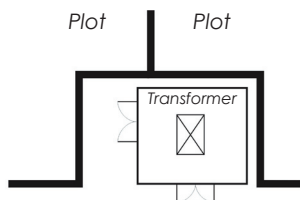
The main transmission network consists of 132kV or 66kV lines (both currently operating at 66kV). The former are pylon mounted whilst the latter may be either pylon or pole mounted. A minimum lateral clearance of 7.5m is required from the outermost conductors, but for pylon mounted cables, which are more widely spaced than poles, an additional clearance is required to allow for cable swing due to the wind. Consequently a clear servitude of approximately 26m is required under main transmission lines.

The ground below main power cables can be utilised for open space, car parking or agriculture but no trees should be planted.

Main Feeder Cables

Generally main 22kV Feeder cables will be installed using overhead bare wire conductors. Outermost conductors are set a distance of 1.2m from the centreline of poles. A lateral clearance of 4m is required to any building from these bare wire conductors.

Boundary walls may be constructed within the line of the outermost bare wire conductor providing minimum vertical clearances of 4m are maintained.



**Allow space for the provision of
transformer sub-stations**

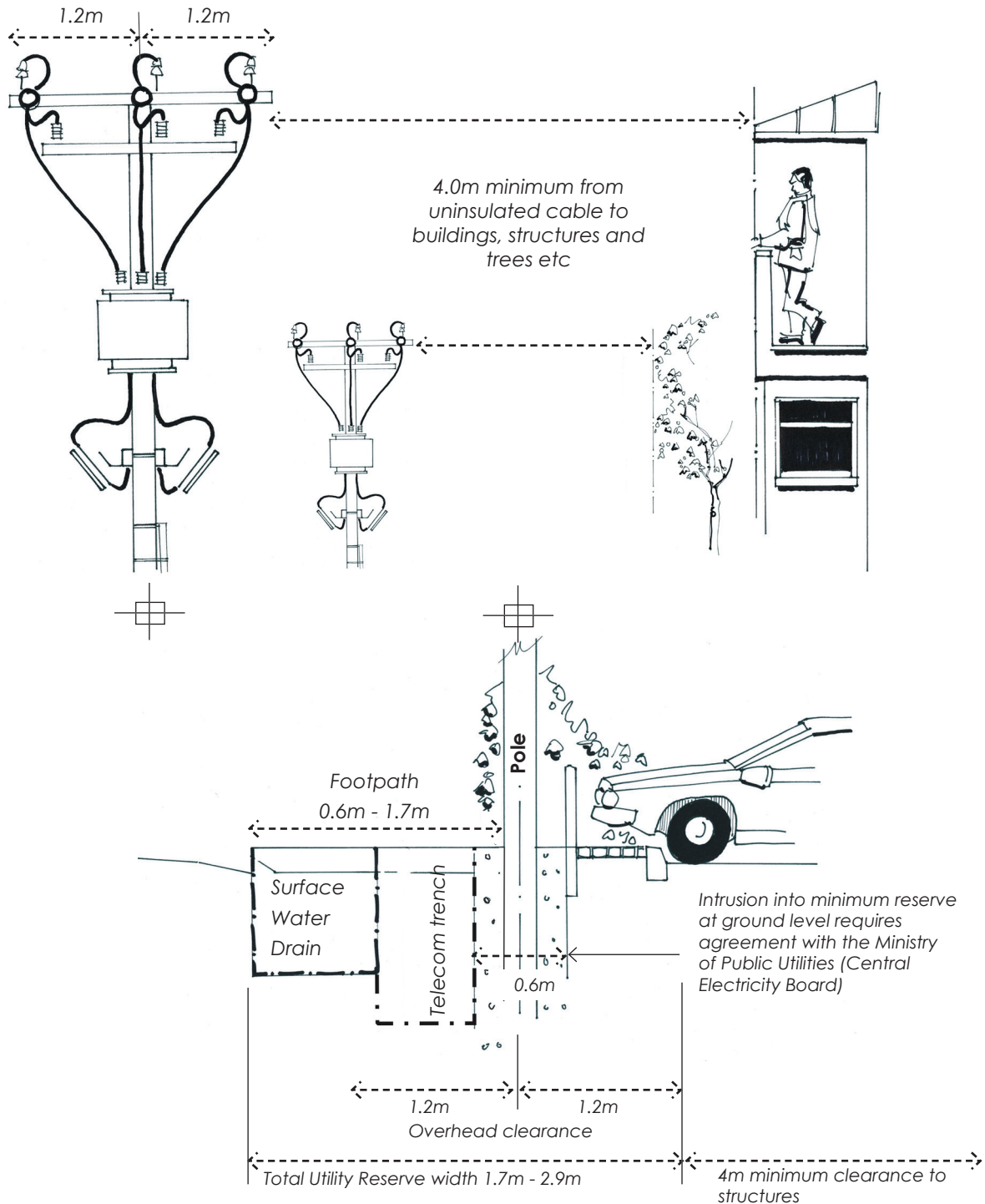
Underground Supply

From the 22kV feeder supply the HV connection to the development should be laid directly in the ground within the utility reserve. Supply crossings under roads should be laid in ducts encased in concrete. Where cables have to cross roads, draw-pits will be required on either side of the road. These draw-pits should be approximately 2.2m square and consequently take up a lot of space. The utility reserve may need to be wider at these locations to ensure that other services such as road drains and water supply can be accommodated.



Electricity

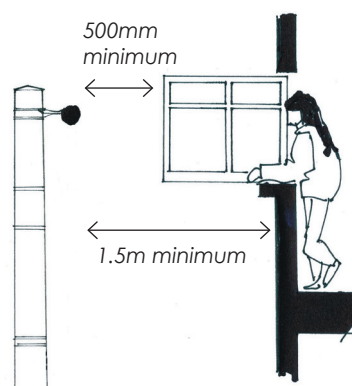
Uninsulated overhead cables



Minimum clearance and indicative reserve requirements for uninsulated overhead cables alongside other services



Electricity



Minimum distances from insulated electricity cables

Transformer sub-stations are required to reduce the supply voltage to the level required by consumers (generally 400/230 volts). The maximum length of low voltage cable between a consumer and the sub-station that serves it is 500m. Sites for the installation of CEB sub-stations will need to be allowed for within the development, with an area of approximately 5m x 6m being required for each. To ensure that sub-station locations and cable routes are laid out as efficiently as possible the developer should hold early discussions with CEB.

From sub-stations a 400V supply cable should be laid directly underground to the various distribution pillars from which customers are supplied with 230V individual connections. Each distribution pillar typically serves up to 16 plots (8 each side of the road) through cables laid in individual 63mm diameter cable ducts. Where these ducts cross under roads they should be encased in concrete. The distribution pillars should normally be located on the boundary between two plots and close to the plot side of the road reserve.

Separate street lighting provision (poles or wall mounted) will also be required. The developer will be responsible for the provision, erection, cabling to and commissioning of street lights.

Overhead Supply

All overhead supplies to developments will be made using insulated cables bunched into a single unit and strung between electricity poles. Space should be provided within utility reserves for pole planting (typically 600mm minimum).

Buildings, trees or other structures will need to be positioned to provide safe clearances to cables. A minimum lateral distance of 0.5m and vertical distance of 2m is required to insulated cables.

In addition to allowing for space to plant the poles, the developer also needs to be aware that where changes of direction of the cables occur it will be necessary to use pole staying cables. These cables will need to be placed on the outside of the bend or junction and will need to be fixed approximately 5m outside the line of the poles. Where the support stay would be required on the road side of the pole then it either will be necessary to:

- Transmit the load to another pole on the opposite side of the road and then provide a support stay to this pole, or
- Carry the cables to a stayed pole on the other side of the road and back again.

Consideration of the impact on other utilities and pedestrian and vehicular access should be given.



Electricity

In small or very low-cost developments, use may be made of pole-mounted transformers, but the preference is for ground mounted transformer sub-stations. Ground mounted sub-stations will require suitable sites to be provided as for an underground supply.

The low voltage cables will generally be hung on the same poles as the HV cables with individual properties supplied through separate connections laid in 63mm diameter ducts fixed to the poles and then run underground to customers on either side of the street. Typically 4 properties are served per pole and poles should normally be planted at every other property boundary, depending upon frontage sizes. The maximum spacing for poles carrying insulated cables is 40m. Where plot spacing is greater or less than 20m then the pole spacing is adjusted so that a pole is planted at every plot boundary.

Where overhead transformers are used, these are most efficiently located at street corners, from which all the interconnecting streets can be supplied with direct cable runs. However, overhead transformers are unsightly and it may be better, where they have to be used, to locate them in side-streets and accept the greater density of cables bunched on the poles.

The developer will be required to ensure that property deeds include:

- **Details of electricity poles and street lights located within or around the property.**
- **Notice to plot purchasers advising of CEB's statutory authority to lop or fell trees to maintain safe clearances**

Property developers should require plot purchasers to keep all utility/road reserves free of structures, trees and other vegetation. Access for maintenance and other purposes must be possible at all times.

Supplies to Individual Buildings in Built-up Areas

Where a supply is required to a new development within an existing urban area or other area where there is no existing, or space for a new, transformer sub-station nearby then it will be necessary for the development to make an accessible room available for the installation of a transformer.

Possible Arrangement of Services

A separate Technical Sheet: Combined Utility Services Summary plans provide indicative groupings for arrangements of the various utilities that generally need to be laid within the road and utility reserve. These drawings are for **information only** and are not intended to cover every eventuality. They do, however, serve to demonstrate why it is important to consider all the utilities and how they relate to each other when preparing development plans.

Further Advice and Information

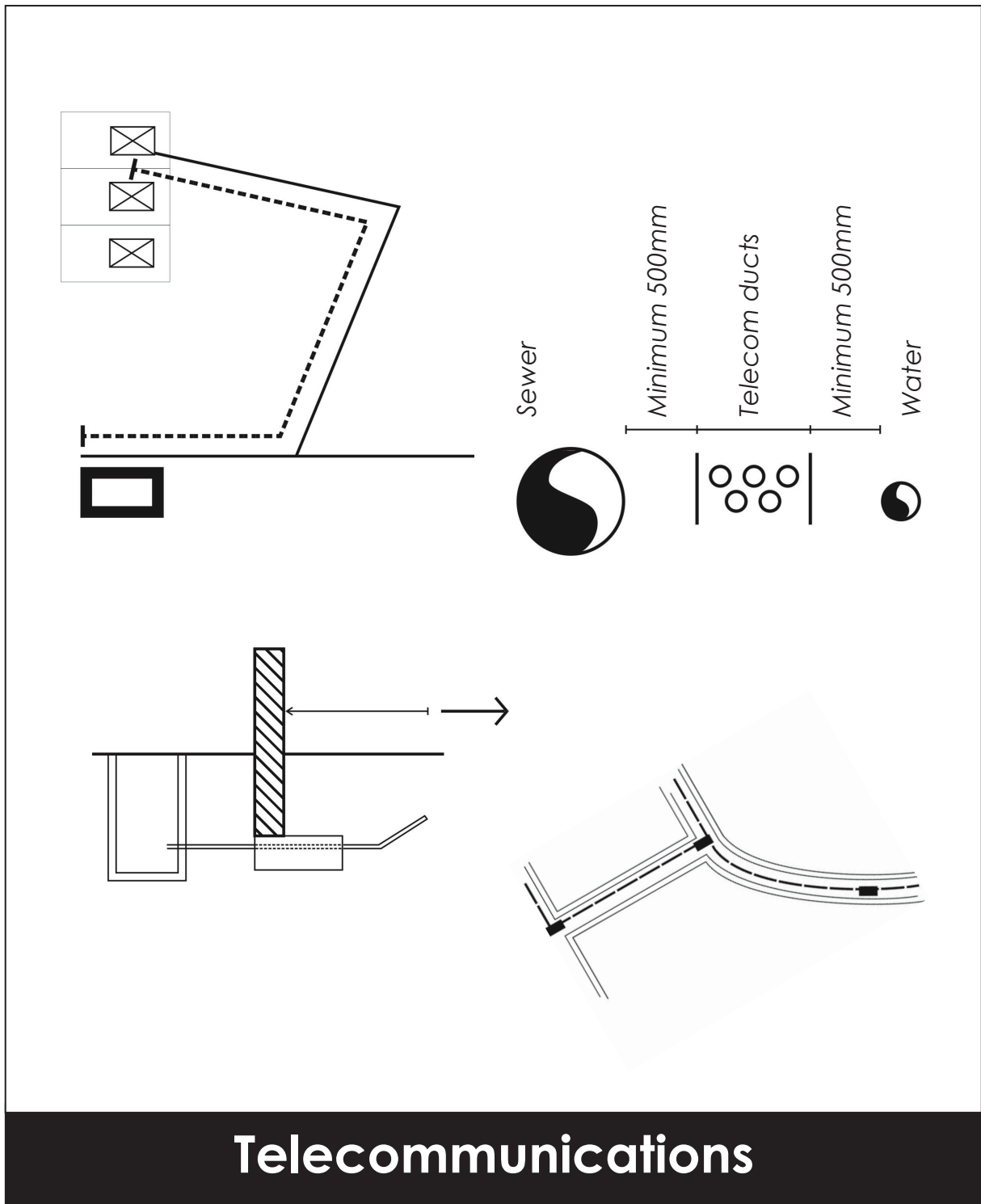
For further advice and information please contact:

Senior Planning Engineer

Loreto Convent Street
Curepipe
Tel No. 670 6040 / 674 0551
Fax No. 674 0445



Technical Sheet



November 2004





Telecommunications

Before any development or building permit is issued MT should be provided with full and accurate details of what is proposed. This should include the number and type of connections that will be required (eg broadband).

Final designs should be approved in writing by MT prior to the commencement of works.

Detailed specifications for the works to be provided by the developer are available from MT.

The implemented network outside individual premises will be owned and maintained by MT.

The developer should submit soft and hard copies of "as made" infrastructure, including details of other utility services.

Property developers should require plot purchasers to keep all utility reserves free of structures, trees and other vegetation. Access for maintenance and other purposes must be possible at all times. The plot owner should also protect and maintain the integrity of the service ducts laid within the plot.

All Telecommunications works to be implemented by the developer will need to be supervised by Mauritius Telecom.

Telecommunications infrastructure for development must be designed and constructed (including supply of appropriate materials) by the developer in accordance with the norms and specifications of Mauritius Telecom (MT).

To design an efficient and economical system the developer will need to coordinate with MT at an early stage of the scheme and MT will need to approve the proposed design. There are some general requirements and guidance that should be considered by prospective developers when preparing development schemes.

The implemented infrastructure will need to be tested and commissioned by the developer based on MT established norms and procedures before handing over to MT. The developer shall continue to be responsible for maintaining the works until such time as they are utilised by MT.

Method of Supply

For new morcellement development and other major developments the preference is for a fully underground supply. This will provide a more secure connection. However, in small developments (of less than 20 residences) this may not be practicable, in which case overhead connection may be considered.

In all cases the preference is to have the main telecommunications cables laid, and poles erected, on the opposite side of the road to the main electricity cables.

For commercial complexes and multi-storey commercial buildings/residential flats, the supply should be fully underground.

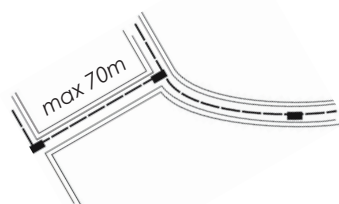
Underground Supply

For developments larger than 20 residences, the telecommunications network should be laid underground. Groups of PVC service ducts will need to be installed by the developer within the development itself. MT will provide these outside of the development where necessary.

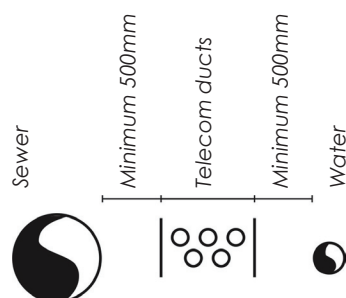
Duct diameters vary but typically range from 80mm to 45mm diameter. 100mm diameter ducts may be required near the start of a supply where there is a total demand for more than 800 service lines. The number of ducts required in different parts of the development will be advised by MT. Typically 2 to 4 x 60mm or 80mm diameter ducts will be required between service distribution boxes with 45mm diameter ducts to each plot. Generally, cable ducts will be laid with 800mm of cover under roads and 600mm of cover in verges, but a shallower depth may be acceptable for individual plot connections.



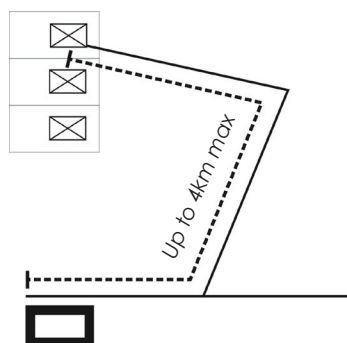
Telecommunications



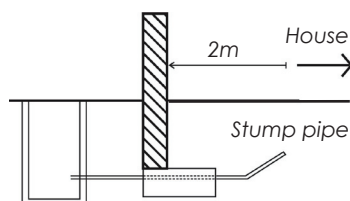
Maximum 70m distances between cable drawing and jointing manholes



MT should be consulted early in the development planning stage to ensure that sufficient space is available for the infrastructure that needs to be installed.



Dedicated telephone exchange or "hub"



Stump pipe provided for individual connection

Although each service distribution point will have 10 pairs of connections (lines) it is only capable of serving up to 7 residences (lines) as a degree of redundancy is required to cater for operational faults.

Cable drawing and jointing manholes will have a spacing not exceeding 295m along the main cable route leading to the development site. Within the site itself a closer spacing of a maximum of 70m should be provided. Manholes will also be required at points where junctions are required. Space will need to be allowed within the road or verge for these manholes. The size of these manholes varies depending on the number of cable ducts and cables that pass through them but typical plan dimensions would be up to about 2.8m by 1.3m overall for the larger ones (but could be much bigger for a major development) to 0.9m by 0.7m. Outside each plot, and serving two plots, a smaller precast type drawpit (about 0.3m by 0.3m) will be required in the road verge adjacent to the plot boundary.

Cable duct runs between manholes need not be totally straight. Some curvature will be required for negotiating junctions and bends in the road. The minimum curvature should be no more than 12 times the diameter of the ducts laid.

To avoid interference problems the main cable runs will need to be installed on the opposite side of the road to the main electricity cables. Main ducts should also be at least 500mm distant from other services such as water and sewers so as to minimise the risk of damage if it is necessary to excavate to these services.

Space will need to be allowed in all developments for the installation of:

- Service distribution boxes (adjacent to plot boundaries).
- Suitably sized Cross Connection Cabinet.
- Possibly, depending upon the proximity and capacity of existing services, a main exchange building with standby power generator.

The Cross Connection Cabinet consists of a panel approximately 1.6m long, 1.5m high and 0.3m deep. Typically this would be located on the outside of the utility reserve, against plot boundaries. Each Cross Connection Chamber can serve between 400 and 600 properties, depending on the unit used, so more than one may be required for major developments.

In rare cases it may be necessary to provide a dedicated telephone exchange building or "hub" (usually only if the development is a major one or is remote from the existing primary telephony system).



Telecommunications

Individual plot "stump pipes" will terminate either 2m inside the plot boundary (for single occupancy plots) or at the building itself for multi-occupancy buildings

Overhead Supply

In small developments (less than 20 properties) it may be preferable to install the on-site network overhead.

Distribution poles will be between 5.6m and 6.5m high above the ground and should be erected within the utility reserve at the boundary line between two plots, and at a maximum of 40m apart. Each pole should distribute MT's service lines to a maximum of 7 residences (lines). Two 45mm diameter ducts should be laid from the main cable manhole to each MT pole.

Possible Arrangement of Services

A separate Technical Sheet: Combined Utility Services Summary plans provide indicative groupings for arrangements of the various utilities that generally need to be laid within the road and utility reserve. These drawings are for **information only** and are not intended to cover every eventuality. They do, however, serve to demonstrate why it is important to consider all the utilities and how they relate to each other when preparing development plans.

Note particularly, in the event that an overhead network is used it will be necessary to lay the water main further from the plot boundaries to allow space for MT poles to be planted.

Where overhead cables have to run parallel to or cross close to overhead electricity cables, the following clearances should be observed:

- 500mm to 1000mm where electricity voltage is less than 500V.
- 3000mm where electricity voltage exceeds 500V.

Note. Central Electricity Board may require greater clearances for safety reasons to certain types of conductor and voltage.

Further Advice and Information

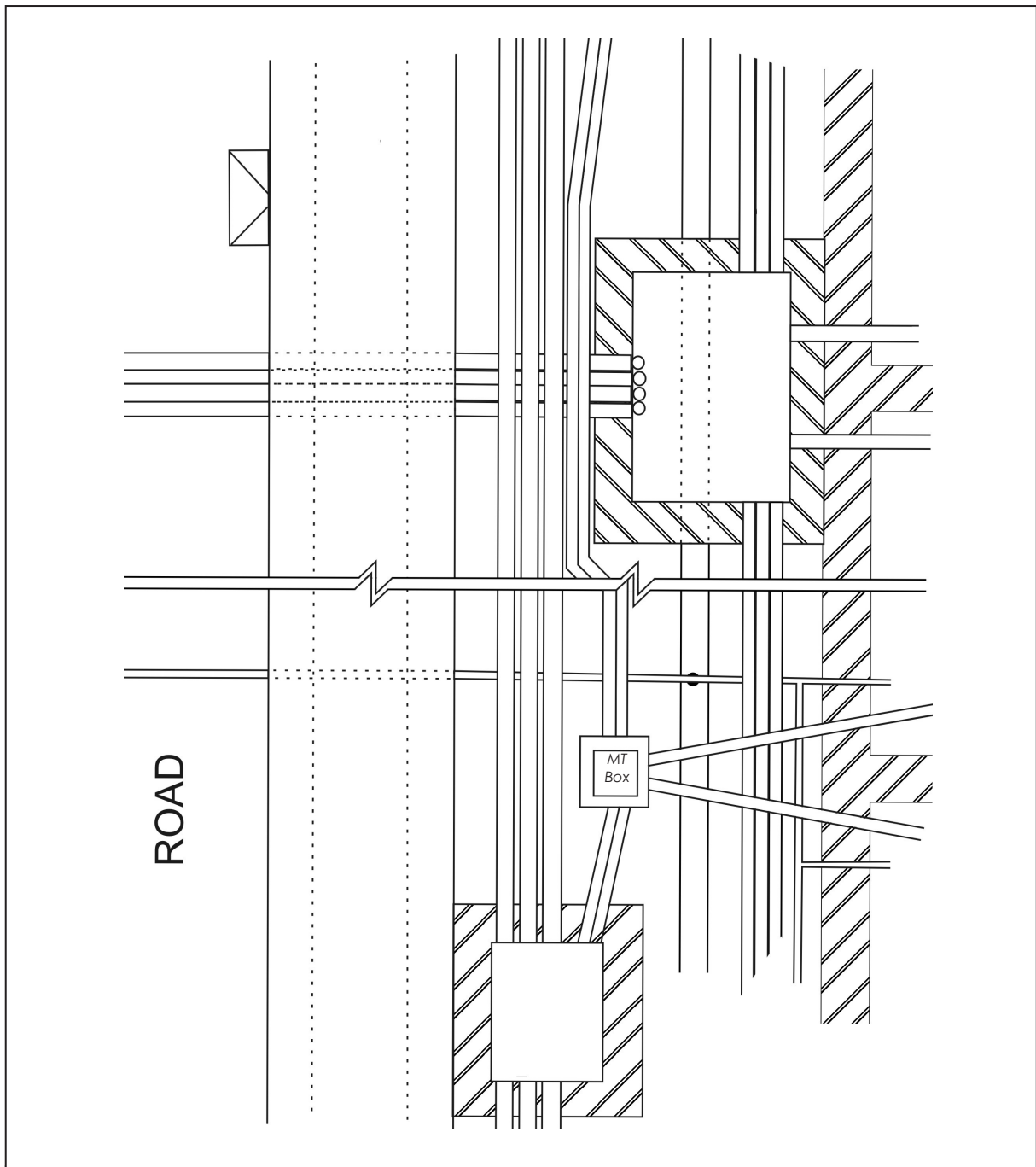
For further advice and information please contact:

Mauritius Telecom

Head of Section
Access Network Planning and Development
8th Floor, Telecom Tower
Edith Cavell Street
Port Louis
Mauritius
Tel: 203 7664
Fax: 208 8732



Technical Sheet



Combined Utilities Summary Plans

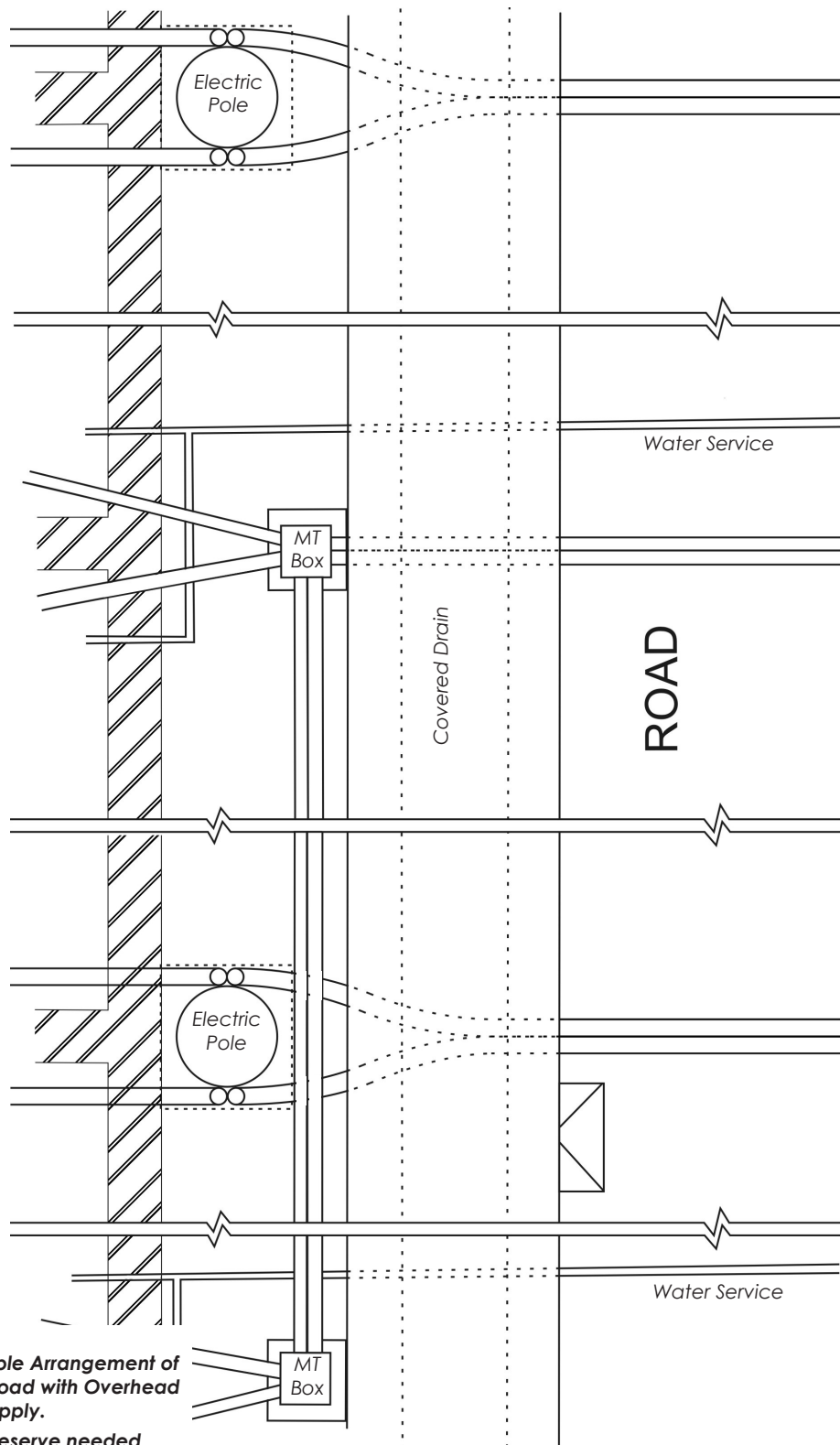
November 2004



Ministry of Housing and Lands



Combined Utilities Summary Plans

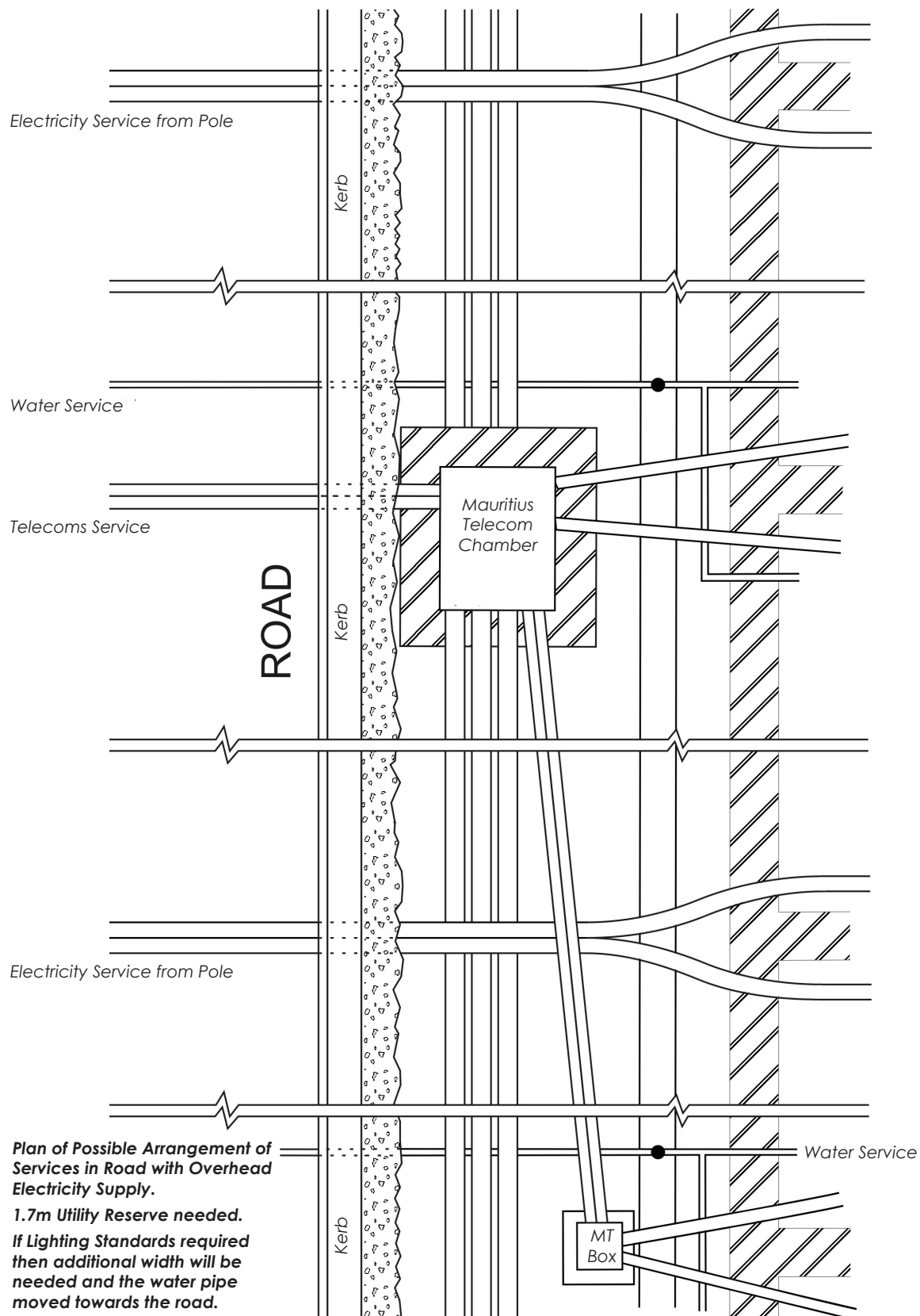


Plan of Possible Arrangement of Services in Road with Overhead Electricity Supply.

1.5m Utility Reserve needed with covered drain to provide footpath

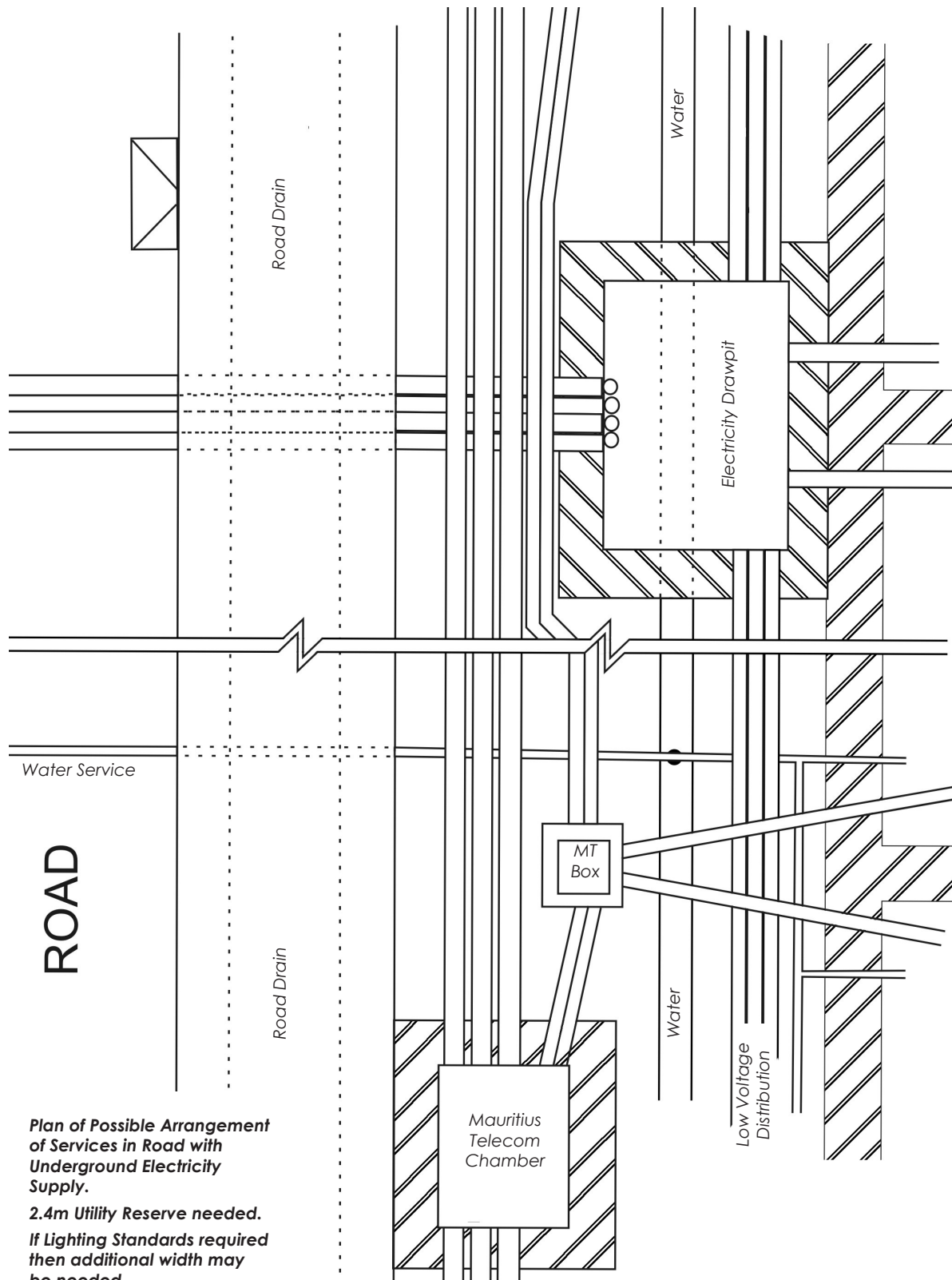


Combined Utilities Summary Plans



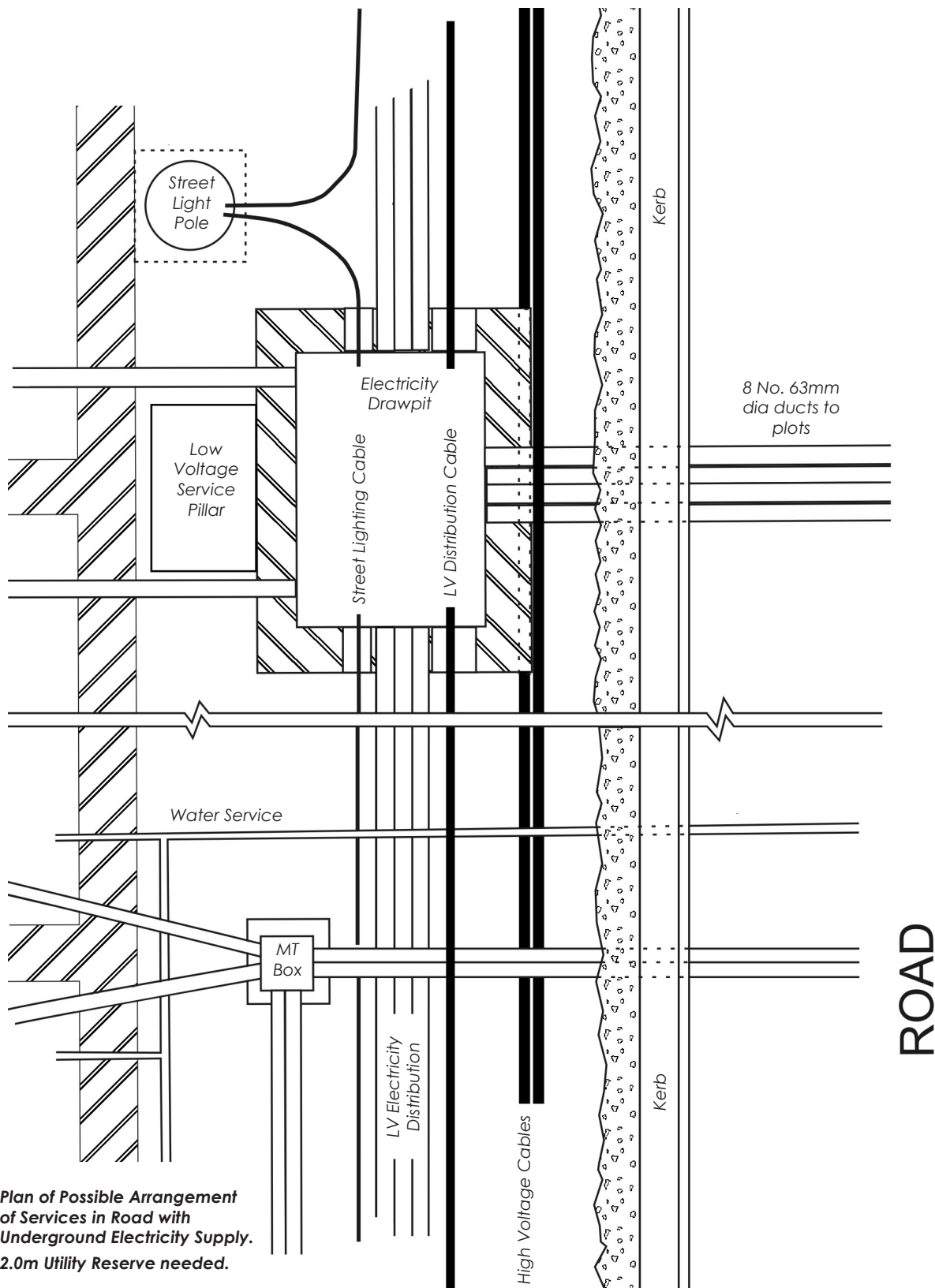


Combined Utilities Summary Plans



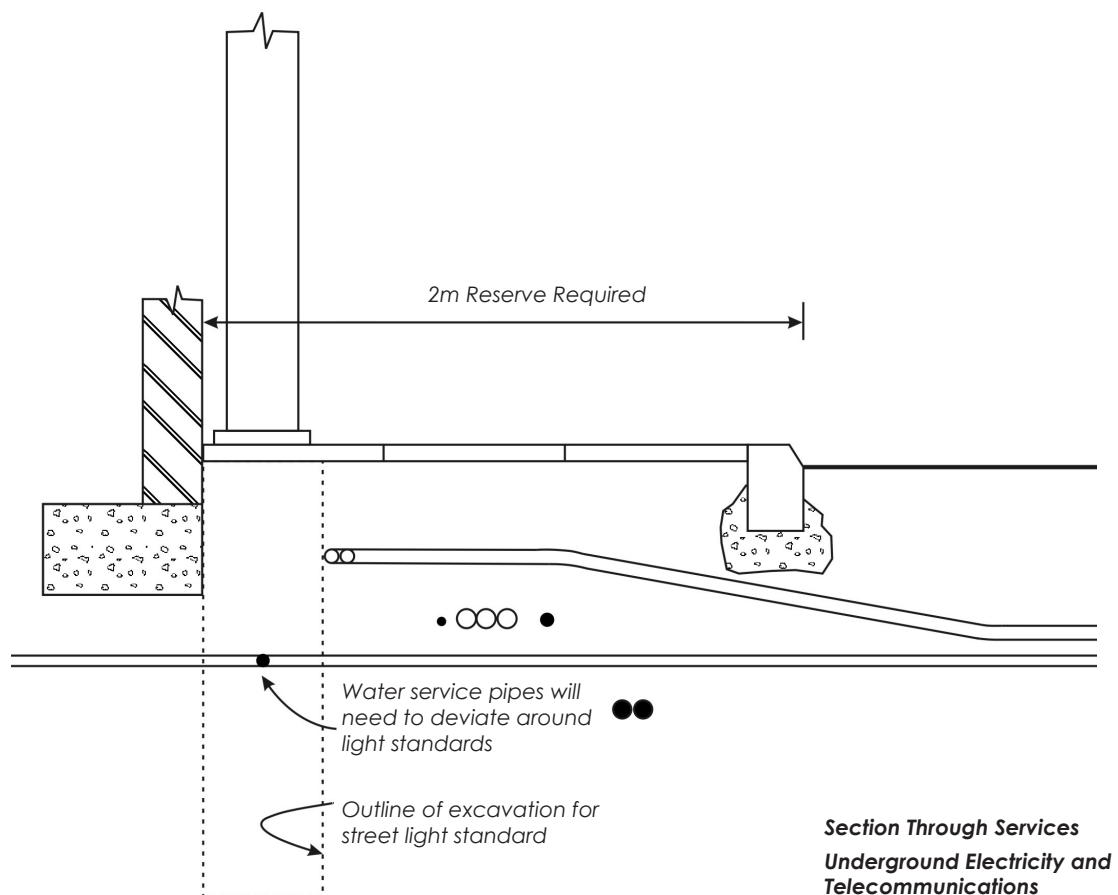
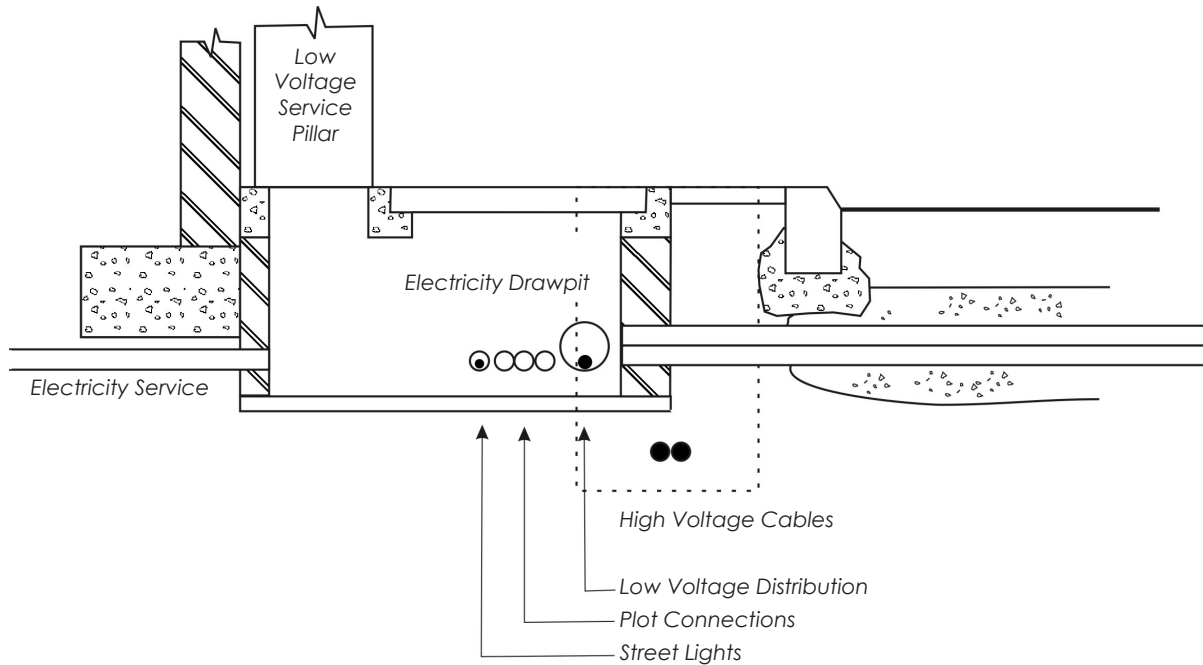


Combined Utilities Summary Plans



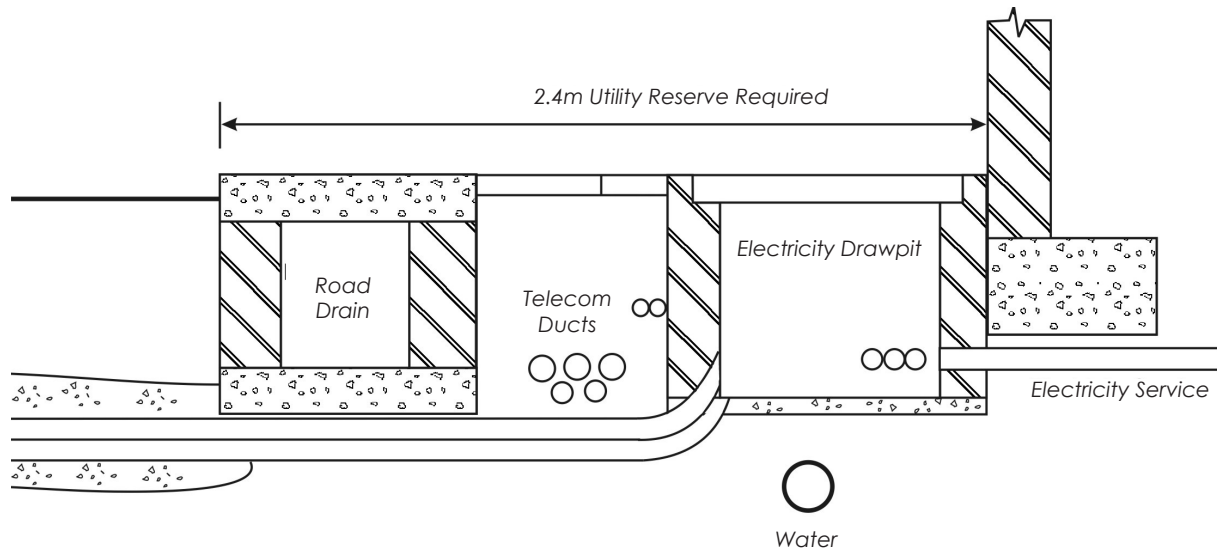


Combined Utilities Summary Plans

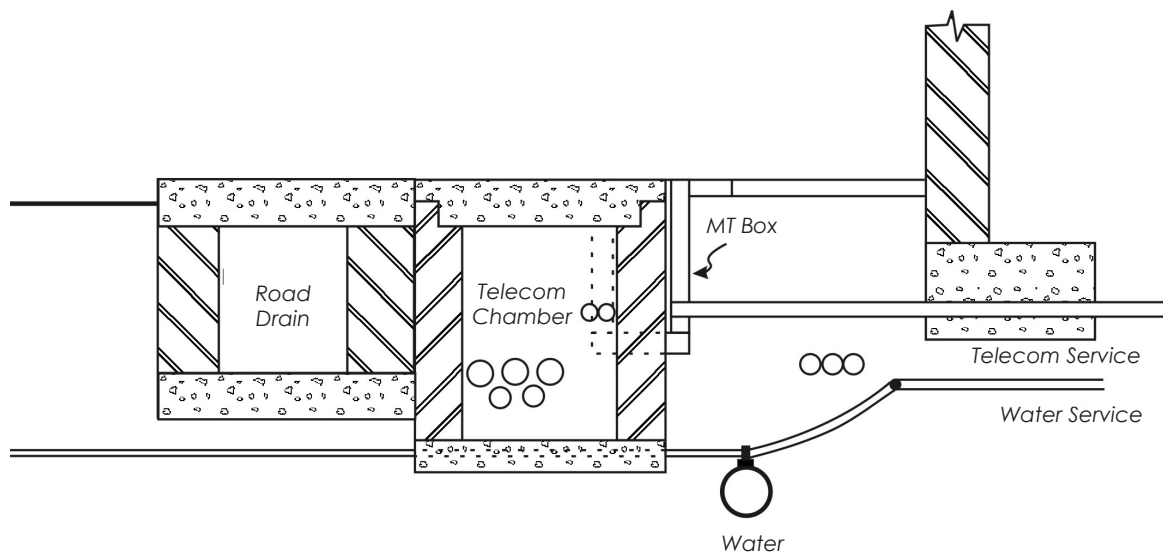




Combined Utilities Summary Plans



Note. If street lighting is also required on this side of the street then the utility reserve may need to be slightly wider to allow the electrical distribution ducts to pass around the light standards and still permit excavation to the water main.



**Section Through Services
Underground Electricity and
Telecommunications**