1. Land Use & Development Control Policies

1.1.Residential

Provisions of the Building Regulations will apply to minimum building setbacks from boundaries. The following planning controls limit building density in terms of bulk, while encouraging more effective use of terracing on hill-slopes for larger buildings.

The following tables summarise the four categories of Residential zones.

Height limits have been developed to suit sloping sites. They are defined by vertical measurement from the original ground level to the eaves line around the perimeter of the building. This is fundamental to achieve objectives of:

- Encouraging traditional higher, pitched roofs, which are most appropriate for the climate (or, in other words, there is no penalty to development yield by using a pitched roof); and

- Encouraging building design which is terraced, that is, which is designed to step down a slope. It will minimise occurrence of flat facades which are elevated from the ground, which is an undesirable outcome.

Residential A

Colour on Zoning Map	Light brown
Building type	Detached dwelling for single family occupancy, or two-family occupancy as a maisonette
Maximum height	9 metres measured at any position of the eaves line to natural ground level
Maximum number of storeys	2 storeys (including parking)
Car parking	Minimum of two undercover spaces for single occupancy dwelling, or three undercover spaces for a dual occupancy maisonette
Minimum site area	300 square metres
Maximum site coverage	50 percent of site area

Residential B

Colour on Zoning Map	Pink-brown
Building type	Detached dwelling for single family occupancy, or attached housing or flats in any configuration for multiple occupancy
Maximum height	11.5 metres measured at any position of the eaves line to natural ground level
Maximum number of storeys	Nominally 3 storeys (including parking); but not limited if tiered down hill-slope
Car parking	Minimum of one space per single bedroom flat, and two spaces per two bedroom (or greater) flat or dwelling unit; to be under cover
Minimum site area	600 square metres
Maximum site coverage	70 percent of site area
Landscaping requirement	Planting of shade trees in setback zone, consistent with NCDC planting plan for street

Residential C

Colour on Zoning Map	Rust-brown
Building type	Attached housing or flats in any configuration for multiple occupation
Maximum height	17.5 metres measured at any position of eaves line to natural ground level
Maximum number of storeys	Nominally 5 storeys (including parking), but not limited if tiered down hill-slope
Car parking	Minimum one space per single bedroom flat, and two spaces per two bedroom (or greater) flat or dwelling unit
Minimum site area	800 square metres
Maximum site coverage	70 percent of site area
Landscaping requirement	Planting of shade trees within front setback to match NCDC planting plan for street

Ela Beach Road Residential-Commercial

Colour	Dark brown
Permitted Use	Hotel Residential flats
Ground floor only	Offices Shops Showrooms Restaurants (excluding take-away food) Galleries (Car parking may not be located at ground level at the front of the building)
Maximum height	10 storeys (including ground floor uses) above ground level
Car parking	May be located in an additional level, when it is a basement below ground level.
Minimum car spaces	One space per single bedroom flat, two cars per residential flat with two bedrooms (or more), and 0.5 cars per hotel room
Front set back	5 metres
Ground level design requirements	Frontage to street will be aesthetically pleasing to pedestrians, with design focus on the streetscape-building interface. The setback zone will be landscaped with paving and shade trees (and shade structures if required) suitable for public use, to the satisfaction of NCDC.

Design of all multi-storey residential buildings must consider solar impact on the building envelope, and incorporate adequate shading devices for windows.

Commercial

Primary use & parking component

The Commercial zone is intended primarily for office accommodation, which covers a spectrum of uses. A parking component is mandatory for each development. Car parks may not occupy street or ground level at the front of the building, although driveway access will be required. Focus will be to encourage uses of public interest to the street frontage, which provide attractive interface of the building, its entrance and streetscape.

Ground floor development

Ground floor development of office buildings may include convenience shopping to meet local need. Take-away food outlets (or other crowd-attracting activities) may not be located with direct access from the street. They may be approved only where there is adequate forecourt area provided within the building, complete with seating and rubbish bins. The operator of any take-away food outlet will be responsible for maintaining the footpath outside the building free from litter.

Hotels

The zone is also appropriate for international-type hotels, which generate considerable traffic, and/or which have a significant entertainment component. (Smaller residential-based hotels are more appropriate in higher-density residential zones.) Residential apartments may be considered as a consent use.

Energy efficiency design controls

Design controls must be met. All new development will require attention to energy efficiency. The primary objective is to minimise air conditioning load, by articulation of facades to shade window openings from direct solar impact. A report must accompany each application describing how the design reflects this objective; and to provide the design load for maximum air conditioning per square metre of floor area.

Non-conforming use

New commercial office development in the Plan area will only be permitted on allotments zoned Commercial. Approval will not be given for a commercial activity as a non-conforming use in another zone.

Height and other controls

The following table of use for the Commercial zone as shown on Map 9 summarises basic planning controls.

Colour	Blue
Permitted use	Offices Hotel Residential flats (by consent)
Ground floor only	Offices Shops Showrooms Restaurants Galleries
Maximum height	12 storeys total above street level, measured at the centre of the façade, including ground floor and podium (if used). A basement may be an additional level for car parking. The roof eave may not be greater than 40 metres above footpath level measured at any point.
Minimum car spaces	1 space per 50 square metres net floor area of office space, 0.5 spaces per hotel room, and 1 space per residential flat bedrooms
Ground floor streetscaping	Provide attractive interface between footpath and building which incorporates: • Tropical vegetation with colour • Shade trees • Cultural artwork or sculpture

The building which best approximates these height controls (for purpose of comparison) is Revenue Haus, in Champion Parade.

Musgrave Street – Champion Parade plaza

It is proposed to impose restrictions on development potential of the site, currently vacant, along the Musgrave Street axis, between Champion Parade and Stanley Esplanade. The site has strategic importance to the main vista from the Town Centre, northwards across the Harbour, and there would be long term benefit in its retention. Refer Photo 46.

The vista is possible to maintain only with a component of open space at lower levels. Ideally the site should remain open and undeveloped; and dedicated as a landscaped public place. If the site cannot be acquired solely for that purpose, it may be viable to develop upper levels as office accommodation, while retaining open space below. Under the plaza, it is proposed that two or three levels of public parking be accommodated, with access from Stanley Esplanade. Refer section 5.1.

Public car parking component

Due to a longer term plan to replace on-street parking with off-road car parking facilities, an appraisal needs to be made of potential sites located in and around the perimeter of the commercial area, to meet future need. Refer Part A section 5. Such facilities may constitute a stand-alone facility (as is proposed for the old Fire Station site between Champion Parade and Stanley Esplanade).

Otherwise they may comprise a number of levels within a commercial development. Future monitoring of demand will influence extent of need or pressure for such use. A number of financial and administrative options could be considered in negotiations between NCDC and private developers for implementation of projects.

Sites for initial investigation are shown on Town Centre maps 6, 7 and 8.

1.2.Public Institutional

Government offices will not be encouraged to remain within the Plan area.

NCDC should be proactive in regard to existing government buildings and facilities, which are run-down or underutilised; and initiate discussions with relevant departments for relocation or demolition.

Large sites which become available should be subject of a land use study; and, where relevant, a master plan prepared. In general, proposed use would be consistent with the adjacent zone.

In institutional campus situations, such as educational, defence force, health, etc., there may be residential components designed for live-in accommodation for people involved in the core activity.

1.3.Light Industrial

The zone is intended for low-impact industry and warehousing, with encouragement given to Port-related activities. Activity which would have environmental impact, or adverse impact on amenity of the neighbourhood, will not be permitted.

All parking, loading bays and vehicular activity will be located within site boundaries.

Non-industrial or non-warehousing uses will not be permitted in this zone.

Caretaker's premises for the residential accommodation may be approved on an industrial site, when it is a subsidiary use of the primary site activity.

Colour on Zoning Map	Mauve
Building type	Not applicable

Maximum height	Not applicable
Maximum number of storeys	Not applicable
Car parking	Minimum 1 loading bay for industrial vehicle and a minimum of 1 car space per 100 square metres gross floor area, with appropriate provision for visitors. No parking will be permitted on street
Maximum site coverage	60 percent of site area
Landscaping requirements	Planting of large shade trees along front boundary satisfactory to NCDC, and shaded sitting out area for employees
Fencing to road frontage	To comply with NCDC Fences policy

1.4.General Industrial

The Port is the main area of General industry; and planning controls are not relevant.

1.5.Open Space

Ela Beach reserve is currently the major recreational area currently used, but future upgrading of the old Sea Park site and Paga Hill will add to the Town's recreational resources. The intention is that they should be available for open public use, but only if certain controls are respected. Use and behaviour should be subject to rules and restrictions as determined by NCDC, and signposted on notice boards.

Rules, and their compliance, should be reviewed on an annual basis. There is no purpose of having rules if they are not being complied with, or cannot be policed, or cease to have relevance. Furthermore, annual reports should be prepared to document the use and condition of open space reserves on each of a number of established criteria, for review by relevant departments.

A master plan is urgently required for the Ela Beach reserve extending up to the Sea Park site; and to that end, comments in Part A section 3.9 and a brief in Part C section 3.6 could be useful. A plan for Paga Hill is recommended for the short term, to establish certainty of NCDC intention, rather than suggest premature upgrading. This comment is made only to reflect likelihood of funding being unavailable, rather than suggest upgrading should be deferred.

A matter of immediate urgency is to provide appropriate rubbish receptacles in places of most activity, and have them emptied on a regular basis; and to install notice boards.

In the future, should additional facilities be requested, or approval applied for, master plans must be revisited and addressed in terms of objectives and constraints, before approval may be considered.

No open space land will be allocated to, or allowed to be used by, private clubs, organisations, or any other use for private purposes.

The Town Centre is lacking an open space of any description, except for the small but important Coronation Park at the southern end of Musgrave Street. It is badly in need of a facelift, and better facilities for use, such as seating and shelters. It is recommended that a master plan be prepared in the near future for its redevelopment.

Future open space prospects have been identified in the Town Centre as:

- House of Assembly Place, being a landscaped public space on the original site. Refer section 2.9; and

- Musgrave Street – Champion Parade plaza. Refer section 2.2.

1.6.Pedestrian Routes

An inventory of existing footpath infrastructure is needed to facilitate an analysis of adequacy and condition. This should be followed by an area-wide master plan for upgrading and prioritising of facilities. Lighting should be installed for the more frequented routes.

In some situations, existing road reserves are incapable of accommodating adequate pathways, and alternative options must be considered.

Functional requirements for different categories of footpaths are listed in section 4.6.

Major footpath links are urgently required between Koki and Ela Beach; and between Hanuabada Village and the Town Centre. In both cases potential footpaths have been squeezed out by road projects, without adequate provision having been made. There is now a lack of space for footpath development, with impossibility of providing appropriate separation of people and cars.

Refer Part C sections 3.4 and 3.7 for implementation recommendations.

1.7.Environmental Protection

Areas of land within this zone shall be processed under the Environment Act as land subject to protection. There may not be any future development or extractive activity in the zone.

NCDC should establish expectations of the Motu Koita for pedestrian access to hill slopes; and, if warranted, selected pathways could be constructed. The intention is to protect the environment, and minimise land degradation and erosion.

A program of re-vegetation could be discussed with the landowners, and assistance given to implement it.

1.8. Historic Buildings

The National Museum should prepare documents describing design, construction and previous use of buildings considered to be of historic interest, and present it on permanent public display. The documents should include survey plans and drawings, photos, government reports of the day, and other available information. Formal advice should be given to owners of historic buildings of the existence of this information, to improve knowledge, and facilitate interest in better maintenance practices.

Specially designed plaques should be erected in public view on each building, or on its site in the case of its previous demolition. The signs would be regularly cleaned and maintained.

The National Museum should produce two types of documents for public availability. One is an illustrated leaflet to provide a guide for touring the Town area, to identify key buildings and landmarks of historic relevance. It would be of interest to local residents and tourists alike. It should be distributed at City Hall, the Airport, travel agencies and hotels. The other would be published as a reference book, containing historically relevant information in some detail. It should be available for sale, and should be part of educational curricula.

There should be no Government control over the future of privately owned historic buildings. Upgrading and recycling of old buildings, most of which are in very poor condition, is only possible and sensible when it is financially viable and realistic.

Burns Philp building

One exception is the corner tower of the old Burns Philp building on the west corner of the intersection of Musgrave Street and Champion Parade. It is one of the most visible icons of the Town's colonial past, and it should remain an important contribution to the Town's historic imagery. When the site is redeveloped, the corner tower (complete with roof) shall be retained. It may either be incorporated into the new building fabric; or it may be kept as a stand-alone structure. Its interior may be recycled as required.

Government buildings

Government buildings should be assessed for future relevance against functional and economic criteria. Cost-benefit analysis should be the basis of decision-making. No existing building is considered sufficiently worthy on architectural merits to preserve as an historic monument.

Old House of Assembly

The old House of Assembly site in McGregor Street is a special case, requiring serious consideration, even though the building ceases to exist and only a derelict steel frame remains.

The site, and its future development, should be retained in perpetuity as a community asset, and not sold to private interests. Custodianship could be retained by National Government, NCDC, the Motu Koitabu Council (or a combination), as considered appropriate.

Ground level would be the focal setting for community access and use. It could be developed as a town square or formal community centre, comprising a landscaped public plaza, associated museum and government service offices.

While open on all sides and surrounded by garden, it would be fenced and well-lit for night security. The roofed section is envisaged to provide a clear 10 metre height above ground, under which buildings would be clustered (or formally set out, depending on Master Plan).

The museum could contain an authentic reconstruction of part of the House of Assembly, with associated displays. It could provide a nostalgic colonial focus to the site, which perhaps could be named “House of Assembly Place”.

Offices could comprise an NCDC public information desk; a tourist advice centre; Motu Koitabu Council offices and cultural centre; meeting rooms and community resource centre. A community hall could be a venue for regular education and information events mounted by NCDC. Shady trees and gardens should provide an attractive setting for the ground floor complex.

There is a proposal for a future public car park at the rear of the site, below ground level, which will not affect development potential of the site. It would be accessed at lower level from Port Road, with lift and back-up stair providing access to the ground level plaza.

Potential exists for multi-storey development above the plaza, which could be three or no more than 4 storeys. With its high-profile cultural identity and magnificent views to the Harbour, the site could suit a convention centre, with culturally-inspired hotel accommodation, or mixed residential-office accommodation.

Any proposal for upper level development would require debate and Government consideration.

Key issues would be how it could be funded, while remaining a public asset. It could represent an opportunity for the Motu Koita community to participate in an investment initiative; be owned by the Council (or other statutory body), and leased out, to return a permanent income stream to the community.

It is considered important that, whatever development model is used, it remains securely in public hands, providing a permanent reminder of its role in the birth of the nation.

Historic relics

Hilltop lookouts and war relics which are noted on the national registry should be cleaned up and rehabilitated, and marked with specially designed signs that describe their importance. They should be subject of a regular inspection and maintenance program. Rubbish bins should be located near each relic, or group of relics.

Culturally significant sites

Ela Beach and its adjacent reserve shall be recognised as culturally significant. No works which impact on the reserve including road and parking shall be planned or undertaken without express approval of NCD Physical Planning Board.

Burials

Burials shall not be permitted on any land including customary land. NCDC should consult with the Talai settlement committee for an undertaking that no future burials will take place.

Other Controls & Policies

Hanuabada Village & Koki Urban Settlement

Hanuabada and Koki are impacted upon by proposals of the Local Development Plan; and due to lack of infrastructure and resources, are heavily reliant on the Town's facilities.

It is recommended that both Hanuabada Village and Koki urban settlement should be designated as growth centres. Plans should be undertaken for their future management and growth.

Such recommendation is consistent with a policy objective of the Urban Development and Services Study, 1996.

Car Parking

In general, car parking will not be permitted on the roadside, or within the road reserve. All development must cater for vehicular needs on-site.

Other temporary and long term parking conditions will apply to the Town Centre. Refer 5.1.

In some special locations, parking will be provided within the road reserve. In such situations, parking spaces will be assigned by road paint, and signs will stipulate

conditions applying to use of parking spaces. Compliance of conditions should be regularly policed.

The main location for roadside parking is along Ela Beach Road, and in reserves at either end of the beach.

Road Reserve Maintenance

Streetscape is of great importance to the appearance of the city. Streets are the most used part of the urban environment. Maintenance is a major on-going cost, which cannot reach and extend to all parts of the Plan area, or indeed the city.

Priorities for maintenance effort will be the major thoroughfares, and busiest public places.

In the community interest, NCDC should require some responsibility of land and business owners situated outside the priority areas. As is the norm in most towns and cities, owners should be required to tend the footpath and reserve in front of their property. This would include removal of rubbish, and general tidiness of vegetation.

Such an initiative is likely to be received well, and have a positive effect on community morale.

Fences

Fences, particularly those facing the street, are a significant component to appearance of the street; and poor quality or vandalised fencing have an adverse impact on streetscape. It is recommended that construction materials and design of front fences should be subject of control.

Outcomes that are not appropriate include steel roofing sheet products (e.g. Colorbond), other industrial-type structures, concrete blockwork and timber palings. Such materials deteriorate easily in appearance; and having solid surfaces, are prone to graffiti. Refer to Photo 39.

Fences that are preferred generally feature voids, for example:

- Aluminium or coated steel tubular panel systems;
- Aluminium balustrading, and other open design panels; and
- Galvanised steel chain wire mesh.

Appearance can be considerably enhanced with climbing plants (e.g. bougainvillea) cover, which can be used to provide the desired level of privacy. Photos 40 and 41 illustrate this.

It is interesting to note that rock walls seem to be immune to graffiti vandalism. Although of solid construction, rock walls in the Plan area (in particular in the hilly residential areas), are attractive and generally in excellent condition. Such walls are generally used as retaining structures, but should be considered suitable for fencing enclosures.

Photo 39a and b: Sheet steel fences offer no resistance to graffiti vandals

Photo 40: Tubular steel fence provides good base for bougainvillea display

Photo 41: Chain wire mesh fence presents transparent appearance

Building Design & Energy Efficiency

Building design is difficult to control; and it is impossible to legislate for good design.

However it is possible, and important, to prevent poor design. At its most basic, this can be defined as building that:

- Is poorly sited and conceived; and/or
- Is not designed for the climate

A basic measurement of poor design is poor energy efficiency.

Codes of energy efficiency have been subject of much research in latter years, and controls are gradually being introduced in many countries. Principles of energy efficiency are well understood, but the difficulty is in its measurement, as applied to individual design situations.

Establishing some design principles in a code would be a good way to make a start. It would raise awareness of design issues, and it would allow NCDC to alert design professions that energy efficiency controls will become increasingly important. They could comprise:

Site planning issues

- Requiring contoured survey plan to accompany a development application, and limiting cut and fill to a height of 1 metre;
- Siting buildings clear of natural drainage lines, and minimising impact on topography.

Building design issues

- Requiring pitched roof with good eaves overhang;
- Limiting major window openings facing east and west (on the basis that solar access to north and south facing windows are more easily controlled);
- Providing awnings or other sun screening devices to windows;
- (Except where air conditioning is mandatory), providing for good natural ventilation.

Infrastructure

Roads

Refer *Map 10:Future road network*

The only significant proposals for upgrading the network (outside the Town Centre) are:

- Widening Lawes Road reserve width, with improved road and pedestrian infrastructure; and

- Future road connections involving creation of two new road reserves: an extension to Elanese Road, and connection of Aviat Street to Sir Hubert Murray Highway.

Drainage

A comprehensive review of the drainage system is required before future planning is possible. A number of deficiencies have been identified; and survey of existing assets, followed by design analysis, is necessary.

Short term recommendations for upgrading and maintenance are made in Part C section 2.2.

PMV Services & Infrastructure

The main focus of PMV infrastructure is the Town Centre. Refer section 5.2.

Outside the Town Centre, PMV services provide a loop service, around the coastline, connecting Koki and Ela Beach Road to Champion Parade and Poreporena Freeway, through the commercial area.

Focus of management should be on minimising disruption to traffic flow. Initiatives should be consistent with NCD-wide policies, which should involve more direct administrative responsibility. In general, bus services are best managed by the local authority, rather than a national regulatory body.

In an effort to encourage improvement in quality of vehicles, driver dress and driving behaviour, a second level of bus service could be considered appropriate and workable.

All stops should have adequate off-road lanes for deceleration and acceleration; and be clearly signposted. Larger-volume stops will involve

construction of multi-lane stations, with the type of facility at Koki market. Two-lane stations are proposed near the Lawes Road/Ela Beach Road roundabout (one in each direction); and three-lane stations are proposed on either side of the Town Centre.

Photo 42: PMV transport on Ela Beach Road

Photo 43: Site for proposed 2 lane off-road PMV station near Lawes Road

1.9.Traffic Management

The main objective of traffic management is to optimise traffic flow, and minimise obstacles or causes of congestion. Upgrading of pedestrian facilities along roads of collector/distributor status and higher, is essential to such objective.

Due to small physical distances within the Plan area, speed is marginally relevant to arrival times. It takes only a matter of minutes to traverse the area. A case for maximising vehicle speeds cannot be made.

It is proposed that speed limits be clearly signposted and policed with maxima as follows:

- Poreporena Freeway – Champion Parade, and Healy Parade divided arterial roads 80 km/hr
- Champion Parade entry 50 km/hr
- Ela Beach & Lawes Roads 40 km/hr
- Local access roads (shared use) 25 km/hr

- Within Town grid 20 km/hr

Signage

A comprehensive set of signs is required throughout the area, for a range of purposes. It is recommended that all signs should have coordinated graphics, with careful selection of colour theme.

The exiting black and yellow emblem colours of NCDC are unsuitable to be used for roadside signage, as black and yellow are standard colours for traffic signs. A further consideration is that public signage is an important part of public imagery of the city authority, and NCDC may wish to adopt a more tropical “flavour” by way of a more colourful theme. This could have important ramifications if tourism becomes a significant economic activity in the future, for which advertising imagery should remain consistent. Colour is also a positive communication medium in the community’s eyes. Ideas for colours are those typified by tropical flowers and plants, and are invariably vivid and bold, often contrasting “impossible” combinations of say red and pink with great effect. There is unlikely to be a strong attachment to the black and yellow combination, and it could well make a strong public impact to adopt a fresh image. There will be a wide range of future need for imagery, which at present cannot be predicted, but may well involve clothing and corporate outfitting, which has become quite the norm in corporations wishing to enhance internal status and external image. Such matter would need to be addressed professionally, and should have the flexibility to serve well into the future.

All public signage should contain a common theme of identity.

In addition to standard traffic signs, signage should include the following applications:

- “Port Moresby Town” signs at entry points of Ela Beach Road, and Champion Parade (with perhaps simple historical references);
- Road names;
- Directions to important places, and other guides for visitors;
- Restrictions of use (e.g. for pedestrian information);
- Cultural and historical plaques;
- Guides for use of public places (e.g. sports ground, Ela Beach reserve) to advise what is permitted, and what is prohibited).

A policy should be developed for NCD-wide use, to reflect need for public advice and imagery.

There should be widely-publicised penalties for vandalism of signs (or other city assets for that matter). Means of apprehending offenders requires consideration.

Footpaths & Pedestrian Crossings

A comprehensive inventory of pedestrian paths requires documentation, prior to analysis of need and identifying shortcomings in the network.

A consistent pattern of pedestrian facilities should be implemented according to road status as follows.

- On local access roads: Shared pedestrian and vehicle use (no separate paths needed);

- On collector, distributor and arterial roads: Minimum 1.8 metre path, separated by landscaping zone, with limited but controlled crossing points. Photo 45 demonstrates a simple landscaped barrier, as pictured from the road, and from the footpath, demonstrating effectiveness of pedestrian/vehicular separation;

- The busiest crossings should be provided with give-way pedestrian crossings;

- On some important pedestrian routes (refer Part C, section 3), special design consideration will be required.

Photo 44: Existing footpath environment lacking normal safety standards

Photo 45a: Footpath landscape appropriate for major roads, with pedestrian separation from traffic

Photo 45 b: Footpath landscape appropriate for major roads, with pedestrian separation from traffic

Street Lighting

General improvement is required in provision of lighting, particularly of areas most frequented by pedestrians.

A master plan should be prepared for the area, together with a program for implementation. Lighting should be vandal-resistant.

Landscaping & Street Tree Planting

It is recommended that formal street tree avenues (i.e. regular spacing of same species) be used on both sides of roads of distributor/collector status and higher.

A master plan should be prepared, giving consideration to:

- Space available (e.g. constraints of overhead electricity, etc.)
- Maximisation of shade;
- Consistency of appearance.

Sustained watering and maintenance will be required in the initial establishment period, but in the longer term trees represent a valuable, low-maintenance investment.

It is suggested that the number of species selected be restricted to only two or three, to maximise consistency of streetscape and character of the area. Species should not be mixed in any street.

Town Centre Upgrading

Refer: Map 11 - Master Plan for Town Centre upgrading

The plan comprises elements of roads, drainage, PMV stations, pedestrian zones, and landscaping. The following is a statement of planning intent, which should be a guide for subsequent detailed design.

Parking

Parking will be located off-road in multi-level car parking structures.

Vehicular access to private and public car parks, located within the Town grid (and therefore crossing over the pedestrian zone) will be achieved without a grade change; which means that pedestrians will not have to step down and up to traverse a crossing. Paving will be continuous for the whole pedestrian zone, without any change of material for vehicular crossings.

Traffic Circulation, Streetscape & Pedestrian Infrastructure

Traffic circulation

The proposed traffic circulation is that described as Option 3 in Part A section 5.3.

Construction of the four PMV stations is the major item of fixed (unchangeable) traffic infrastructure. Otherwise there is considerable flexibility for future changes to traffic circulation, should the need arise. Proposed circulation optimises traffic flow, and the directness of access to any part of the commercial area.

Design of intersections should be based on the following principles:

- Turning lanes for left and right turn will be separate, with the latter designed as slip lanes within the landscaping median (where relevant);

- Points of traffic conflict will be managed by providing right-of-way to the predominant movement, and dedicated waiting lanes for secondary movements.

To avoid duplication of traffic through the Centre streets, it will be noted that (with care in design), traffic from Paga Hill will have choice of turning left or right in Musgrave Street, or a U-turn into Cuthbertson Street and the Port. PMV traffic heading northwards up Musgrave Street will have right-of-way in the left hand turn across Douglas Street west, into Cuthbertson Street.

Cross-intersections are avoided altogether; and roundabouts would not be useful management tools for the proposed layout.

Pedestrian circulation

Pedestrians will have greatly enhanced separation from motor vehicles, compared with the current situation. However, with the large volume of pedestrian activity to be anticipated, there will be significant need to cross roads.

It is proposed to design for this, rather than allow (or encourage) jay-walking at any place of choosing. Crossing points must be a sensible compromise between traffic flow for vehicles on the one hand, and safety and convenience for people on the other.

On matters of safety, the most difficult situation is to cross a road with two-way traffic, when there is no safe haven in the centre of the road. This situation occurs in Champion Parade. At either end of the road there are PMV stations, which will attract large numbers of pedestrians. For safety reasons, it is proposed to provide a pedestrian crossing near each facility, at which motorists must give way. For a similar reason, consideration could be given for one or more crossings of Ela Beach Road.

Elsewhere within the Town Centre, crossing can be done with greater ease, particularly in the focal areas of Musgrave and Douglas Streets. Only one lane of traffic needs to be negotiated at any time. In locations which have median landscaping, crossing points need to be pre-determined, with breaks in vegetation for footpaths. It is proposed that these can be simple “Take care when crossing” facilities, with two white lines marked on the road, 2.5 metres apart, and signposted for both vehicles and pedestrians. Cars would have right of way, but the defined crossings would encourage caution. With low traffic speeds of maximum 20 km/hr, such crossings would provide adequate safety.

For convenience, it is proposed to locate crossings at maximum 90 metre distance apart (so that the most a person would have to walk would be 45

metres), with two in Musgrave Street north, one between Douglas and Mary Streets, and two further south in Musgrave Street.

Douglas Street west will have two crossings; one involving steps to accommodate level changes in the landscaped median.

Most of Douglas Street east is a Shared Zone, in which vehicles may travel a maximum of 10 km/hr, and must give way to pedestrians. The accompanying photos show the type of environment applicable to such an arrangement. Vehicles would be prevented from accessing Musgrave Street by bollards, and therefore through traffic is prohibited.

Pavements and drainage

Drainage needs to be designed in tandem with pavement design. In general the intent is that:

- Width of the pedestrian zone is maximised, and rock planters containing street trees are located within the zone;
- The median of Musgrave Street, which will accommodate slip lanes, will be approximately 6 metres;
- Single-lane one-way road pavements of Musgrave street would be 5.5 metres net of kerbing and drainage;
- The pedestrian zone would be approximately 11 metres on either side of Musgrave Street, with paving material selected on the basis of easy maintenance, and good appearance;
- The use of steps should be minimised; and even where necessary, adjacent ramps should provide for complete accessibility of wheeled aids;
- Cuthbertson Street would carry two lanes of traffic in one direction: one for PMVs that turn right into the station, and one for other vehicles;
- The shared zone of Douglas Street east could be patterned with two or three textures of cobblestones and pavers; and the slope could accommodate a series of terraces, connected by ramps. There could be seating, shade structures, and decorative garden beds, together with necessary street furniture of bollards, signage and rubbish bins.

Street trees

It is proposed that choice of trees be limited to two species, in order to consolidate consistent character. The main vista is along Musgrave Street, particularly from the saddle of the hill, northwards to the Harbour.

Along the Musgrave Street axis, water views would be made possible by a landscaped plaza on the vacant land on the north side of Champion Parade. Implications to development potential of the site are addressed in Part B section 2.2. It is proposed that the plaza be elevated from the footpath by a couple of metres, to enhance the vista from higher in the street. A few levels of public car parking would be accommodated below the plaza, to be accessed from Stanley Esplanade.

Trees in Musgrave Street should be large-scale shade trees, such as mango or Indian almond, contained in rock planters approximately 2.5 metres square. Regular cleaning of the pavement will be required with any choice.

Secondary axes of Champion Parade and Douglas Street could focus on a tropical, nautical theme such as would be afforded by coconut palms, which are both hardy, and would reinforce character of the coastal setting . If such palms are selected, clusters of a few plants could be contained within enlarged rock planters of 3 or 4 metres square.

Continuation of that theme could occur in clusters at waterfront locations of Paga Hill and Ela Beach. Continuity of planting is important to establish desirable urban character.

Photo 46: Harbour view from Musgrave Street worthy of retention and enhancement

Signage & Public Notices

A system of comprehensive and coordinated signs, as outlined in section 4.5, should be implemented in the Town Centre.

2. Appendix

2.1.Potential Port Redevelopment

A possibility of relocating the Port at some time in the future is a prospect that never seems to go away. Previous investigations have, however, not resulted in identifying any financially viable alternative.

Should future relocation occur, it would open up a major planning opportunity.

Relocation could only occur in an environment of radical development and economic growth. Such change in the economy would have a significant impact on the whole Town and its infrastructure. In this event, the basis of the current Plan would have to be revisited, and new needs assessed.

Rehabilitation of the Port site would be a mammoth task involving enormous cost. Apart from the land-based component, considerable work would be required in the Harbour to remove infrastructure, and re-shape the shoreline, with a new seawall for a length of approximately 1.5 km.

Taking an overview of options for redevelopment, one possibility has appeal above everything else.

Each great city has beautiful gardens, sometimes within the centre; but generally surrounding the core is a wide band of breathing space and restful gardens. Due to a lack of any such legacy, or provision within the Plan area, it would provide a one-off opportunity for a special waterfront garden.

Close relationship with the commercial heart would optimise pedestrian enjoyment. Anticipated benefits include recreational opportunity, environmental enhancement, and significant flow-on effects in areas of property development, tourism and social wellbeing. Climatic characteristics are ideal for a diversity of tropical trees and plants; and the type of environment that can be achieved is evident in the Botanical Gardens.

The importance of attractive public gardens has been underestimated in the recent history of Port Moresby, indeed overlooked for many years. This would be a unique opportunity.