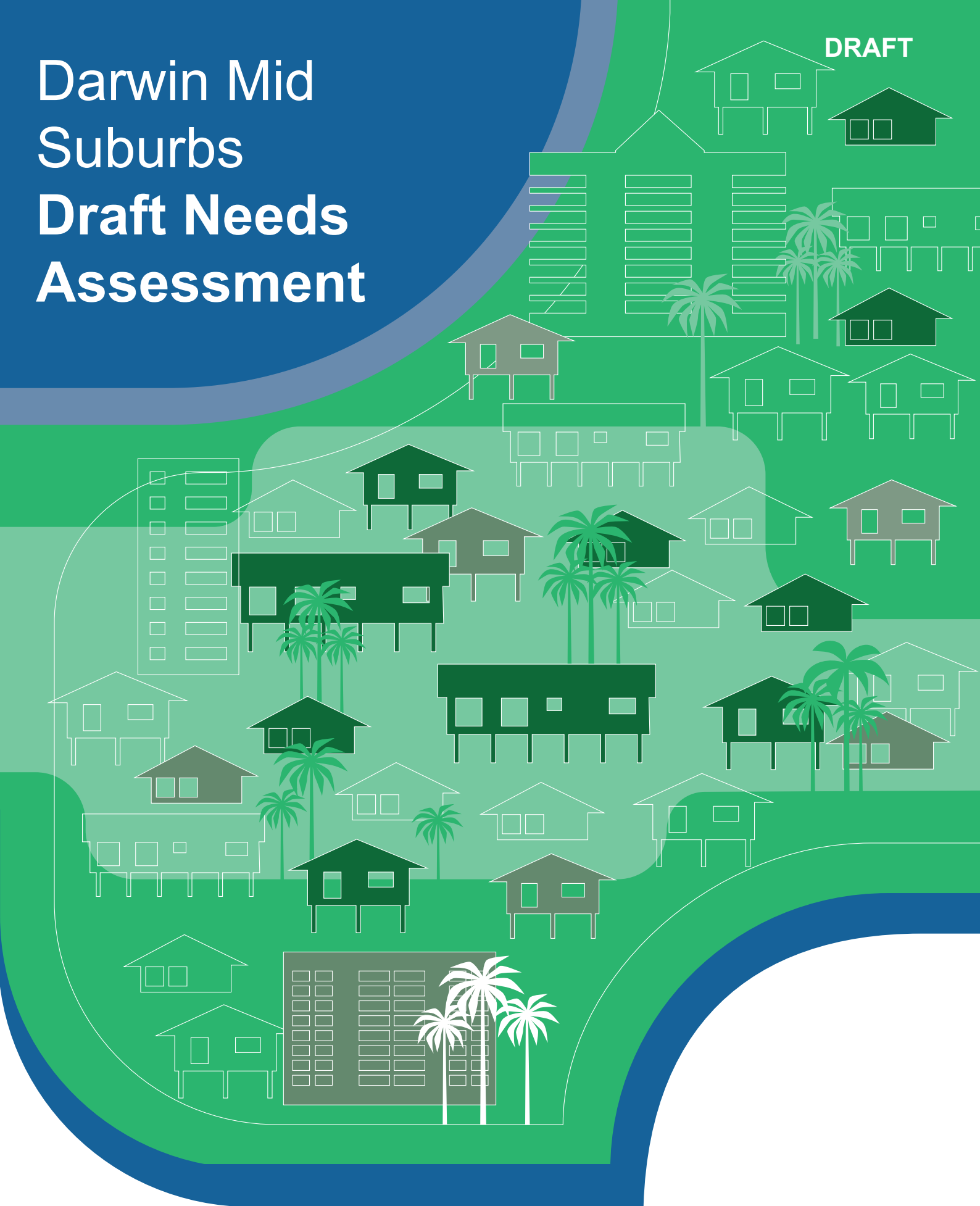


Darwin Mid Suburbs Draft Needs Assessment

DRAFT



February 2016



NORTHERN TERRITORY
**PLANNING
COMMISSION**

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1. Introduction

1.1 The Study Area

The Darwin Mid Suburbs are strategically located between the major centres of the Darwin CBD and Casuarina, within the boundaries of Ludmilla Creek and Rapid Creek. The Darwin International Airport/ RAAF Base exists to the east of the study area.

The 'Mid Suburbs' includes the suburbs of:

- Ludmilla (excluding the portion south of Namarluk Drive, which has been included in the Inner Suburbs Area Plan);
- Coconut Grove;
- Nightcliff;
- Rapid Creek; and
- Millner.

1.2 Study Context

The Darwin Regional Land Use Plan identifies threshold populations of 150 000 and 250 000 to guide identification of land required to accommodate future growth in the short and longer term. The projections indicate that a population of 150 000 for the region could be reached within 5 years, with a longer term projection of 250 000 residents in 40 to 50 years.

The Darwin Regional Land Use Plan stipulates that the land use structure identifies residential land with the potential to eventually accommodate a regional population in excess of 500 000 people.

The plan adopts basic principles for future residential development that include:

- meeting the continued demand for traditional low density houses on individual lots;
- increasing the choices in housing types, both on higher density more compact urban residential lots and a range of rural lifestyle lots;

- recognising the increasing importance of:
 - readily available and affordable housing;
 - integration of land use and transport; and
 - a more efficient urban form; and
- opportunities to use undeveloped or underdeveloped sites in established areas to increase housing diversity.

The Darwin Mid Suburbs will have a role in accommodating a share of the population growth expected within the Darwin region over the next 40 to 50 years. The Mid Suburbs will be required to accommodate a proportion of the 2 490 new infill dwellings that are forecast for the Mid and Northern Suburbs in the far term.

These dwellings will be provided through infill development. The Northern Territory Planning Commission is responsible for the preparation of strategic land use plans to establish a framework to guide future infill development.

In mid 2015, the Minister for Lands and Planning gave a mandate to the NT Planning Commission to prepare a strategic framework for the Darwin Mid Suburbs called an Area Plan. The Area Plan is intended to establish a framework to guide future development and accommodate the projected growth in the Mid Suburbs. The adoption of this framework will work towards better integrating land use, transport and infrastructure planning, and deliver improved development outcomes for the community, with sensitivity to environmental and heritage values.

The Area Plan also clarifies development choices rather than continued uncoordinated responses to population growth pressures. The clear principles and guidelines within the Area Plan also reflect the demands and aspirations of the wider community.

Figure 1 - Darwin Mid Suburbs Scope Area



2. Regulatory and Policy Context

The NT *Planning Act* and the NT Planning Scheme regulate the use and development of land in the Darwin Mid Suburbs.

2.1 The Northern Territory Planning Act

The *Planning Act* provides for appropriate and orderly planning control of the use and development of land in the Northern Territory. Section 2A states that the intended objects of the Act are to plan for, and provide a framework of controls for, the orderly use and development of land. The objects are to be achieved by:

- (a) strategic planning of land use and development and for the sustainable use of resources;
- (b) strategic planning of transport corridors and other public infrastructure;
- (c) effective controls and guidelines for the appropriate use of land, having regard to its capabilities and limitations;
- (d) control of development to provide protection of the natural environment, including by sustainable use of land and water resources; and
- (e) minimising adverse impacts of development on existing amenity and, wherever possible, ensuring that amenity is enhanced as a result of development.



2.2 The Northern Territory Planning Scheme

The NT Planning Scheme contains provisions that include:

- statements of policy with respect to the use or development of land;
- provisions that permit, prohibit or impose conditions on a use or development of land;
- provisions that provide instructions, guidelines or assessment criteria to assist the consent authority in assessing development applications;
- other provisions in connection with planning for, or control of, the use or development of land; and
- maps, plans, designs and diagrams.

The NT Planning Scheme includes statements of policy to establish the expected nature of future development and guide the interpretation of the zones and associated development provisions. A zoning map for the Darwin Mid Suburbs is at Figure 2.

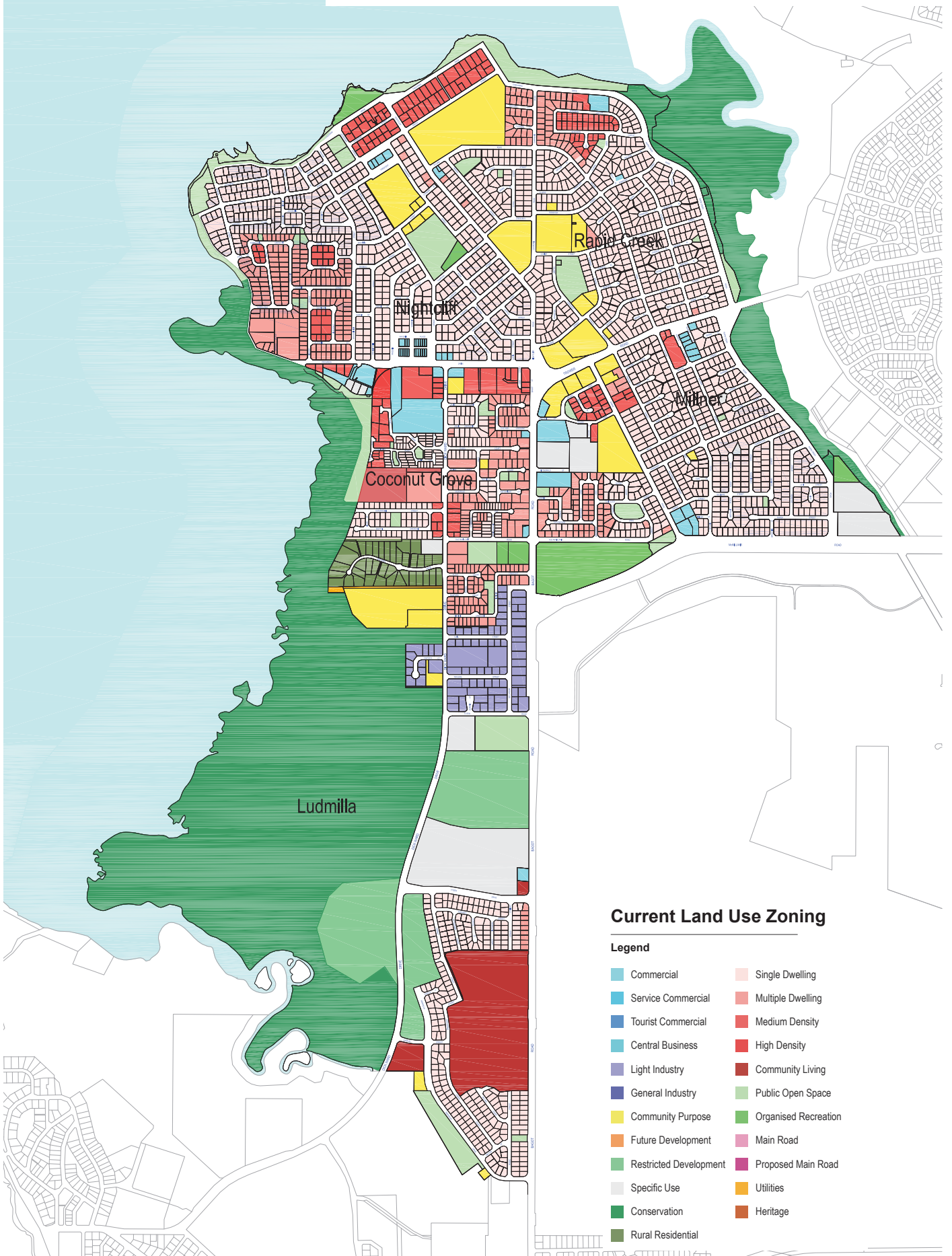
Policy documents within the Scheme are intended to assist in the interpretation of the Scheme and the determination of the Development Consent Authority (DCA).

Darwin Regional Land Use Plan 2015

The inclusion of the Darwin Regional Plan 2015 as a policy document under the NT Planning Scheme has established an avenue as a means to provide a strategic policy framework to guide the future growth and development of the Darwin Region, including the Darwin Mid Suburbs.

The Darwin Regional Land Use Plan 2015 is a policy document within the Scheme that establishes a high level policy framework relevant to the Darwin Mid Suburbs.

Figure 2 - Darwin Mid Suburbs Current Land Use Zoning



Compact Urban Growth Policy 2015

The Compact Urban Growth Policy 2015 (CUGP) as a reference policy document of the NT Planning Scheme provides a consistent and transparent set of benchmarks that will assist a decision maker in determining the merits of higher density residential development proposed by an Area Plan, a rezoning application or an exceptional development application.

The formulation of the Darwin Mid Suburbs Area Plan will incorporate some principles as stipulated in the Compact Urban Growth Policy. The Mid Suburbs Area Plan will provide an additional layer of fine-grained policy to guide development intent in this strategic locality.

The Compact Urban Growth Policy aims to create compact and mixed activity localities that contribute toward improving people’s lifestyle and creating socially, economically and environmentally sustainable communities. The concept as pertained in the policy document is that higher density residential buildings are encouraged, and are usually a key component of a Compact Urban Growth locality as illustrated in Figure 3 below.

Compact Urban Growth is based on core principles to encourage development:

- around activity centres and public transport nodes, where dwelling and activity density may be at its highest;
- along transport corridors that are within 400 metres of an activity centre;
- that maximises cycling and walking access to public transport, commercial and community facilities; and
- that provides a zone of less intense development as a transition to lower densities of the surrounding locality (generally 400 m around the activity centre and public transport node).

The Compact Urban Growth Policy also establishes that areas outside 400 m from a designated activity centre will experience minimal change in residential density. Densities transitioning from activity centres should be respectful of the scale and character of the surrounding locality and in keeping with changes reasonably anticipated within a locality.

The focus of the Compact Urban Growth Policy is the improvement of urban sustainability, and balancing environmental, economic viability, social equity and liveability outcomes.

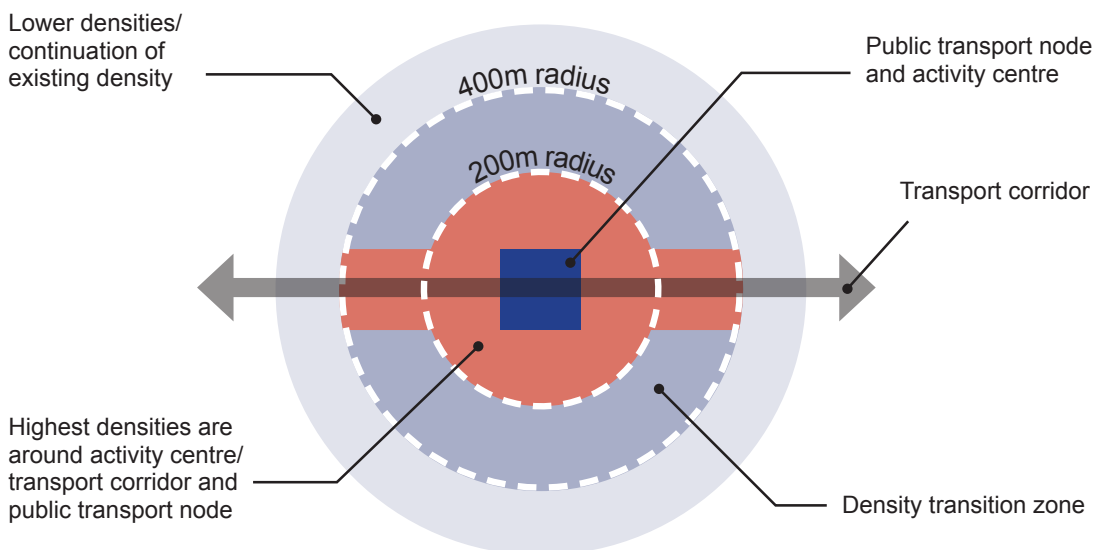


Figure 3 - Compact Urban Growth

3. Demographic Context

3.1 Darwin Mid Suburbs Existing Population

At the 2011 census, Darwin Mid Suburbs has a population of 14,248 (refer Table 1), by 2014, the Estimated Resident Population (ERP) is estimated to have grown to 15,434 (Australian Bureau of Statistics 2014).

As demonstrated in Table 1, compared with the population of Greater Darwin, the Darwin Mid Suburbs is characterised by:

- a lower proportion of children and young people in all age cohorts under 19 years;
- a higher proportion of young adults 20-34 years;
- a higher proportion of older people aged 60+;
- a lower proportion of family households, particularly families with children and a higher proportion of single people and group households, couples without children and single parent families;
- a correspondingly lower average household size;
- a lower median weekly household income;
- a much lower proportion of detached housing and much higher proportion of attached and apartment dwellings; and
- lower level of home ownership and higher levels of rental housing.

The Socio-Economic Indexes for Areas (SEIFA) scores indicate a mixed socio-economic profile in the Mid Suburbs Area, with three suburbs (Coconut Grove, Ludmilla and Millner) having higher levels of socio-economic disadvantage than the average for Greater Darwin. The two suburbs (Nightcliff and Rapid Creek) have lower levels of socio-economic disadvantage than the average for Greater Darwin.

It is worth noting that an assessment of each individual suburb shows that in 2011:

- the suburb of Ludmilla had a much higher proportion of family households and correspondingly a higher proportion of children and young people aged 5-19 years;
- a large proportion of the family households in Ludmilla were single parent families;
- Ludmilla had a significantly higher Aboriginal or Torres Strait Islander population;
- Coconut Grove had a higher proportion of people aged 70 and over when compared to the other suburbs, and a significantly higher proportion when compared with Greater Darwin;
- Coconut Grove had a higher proportion of people aged 20-34 years and a high proportion of single or lone person households;
- Coconut Grove had a lower proportion of couple families with children;
- there were lower levels of home ownership in Coconut Grove;
- Coconut Grove had the lowest SEIFA score of all the suburbs in the City of Darwin and the lowest median weekly household income at \$1,355;
- Rapid Creek has the highest median weekly household income at \$1,724;
- Over half the total dwellings in Nightcliff and Rapid Creek are rental dwellings; and
- Nightcliff had a higher proportion of couple families without children.

A comparison of 2011 Census data with outcomes of the 2001 and 2006 Censuses shows that while demographic changes from 2001 to 2011 differ slightly across the Darwin Mid Suburbs, there have been a number of consistent trends. The trend is stipulated as follows:

- most of the suburbs have experienced an increase in empty nesters/ retirees (60-69 years);
- the majority of suburbs have experienced an increase in older workers (50-59 years) and people aged 70 and over;
- the majority of suburbs have experienced a decline in people aged between 18 to 24 years;
- in Ludmilla and Millner there are fewer couple families with children and an increase in lone person households;
- Nightcliff and Rapid Creek have experienced a decrease in the number of lone person households over the past decade; and
- there are fewer people living in social housing across all suburbs except in Ludmilla.

The increased proportion of retirees in the 60-69 age group supports anecdotal evidence that older people, as they retire, are not moving back to the southern states as may have happened in the past, as they now have children and grandchildren settled in Darwin. This trend has significant implications for housing demands and social infrastructure needs to support the ageing of the population. This comparison also links to the suburb of Ludmilla, which continues to experience higher levels of socio-economic disadvantage.

Table 1: Selected population characteristics, 2011 ABS Census

	Darwin Mid Suburbs	Greater Darwin
Population number	14 248	120 586
Age groups	%	%
0-4 years	6.3	7.4
5-9 years	5.4	6.8
10-14 years	5.7	6.9
15-19 years	5.7	6.7
20-34 years	26.0	25.3
35-59 years	37.2	36.0
60-69 years	8.7	7.3
70+ years	5.1	3.6
Family	%	%
Couple with children	41.4	45.5
Couples without children	40.6	37.0
Single parent families	19.3	15.9
Household structure	%	%
Family households	62.6	72.1
Lone person	28.8	21.3
Group	8.6	6.6
Average household size	2.5 persons	2.7 persons
Median weekly household income	\$1 661	\$1 806

Table 1 (continued): Selected population characteristics, 2011 ABS Census		
	Darwin Mid Suburbs	Greater Darwin
Population number	14 248	120 586
Housing Structure	%	%
Detached	40.2	64.2
Attached (townhouse etc)	21.5	12.9
Flat, unit apartment	28.5	19.8
Owned outright	18.3	17.9
Owned with mortgage	27.9	36.7
Rented	49.8	41.9
Cultural background	%	%
Percentage Indigenous	9.0	9.2
Percentage overseas born	27.3	21.6
Country of birth (other than Australia)	Philippines (4.1) England (3.4) New Zealand (2.3) India (2.0) Greece (0.9)	England (3.2) Philippines (2.4) New Zealand (2.1) India (1.1) Greece (0.8)
Same residence as 5 years ago	36.4	37.1

3.2 Expected Future Population

In 2013, the population of the Darwin Region was estimated at 137 000. The Darwin Regional Land Use Plan 2015 suggests that a population of 150 000 could be reached within the near term (5-10 years) and a population of 250 000 could be reached within the far term (40-50 years).

To accommodate for regional growth, it is anticipated that an additional 2 490 infill dwellings will be required in the Mid and Northern Suburbs in the far term. Due to the nature of infill development, new dwellings within the Mid Suburbs are expected to comprise a mix of medium density (ie. two-storey terrace and townhouse) and higher density (apartments).

As demonstrated in Table 2, the population of the Darwin Mid and Northern Suburbs is likely to grow by an additional 6 723 people in the far term.

Based on existing trends, the future population in the Mid Suburbs is likely to be characterised by:

- an increasingly high proportion of people renting including younger adults in single, group or couple households;
- a significant proportion of older people, down-sizing from both within the Mid Suburbs and from other parts of Darwin; and
- a reduced interest for families with children to reside in smaller dwelling types, however the proximity to schools, childcare facilities and recreation opportunities in the area may counter this.

Table 2: Dwelling and Population Forecasts, Mid and Northern Suburbs

Current Population (2013)	Planning Horizon	New Infill Dwellings	Approximate Additional Population
57 000	Far Term	2 490	6 723

4. The Planning Journey

4.1 Expected Outcomes of the Darwin Mid Suburbs Area Plan

The Darwin Mid Suburbs Area Plan will provide a detailed land use framework within the context of the regional strategic planning directions. These policies will combine to guide progressive growth and development around existing and future urban activity centres. These centres will facilitate walkability associated with the co-location of higher density residential development and a mix of commercial, retail and community facilities and services, public transport and public open space.

The Area Plan aims to provide the community, the development industry and decisions makers with confidence about the likely form of future development. The Darwin Mid Suburbs Area Plan presents the characteristics and opportunities that will shape the future of the area to foster community understanding and consistent decision making.

The Area Plan as a framework for future growth will also inform investigations required to ensure that future essential infrastructure services can and are being provided commensurate to expected growth.

In summary the Darwin Mid Suburbs Area Plan will:

1. Influence growth within the scope area by providing guidance for development and therefore confidence for both developers and the wider community;
2. Guide both public and private investment; and
3. Coordinate the development of and investment in required servicing infrastructure to match envisaged growth.

4.2 Formulation of the Area Plan

The Darwin Mid Suburbs Area Plan is being prepared over three key stages:

- Stage 1 - Information gathering and analysis;
- Stage 2 - Area Plan formulation and community consultation on the draft plan; and
- Stage 3 - Finalisation and formal exhibition.

A summary of these stages is provided for below.

Stage 1 - Information gathering and analysis stage

This stage included infrastructure capacity studies to see where population growth may cause issues and how such issues may be managed. It is also included community engagement to identify issues of concern that need to be addressed in the Area Plan.

Stage 2 - Area Plan formulation and community consultation on the draft plan

This stage comprises drafting the Area Plan and principles in response to the initial public consultation and the infrastructure studies, and a soft launch of the draft Area Plan for further public comment.

Stage 3 - Finalisation and formal exhibition

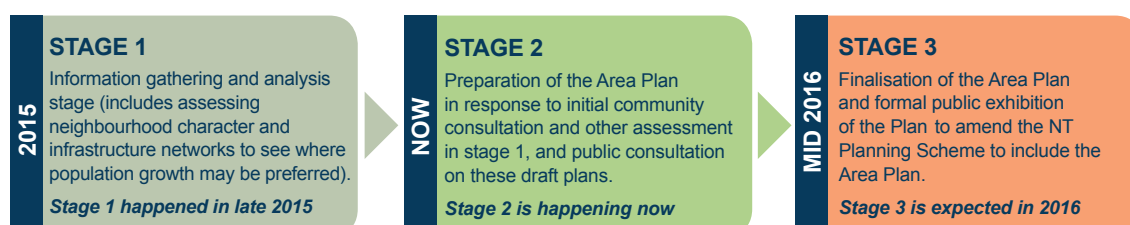
This stage will comprise amending the draft Area Plan based on public feedback and a request to the Minister to consider formal amendment of the NT Planning Scheme to incorporate the Area Plan as a policy document.

4.3 How this document works

The Darwin Mid Suburbs Area Plan will be underpinned by this background “Needs Assessment” document which outlines the key issues for consideration. This Assessment informs the vision, specific land use principles and acceptable responses of the Darwin Mid Suburbs Area Plan within the context of the issues raised by the community and the infrastructure investigations underpinning the land use plans.

This Needs Assessment is presented under the following key themes:

- Residential Areas;
- Activity Centres;
- Industrial and Service Commercial Areas;
- Social Infrastructure;
- Movement and Transport;
- Essential Services; and
- Environment and Heritage.



5. Residential Areas

5.1 Introduction

Darwin's Mid Suburbs comprise a diverse housing mix varying from low density detached dwellings, two storey attached housing, to higher density multi-level unit developments. This housing mix reflects the diverse demographics and the evolution of these suburbs in response to changing demographics over time.

Future development must recognise the importance of continuing to provide housing diversity to meet community aspirations, within the context of development that is sympathetic to established residential areas.

There are three indigenous community living areas within the Mid Suburbs:

1. the Kulaluk Community, Coconut Grove;
2. the Minmarama Community, Ludmilla; and
3. the Bagot Community, Ludmilla.

The Darwin Mid Suburbs also accommodates a significant number of the Department of Housing assets (see Figure 5, p. 21). A large majority of these assets are located proximate to the Nightcliff Shopping Centre in Nightcliff and Coconut Grove, with assets also found in Ludmilla and Millner.

5.2 Context

Existing Housing Typologies

Large areas of detached single dwelling housing is located in the suburbs of Ludmilla, Millner and Rapid Creek, while attached housing, units and high rise apartments are predominately located in Nightcliff and Coconut Grove. Higher density housing of 5 storeys or above is located on Progress Drive, within walking distance to the Nightcliff Village and Woolworths as well as public transport routes.

The predominant housing type throughout the Darwin Mid Suburbs is detached single dwellings, making up 38 per cent of the housing stock. These single dwelling houses are mostly located within Ludmilla, Rapid Creek, Millner and Nightcliff in reasonable proximity to community facilities, schools and churches.

Low to medium density attached housing makes up 26 per cent of the housing stock and is located predominantly in Nightcliff and Coconut Grove. The majority of this housing is located in Nightcliff around Chapman Road to the north of Ryland Road and to the south west of Bougainvillea and Aralia Streets. There is also attached housing located in Coconut Grove between Bagot Road and Dick Ward Drive.

Higher density housing such as units and apartments make up 36 per cent of the housing stock in the Mid Suburbs Area. Most of this housing is located on Casuarina Drive and Progress Drive in Nightcliff, Sergison Circuit and Trower Road in Rapid Creek and Belle Place and Sabine Road in Millner.

Table 3: Dwelling Distribution in Darwin's Mid Suburbs

Dwelling Type	Darwin Mid Suburbs %	Darwin region %
Detached	38	64.2
Attached (two storey terraces, townhouse etc.)	26	12.9
Flat, unit apartment	36	19.8

Residential Growth Demand

The Darwin Regional Land Use Plan 2015 recognises the importance of balancing infill and greenfield development and achieving a more compact urban form to balance future population growth with suitably available land.

Significant development has occurred in the Mid Suburbs over the past few years, with the population estimated at 15 434 people in 2014.

Residential land use needs suggest the contribution of the Mid and Northern Suburbs to accommodating regional population growth will require approximately 2 490 dwellings in the far term (40 - 50 years).

Housing Supply and Development within Existing Zones

A significant number of sites throughout the study area are currently developed below the capacity of their existing zoning (see Figure 4, p. 19). For example, a number of sites in the south west part of Nightcliff are designated Zone MD (Multiple Dwelling) but are currently occupied by a single detached house. Many of these sites are 900 to 1000 m² in size and therefore have the capacity to accommodate three dwellings under the provisions of the NT Planning Scheme.

Such sites are concentrated in existing Zone MD and Zone MR (Medium Density) areas in Nightcliff, Rapid Creek, Coconut Grove and parts of Millner. Were all these sites to be developed to the capacity of their zoning they could accommodate an additional 1 367 dwellings.

As the redevelopment of these sites is subject to the specific circumstances of individual land owners, the need to identify further redevelopment opportunities throughout the study area to accommodate the projected growth is required.

Indigenous Community Living Areas

Several Community Living areas exist within the Mid Suburbs study area. The Minmarama Community on Dick Ward Drive in Ludmilla and the Kulaluk Community in Coconut Grove are both owned and managed by the Gwalwa Daraniki Association (GDA).

The Bagot Community on Bagot Road, Ludmilla is owned and managed by the Bagot Community Incorporated.

Department of Housing Assets

The Darwin Mid Suburbs accommodate a significant proportion of the Department of Housing's assets in the Darwin Region. Based on 2011 census, the Department holds 9.6 percent of all dwellings across the study area predominantly around Nightcliff Village/ Shops, Coconut Grove and Millner. The majority of the sites in the Mid Suburbs are approaching the end of their useful life and could present an opportunity for future redevelopment. Redevelopment of any public housing sites will be a consideration of the relevant NT Government agencies.



5.3 Community Feedback

Continued Spot Rezoning Applications in Residential Areas

The existing zoning pattern in the Mid Suburbs provides the community with a degree of confidence to the likely form of future development within their neighbourhoods. The zoning pattern indicates that the attached housing, flats and high rise apartments are predominantly located at the following locations:

- along the Nightcliff Foreshore;
- on Progress Drive;
- between Dick Ward Drive and Bagot Road in Coconut Grove;
- sites adjoining the Jape Homemakers Village;
- on the northern end of Sabine Road; and
- adjacent to the Rapid Creek Business Village.

Ongoing spot rezoning and Exceptional Development Permits are seen to be undermining the community's confidence in both the zoning and the planning system and leading to calls for a coordinated, integrated and transparent approach to increasing densities in the Mid Suburbs.

Compact Urban Growth

The concept of compact urban growth is understood in the community and generally recognised as an important tool to allow revitalisation and densification in key areas particularly those supported by transport corridors and centres of employment and activity. The community has been clear in outlining that an emphasis needs to be put on providing more affordable housing alternatives close to a range of services and facilities.

“It would be sensible to encourage the redevelopment of all existing centres (throughout Darwin) to include shop top housing.”

“Affordable and low cost public housing must be part of the plan.”

Mid Suburbs residents

Tropical Character

A strong sentiment expressed by the community was the gradual demise of Darwin's traditional lifestyle in terms of housing typologies. More specifically, this was seen to be the progressive loss of larger lots with single dwellings for duplex homes, blocks of units and high-rise apartments. Residents were keen to see a mix in development that not only focussed on high density development, but lower density townhouse type development. Retaining areas with detached dwellings on large, landscaped lots was seen as a priority.

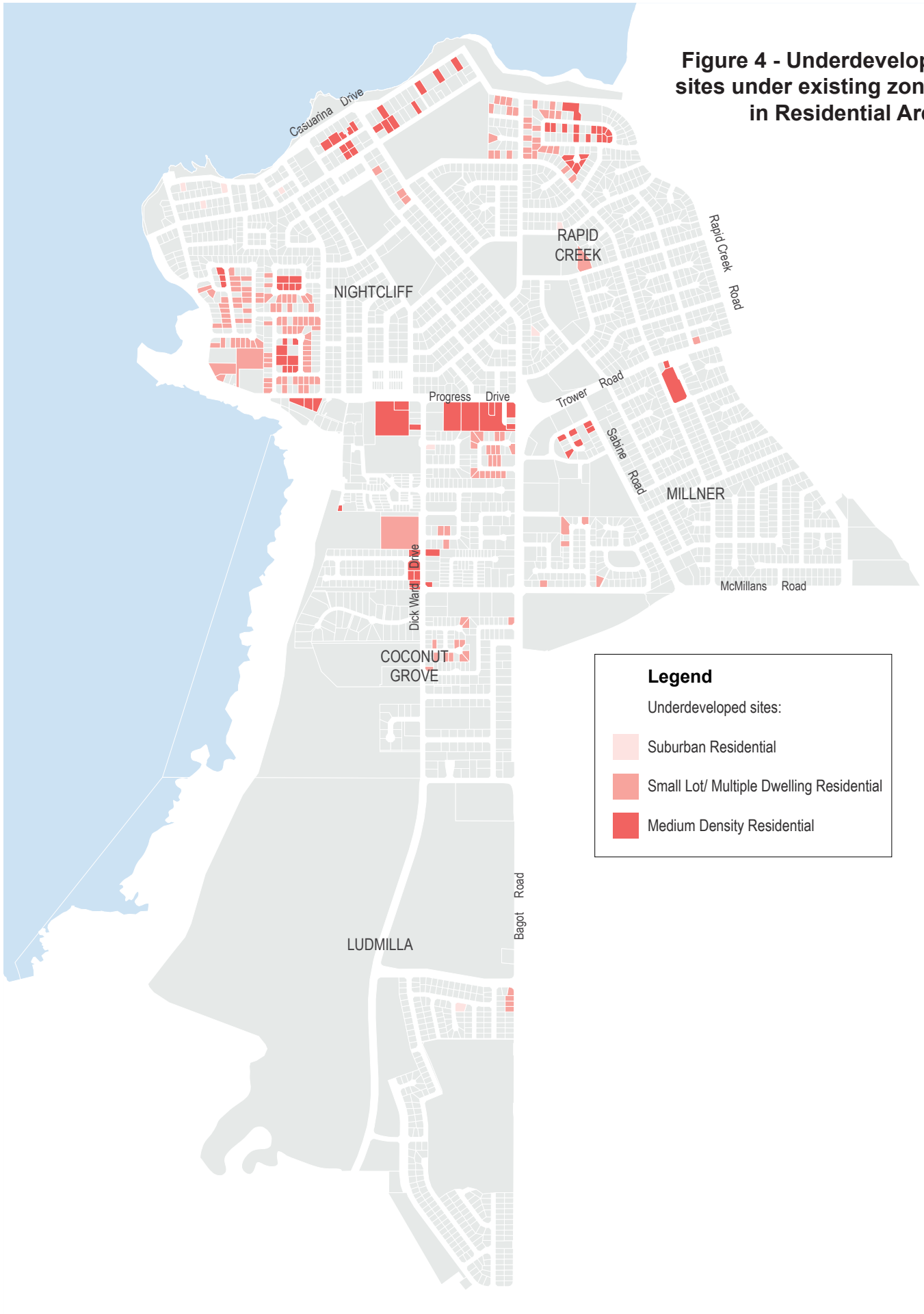
Frustration was also pointed towards a lack in consideration for Darwin's tropical climate with relation to the design and construction of recent development. Part of this problem has been attributed to rigid building controls suited to southern conditions.

“there is adequate high rise development in these suburbs already and we believe it is time to increase the availability of housing in a more community friendly and lower impact way.”

“building design should reflect the Darwin tropical character and not be generic to other cities in the south of Australia. Building low density housing around a central courtyard would provide tropical cool green spaces for communal use.”

Mid Suburbs residents

Figure 4 - Underdeveloped sites under existing zoning in Residential Areas



5.4 Implications for the Area Plan

Identification of a framework for future residential infill development will provide opportunities over and above the existing zoning to ensure adequate land supply in strategic locations to support growth in the long term.

The Darwin Mid Suburbs Area Plan provides an opportunity to guide development in the context of the NT Compact Urban Growth Policy. This plan will address the development of activity centres and the delineation of boundaries between mixed use and purely residential areas.

Higher Density Residential Development

The Mid Suburbs Area Plan will provide the community with clarity as to the likely location and form of higher density development.

Given that much of the existing multiple dwelling and medium density zoned land is yet to be developed to its full potential, it is expected that there will only be minimal zoning changes required throughout the Mid Suburbs Area. In this respect, sites with the highest potential for redevelopment include the large Department of Housing sites on Progress Drive. These sites are located adjacent to the existing Nightcliff centre area and are therefore well serviced by a range of facilities including retail, commercial, community facilities and public transport connections.

It is paramount that the necessary infrastructure can be provided to support higher density development. This includes essential services, movement and transport including parking and accessibility and social infrastructure. Investigations have been undertaken to identify the augmentations and upgrades required to support the future development. The provision of this supporting infrastructure is discussed in following sections of this document.

Retaining Intact Single Dwelling Areas

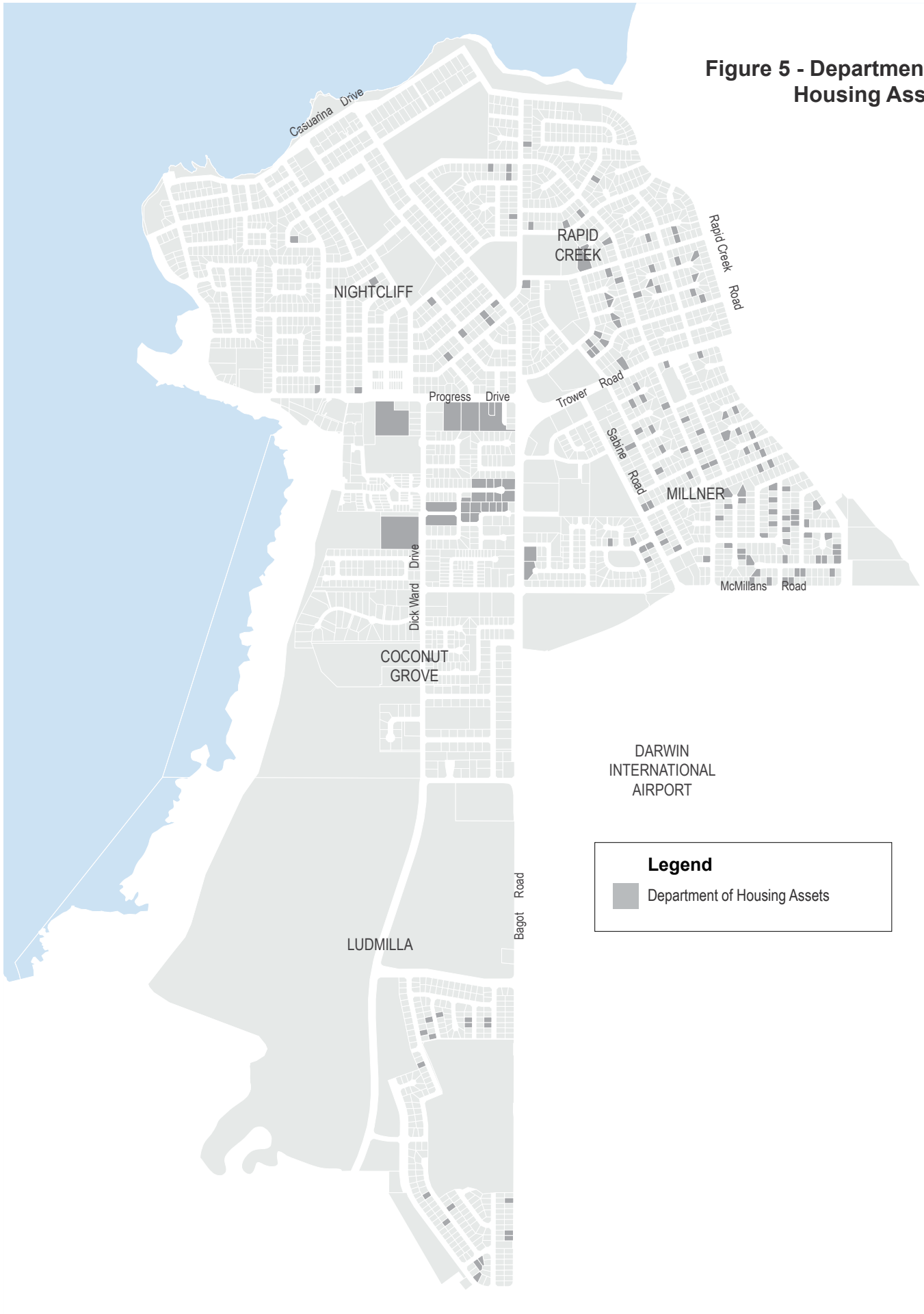
Achieving balanced growth in the Mid Suburbs also depend on the maintenance of areas comprising lower density detached dwellings.

The existing pattern of the detached single dwelling areas in the Mid Suburbs is well-intact and mostly located within walking distance to the schools, shops, church, the foreshore, public space for recreational use and public transport corridors. Detached dwellings are located in areas characterised by well landscaped street verges throughout Nightcliff, Rapid Creek and Millner. Maintaining the character of these areas will be a priority for the Area Plan.

Transition Between High and Low Density Development

Consideration will need to be given to identifying opportunities to increase housing choice by providing different types of housing within transition areas between areas of higher and lower density housing types.

Figure 5 - Department of Housing Assets



Legend

- Department of Housing Assets

6. Activity Centres

6.1 Introduction

Activity centres are characterised by a mix of retail, commercial, community and residential development that provides wide-ranging social, economic and environmental benefits. A genuine mixed use activity centre is a place where people work, shop, relax, meet friends and family and also live.

A range of vibrant activity centres will contribute to improving the efficiency of transport systems and the creation of walkable healthy communities. The centres will be the focus of higher density residential development to improve housing choice and affordability and to assist in addressing the increasingly diverse aspirations of residents in relation to preferred lifestyle.

Development of higher density housing around a number of established urban activity centres (e.g. Nightcliff, Millner and Rapid Creek) and along major transport corridors (e.g. Progress Drive/ Dick Ward Drive at Nightcliff, Bagot Road/ Trower Road and McMillans Road/ Sabine Road at Millner) reflects increasing interest in housing variety, particularly options close to employment, transport networks, local facilities and services.



Nightcliff Village

6.2 Context

Existing Centres Typologies

A mix of shops, offices, schools, community and residential developments are usually the central hub of activity within a neighbourhood. The Darwin Mid Suburbs currently has the following identified Activity Centres:

Secondary Activity Centres

Nightcliff Shopping Centre and the Rapid Creek Business Village are secondary centres that service the weekly needs of the community and cater for surrounding communities. The Nightcliff Village area also consists of other retail uses such as offices, shops, post office and a library.

Local Activity Centres

Diamond Village shops on Sabine Road in Millner and Aralia Street Shops in Nightcliff are local activity centres focusing on convenience retailing that serves the community's day-to-day needs.

Local Retail

Local retail opportunities exist in a number of locations around the study area. These include "Cliffside" comprising shop top housing at the intersection of Nightcliff and Ryland Roads, the Beachfront Hotel and Rossiter Street Shops in Rapid Creek. Local retail is also found within the Coconut Grove industrial area on Caryota Court.

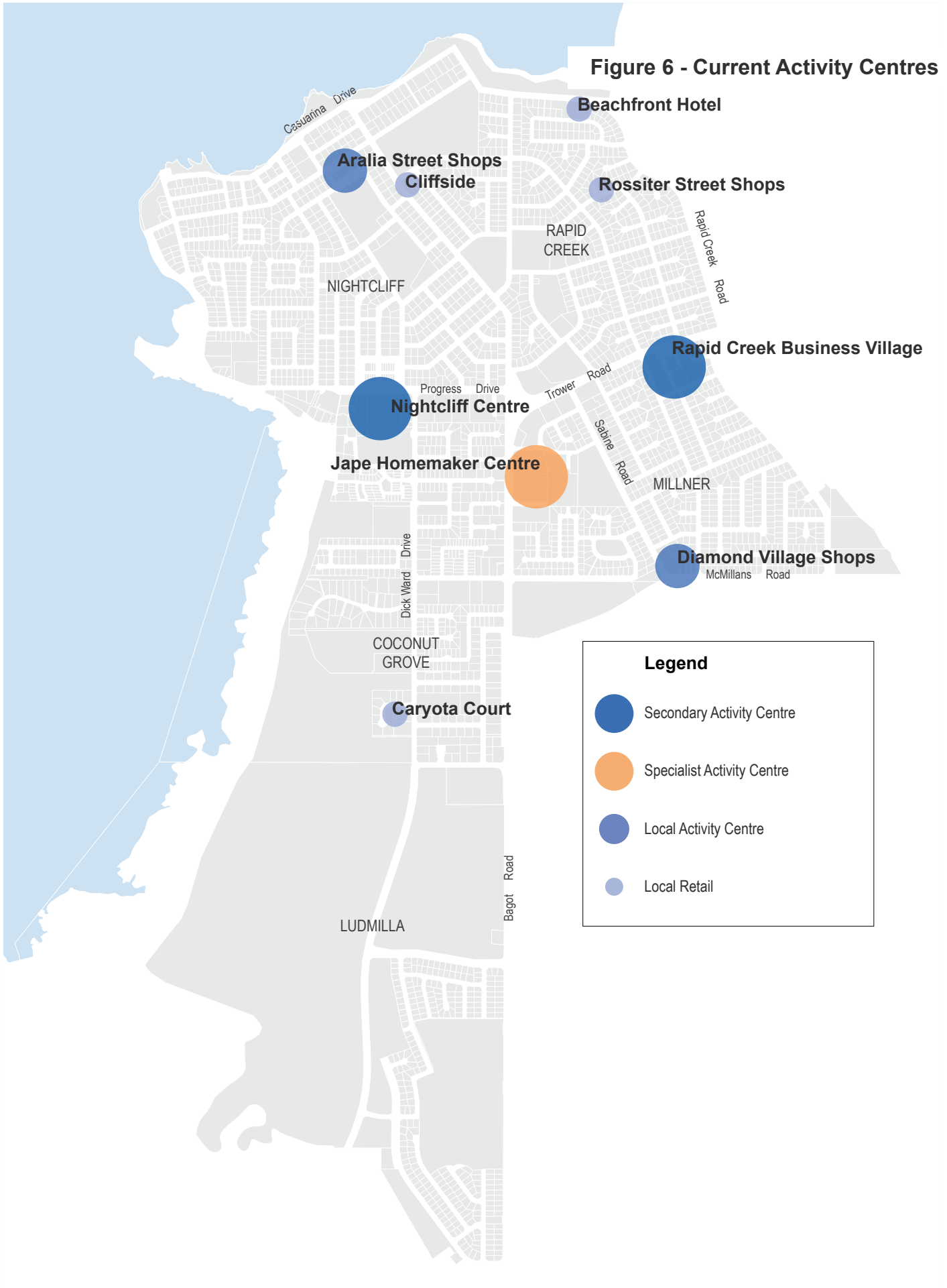
Specialist Activity Centres

Jape Homemaker Village on Bagot Road is a specialist activity centre that includes a range of unique retail offerings including and bulky goods which attract people from all over greater Darwin.

Commercial Services along the Major Roads

There is a significant mixed-use service corridor along the major transport routes of McMillans Road and Bagot Road. This mixed use corridor comprises several commercial related activities such as cafes/fast food and restaurants, service stations, entertainment, retail and office space servicing greater Darwin.

Figure 6 - Current Activity Centres



Legend

- Secondary Activity Centre
- Specialist Activity Centre
- Local Activity Centre
- Local Retail

Analysis of the Existing Centres Network

There is currently sufficient land provided for commercial related purposes in the Mid Suburbs. The Nightcliff Shopping Centre comprises of the Woolworths Shopping Centre, a Medical Clinic and variety of shops. This secondary activity centre provides services to a catchment beyond the Mid Suburbs Area including the inner and northern suburbs.

The retail component of centres in Rapid Creek Business Village comprises shops, convenience store, cafes/ restaurants and non-for-profit organisations. This centre is considered as a neighbourhood centre or district centre due to the services it provides to a catchment beyond the Mid Suburbs.

The Jape Homemaker Village on Bagot Road is a shopping destination accommodating a variety of businesses. The Village includes specialist outlets through to large national retailers that provide visitors with various goods and service offerings including a variety of bulky items that service Greater Darwin and the Top end.

Future Evolution of the Activity Centres

Commercial Floor Space

Whilst there is currently sufficient commercial floor space available across the Mid Suburbs, given projected population growth and the concentration of development in mixed use activity centres, a moderate increase in commercial floor space is required in the longer term (by 2050).

The Woolworths shopping centre is currently undergoing an extension of its floor space. This redevelopment will be beneficial in the longer term as the population in the Mid Suburbs increases.

There are also additional retail outlets in the Jape Homemakers Village currently under construction adding further to the Mid Suburbs commercial services.

Sabine Road Shops, Millner

The Diamond Creek Village on Sabine Road in Millner are accommodated on two Zone C (Commercial) lots. The two adjacent sites accessed via Dowdy Street and McMillans Road are also designated Zone C and are currently occupied by residential dwellings.

With a total site area of 5 890 m², these sites have the potential to be redeveloped as shop-top housing adding further commercial floor space to the local area.

Other Commercial Sites on Major Roads

Existing commercial uses on Bagot Road provide services accessible to the wider catchment of Greater Darwin. Additional service commercial uses have been developed within Darwin International Airport land fronting Bagot Road and McMillans Road. Offerings include Bunnings Warehouse, Kingpin Bowling and a Petrol Station. This area is proposed for further development into the future by the *Darwin International Airport Master Plan (2010)*. Notably, this includes a 9 hectare site bound by Bagot, McMillans Roads and Osgood Drive, earmarked for commercial development as a "Home and Lifestyle Super Centre".

Locational Considerations

Given the existing availability of commercial floor space in the Mid Suburbs, it is anticipated that the only sites which will be available for significant redevelopment will be 61 Progress Drive (former Rite Price supermarket) and John Stokes Square (47 Progress Drive). These sites have been identified to grow over time to meet with the needs of the future population. The redevelopment of these sites could provide 18 280 m² of commercial floor space to reinforce the existing Nightcliff centre, and underpin growth close to the centre.

The identified local retail centres within the scope area will continue to provide local centre services within the boundaries of their existing zoning.

It is also expected that the Jape Homemakers Centre and Rapid Creek Business Village will continue to provide their level of service within existing zoned areas.

The mixed use development at the corner of Nightcliff Road and Ryland Road comprising ground level shops, offices and a restaurant and residential dwellings above demonstrates the type of development that could be encouraged on other Zone C (Commercial) sites such as the Aralia Street Shops, and Rapid Creek Business Village.

6.3 Community Feedback

Consultation has highlighted that the community supports the idea of consolidating development within existing activity centres. It is seen that whilst higher order shopping centres play a major role, more localised services would improve local neighbourhoods. In addition to improved local services, residents also provided support for a diversity in housing options in areas proximate to a range of facilities and transport options, examples of this include shop top housing within activity centre areas.

In addition to providing opportunities for residential and commercial growth within activity centres, the colocation of community facilities within activity centres is considered important in fostering the wellbeing of the community. Furthermore, efficient public transport is recognised as an essential component in the revitalisation of activity centres.

“More areas should be made available for local shops throughout the suburbs to serve the immediate needs of the residents: corner grocery stores, cafes and workshops. Provision could be made for local commercial activity centres to be located at the bottom of high rise buildings.”

Mid Suburb Resident

6.4 Implications for the Area Plan

The opportunity to create a vibrant network of activity centres is limited by the level of demand for commercial floor space over the longer term in the Mid Suburbs. Commercial growth therefore needs to be directed to priority activity centres where the benefits of increased services will be most accessible to the population.

The Area Plan will identify existing centres suitable for enhancement, such as the Nightcliff Shopping Centre. Sabine Road Shops and Aralia Street will remain Local Activity Centres with the possibility of shop-top housing. The Jape Homemaker Village will retain its status as a Specialist Activity Centre serving the needs of the Greater Darwin area.

The potential renewal sites will be focused mainly around the Nightcliff centre, specifically on Progress Drive. As with all renewal areas, a planning framework outlining clear guiding parameters for the future development is essential. The framework should identify urban design requirements and any performance criteria that will bring about the successful creation of the centres in such a way that it better integrate the existing centres of Nightcliff Village and the Woolworths site.



Nightcliff Village facing south across Progress Drive towards John Stokes Square.

7. Industrial Areas and Service Commercial Areas

7.1 Introduction

Industrial and service commercial land plays an important role in the overall function of the city. An adequate supply of affordable, appropriately zoned industrial land of varied lot sizes, location and type provides employment opportunities for a growing labour force, ensures businesses have access to their clients, suppliers and the transport network, and provides flexibility for the growth and changing demands of the market.

7.2 Context

Within the Mid Suburbs, large portions of industrial and service commercial land is subject to noise and public safety impacts due to the day to day activities of the Darwin International Airport and RAAF Base. The Australian Noise Exposure Forecast (ANEF) contours illustrate the impacts of noise on the surrounding area and recommends acceptable uses of the land upon which this constraint applies.

Existing light industrial uses are confined to the Zone LI (Light Industry) areas of Coconut Grove to the north of Totem Road. This industrial estate includes a range of different lot sizes catering for manufacturing, construction, transport, external storage and warehousing activities. This precinct is well connected to the arterial road network via Bagot Road and McMillans Road.

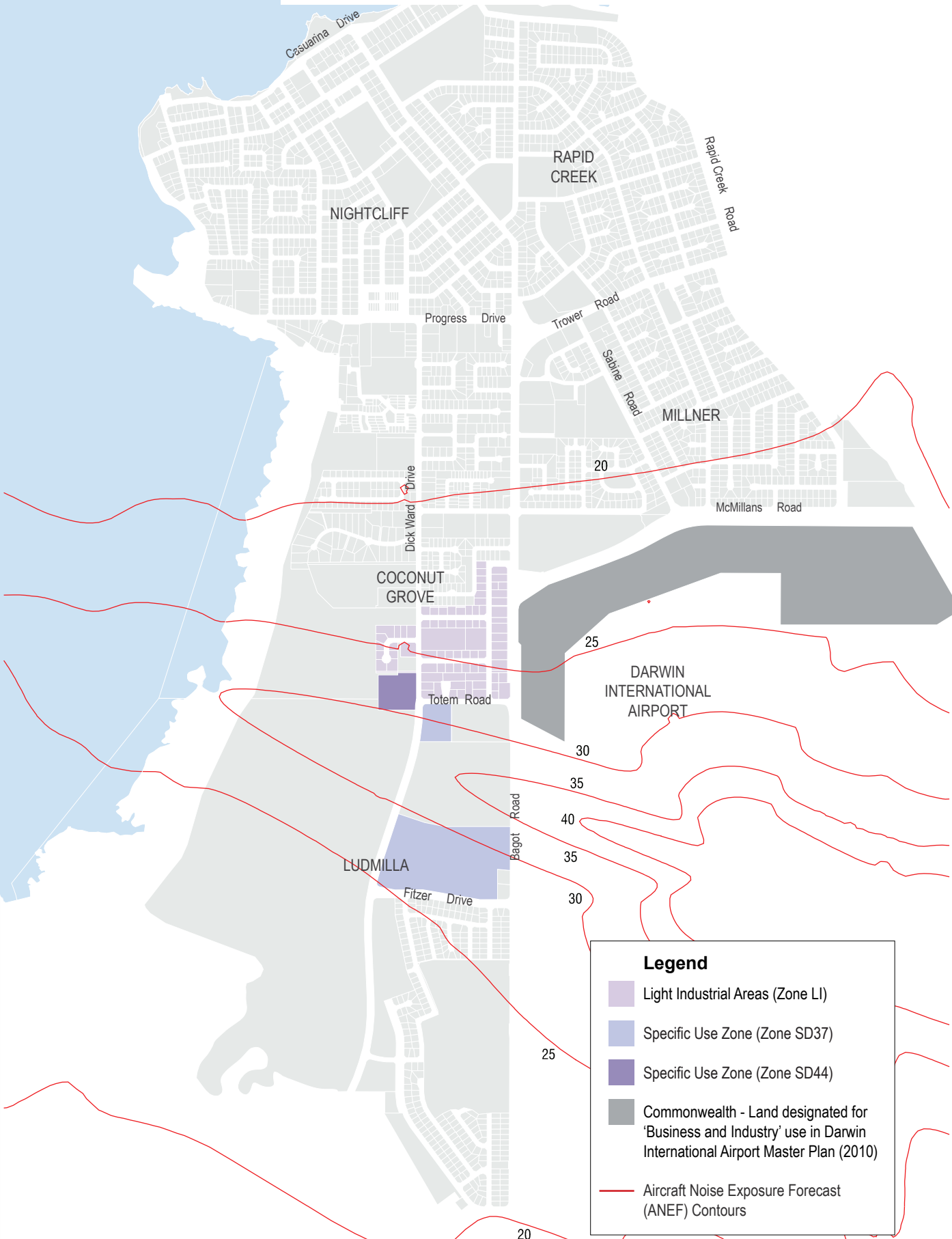
Three yet to be developed land parcels within the Kulaluk lease area (over Lots 5182 Town of Darwin and 8630 Town of Nightcliff) are designated under Specific Use Zones that allow for industrial and service commercial uses whilst minimising the impacts of being exposed to aircraft noise and maintaining the curfew free operation of the Airport.

One large site of around 16 hectares located on Fitzer Drive is designated Zone **SD37** for uses consistent with Zone SC (Service Commercial). A further site comprising 2 hectares at the corner of Dick Ward Drive and Totem Road falls within SD37, however is designated for the development of light industrial uses.

The site fronting Dick Ward Drive is designated Zone **SD44** for uses consistent with Zone LI (light Industry). This site is also subject to the effects of Primary Storm Surge.

Land within the boundaries of the Darwin International Airport has been designated for “Business and Industry” use in the Darwin International Airport Master Plan (2010). The master plan outlines that development in this area is to be service commercial in nature, allowing for office, retail, showroom sales and warehouses. Whilst not subject to the requirements of the NT Planning Scheme, relevant commonwealth legislation exists to control development on airport land.

Figure 7 - Current service commercial and industrial activities



Legend

- Light Industrial Areas (Zone LI)
- Specific Use Zone (Zone SD37)
- Specific Use Zone (Zone SD44)
- Commonwealth - Land designated for 'Business and Industry' use in Darwin International Airport Master Plan (2010)
- Aircraft Noise Exposure Forecast (ANEF) Contours

7.3 Community Feedback

Community views regarding industrial land use were generally of the opinion that such uses did not belong in areas such as the Mid Suburbs and were better suited away from residential areas and the CBD.

Industrial areas were seen by some as appropriate places for accommodating residential growth. Several respondents indicated that land on Fitzer Drive would have been better suited to residential than industrial or service commercial use and would reduce space available for recreational use.

“It’s not very nice walking past some of the light industries located inside a largely residential area.”

Mid Suburbs Resident

7.4 Implications for the Area Plan

The industrial and service commercial land within Coconut Grove is considered appropriate due to the proximity of the Darwin International Airport and RAAF Base. The impacts associated with the activities of the airport ensure that these areas are constrained in such a way as to render residential uses inappropriate.

Whilst the boundaries between light industrial/service commercial and residential uses is acknowledged, the primary purpose of Zone LI (Light Industry) is to ensure that uses onsite will not by their nature, detrimentally affect adjoining or nearby land. Furthermore SD37 comprises guidance to ensure that development fronting Fitzer Drive protects the residential amenity of the adjoining Ludmilla community.



A typical street in the Coconut Grove light industrial area.

8. Social Infrastructure

8.1 Introduction

Social infrastructure, including community facilities and open space, contributes to the development of healthy and sustainable communities. It ensures that a population is supported by a network of community facilities and services that are accessible, affordable and responsive to local community needs.

The Mid Suburbs boast a wide range of social infrastructure, including ample access to foreshore open space, aquatic and sporting facilities, a choice of schools, child care centres and churches, a local library and a range of medical and social support services.

Consideration of the need for social infrastructure to support population growth in the Mid Suburbs is a critical component of planning for future development. As such a Social Infrastructure Assessment has been completed to inform planning for the Darwin Mid Suburbs.

Aspects of social infrastructure considered as part of this assessment include:

- the supply of land for Community Purposes;
- civic and community facilities;
- library and cultural facilities;
- public open space;
- recreation and sporting facilities, both indoor and outdoor;
- health services and medical facilities;
- aged care facilities and services;
- child care centres and preschools;
- primary and high schools, both government and independent;
- tertiary education facilities;
- welfare and support services; and
- places of worship.

The following analysis discusses the major components of social infrastructure within the Mid Suburbs, and the community's view of the future provision of these facilities and in conclusions identifies the implications to be addressed in the Area Plan.

8.2 Context

Public Open Space and Organised Recreation

The Mid Suburbs contain a total of 38.3 ha of land zoned PS (Public Open Space), 0.5 ha of which is vacant/undeveloped as public open space, or not easily accessible to the community. 14.5 ha of land is within land designated for Zone OR (Organised Recreation).

The quantum of Zone PS and OR comprises 52.8 ha of land zoned for sport and recreation. This equates to an overall level of provision of 3.4 ha per 1000 people, based upon the 2014 estimated population of 15,434 people. When compared to the standard used in many Australian metropolitan areas of 2.83 ha/ 1000 people, the Mid Suburbs remains comfortably above the standard, suggesting that the area is adequately provided for.

Despite this, it should be noted that access to open space is not equitably distributed throughout the Mid Suburbs. Coconut Grove comprises the lowest provision of open space with 2.5 ha/ 1000 people.

A list of organised recreation facilities can be seen in Table 4 below, with their locations seen in Figure 8. The study area contains one facility of regional significance – the Darwin Velodrome, located adjacent to Bagot Park. Constructed in 1971, the facility is now below current standards and is in need of upgrading. \$1.5 million has been allocated in the 2015 NT Budget for upgrading, fencing, lighting, refurbishing and surfacing of the track to bring it up to competition standard.

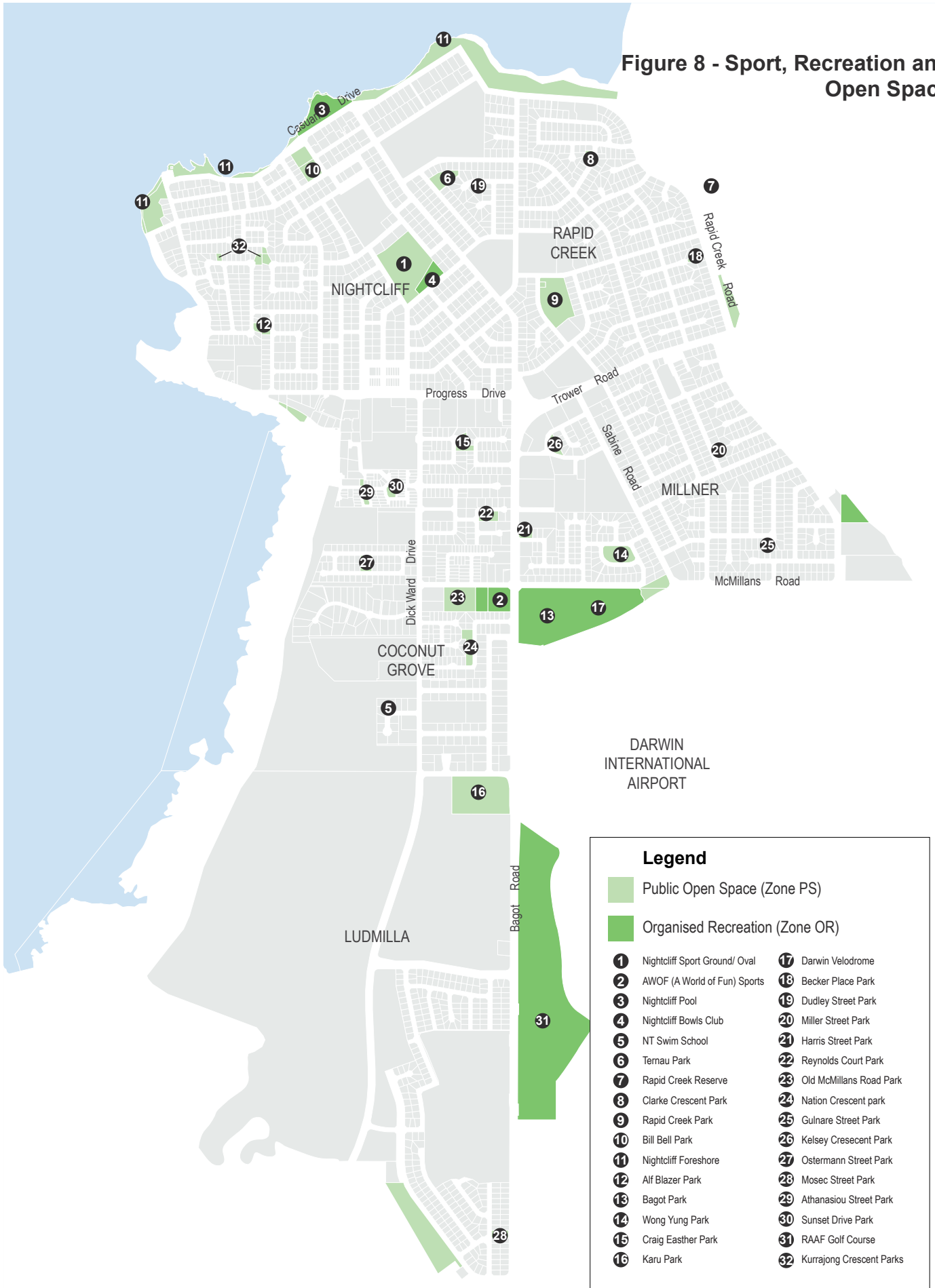
Apart from the Velodrome, residents rely on major sporting facilities outside the Mid Suburbs such as the stadium, field courts and indoor sports facilities at the Marrara Complex.

The study area adjoins the RAAF Golf Course, which is open to members of the public.

Table 4: Sports Facilities within the Mid Suburbs

Field	Area	Area	Facilities
Nightcliff Sports Ground	Nightcliff	3.87 hectares	AFL Posts, Cricket Pitch
Rapid Creek Park	Rapid Creek	2.24 hectares	Soccer pitch, tennis courts, disused bitumen court
Bagot Park	Millner	9.7 hectares (Including velodrome)	Soccer pitch (used by junior soccer clubs)
Nightcliff Pool	Nightcliff	1.67 ha	<ul style="list-style-type: none"> Pool Café
Nightcliff Sports club/ bowling club	Nightcliff	0.67 ha	<ul style="list-style-type: none"> Nightcliff sports clubs Bar/dining Meeting rooms for club members Bowling greens
A World of Fun sports centre	Coconut Grove	1.56 ha	<ul style="list-style-type: none"> 6 Tennis courts (with lighting) 2 Beach volleyball courts Pool Indoor fitness facility Futsal facility
Rapid Creek Road / Levi Street	Millner	0.6 ha	Open space which accommodates equestrian related uses.
Several privately operated facilities			<ul style="list-style-type: none"> a swim school in Coconut Grove two gyms in Nightcliff and Millner a yoga studio in Coconut Grove

Figure 8 - Sport, Recreation and Open Space



Community Uses

The purpose of land within Zone CP (Community Purposes) is to provide for community services and facilities, whether publicly or privately owned or operated, including facilities for civic and government administration. Zone CP commonly accommodates uses such as education establishments, child care centres, hospitals, community centres, libraries, post offices, churches, police stations, museums, healthcare clinics, universities and social or cultural clubs. Zone CP also covers other uses such as airports, barge landings and telecommunication facilities.

Land for Community Purposes

The Mid Suburbs contain a total of 44.3 ha of Zone CP (Community Purposes) land, over a total of 26 sites. Rapid Creek has the most Zone CP sites with eight in total (22.4 ha in area) whilst Ludmilla has the least with two sites (0.6 ha).

The following indicates the number of facilities that currently utilise Zone CP land:

- Schools, both private and public (7);
- Child care facilities (3);
- Churches (7);
- Health Centre;
- Community Centre;
- Seniors Community Hall;
- Archives;
- Renal Treatment Unit;
- Alcohol/ Drugs sobering up residential care unit;
- Not-for-profit groups/ religious run social facilities including:
 - Medium to long term homeless men's shelter;
 - Aged care residential facility; and
 - Natural fertility clinic.

It is worth noting that, although the Mid Suburbs have a significant number of Zone CP sites, there are also a number of community or social facilities located within Zone C (Commercial), including the Nightcliff Library and Police Station located at Nightcliff Village and various not-for-profit organisations located in the Rapid Creek Business Village.

Community Meeting and Activity Spaces

Space for community groups to meet and for community activities and events to be held is an important element of social infrastructure for all communities. Within the Mid Suburbs two facilities exist for use by community organisations and groups for meetings and activities – the Nightcliff Community Centre and the Coconut Grove Seniors Community Hall. However in both facilities space is limited in terms of size, quality and availability.

Other facilities that provide some space for community groups to meet include:

- The hall at the former Greek Orthodox School in Nightcliff;
- The hall at Nightcliff Primary School out of school hours; and
- The community centre within the Bagot community.

Overall, the area contains a scattering of spaces available for community uses. However, there is a lack of contemporary, well-designed and well-located multi-purpose activity space for the general population that is suitable for diverse social groups and a variety of community and cultural activities.

Child Care Centres

The study area contains six long day care facilities and four pre-schools for children aged 4-5 years. The pre-schools are each attached to a primary school in the area (with two at government schools and two at independent schools).

Existing child care centres appear to have some capacity to absorb the additional demand generated by the forecast population growth. However, the demand on spaces at the Nightcliff Community Early Learning Centre indicates there may be need for more Council or community run affordable child care facilities.

Educational Facilities

The study area is served by three primary schools – Nightcliff, Millner and Ludmilla – and by the Nightcliff Middle School (years 7-9). Senior school students attend the Casuarina Senior College in the Northern Suburbs, or Darwin High School in the Inner Suburbs. Ludmilla Primary School is located just outside the

Figure 9 - Community Facilities



study area boundaries in the Inner Suburbs, but its catchment area includes those parts of Ludmilla within the Mid Suburbs.

The three primary schools each have a government pre-school either within the school site or nearby, as is the case with Millner Primary School.

In addition, the Northern Territory Open Education Centre is located within the study area, providing a distance learning school catering for students in years 10 – 12 from its location within the campus of Nightcliff Middle School.

The Department of Education has advised that all these schools and pre-schools have a reasonable amount of spare capacity to absorb additional enrolments.

None of the schools have been identified for major works in the Department's capital works program.

The study area contains two independent schools; the Essington School and St Pauls Primary School, a catholic school.

Consistent with its small size, the study area contains no facilities offering tertiary education or lifelong learning. The Charles Darwin University campus is located just outside the study area, the Casuarina Senior College offers evening classes for adults and The University of the Third Age (U3A) offers lifelong learning courses to older people in the community meeting room at Casuarina Library.

Libraries

The Nightcliff branch library is part of the City of Darwin library network and is the only library located in the study area. The library is located within a shopfront premises in Nightcliff shopping centre and comprises the smallest branch in the City of Darwin area.

While Nightcliff Library provides all core library services, its current small premises restricts the range of additional activities and programs that could be provided in addition to the spaces available for public computer use and social activities. The library does not contain any meeting rooms.

Cultural and Entertainment Facilities

Consistent with its size as a local catchment, the Mid Suburbs does not contain any cultural facilities such as museums or art galleries and there are no public facilities for community arts activities or theatre space for local performing arts.

There are a few social and recreational clubs within the Mid Suburbs which contain entertainment facilities, such as bars/bistros/lounges. These include:

- Nightcliff Sports Club (Bar/bistro);
- Beachfront Hotel; and
- Nightcliff Bowls Club.

Social Support services

The Mid Suburbs are home to a significant number of non-profit community organisations that are either peak bodies representing welfare and support services, providers of welfare or support services or interest or advocacy groups in the health and welfare sectors, including:

- Anglicare NT;
- Alzheimer's Australia NT;
- Family Planning NT;
- St Vincent de Paul;
- Darwin Asylum Seeker Support and Advocacy Network (DASSAN);
- Autism NT;
- NT Shelter;
- National Association for Prevention of Child Abuse and Neglect (NAPCAN);
- The Smith Family;
- Larrakia Nation Aboriginal Corporation;

Many of these services are clustered at the Rapid Creek Business Village and the Nightcliff Community Centre.

Health Services

The study area contains four GP practices, all located in Nightcliff. There is also a Clinical Psychologist located in the Rapid Creek Business Village.

Community health and associated services located within the study area include:

- Nightcliff Renal Unit located on Dick Ward Drive; and
- Bagot Community Health Centre – a community-based indigenous primary health care centre located on Bagot Road, Ludmilla.

The study area population also has reasonably good access to the community health services delivered from the Community Care Centre in Casuarina.

In terms of hospital facilities, residents of the Mid Suburbs have ready access to the in-patient, out-patient and emergency services of Royal Darwin Hospital and the services of Darwin Private Hospital.

Accommodation and Services for the Elderly

The only residential aged care facility in the study area is the Juninga Centre located in Coconut Grove, which is a 26-bed service for older Indigenous Australians. There is no local residential aged care for non-Indigenous residents.

In terms of community aged care services, which provide services to support people to remain living in their own homes, the only service located within the study area is the Calvary Community Care – Darwin Service Centre in Coconut Grove. This facility delivers a range of aged care, disability and other support services including Silver Chain home care services.

Across the Darwin region, there is a shortage of aged care services relative to the demands now being experienced by the growing population of older people. A key issue for older residents is gaining access to sufficient services to meet their needs.

8.3 Community Feedback

Public Open Space

Consultation with the community has highlighted the general notion that Darwin is losing its green space and tropical character. There is consensus in the community on the importance of retaining available open space.

The community also emphasised that meeting future needs is not just about the reliance on the existing quantum of open space available, but should also focus on improving the quality and quantity of what already exists. In this respect, there is strong support for new developments to include areas for open space, either for use by residents, or by the broader community.

“Any new developments should be required to meet the design requirements of healthy spaces and places”.

Mid Suburbs Resident

Organised Recreation

Similar to the community’s thoughts around retaining and embellishing existing public open space, many agree that organised recreation facilities within the Mid Suburbs need to be utilised more effectively. Recommendations included the redevelopment and improved management of existing facilities, to ensure that they appeal to a greater cross section of the community.

“I’ve thought for ages it would be nice to have some amenities in our neighbourhood – cafes and things like that. Public space options. The markets are fantastic, and the Foreshore is fine as it is. I also like the pop-up vans that appear here and there.”

“There’s a park near me which could be upgraded.”

Mid Suburbs Residents

Community Uses

There does not appear to be a strong view from the community that any particular community services are lacking. There is a general opinion that an increase in local shops and community services would be appreciated, though the existing provision is adequate for current needs. The community also identified the need for more efficient use of existing community land, particularly underdeveloped sites.

“Definitely more shops [are needed]. Preferably within the suburb itself, plus more doctors and other medical services.”

Mid Suburbs Resident

8.4 Implications for the Area Plan

Modest forecast population growth suggests that additional demands for social infrastructure will be quite limited well into the future for the Mid Suburbs. Given that the study area is already relatively well provided for, this additional demand will mostly be able to be absorbed within existing levels of provision. The population growth is not expected to be sufficient to warrant new facilities, or to push the Mid Suburbs above the population thresholds that would trigger demand for higher order district facilities.

However, many of the existing facilities are already old, outdated and unable to meet contemporary needs, and their limitations will be heightened as time goes by and the population expands. These shortcomings need to be addressed to cater for the growing population, and therefore will require upgrading and expanding.

Public Open Space and Organised Recreation

It is recognised that opportunities to increase the quantum of open space across the Mid Suburbs will be limited across the established, built-up areas of the Mid Suburbs.

Suburbs which would benefit from additional open space areas include Coconut Grove and Rapid Creek, though opportunities to increase open space should be seized across the entire Mid Suburbs area.

Options to increase the amount of open space in areas of concentrated development include the application of sub-division guidelines that require 10% of a sub-division site to be made available as public space, and requirements for 15% of the site area to be made available as communal open space in multiple dwelling developments. Within major redevelopment sites, the application of these guidelines will be essential to achieving high quality, usable public open space.



Nightcliff Foreshore/ Rapid Creek reserve trail.

With regard to sporting fields, the current level of provision in the Mid Suburbs is adequate. However, with land and funds for sporting facilities limited, the approach favoured by both the Department of Sports and Recreation and City of Darwin is to make more intensive use of existing facilities, through lighting and surface upgrades and to provide more multi-purpose, shared facilities in the future.

A Draft Sports Field Plan (2015 – 2025) is being prepared by the City of Darwin to guide the ongoing upgrade of sports facilities throughout the Darwin region.

Community Meeting and Activity Spaces

It is recommended that a multi-purpose community centre of around 900 m² be developed in the Mid Suburbs to provide flexible spaces for a range of social, leisure, learning, cultural and lifestyle activities.

One option would be to redevelop the existing Nightcliff Community Centre, to create a double storey facility with multi-purpose space on the ground floor and offices for community organisations above. Other locations may be identified on an opportunistic basis as redevelopment of major sites occurs.

Child Care Centres

There appears to be sufficient capacity within current facilities to meet the needs of the future population, particularly as the proportion of children are expected to continue to be lower than the Darwin average. However, current patterns of utilisation indicate a high demand for child care that is affordable and run by Council or a non-government provider, which is likely to increase with a growing population.

Educational Facilities

With the exception of The Essington School, all of the schools and pre-schools within the study area have spare capacity and should be able to accommodate the population growth anticipated for the Mid Suburbs.

Libraries

While not a high priority, the need for renewal of the Nightcliff Library in the longer term should be recognised and opportunities for the upgrade, expansion and/ or relocation of the library should be explored.

Cultural and Entertainment Facilities

The future population will continue to rely on cultural and entertainment facilities in the surrounding area. As the population grows and changes, there may be demand for more facilities at the local level, such as cafes, restaurants and bars. These uses are able to be accommodated within areas of Zone C (Commercial).

Social Support services

Social support services generally serve a district or regional catchment, so there is no specific need for new organisations to locate within the Mid Suburbs. However, the NT Council of Social Services has reported that many organisations are seeking to relocate to the Mid Suburbs as it is more affordable and accessible than the city centre.

Health Services

It is expected that future demand for health services can be adequately catered for through existing health services, both within and outside of the study area. Redevelopment of commercial areas will also provide the opportunity for health services to establish within the study area.

Accommodation and Services for the Elderly

The Mid Suburbs has a significant and growing population of older people. Meeting their future needs will involve providing suitable housing with good access to care services and appropriate care services. Opportunities for physical activity, social connection, lifelong learning and community involvement are also important. The Mid Suburbs is considered a good location for future residential care facilities. Should suitably located Zone CP land become available in the future, consideration should be given to its use for aged care facilities. The Greek Orthodox Community site in Rapid Creek presents an opportunity in this respect.

9. Movement and Transport

9.1 Introduction

Movement and transport networks are important on many levels. Such networks are vital in supporting economic and social activity. A movement and transport network that offers multi-modal choices can also contribute to a reduction in the carbon footprint of an urban area. The role the existing road network plays in prioritising the movement of people by more efficient modes of transport (walking, cycling, public transport) over time, will be essential to the sustainability and livability of the Mid Suburbs into the future.

Movement and transport systems that are effective and safe result in economic efficiencies and better social engagement opportunities. Therefore, it is important to plan a multi-modal transport system to meet the diverse needs of the growing population.

9.2 Context

Road Networks

Arterial Roads

McMillans Road

McMillans Road is a Territory controlled, multi-lane divided road providing a primary arterial function for access between the Darwin CBD, the Mid and Northern Suburbs and the Darwin International Airport. McMillans Road has a wide landscaped verge on its north side incorporating a shared movement path.

Trower Road

Trower Road is a Territory controlled arterial road connecting the Northern Suburbs with the Mid and Inner Suburbs and the Darwin CBD. Together with McMillans Road, Trower Road caters for the peak period commuter traffic demands to and from the City and the Mid and Northern Suburbs.

Bagot Road

Bagot Road is a Territory controlled, multi-lane divided road (6 lanes) which provides access between the Darwin CBD, the Mid and Northern Suburbs and the Darwin International Airport.

Sub-arterial and Primary Roads

Sub-arterial and primary roads generally connect to arterial roads, and carry traffic directly to destinations in the study area. Some of the noteworthy sub-arterial and primary roads are discussed below.

Dick Ward Drive

Dick Ward Drive is a two-lane sub-arterial road managed by the City of Darwin, which connects Fannie Bay with Nightcliff, also servicing the suburbs of Ludmilla and Coconut Grove.

Progress Drive

Progress Drive is a two-lane primary collector road managed by the City of Darwin, which connects the Nightcliff Foreshore, Nightcliff Village and Coconut Grove with Trower and Bagot Roads. The road is characterised by considerable traffic volumes at peak times related to the nearby Woolworths Shopping Centre on Dick Ward Drive. Progress Drive has several roundabouts at major intersections, some in close proximity with one another.

Casuarina Drive/ Rapid Creek Road

Casuarina Drive and Rapid Creek Road are effectively one continuous two-lane primary road managed by the City of Darwin, which run the full length of the Nightcliff Foreshore and Rapid Creek from Progress Drive to McMillans Road.

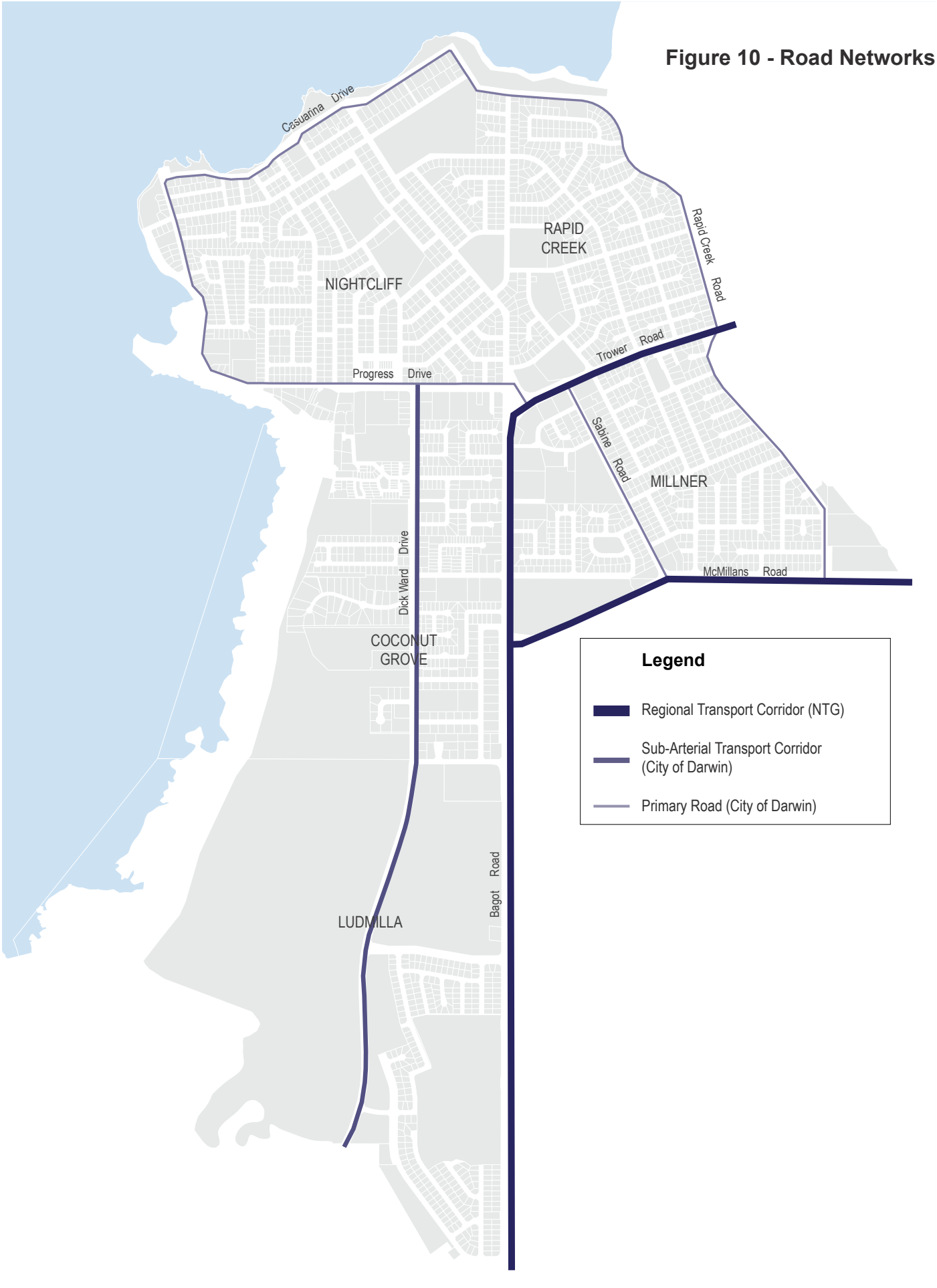
Sabine Road

Sabine Road is a two-way primary road in Millner connecting Trower and McMillans Roads managed by the City of Darwin.

Local Roads

The City of Darwin controls local roads that have various functions, including circulation of residential and industrial within local areas.

Figure 10 - Road Networks



Existing Network Function

Currently, the majority of the roads within the Mid Suburbs operate relatively uncongested.

Moderate levels of traffic congestion occur during peak times around the intersection of Progress Drive and Dick Ward Drive. This congestion is expected to increase with further residential development in the area.

Growth in the Mid Suburbs, combined with additional growth across the region will have implications for the future management of the road network in the study area.

Potential Network Function

The road networks in the Mid Suburbs have been considered within the context of anticipated future traffic demand that will be generated by development in both the Mid Suburbs and the broader region to provide an understanding of how the road network may operate with anticipated growth.

The analysis suggests that the road network should cope with the increased traffic likely to be associated with development in accordance with the Area Plan, if the potential upgrades listed below are carried out when required.

Potential Future Upgrades

Arterial Roads

Bagot Road/ Trower Road

There is the need for a significant upgrade of the intersection of Bagot, Trower and Nightcliff Roads. This junction forms the centre point of the study area and provides a major gateway to Nightcliff and Rapid Creek. It is currently a traffic dominated area, and should be upgraded to improve accessibility for pedestrians and cyclists.

Sub-arterial and Primary Roads

Dick Ward Drive

Traffic modelling has indicated that in the longer term, increased traffic use of Dick Ward Drive driven by future population growth will necessitate the augmentation of Dick Ward Drive to increase capacity.

Specifically, this will require widening of the corridor between Hazell Court and Progress Drive. Further investigation into the requirement and potential alignment of this augmentation is needed to inform the future requirements of this corridor.

Progress Drive

Increased development in the area around Progress Drive is putting increased pressure on the road's function. There is the potential for the optimisation of intersections at Dick Ward Drive and Nightcliff Road with the possible introduction of traffic signals and additional turning lanes. The duplication of Progress Drive between Nightcliff Road and Frangipani should be considered.

Public transport priority and facilities for passengers along Progress Drive are also in need of improvement. Increased residential and mixed use development to the west of Dick Ward Drive, means that, proximate to the centre, Progress Drive will become more of a 'high street' for shoppers and other visitors. Consideration should be given to how this section of Progress Drive serves the needs of pedestrians and cyclists.

Sabine Road

Sabine road is a wide two-lane road that could provide a high quality bicycle link between Trower Road and McMillans Road.

Local Roads

Nightcliff Road

Nightcliff is the major local road through the study area and has the potential to provide a high quality bicycle route linking various community facilities and open spaces with the primary bicycle network. Opportunities for a complimentary perpendicular bicycle route through Nightcliff and Rapid Creek connecting open spaces, schools and other community facilities should also be explored.

Car Parking in Residential Areas

An analysis of car parking in medium to high density areas suggests a shortfall of on-site car parking provision on some sites developed prior to 1988, when car parking requirements were less than the current requirement of 2 bays per dwelling.

This shortfall creates demand for on-street parking. In some instances, the road carriageway is wide enough to cater for informal and formal car parking on the street. Where the carriageway is less than 7 m wide, on-street parking constrains traffic circulation. The provision of formal indented on street parking is an option to improve traffic circulation.

Public Transport

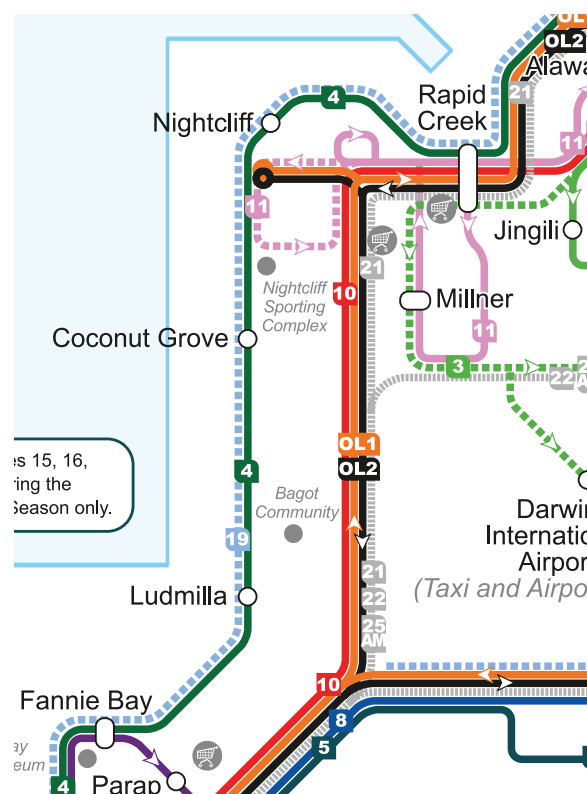
Darwin’s Mid Suburbs are fairly well served by public transport services along the Dick Ward Drive and Bagot/ Trower Road Corridors which pass through the study area on their way between the Darwin CBD and Casuarina. Several circuitous, single direction loop and occasional services run through the streets of Nightcliff, Rapid Creek and Millner.

The public transport connections currently available along regional and sub-arterial and primary roads within the Mid Suburbs provide relatively good coverage and level of service compared to the rest of the region. Areas proximate to the Bagot/ Trower Road corridor have the highest accessibility to frequent inbound and outbound public transport services, representing peak frequencies of 30 minutes or better.

Route 4 services provide areas proximate to Dick Ward Drive with a relatively frequent service running between Casuarina and Darwin CBD.

Out of peak times and on weekends bus routes generally tend to run at frequencies of around 40 minutes or more. The exceptions to this are route 4 and route 10 between Darwin City and Casuarina, which are marginally better out of peak times, with frequencies of around 30 minutes. These two routes provide the most frequent and regular service on the network, and also rank amongst the best connections in terms of usage.

Areas more than 400 m to bus stops along major public transport corridors generally consist of low-rise and low density areas of Nightcliff, Rapid Creek and Millner.



Source: www.transport.nt.gov.au

Figure 11 - Bus routes servicing Darwin’s Mid Suburbs

Bicycles and Pedestrians

Darwin has the highest per capita percentage of cyclists of all Australian cities, in addition to a high proportion of people commuting and recreating on foot. Complementing this high participation, the Mid Suburbs are served by a reasonable bicycle and pedestrian network as part of a regional network comprising over 70 km of off road paths (refer Figure 12). This network connects the Mid Suburbs to the Inner Suburbs, CBD and Northern Suburbs and provides for a variety of users and needs. Key links within this network include:

- higher order regional shared paths running along Dick Ward Drive and McMillans Road;
- shared paths on Nightcliff Road, Progress Drive, Bagot Road and Trower Road; and
- the Nightcliff Foreshore and Rapid Creek shared path which provides a high quality recreational purpose on a regional scale.

The Mid Suburbs lack a number of important neighbourhood links connecting suburbs to activity centres, transport corridors and important community facilities and services, also connecting to higher order shared routes. Whilst local streets can provide reasonable bicycle access, the prevalence of on-street parking and often narrow road widths can make cycling unsafe, particularly for children.

There are issues with the connectivity of the existing network, particularly around the intersection of Bagot/ Trower Road and Nightcliff road.

The lack of priority for cyclists and pedestrians is also an issue where shared paths conflict with driveway crossovers, side road junctions or left hand turn lanes across the network.

East-west connectivity across the study area is relatively limited as the major transport corridors create a barrier for pedestrian and cyclist movement.

The existing shared path adjacent to Bagot Road is compromised by multiple residential and business accesses. While improved provision for cyclists would significantly improve connection to the Northern Suburbs there are a number of issues which will need to be addressed including restricted road reserve width and local drainage issues.

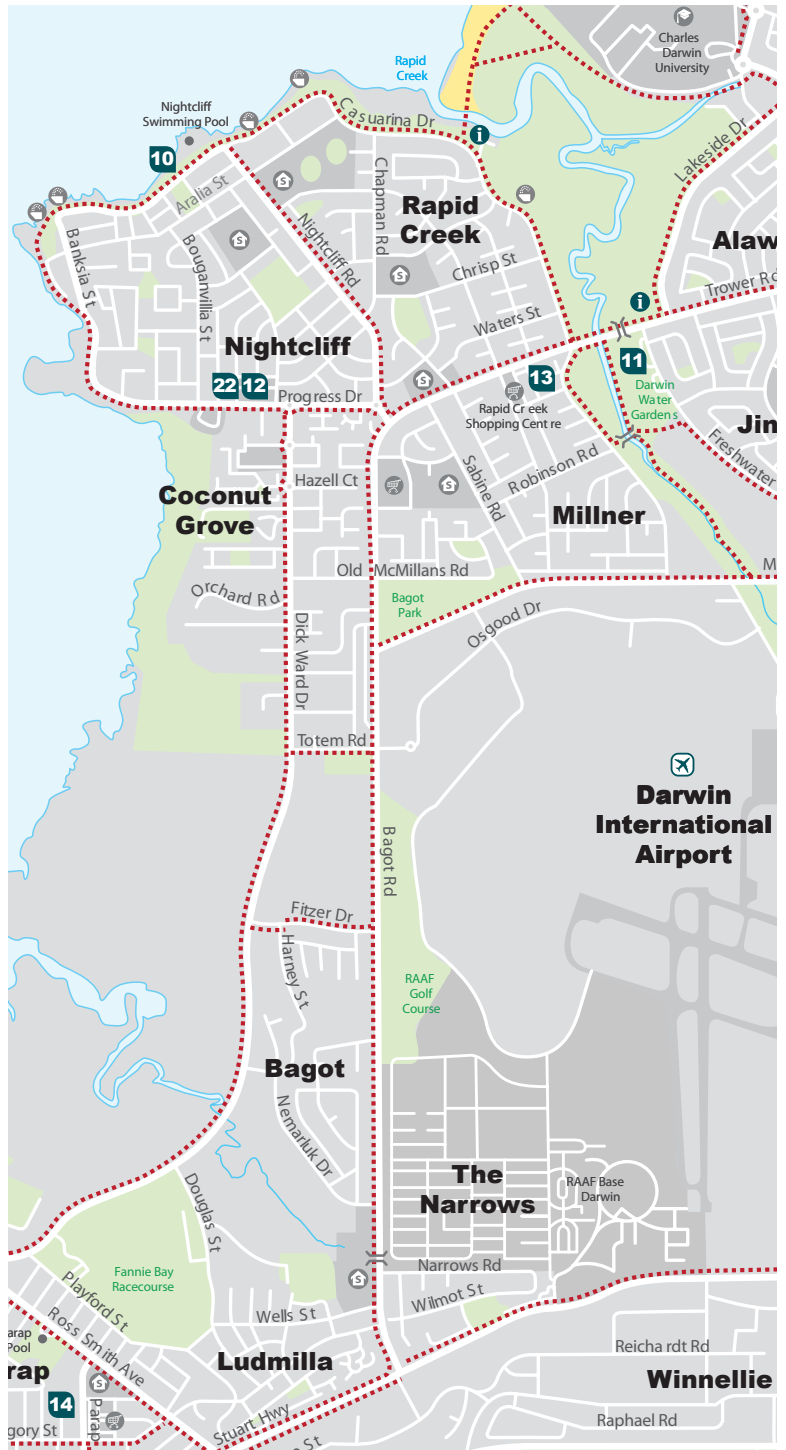


Figure 12 - Shared Path Network

Darwin Airport Controls

In addition to any controls in the NT Planning Scheme, airport control legislation applies additional land use controls to the study area. All the Mid Suburbs are subject to height restrictions of various degrees which are enforced by the Department of Defence, and some areas are further subject to Aircraft Noise Intrusion.

Height restrictions

As shown on the map opposite, there are various levels of height restrictions in the Mid Suburbs depending on how close they are to the airport runway. There are areas of each suburb that are subject to Department of Defence approval for structures over 15 m, and Ludmilla in particular has increased development restrictions in place.

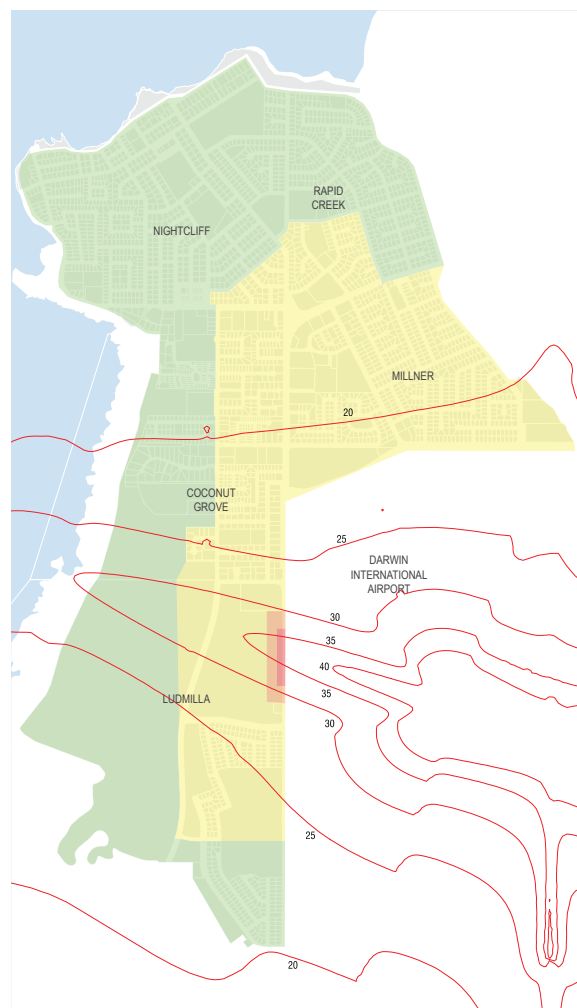
Noise

Australian Noise Exposure Forecast (ANEF) maps produced by the Department of Defence provide information regarding aircraft noise exposure near Defence bases. The map opposite illustrates the ANEF contours and the level of exposure each suburb faces.

ANEF contour	Acceptable Use
< 20	residential, hotel/motel/hostel, commercial, light industry, general industry
< 25	hotel/motel/hostel, commercial, light industry, general industry
< 30	light industry, general industry
> 30	general industry only

Public Safety Zones

There is a Public Safety Zone at the end of a the runway in Ludmilla where development is restricted to limit the number of people on the ground at risk of injury or death in the event of an aircraft accident at take-off or landing.



Legend

Department of Defence consent required for:

- All structures
- Structures greater than 7.5m
- Structures greater than 15m
- Structures greater than 45m
- Aircraft Noise Exposure Forecast (ANEF) Contours

9.3 Community Feedback

Road Networks and Parking

There is a general feeling amongst the community that the existing road network is struggling to cope with increased development, and therefore increased traffic, in the area.

The impact of more cars in the area due to increased development is causing issues with on-street parking, particularly in narrow local streets where parking on both sides is restricting traffic movement.

The area around the Progress Drive and Dick Ward Drive intersection is considered a particularly congested pinch point that is getting worse due to development in the area.

“The streets are too narrow to cope with existing traffic, especially when you have cars parked on both sides of the road. Trying to get out of the suburbs on to the main roads to do the school run is a big hassle.”

Mid Suburbs Resident

Public Transport

Improvements to public transport are seen as essential to revitalising the area. Existing public transport services are used intermittently by most people as they are considered unreliable and only suitable for particular kinds of trips, such as commuting into the CBD.

Public transport improvements are considered important to reducing reliance on cars for travel and for helping mitigate the impacts of parking and traffic congestion. There is a general view that people would be happy to catch public transport more regularly should the service be more reliable and suitable to their needs.

“You can’t exist in Darwin without a car. You need to get around at weekends. You can’t do that effectively by bus. And the timetables are so unreliable.”

Mid Suburbs Resident

Cycling and Walking

Cycling is considered a good transport alternative by many people and the existing shared path network is thought to provide a reasonable basis for expansion. Safety and access around major roads was considered to be a primary issue by some cyclists.

Both drivers and cyclists are supportive of improvements to the cycling network in order to provide safe access for all transport modes. The need for better cycling access on local streets has been identified, particularly to provide safe routes for children to ride to school.

Providing comfortable areas to walk around busy shopping areas, public transport stops and major roads is considered an area in need of attention.

“In some respects and in some areas it’s OK, but as soon as you want to veer off the cycle routes, it gets very rough – not very bike-friendly.”

Mid Suburbs Resident

“The NT is a unique situation of having some of the highest percentages of students riding to school so there is real opportunity to develop this further, especially for our primary students who are most likely to ride.”

Principal, NT Schools

9.4 Implications for the Area Plan

Transport corridors within the Mid Suburbs serve a number of functions. These include the circulation of private vehicles and public based transport through road networks, pedestrians and cyclists, and car parking.

The Draft Area Plan will recognise that transport corridors within the Mid Suburbs operate on the regional, sub-arterial and primary, and local levels. As such, the Draft Area Plan utilises these designations to provide for strategic land use responses with relation to road networks, on-street car parking, public transport and pedestrian and cyclist circulation within the Mid Suburbs.

Road Networks

It is acknowledged that population growth in the study area will result in more vehicles using the road network and therefore timely upgrades to the road network will be required to maintain an acceptable level of traffic movement. The required upgrades have been outlined early in this chapter.

Most of these upgrades include signalling and upgrading existing intersections and potentially increasing carrying capacity on some roads.

Car Parking in Residential Areas

Where medium and higher densities are proposed, the issue of on-street car parking should be considered. In instances where the road carriage way is less than 7 m wide, indented car parking bays may assist in improving traffic circulation.

It is also noted that car parking in residential streets provides an opportunity to calm traffic and that the demand for on-street car parking in the Mid Suburbs may decrease as people choose to shift from the car to public transport in line with an improved public transport network.

Public Transport

The attractiveness and benefits of infill development within the Darwin Mid Suburbs will be enhanced by higher quality public transport services. The increase in population within activity centres will be supported by increased service frequencies across the network.

Investigations into the regional public transport system identify the potential for 30 minute all-day bus service frequencies along the Dick Ward Drive and Bagot/ Trower Road corridors.

To supplement the existing frequencies of these major corridors, a bi-directional local route utilising Progress Drive, Trower Road, Ryland Road and McMillans Road would provide a connection between the Mid Suburbs, the Airport and Marrara.

Bicycles and Pedestrians

A proportionate increase in people utilising active transport and associated infrastructure is expected in line with population growth. This is due to an increased range of services and employment opportunities available at distances suitable for active transport trips. Current issues identify the need for improved interconnection of the pedestrian and cycling networks to improve the functionality of the overall network.

The Darwin Mid Suburbs Area Plan will consider a number of options to promote the progressive augmentation of the existing active transport network including:

- the maintenance and enhancement of the existing pedestrian and cycling routes;
- construction of identified missing links in the network; and
- providing for the enhancement of cyclist and pedestrian routes through the integration of mid and end of trip facilities including drinking fountains, interpretive signage, shelter, bicycle parking and associated facilities.

The Draft Area Plan will support the ongoing implementation of the *Darwin Bike Plan 2015-2020* (City of Darwin). Potential transport infrastructure upgrades providing opportunities to enhance the pedestrian and cycling networks include:

- Incorporation of a dedicated active transport link adjacent to Bagot Road;
- Sabine Road;
- Old McMillans Road;
- Nightcliff Road; and
- Routes along appropriate local streets.

10. Essential Services

10.1 Introduction

The Area Planning process is one of assessing patterns of growth and managing expected future growth in line with the expectations of the community and the capability of the networks that support it, both in terms of current capacity and necessary upgrades.

To this end, investigations have been carried out with regard to the potential impacts population growth within the Mid Suburbs will have on the essential infrastructure, including water, sewer, power and telecommunications services. Through this analysis, augmentations likely to be required to support future development areas within the Mid Suburbs have been identified.

10.2 Context

Water Supply

The Mid Suburbs fall within two water reticulation supply zones, Stuart Park zone and Casuarina zone, with the separation existing between Fitzner Drive and Totem Rd. Power and Water have strategies for the augmentation of these zones to meet future needs, however the zone boundaries within the Mid Suburbs are not expected to significantly change.

Power Supply

The Woolner and Casuarina substations provide electricity to the Mid Suburbs at 11 kV through a combination of underground and overhead feeders.

Wastewater Network

The study area contains sewers discharging to two separate catchments. Ludmilla, Coconut Grove, and parts of Nightcliff discharge to the catchment of Ludmilla Waste Water Treatment plan (LWWTP), while Rapid Creek, Millner, and other parts of Nightcliff rely on the pump station in Rapid Creek to transfer to the Leanyer Treatment Ponds.

For the parts of the Mid Suburbs serviced by the downstream pump station in Rapid Creek; developing areas in Eaton, Marrara, and Berrimah North, although outside of the Mid Suburbs, currently discharge to the same Leanyer Treatment Ponds catchment and share a common downstream trunk sewer route. Triggering of strategic augmentation proposed for the Leanyer Treatment Pond catchment is therefore influenced by development both internal and external to the Mid Suburbs. The Rapid Creek pump station is currently nearing capacity, and either significant alleviation of load from or augmentation to sewer infrastructure is required before upgrades of the station can be considered feasible.

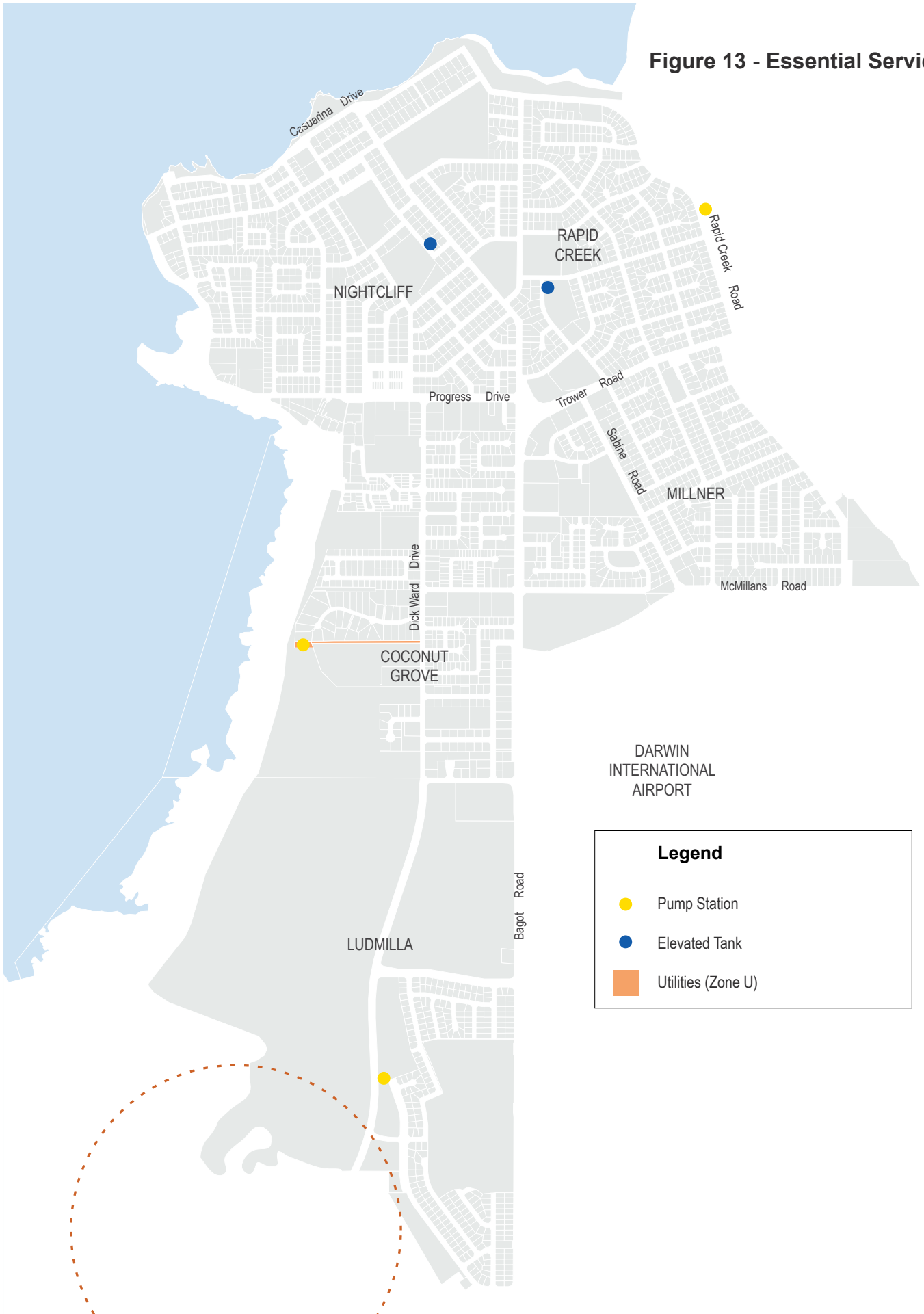
For the parts of the Mid Suburbs within the catchment of the LWWTP, the hydraulic constraint of the plant needs to be considered. Whilst infill in the Mid Suburbs is smaller in scale relative to the development expected within the Inner Suburbs and CBD, cumulatively development will likely incur the need for significant augmentation of the plant.

Power and Water Corporation has strategies in place to control and manage the impacts of the LWWTP on the community including the designation of a 700m odour buffer, where development is to be limited. Part of this buffer exists within the Mid Suburbs, in the south western parts of Ludmilla.

Telecommunications

There are currently several telecommunications companies providing services and infrastructure through the area. All dwellings within the Mid Suburbs have the ability to connect to the NBN broadband network and coverage of mobile phone services is seen as acceptable through the area.

Figure 13 - Essential Services



Legend

- Pump Station
- Elevated Tank
- Utilities (Zone U)

Stormwater Drainage

The majority of trunk stormwater infrastructure and drains within the Mid Suburbs are the responsibility of the City of Darwin, which is responsible for the maintenance of these assets. In addition, drainage systems associated with Northern Territory controlled road networks are maintained by the Department of Transport, and drainage associated with Darwin International Airport and the RAAF Base, the responsibility of the Department of Defence.

Due to the multitude of asset owners, a coordinated approach to the maintenance of the network is difficult to achieve. The report of the Darwin region Flood Mitigation Advisory Committee has identified this issue as a barrier to ensuring that stormwater networks are maintained into the future. To address this issue, the report recommends that:

- Best practice policy for stormwater management is addressed, including the objective to reduce the risk of stormwater flooding. To support this, a single entity is resourced for the responsibility to hydraulically model trunk drainage systems to mitigate the impact of development on trunk drainage systems. This also includes the preparation of jointly funded maintenance agreements for the ongoing management of trunk drainage to maintain hydraulic efficiency.

In addition a number of stormwater infrastructure works and further investigations are currently underway or programmed, as recommended by the Darwin region Flood Mitigation Advisory Committee Report, these include:

- Mitigation works to the Ludmilla and Rapid Creek catchments; and
- NT Airports to investigate and implement mitigation solutions to manage stormwater runoff from development on Airport land.

10.3 Community Feedback

Residents have outlined that the growth of the Mid Suburbs to date is impacting upon essential services, which due to their age, or inadequate provision are not coping with existing development. There is concern amongst the community that increasing development density within certain areas of the Mid Suburbs will continue to put pressure on existing services.

There was agreement amongst the community that consideration must be given to infrastructure planning and investment before development is approved.

“I often turn on the tap and brown water comes out. The infrastructure is so old it can’t cope. How will it cope if the population is doubled in size?”

Mid Suburbs Resident

10.4 Implications for the Area Plan

Water Supply

Work on the Casuarina zone system will see the Nightcliff tank decommissioned as trunk distribution systems are augmented to ensure adequate peak flow from the Rapid Creek tank. Ultimately a new tank will be installed at Marrara and a new water zone created as a result.

As introduced in the Darwin Inner Suburbs Area Plan (DISAP), the Power and Water Corporation (PWC) is in the process of transferring northern Ludmilla to a new zone system, based on the planned ground level storage at Berrimah and capacity within the existing elevated tank at Winnellie. The Salonika and Parap tanks will be decommissioned as works on the Berrimah tank progress.

Power Supply

A new zone substation at Leanyer, expected to be fully operational in mid-2016 has resulted in increased capacity to the Casuarina zone substation and will allow for a new feeder to be provided at Nightcliff.

Wastewater Network

The hydraulic load limitation of the Ludmilla Waste Water Treatment Plant (LWWTP) is acknowledged. As this facility serves a broader catchment of Darwin metropolitan area, this issue will require further consideration within the context of in-depth infrastructure programming analysis. The odour buffer associated with this facility influences concepts for future development to ensure development does not impact on its future operation.

Infill development in areas serviced towards the LWWTP will be reliant on the limited capacity available at the existing Coconut Grove and Ludmilla sewer pump stations. Upgrades at Coconut Grove sewer pump station are feasible, although are expected to trigger replacement of the sewer rising main along Dick Ward Drive. Ludmilla sewer pump station cannot be upgraded at its current location and needs to be relocated to a new location. Due to its proximity to nearby residents along with it being in a location susceptible to flooding, a new Ludmilla sewer pump station will still be limited in the area it can service and may only be able to cater for a small proportion of infill in close proximity to the station.

Transfer of increased load upstream is expected to be better suited to another new pump station at an alternative location. Strategic planning from Power and Water proposes a second new sewer pump station situated on land between Fitzer Drive and Totem Road, that could accept the increased load for transfer to the LWWTP whilst also taking into consideration the future development potential of the surrounding undeveloped land in Coconut Grove. A 50 m odour buffer would be required with the proposed new pump stations.

Infill development in Mid Suburbs areas serviced towards the Leanyer Treatment Ponds will be constrained by capacity limitations at the downstream Rapid Creek pump station conveying sewerage from Rapid Creek, Millner and parts of Nightcliff. Investigations are beginning into a feasible option for upgrading capacity in the Rapid Creek sewer network to accommodate development in the Mid Suburbs and surrounding areas. These investigations need to consider potential system augmentation that could be triggered by development proposals in Eaton (Darwin Airport) and Berrimah North, which although existing outside of the Mid Suburbs currently share downstream infrastructure. Until investigations are completed, out of sequence development or major rezoning in these areas may be limited or require additional funding from developers to accelerate a solution.

In general, local densification is likely to trigger replacement and upsizing of local gravity infrastructure. Contribution plans for the replacement of this infrastructure are expected to be facilitated through a Master Planned approach, informed by the Area Plan, wherever possible.

Telecommunications

Only minor upgrades to existing telecommunications infrastructure will be required. It is not anticipated that additional investment will be required in this area.

Stormwater Drainage

Further investigations are required to ensure that increasing development does not exacerbate any existing stormwater drainage issues. The Darwin Mid Suburbs Area Plan will provide the development blueprint to inform any stormwater investigations that may be carried out to determine any required network augmentation within the scope area. This information will be vital for the establishment of fund capturing mechanisms to facilitate required works.

11. Environment and Heritage

11.1 Introduction

The Darwin region is rich in natural resources and associated natural attributes. The relatively flat landform of the Darwin Region, the extensive coastal areas and the highly seasonal rainfall create development constraints associated with large tidal ranges and seasonal inundation.

The community places a high value on the protection and conservation of the natural environment, and its coastal habitats, and inland wetlands, lagoons, streams and riparian vegetation. These habitats are often linked by seasonal surface and groundwater flows.

The Mid Suburbs form a fairly discrete area, separated from adjoining suburbs by Darwin International Airport to the south-east and the conservation lands along Ludmilla Creek to the south-west and Rapid Creek to the north-east. The natural values of these two creeks will be protected and maintained in the Area Plan.

Land is fundamental to indigenous identity and cultural vitality. The ancient and rich Aboriginal heritage provides a context for traditional cultural activities and community recognition.

As there are three Indigenous Communities within the Mid Suburbs, it is essential to identify and acknowledge sites that are of cultural significance to Aboriginal heritage. The Mid Suburbs Draft Area Plan recognises the importance of heritage sites, buildings and objects based on indigenous culture, tradition and historic events.

11.2 Context

Storm Tide Flooding

The Northern Territory adopts the Primary Storm Tide which represents one per cent Annual Exceedence Probability (AEP) as the basis for land use planning and endorses the general policy of locating future urban development, especially residential uses, where these serious risks can be avoided.

The plan supports property protection strategies that include appropriately engineered standards for developing and maintaining infrastructure, such as roads and stormwater drains and, in selected locations, land reclamation and tidal barriers.

Storm tide is the collective name for the inundation level above the normal high tide water level along the shore as a result of a storm surge event associated with strong onshore winds, which cause water to pile up against the coast.

The Darwin Mid Suburbs is located in the primary and secondary storm surge meaning that if and when a storm tide event happens in conjunction with a high or spring tide, the storm tide can reach areas that might otherwise have remained dry. Figure 14 highlights the areas affected by primary and secondary storm surge.

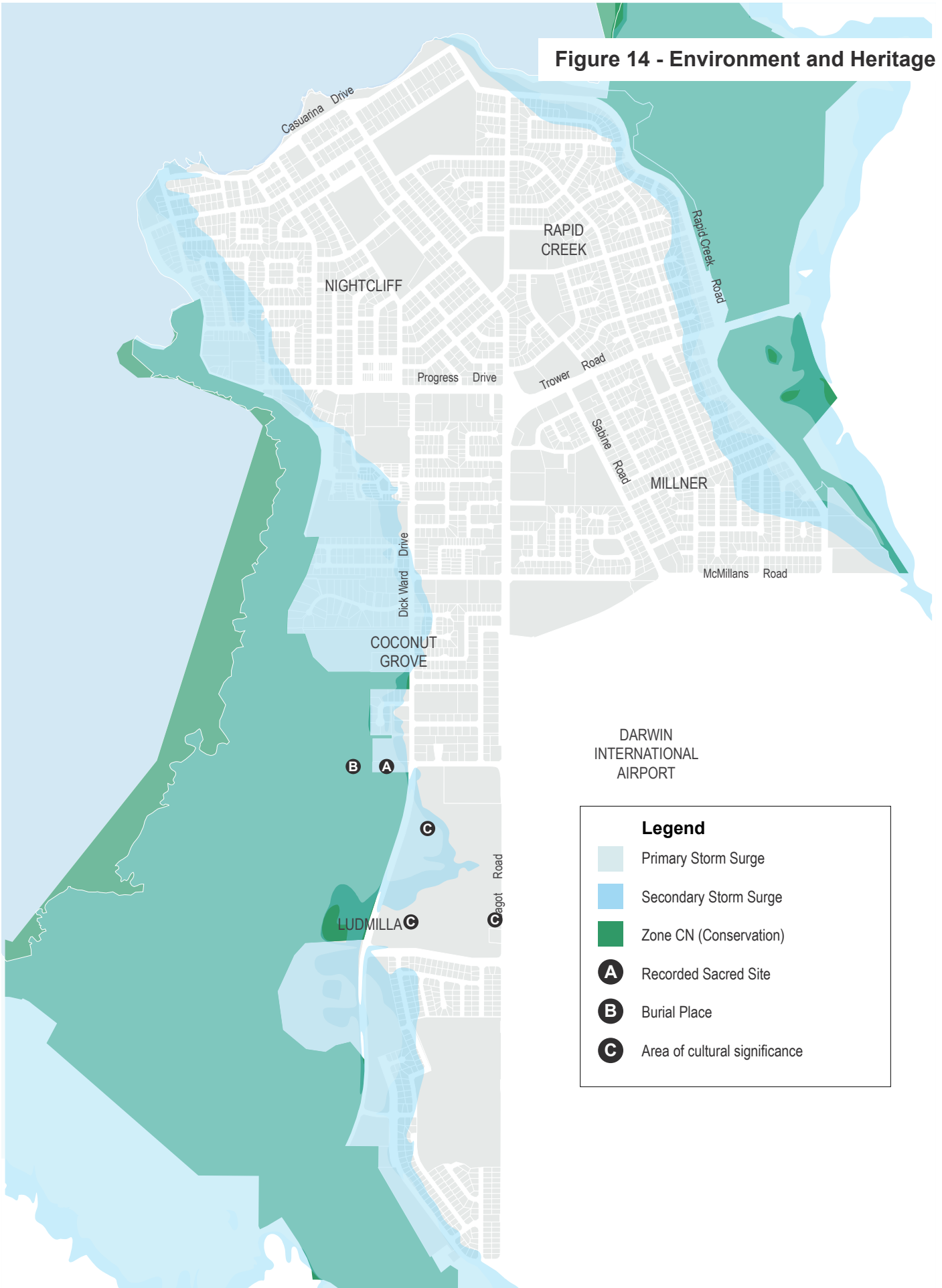
Riverine and Stormwater Flooding

Monsoonal rain or rain associated with cyclones or severe storms can cause riverine and flash flooding, which can exacerbate local drainage problems and cause groundwater to rise above the natural surface.

Riverine flooding occurs when heavy rain causes high water levels in rivers or creeks to overtop the banks and is one of the major natural hazards in the Northern Territory.

The suburbs of Ludmilla and Rapid Creek, can also be affected by riverine flooding or flooding due to storm water drainage issues. During Cyclone Carlos in 2011, about 67 properties were affected by floodwaters from Rapid Creek.

Figure 14 - Environment and Heritage



Rapid Creek Environment Reserve

Rapid Creek is a small, relatively natural drainage system located in Darwin's Northern Suburbs, and is included in the Darwin Mid Suburbs Area Plan. The creek extends for a distance of 9.8 kilometres and drains a catchment of approximately 28 km².

Rapid Creek supports a number of important remnant vegetation communities and the creek channel is virtually undeveloped for its entire length. The creek corridor has been acknowledged as a major recreation resource, including a visual resource for the Darwin region.

The Darwin International Airport (DIA) Master Plan 2010 recognises the significant values of the environmental components of the creek and has included an environmental management plan in order to conserve the creek and its ecosystem.

The Master Plan, states that DIA is committed to the conservation and management of a corridor which runs alongside Rapid Creek, 75 metres from the creek's centreline, and acts as an environmental buffer zone.

The Master Plan also indicates that over the last 10 years, DIA has implemented a weed control and vegetation rehabilitation program and water quality monitoring in the Rapid Creek corridor and catchment.

Public amenity features have also been installed by the Airport within the Rapid Creek Environment Reserve that includes approximately 2.5 km of public nature trails, picnic tables and resting seats, interpretive signage and stabilised entry points to the creek enabling safe public access without destroying the fragile creek banks and an interface with the new Darwin Airport Resorts bird viewing platform.

Regional Culture and Heritage

The *Heritage Act* (NT) gives provision to protect and manage regional culture and heritage significance (particularly WWII sites), recognising their capacity to enrich lives and provide a series of connection for locals and visitors.

There are no areas of significance identified in the Darwin Mid Suburbs, including WWII sites.

Aboriginal Sacred Sites

The provisions of the *Northern Territory Aboriginal Sacred Sites Act* has given some assurance to protect prescribed archeological places and objects, including sites of Aboriginal and Macassan origin.

The Aboriginal Areas Protection Authority (AAPA) has identified two sites owned by Gwalwa Daraniki Association Incorporated comprising Lot 8360 Town of Nightcliff (95 Dick Ward Drive, Coconut Grove) and Lot 5182 Town of Darwin (213 Dick Ward Drive, Ludmilla) that contain areas of cultural and historical significance to Larrakia custodians and/or other Aboriginal groups.

In the certificate issued by AAPA there are three areas identified to be of cultural significance, one recorded sacred site and one burial site. Any future works in these area should give consideration to the historical and cultural significance of these sites.

11.3 Community Feedback

Preservation of the Coastline

Local residents consider the protection of the coastal environment as an important asset for recreational and tourism purposes.

Some residents have indicated that as much of the south-west part of the Mid Suburbs Area is susceptible to storm surge and inundation, it could be preserved for recreational use and open space. For example, a bicycle and pedestrian path could be established along the coastline as a connection from the Darwin CBD to Casuarina through the Mid Suburbs.

“Nightcliff was designated a Garden suburb, and its streets reflects this, e.g. Bougainvillea, Hibiscus, Aralia etc. From the earliest days of European settlement, Nightcliff has been the place to come to catch the refreshing sea breezes.”

Rapid Creek Resident

Ludmilla Creek Catchment

The Ludmilla Creek Landcare Group has suggested that a recreational walking trail be established to link residents in Ludmilla, the Narrows, Fannie Bay and Parap with the diverse natural environments of Ludmilla Creek and East Point Reserve. The Landcare Group in their submission also take note of the “Cajaputi Walk Trail” which is located adjacent to the Namarluk Drive. This existing trail provides good pedestrian links with the Namarluk Drive and the Narrows through to Totem Road and could be further improved.

“The relationship with both of the creeks, should be strengthened, and the extent of catchment areas acknowledged and respected. Recreational reserves along their length, in the case of Rapid Creek, should be maintained, and enhanced in terms of amenity.”

Australian Institute of Architects

11.4 Implications for the Area Plan

Conservation of environmental, cultural and heritage values

Current land of environmental significance within Zone CN (Conservation) will be retained to preserve and promote the intrinsic conservation values of these areas into the future. This principle will also apply to areas within Zones PS (Public Open Space) and OR (Organised Recreation), whereby these areas will be protected and managed to promote their inherent ecological values, in addition to ensuring that their recreational values are also maintained.

The principle of preservation and promotion of conservation, ecological and recreational values will underpin the Area Plan through the maintenance of the current extent of the relevant zones including Zones CN (Conservation), PS (Public Open Space) and OR (Organised Recreation).

The Area Plan will also encourage coordination with the NT EPA, AAPA, Department of Land Resource Management (DLRM) and City of Darwin to facilitate consistent policies, knowledge sharing about the quality of conservation areas and effective stormwater management. The Area Plan will establish the likely form of future development and contribute to the improvement of ecological protection and stormwater discharge practices in accordance with NT EPA's strategy.

Conservation of the Rapid Creek Catchment

Rapid Creek is the only significant freshwater system in Darwin and as such, it is considered to be of environmental and social importance. The Area Plan will recognise and maintain the natural value of the Rapid Creek catchment area. Any future policies and plans concerning this area will encourage coordination with the Rapid Creek Catchment Advisory Committee and DIA, as they have had an ongoing role in the environmental management of the creek system.

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NORTHERN TERRITORY
**PLANNING
COMMISSION**

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The Northern Territory Planning Commission is an independent and advisory statutory authority that prepares strategic land use plans to manage growth in anticipation rather than response.

The Planning Commission proactively sets the strategic framework for better integrated land use, transport and infrastructure planning, delivering more sustainable and cost-effective outcomes for the community, with sensitivity to environmental and heritage values.