



Darwin Inner Suburbs Needs Assessment

February 2016

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1. Introduction

1.1 The Study Area

The Darwin Inner Suburbs are strategically located on the Darwin Peninsula, extending from the northern edge of the CBD to Ludmilla Creek and the Darwin International Airport/RAAF Base in the north. Darwin's inner suburbs include Stuart Park, The Gardens, Parap, Woolner, Fannie Bay, Ludmilla below Ludmilla Creek and East Point, Bayview and The Narrows.

1.2 Study Context

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

The Darwin Inner Suburbs will have a role in accommodating a share of population growth expected within the Darwin region over the next 40-50 years. It is projected that the Inner Suburbs will be required to absorb approximately 800 dwellings over the coming 5-10 years, with 4 490 expected to be absorbed into the area by 2050-2060. 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 development.

In early 2015, the Minister for Lands, Planning and the Environment tasked the Planning Commission with the preparation of Area Plans for the Darwin Inner Suburbs. This Area Plan is intended to establish a framework to guide future development to accommodate the projected growth in the inner suburbs to better integrate land use, transport and infrastructure planning, and deliver more cost effective outcomes for the community, with sensitivity to environmental and heritage values.

Figure 1 - Darwin Inner Suburbs Scope Area



2. Regulatory and Policy Context

The Planning Act (NT) and the Northern Territory Planning Scheme regulate the use and development of land in the Darwin Inner Suburbs.

2.1 The Northern Territory Planning Act

The Planning Act (NT) is intended to provide for appropriate and orderly planning and control of the use and development of land in the Northern Territory. The Act provides for the Northern Territory Planning Scheme, which establishes policies and development provisions in connection with the control of the use and development of land.

2.2 The Northern Territory Planning Scheme

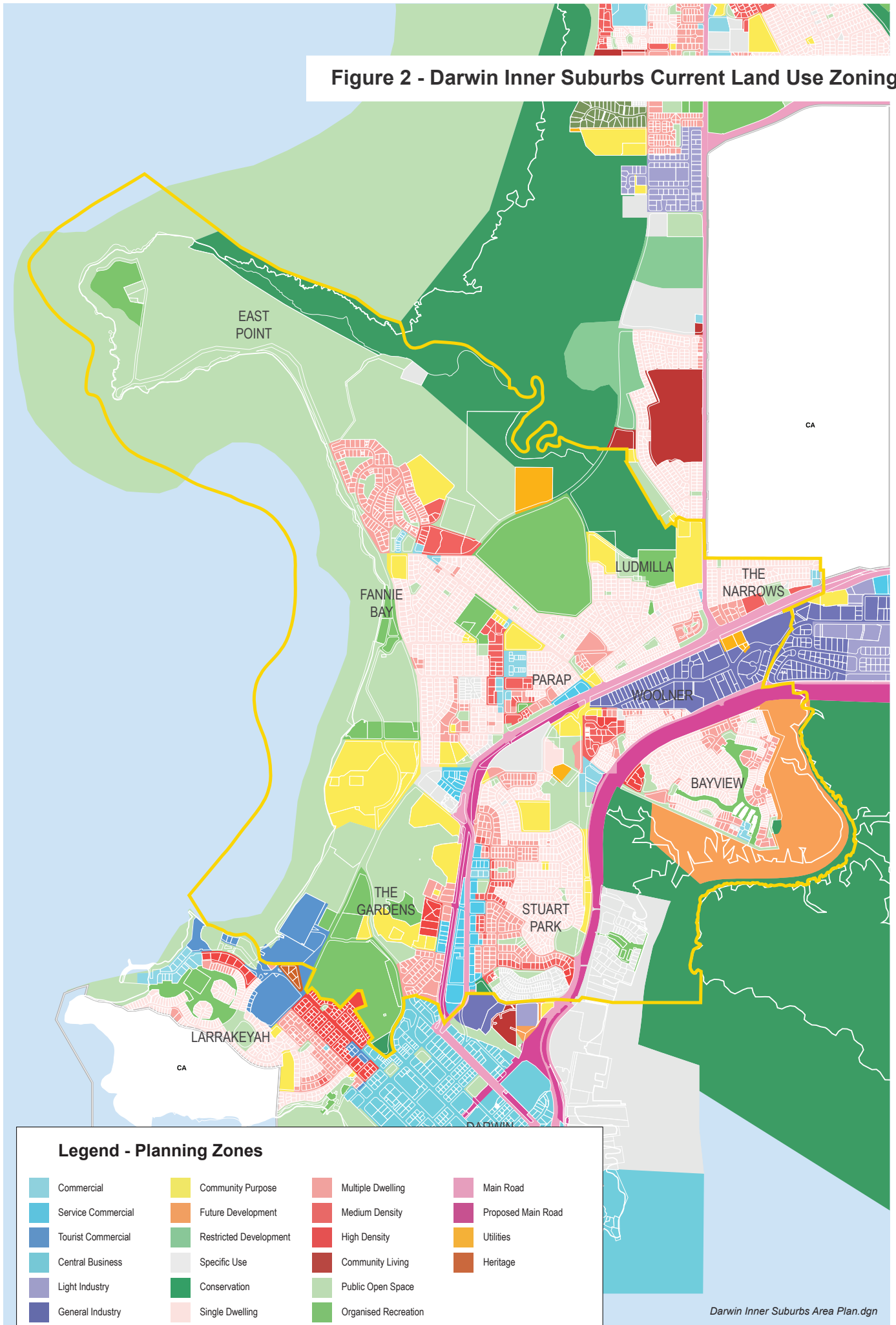
The NT Planning Scheme includes statements of policy to establish the expected nature of future development and guide the interpretation of the zones and associated development provisions. Existing zoning of the Darwin Inner Suburbs can be seen at Figure 2.

Policy documents within the Scheme are intended to assist in the interpretation of the Scheme and the determinations of the consent authority. 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 Inner Suburbs. The Compact Urban Growth Policy also provides planning guidance for the development form to be expected within the inner suburbs.

The Darwin Inner Suburbs Area Plan will provide an additional layer of fine-grained policy to guide development in this strategic locality.

The policies that will guide future development in the Darwin Inner Suburbs are outlined in further detail below.

Figure 2 - Darwin Inner Suburbs Current Land Use Zoning



Compact Urban Growth Policy

The Northern Territory Compact Urban Growth Policy guides urban infill development within the Northern Territory. The aim of Compact Urban Growth is to create compact and mixed activity localities that play a role in improving people's lifestyle, and contributing to creating healthy people, sustainable economies, sustainable environments and sustainable communities. This policy will be used to guide the development of Area Plans for urban areas within the Northern Territory.

Figure 3 below outlines the philosophy underpinning Compact Urban Growth.

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 environment, economic viability, social equity and liveability.

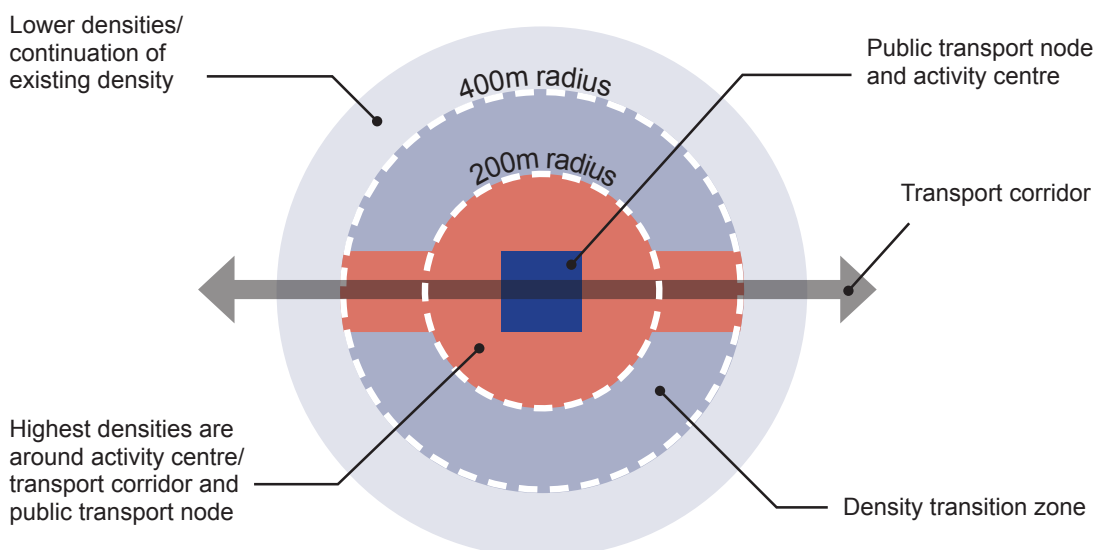


Figure 3 - Compact Urban Growth

The Darwin Regional Land Use Plan

The Darwin Regional Land Use Plan identifies the essential characteristics and needs that will shape future development within the Darwin region and establishes an overarching framework for that development.

The Darwin Regional Land Use Plan supports ongoing infill residential development in various localities particularly in association with mixed use activity centres. The Plan reflects the role of these centres in providing a mix of retail, commercial, community and residential development to deliver wide ranging social, economic and environmental benefits to the catchments they serve. Specific benefits include increased housing choice, improved public transport and enhanced viability of the centres.

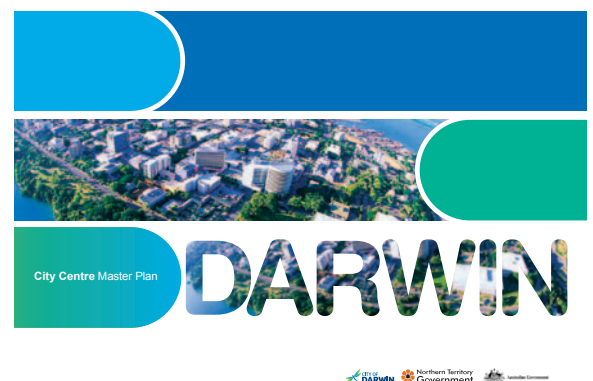
The Plan recognises the potential for development around existing centres and along transport corridors, particularly options close to employment, transport networks and local facilities and services.

The Plan identifies the role of more detailed Area Plans to guide the development of individual localities such as the Darwin Inner Suburbs.

The Darwin City Centre Master Plan

The Darwin City Master Plan is intended to guide the growth and development of the CBD over the next 20-30 years. With aspirations for being Australia's northern gateway capital city, the Master Plan will allow both the Territory Government and the City of Darwin to plan for new infrastructure, upgrade the existing public realm and create certainty for private sector investment and growth. The Master Plan outlines 72 projects with potential to contribute to achievement of the vision.

The influence of the Master Plan's primary outcomes stretches beyond the CBD into the Darwin Inner Suburbs. This broader zone of influence highlights that previously the City Centre has been regarded as somewhat separate from the rest of the city and that growing the CBD towards existing areas to the north such as Stuart Park will encourage a more connected and integrated city.



3. Demographic Context

3.1 Darwin Inner Suburbs Existing Population

At the 2011 census, the Darwin Inner Suburbs had a population of 12 593 (refer Table 1), by 2014, the Estimated Resident Population (ERP) is estimated to have grown to 13 125 (Australian Bureau of Statistics, 2014).

As demonstrated in Table 1, compared with the population of Greater Darwin, the Darwin Inner 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 comprising couples with children, and higher proportion of couples without children, single people and group households;
- a correspondingly lower average household size;
- a higher median weekly household income;
- a much lower proportion of detached housing and much higher proportion of attached and apartment dwellings;
- lower levels of home ownership and higher levels of rental housing;
- a lower proportion of Indigenous residents and slightly higher proportion of those born overseas (although the countries of origin do not differ from the Greater Darwin profile); and
- higher levels of population turnover, evidenced by the significantly lower proportion of residents who were living at the same address five years previously. This is linked with the high proportion of rental housing.

A comparison of 2011 Census data with outcomes of the 2001 and 2006 censuses shows that there have not been consistent trends in age profile changes across the inner suburbs indicating diversity within the study area from a demographic perspective. However the majority of suburbs have experienced a decline in the proportion of children and adults aged 35-49 years, and an increase in the proportion of young workforce adults (25-35 years) and empty nesters/retirees (60-69 years). The proportion of older people (70 plus) has declined in some suburbs and increased in others, indicating no clear trend.

Table 1: Selected population characteristics, 2011 ABS Census

	Darwin Inner Suburbs	Greater Darwin
Population number	12,593	120,586
Age groups	%	%
0-4 years	5.6	7.4
5-9 years	4.7	6.8
10-14 years	5.1	6.9
15-19 years	5.3	6.7
20-34 years	29.4	25.3
35-59 years	37.1	36.0
60-69 years	8.0	7.3
70+ years	4.3	3.6
Family	%	%
Couple with children	40.3	45.5
Couples without children	47.8	37.0
Single parent families	12	15.9
Household structure	%	%
Family households	61.6	72.1
Lone person	26.9	21.3
Group	11.2	6.6
Average household size	2.4 persons	2.7 persons
Median weekly household income	\$2,137*	\$1,806

*This figure excludes the suburb of The Narrows, which had an unusually low median household income of \$900 per week. Its inclusion would falsely distort the average for the other suburbs in the study and so was not included in calculations.

Table 1 (continued): Selected population characteristics, 2011 ABS Census

	Darwin Inner Suburbs	Greater Darwin
Population number	12,593	120,586
Housing	%	%
Detached	33.5	64.2
Attached (townhouse etc.)	24.1	12.9
Flat, unit apartment	39.5	19.8
Owned outright	15.4	17.9
Owned with mortgage	28.1	36.7
Rented	53.6	41.9
Cultural background	% Darwin Inner Suburbs	% Greater Darwin
Percentage Indigenous	5.8	9.2
Percentage overseas born	23.5	21.6
Country of birth (other than Australia)	England (3.8%) New Zealand (2.7%) Philippines (1.7%) India (0.6%) Germany (0.5%)	England (3.2) Philippines (2.4) New Zealand (2.1) India (1.1) Greece (0.8)
Same residence as 5 years ago	30.6%	37.1%

3.2 Expected Future Population

To accommodate the projected regional population of 150 000 and 250 000 in the short and long term respectively it is anticipated that the Darwin Inner Suburbs will need to provide an additional 800 and 4 500 dwellings. Considering the limited opportunities to accommodate this growth, it is envisaged that the population will be accommodated primarily by a mix of medium (two storey terraces, townhouses) and higher density (apartments).

These additional dwellings will accommodate approximately 1 632 people in the short term, and 9 180 in the far term in the Darwin Inner Suburbs.

Based on existing trends, the new population within the inner suburbs are likely to be characterised by:

- An increasingly high proportion of people renting in parallel with the increased number of higher density dwellings;
- a high proportion of young adults, including both students and young professionals who are drawn to Darwin for education and work;
- new arrivals utilising short term rentals pending familiarisation with Darwin and selection of location for long term accommodation;
- short term contract and fly in/fly out workers, attracted to rental and higher density forms of housing;

- defence personnel, predominately households without children accommodated in future high density development of sites owned by Defence Housing Australia;
- empty nesters and older people, looking to downsize from a big house and garden, or move into town from rural properties as their needs change;
- recent immigrants, especially those used to living in inner city medium and higher density forms of housing;
- lower income households not able to afford to enter the home purchase market, or looking to purchase a smaller, more affordable dwelling; and
- families with children attracted to higher density housing because of its affordability and proximity to key amenities and employment.

Table 2: Forecast Dwelling and Population Numbers

Planning Horizon	New Dwellings	2014 ERP	Additional Population	Total Population of Southern Suburbs
Near Term	800	13 125	1 632	14 757
Far Term	4 490	13 125	9 180	22 305

4. The Planning Journey

4.1 Expected Outcomes of the Darwin Inner Suburbs Area Plan

The Darwin Inner Suburbs Area Plan provides a detailed land use framework within the context of the regional strategic planning directions. These policies 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 tracts of public open space.

The Area Plan aims to provide the community, the development industry and decision makers with confidence about the likely form of future development. The Darwin Inner 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 Inner Suburbs Area Plans 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 sector 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 Inner Suburbs Area Plans was 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 public exhibition.

A summary of each stage is provided below.

Stage 1 – Information gathering and analysis stage

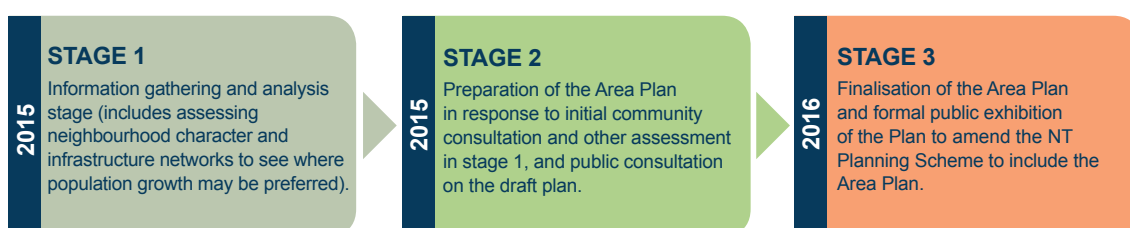
This stage included infrastructure capacity studies to see where population growth may cause issues and how such issues may be managed. It also included community engagement to identify issues of concern that need to be addressed in the Area Plan.

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

This stage comprised 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 public exhibition

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 Inner Suburb Area Plan is 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 Inner 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 and Tourist Commercial Areas;
- Industrial and Service Commercial Areas;
- Social Infrastructure;
- Movement and Transport;
- Essential Services; and
- Environment and Heritage.



5. Residential Areas

5.1 Introduction

Darwin's inner suburbs comprise a diverse housing mix varying from low rise, low density detached dwellings, to higher density multi-level unit developments. This housing mix reflects the diverse demographics and the evolution of these suburbs in response to changes in demographics over time. Future development must recognise the importance of continuing to provide a housing mix to meet increasingly diverse community aspirations within the context of development that is sympathetic to established residential areas.

5.2 Context

Existing Housing Typologies

Darwin's inner suburbs accommodate 17% of Darwin's metropolitan population. The inner-city location of the area has ensured that the existing housing mixture is characterised by higher densities compared to the wider Darwin region.

Although much of the older suburbs of Stuart Park, Parap, Fannie Bay, Ludmilla and The Narrows are characterised by detached housing, some localities within these suburbs also contain a mix of attached and detached dwellings. Examples of this mix include Eden and Charles Streets in Stuart Park and MacKillop and Weddell Streets in Parap.

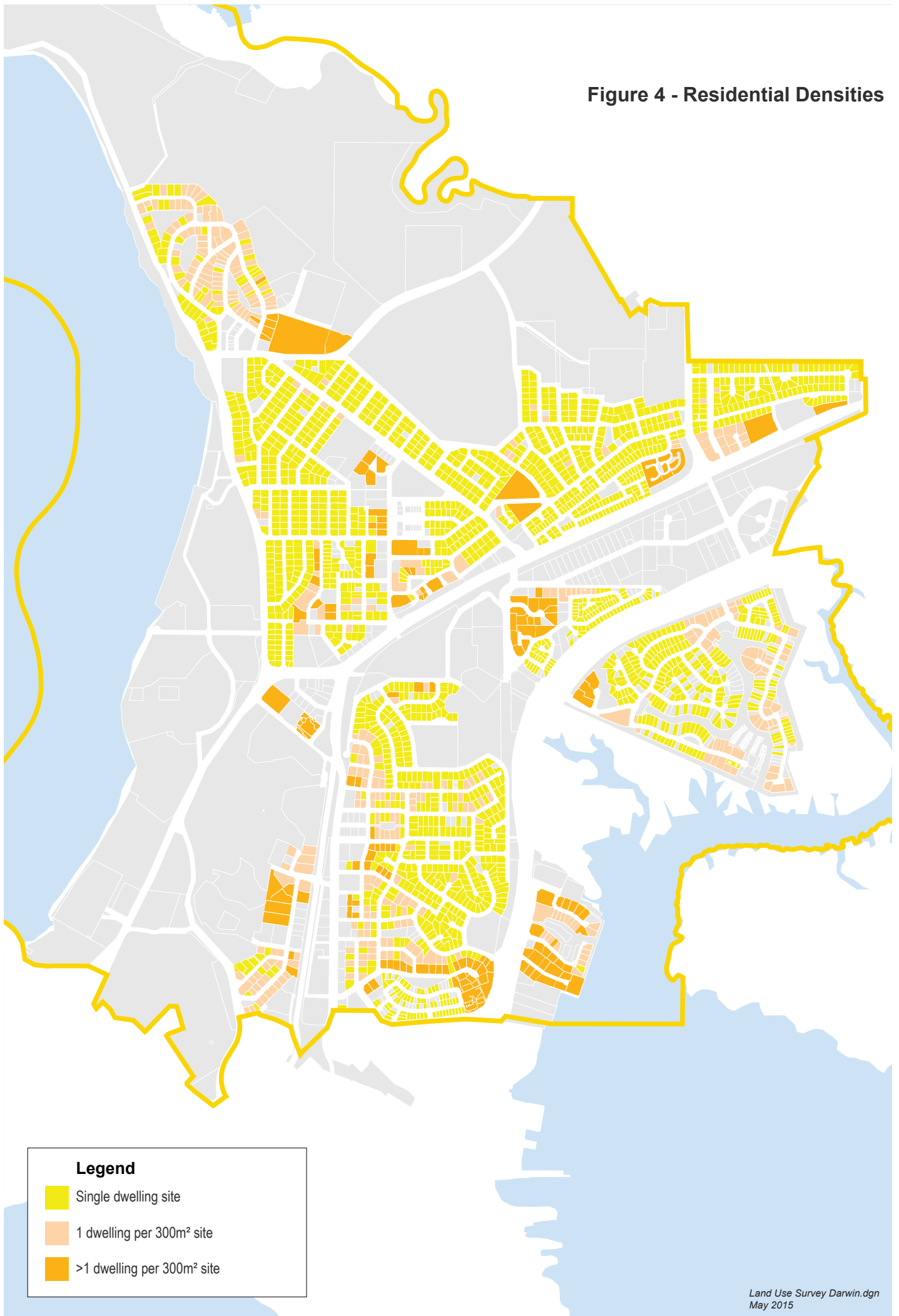
Medium density attached housing and flat/ unit development is generally associated with commercial areas along major transport routes and provides a transition between the commercial areas and the traditional low density residential areas. Medium densities are also associated with localities where the topography or proximity to the harbour provides opportunities for vistas overlooking both the harbour and or the CBD.

The highest density residential development within the Inner Suburbs has resulted from redevelopment of sites previously utilised for non-residential purposes. Developments typically in excess of 5 storeys are located at Woolner and the southern Stuart Park while more recent developments in the Salonika Street/ Goyder Road locality exceed 8 storeys.

Table 3: Dwelling Distribution in Darwin's Inner Suburbs

Dwelling Type	Darwin Inner Suburbs %	Darwin region %
Detached	33.5	64.2
Attached (townhouse etc.)	24.1	12.9
Flat, unit apartment	39.5	19.8

Figure 4 - Residential Densities



Housing Supply and Development within Existing Zones

There are a number of sites within the inner suburbs which have not been developed in accordance with the current zones particularly in Stuart Park, Fannie Bay North and Bayview.

Future development of these sites in accordance with the current zones, combined with larger potential redevelopment sites in Fannie Bay, The Narrows and Goyder Road have the potential to accommodate approximately 2 100 dwellings across a range of housing types including small lot detached dwellings to higher density multi-storey residential.

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. Within this context, detailed analysis of residential land use needs suggest the contribution of the inner suburbs to accommodating regional population growth will require approximately 800 dwellings over the coming 5 to 10 years, extending to 4 490 dwellings in the longer term, 40 – 50 year scenario.

Whilst current zoning has the potential to accommodate the short term dwelling demand in the inner suburbs, the long term demand cannot be accommodated by existing zones. Factors including ownership fragmentation, infrastructure capacity, development feasibility and emotional attachment have influenced the character of the inner suburbs and will impact on the ability of the existing zones to accommodate even the short term demand.



5.3 Community Feedback

Continued Spot Rezoning Applications in Residential Areas

The existing zoning pattern in the inner suburbs provides the community with a degree of confidence to the likely form of future development within their neighbourhoods.

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

Compact Urban Growth

The concept of compact urban growth is well 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. What has been identified as important to the community is the management of such development.

“Development is necessary and a good thing. It creates jobs and prosperity. Inner urban “infill” or “consolidation” is also a good thing if managed properly. It can create vibrant, compact, cosmopolitan cities where people want to live. However, not every development is good, just as not every resident objection is valid.”

Inner Suburbs resident

Localities identified by many in the community as having potential for redevelopment, revitalisation or as opportunities for compact urban growth, include:

- along transport corridors, particularly entry points to the Stuart Highway and Westralia Street in Stuart Park;
- existing Activity Centres;
- the Stuart Highway end of Parap Road;
- the current Power and Water and Government Bus Fleet sites on Iliffe Street, Woolner;
- Goyder Road, particularly the Motor Vehicle Registry site;
- The old Netball courts on Ross Smith Avenue;
- Higher density development along the Stuart Highway from the old Government Printing Office to Parap Road; and
- Revitalisation of the CBD entrance along the Stuart Highway.

Housing Mix

While supporting well planned urban infill development, the community also put priority on the maintenance of a housing mix. While increasing the mix in housing throughout the inner suburbs was seen as important, there was also strong support for retention of existing lower density residential areas, adequately buffered from higher density areas.

“If higher density housing is inevitable, it should be planned for and encouraged, so that developments can take place in a logical and desirable way...”

Stuart Park Resident

Single dwelling residential areas

There was a clear view in the community that infill development should only occur in appropriate areas and should not impact on the character of areas dominated by detached single dwellings. Within that context there are concerns about the application of the compact urban growth policy, and its implications for these intact areas. Many residents identified a number of benefits of traditional single dwelling residential development including the perceived strong sense of community, enhanced safety for children and families, room to buffer noise from neighbours and opportunities to construct tropical homes incorporating natural cooling associated with the use of louvres and large shade trees. Many emphasised that these benefits underpinned the significant investment in established areas.

For many local residents, it was felt that a key component in achieving a “tropical character” is retaining larger lot sizes. Comments from the community were mixed in regard to allowing for the subdivision of larger lots in the inner suburbs, however many agreed that a tropical character could be maintained on lots 500 – 600m² in size. It was felt that allowing subdivisions of larger blocks could alleviate the housing pressure, without needing to build higher density unit developments, and that it could allow older residents an alternative option to enable them to remain in the inner suburbs. One resident indicated a preference for dual occupancy in this respect, suggesting that it would constitute a “less disruptive, staged approach to densification”.

“Principles in the Darwin Compact Urban Growth Policy give some guidance to selecting areas where densification is appropriate; however it does not go far enough to protect precincts where our resident community’s investment in gentrification is underpinned by the SD zone – precincts that would otherwise meet the requirements for densification...”

Stuart Park resident

Development Transition

The consultation identified concerns about the impacts of provisions within the NT Planning Scheme on the scale and design of residential development at the interface between the various zones. Proximity to low density residential zones rightly restricts the scale of adjacent medium density development, however there is concern that the current provisions fail to make corresponding provision for higher and better use of that part of a site adjacent to a zone providing for higher density residential development. Flexibility is needed to maximise the benefits of compact urban development within the context of protection of the interface.

Planning, Development and Design

Both individuals and industry groups identified the need for improved and explicit development design controls, urban design guidelines and character statements to inform consideration of aesthetic, environmental, tropical living, innovation and parking/traffic issues associated with new development. Of particular concern to the community were the potential impacts compact development may have on Darwin’s tropical character and lifestyle. Primary concerns included the potential reductions in landscaping and shading in addition to more intense building forms. Within this context, there is strong community support for building design guidelines to encourage design which responds to Darwin’s climate and tropical character. This approach to planning is seen as fundamental to the maintenance of “tropical character” in the context of compact urban development.

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 to support growth in the long term. The framework for infill growth reflects the broad policy established by the NT Compact Urban Growth Policy.

Higher Density Residential Development

Existing zoning within the inner suburbs provides for higher residential density proximate to commercial areas, and the major transport corridor of the Stuart Highway.

The Darwin Inner Suburbs Area Plan provides the opportunity to reinforce this long standing development structure within the context of the NT Compact Urban Growth Policy and to address the development of activity centres and the delineation of boundaries between mixed use and purely residential areas. This will provide development opportunities adequate to meet demand over the longer term.

This development framework will provide the community with clarity as to the likely location and form of higher density development.

It is important that the necessary infrastructure can be provided to support development in accordance with the framework. This includes essential service, movement and transport (including parking and accessibility) and social infrastructure. Investigations have been undertaken to identify the augmentations and upgrades required to support future development.

Retaining Intact Single Dwelling Areas

Achieving balanced infill in the inner suburbs will depend on the maintenance of lower density detached dwelling areas. Providing a transition in development intensity from higher density development in accordance with the compact urban growth policy and lower density areas will also be a priority for the Area Plan.

Consideration of the existing residential typologies and transitions will identify opportunities, within the context of enhanced transitions, to increase housing choice.

The community has indicated the need to consider smaller lots within Zone SD (Single Dwelling Residential), or dual occupancy development. This type of land use policy change has implications for the wider Northern Territory, and therefore must be investigated through a separate process at the Territory wide level.

Specific Precincts

There are localities within the inner suburbs where issues such as poor site accessibility and/or the need to provide transition between different land uses will require detailed design related guidance to achieve the general objectives of the Area Plan.

These criteria will also outline how the design of compact urban development can incorporate features to ensure an appropriate outcome within the context of existing character.

Transition Between High And Low Density Development

The transition between traditional low density residential areas and localities identified for higher density compact residential development is recognised as an issue requiring further consideration.

Although the resolution of this issue is beyond the scope of the current Area Plan, design related guidance relevant to particular areas will assist in achieving more appropriate outcomes, pending future investigation and be addressed through a subsequent review of existing provisions in relation to development transitions.

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 to 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. Parap) and along major transport corridors (e.g. Stuart Highway at Stuart Park) reflects increasing interest in housing variety, particularly options close to employment, transport networks and local facilities and services.

6.2 Context

Existing Centres Typologies

Activity Centres are characterised by a mix of shops, offices, community and residential developments, and are usually the central hub of activity within a neighbourhood. Darwin's inner suburbs currently have the following identified Activity Centres:

- Parap Village, a secondary centre servicing the weekly needs of the surrounding community
- Fannie Bay, Winnellie, Tipperary Waters and Stuart Park all comprise smaller local centres for convenience retailing, where the daily needs of the community are available. A new local centre is also evolving at the Salonika Street Precinct.

Darwin's inner suburbs do not currently contain an Activity Centre with a full-line supermarket, such as Woolworths or Coles. Instead, those seeking the services of a full-line supermarket travel to Darwin City or Nightcliff.

A significant mixed-use service corridor along the Stuart Highway has evolved east from the CBD. This corridor comprises commercial, service commercial, shopping, car sales yards and a variety of other uses which service both Darwin and the Northern Territory.

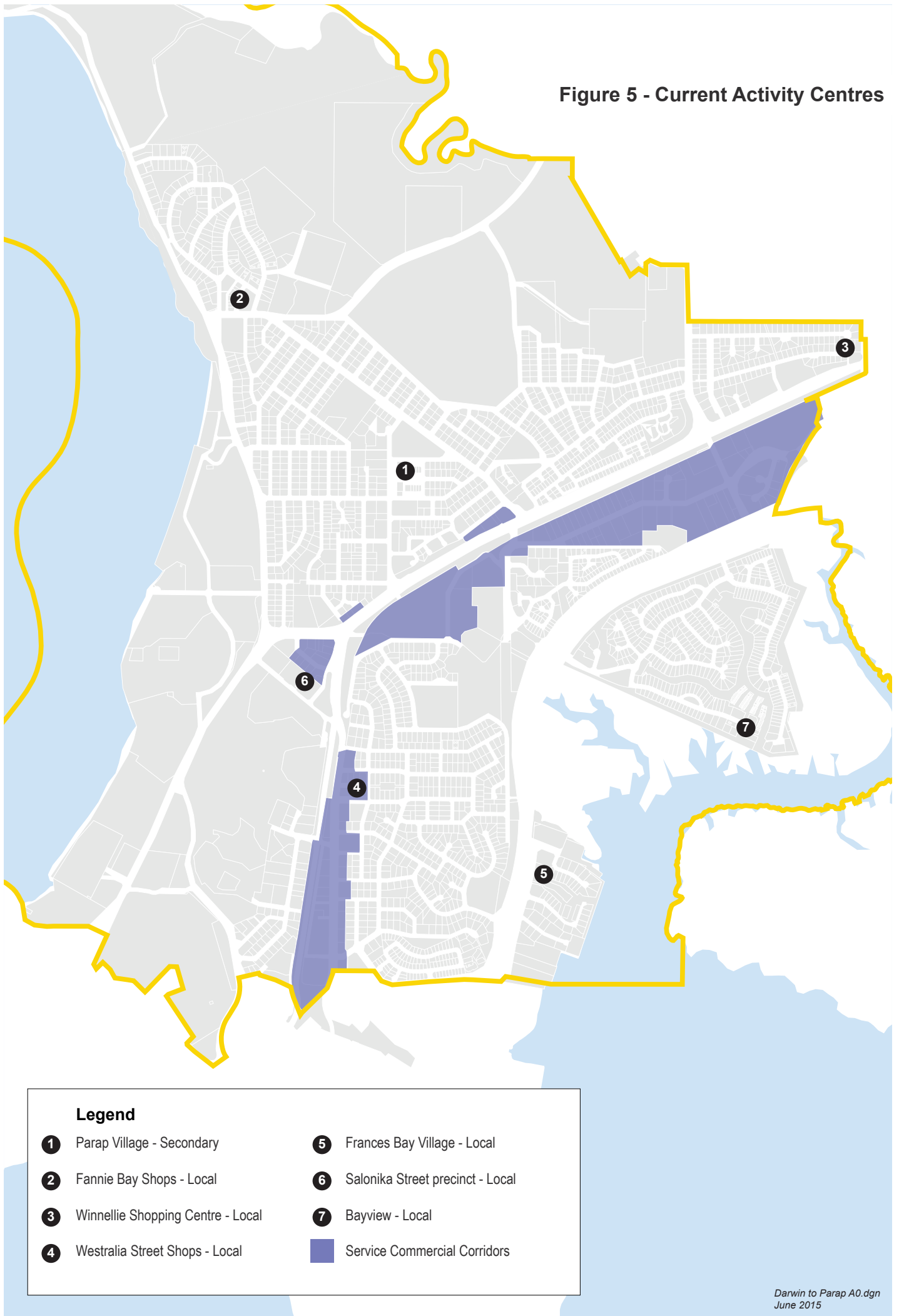
Analysis of the Existing Centres Network

A review of the operation of activity centres within the study area highlights that there is very limited centres infrastructure throughout the area.

The only centre offering a strong variety of activities is Parap which provides a relatively consolidated main street style centre. Parap does not however include a traditional retail anchor.

The gap for a supermarket use within the study area is illustrated by the fact that the closest full line supermarket is the Woolworths stores at Nightcliff and Darwin CBD and Coles in the CBD. Demand generated by the local catchment is being lost to other centres outside of the study area, resulting in the escape of local business to locations outside the study area.

Figure 5 - Current Activity Centres



Future Evolution of the Activity Centres

Floorspace Demand

The existing situation indicates that there is a current undersupply in activity centres floorspace to meet current and future demand in the study area. Specifically, the catchment has the capacity to support a full line supermarket based on existing population and demand capacity, with approximately 5 900m² of supermarket and related uses supported in 2016. By 2026, supermarket demand is expected to increase to almost 6 500m².

While these figures indicate the opportunity for a full line supermarket within the catchment now, potential impacts on existing supermarkets in adjoining catchments also need to be considered. For example, if a supermarket were to be established in the catchment in 2016, there would be some redistribution of existing supermarket demand to the new store. This would likely result in an estimated 2000m² of demand redistributed from the CBD based supermarkets to the new supermarket.

In order to avoid potential impacts on existing centres and individual stores, it is considered appropriate to delay the timing of this opportunity to allow the catchment to further mature and improve demand conditions. By sequencing the establishment of any supermarket anchored development or expansion to 2020 – 2025, much of the potential impacts on the CBD and other centres are likely to be offset by growth and contribute to the initial viability of the new centre.

Locational Considerations

It is not anticipated that the local centres of Fannie Bay, Winnellie, Tipperary Waters and Salonika Street will grow beyond their current boundaries due to limited land availability and locational constraints.

However, it is anticipated that Parap/ Woolner (Ben Hammond Complex redevelopment) and the Stuart Highway, Stuart Park localities will grow over time to meet the mixed commerce needs of the future population. These locations are preferred as future growth centres because:

- of the availability of land for development/ future redevelopment;
- of the likely timing and sequence factors relating to development in these locations better align with the near term and far term need for additional activity centre floorspace;
- the established land uses in this locality provide the best opportunity to integrate required interim and long term development to create vibrant centres;
- of public transport availability; and
- centrality to the inner suburbs.

These factors are discussed in more detail below.

Parap and Woolner

Parap Centre caters for the convenience needs of adjacent residents and provides activated nightlife and weekend trade serving residents of the inner suburbs and the broader region. Enhancement of these roles will be important to ensure the centre remains competitive in the context of development of the Woolner locality in the longer term. In the medium term, there is potential to create a significant inner city urban renewal precinct at the Ben Hammond Complex incorporating:

- a secondary activity centre with a full line supermarket;
- high density residential housing; and
- high quality public transport, with an interchange that allows integration across the Stuart Highway to the Parap Centre.

The preferred timing for the development of the Ben Hammond Complex as an urban renewal node is 2020 – 2025. This timing will allow the catchment to grow and mature.

In the short term, there are opportunities for finer grained retail and commercial activity as a component of mixed use development along Parap Road. Allowing this development now will assist in the long term integration of Parap and the Ben Hammond Complex redevelopment area. Allowing such development in the short term meets immediate local demand without interfering with the viability of future development of the Woolner component of the secondary centre.

Growth in the catchment will offset potential impacts of developing the Ben Hammond Complex on the CBD, while also allowing time for the establishment of mixed use along Parap Road. A mixed use corridor along Parap Road will reinforce the role of this link in integrating the existing Parap Centre and the Ben Hammond Complex renewal area.

Stuart Highway, Stuart Park

The Stuart Highway corridor in Stuart Park currently contains a mix of uses including showrooms, retail and various service commercial uses servicing the CBD and inner suburbs. Analysis of showroom and bulky goods floorspace in the region suggests that there is limited potential for expansion of such uses in the inner suburbs particularly considering that the small lot sizes along this corridor limit opportunities for further redevelopment into viable commercial lots. The smaller lots may however provide opportunities for smaller scale service commercial.

The ongoing role for this corridor will be to provide service commercial uses serving both the inner suburbs and the CBD. Specifically, it is likely that this corridor will transition away from showrooms to other uses such as health related facilities.

Proximity to the amenity associated with the Botanic Gardens through to the foreshore areas will create opportunities for residential uses. This attraction will be further enhanced as traffic volumes are decreased on this corridor by initiatives such as improved rapid public transport and the far term possibility of the Stuart Park Bypass.

Therefore, an urban design solution is required that will:

- facilitate sufficient population growth along this corridor to support future mixed use commercial, showroom and residential activities;
- create an urban design solution for this important gateway to the city;
- set parameters for showroom development; and
- encourage consolidation of existing lots to create appropriate minimum lot sizes that support densification and economic feasibility.

6.3 Community Feedback

Shopping / Commercial Precincts

An industry stakeholder recommended Parap Village and adjoining nodes be designated as the major centre of the inner suburbs. Stuart Park was also seen as a key Activity Centre, due to its placement on the Stuart Highway.

Another industry stakeholder also recommended that the large Iliffe Street site has potential for a large supermarket, as well as additional green space through redevelopment. Alternative sites for a hub or supermarket include The Narrows and Woolner. The Fannie Bay centre was also mentioned as a location with potential for a two-storey development, particularly with the redevelopment of Sports House.

General public commentary was split as to the need for a supermarket in the inner suburbs. Some felt it would destroy the neighbourhood feel (particularly at Fannie Bay), others felt Ludmilla or Woolner would be a perfect location for an additional supermarket or grocery shop.

“Always have mixed shops in any development, they provide opportunity for micro/small businesses and keep local communication points alive. We want to encourage walking to the shops, not driving to the supermarket”.

Inner Suburbs resident

Gateway to the CBD

It was generally thought that rezoning/densification along existing service corridors and main roads makes sense.

The creation of an ‘entry’ or gateway into the CBD, through rezoning of existing service commercial, revitalisation and changes to the alignment of the Stuart Highway was a common theme, and included suggestions such as:

- revitalised Stuart Highway with a ‘High Street’ feel;
- terraced housing at the entrance to the city;
- rezoning the Stuart Highway to improve commercial appeal; and
- maintaining the auto strip along the Stuart Highway “to support the day to day business, residential and lifestyle needs of the study area”.

“The approach to the city is disgusting”

Resident, Stuart Park

“The potential for significant revitalisation of land fronting the Stuart Highway, between the Daly Street Bridge and the Westralia Street intersection... with a greater emphasis on commercial (rather than service commercial), community and mixed use development, whilst ensuring the appropriate provision of services and infrastructure, would significantly improve the use of this land and the entrance to the CBD.”

Industry Stakeholder Submission

6.4 Implications for the Area Plan

The opportunity to create a vibrant activity centres network is limited by the level of demand that will be created by even long term growth in the inner suburbs. Therefore, every effort should be made to ensure that this growth is directed to the most appropriate location within the context of the potential for long term growth to maximise the benefits of this growth.

The Area Plan will identify the centres of Parap/ Woolner and along the Stuart Highway as the preferred locations for growth. These centres have the greatest potential to deliver, in a timely manner, well serviced and well located mixed use centres. Further, renewal of these locations is desired, and hence the limited redevelopment demand should be directed towards these centres.

As with all renewal areas, a planning framework outlining clear guiding parameters for the future development of these centres is required. This Area Plan will provide such a framework. The framework should identify urban design requirements and any performance criteria that will bring about the successful creation of the Parap/ Woolner and Stuart Highway, Stuart Park Centres, and any other criteria to guide future use and development of other centres in the inner suburbs.

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 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

Bishop Street Industrial Precinct

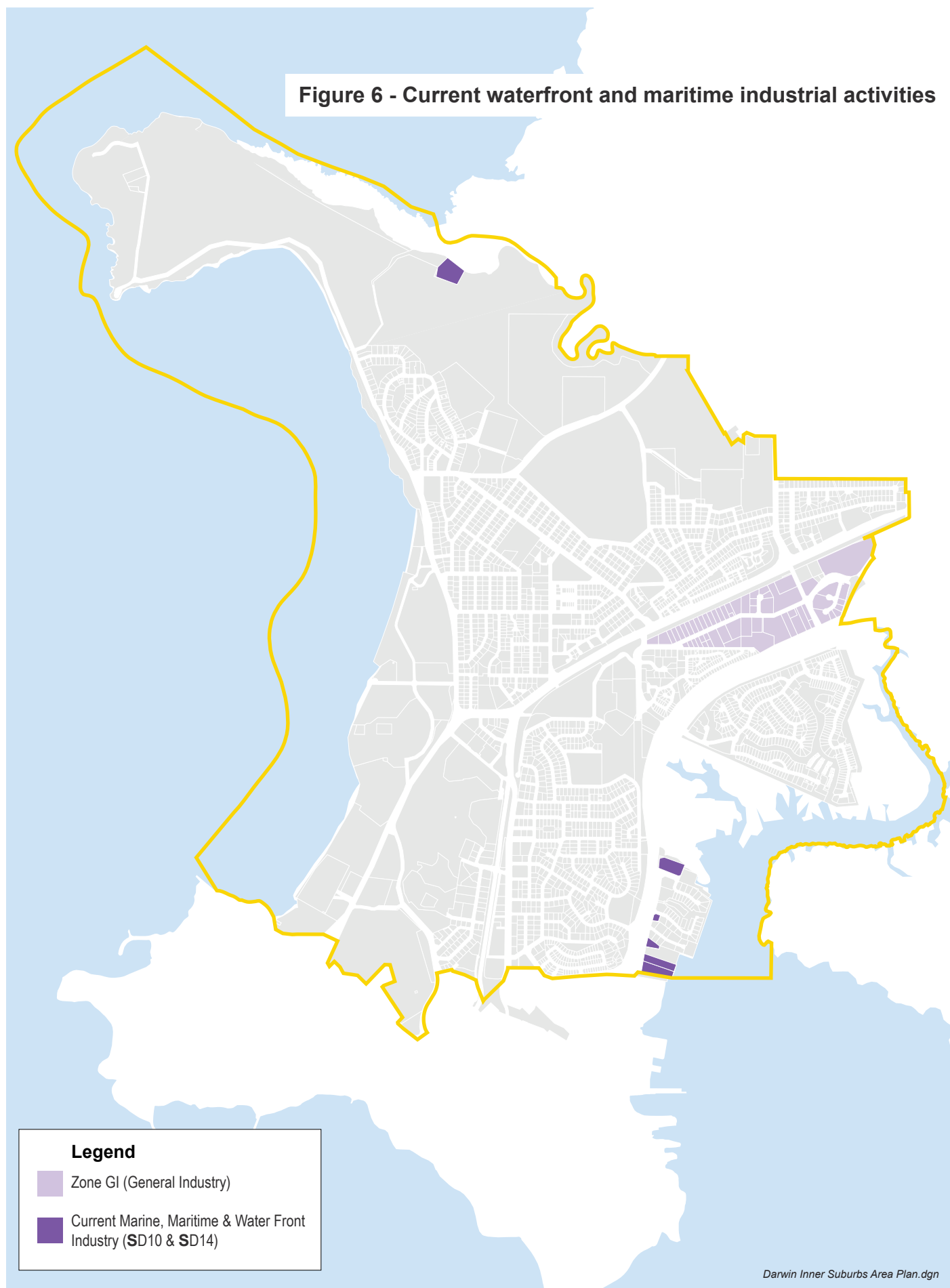
The Bishop Street precinct forms part of the larger Stuart Highway mixed use corridor and provides a unique land offering in the context of the greater Darwin region.

The existing Zone GI (General Industry) in this locality reflects its role as the first significant industrial area serving early Darwin. This zoning allows for development of a full range of industrial uses including those which may affect the amenity of the surrounding locality by reason of the emission of noise, vibration, odours and otherwise; due to the potentially noxious activities permissible on site. Although the area is generally developed with industries unlikely to cause impacts on the amenity, the potential for such development is of concern given the geographical border with residential development.

An industrial land assessment conducted for the Darwin Regional Land Use Plan 2015 along with a review of recent development activity has identified various attributes of this precinct including:

- its strategic location on the Stuart Highway corridor and its contribution, with the Winnellie precinct as the largest area of industrial land proximate to Central Darwin;
- a subdivision pattern that includes a mix of lot sizes ranging from less than 3000m² to larger lots greater than 1 ha;
- significant investment in the precinct in recent years, generating generally higher purchase prices per square metre than other industrial areas in Greater Darwin, particularly for smaller sites; and
- the focus of recent development toward higher yield service commercial uses, including warehouse upgrades, showroom sales and storage units.

Figure 6 - Current waterfront and maritime industrial activities



The Frances Bay Maritime and Waterfront Industrial Areas

The Frances Bay Planning Principles and Area Plan provide maritime and waterfront industry combined with a mix of tourism, entertainment, water transport and harbour side living. Specific Use Zone Darwin No. 10 (SD10) covering the locale of Tipperary Waters within the NT Planning Scheme provides for this range of uses, however includes provisions to limit the expansion of existing waterfront and maritime industries.

A further area which allows for industrial type uses related to marine activities exists at 50 Colivas Road, East Point within Specific Use Zone Darwin No. 14 (SD14). An ancillary break out space on vacant Crown land adjacent to the site is also used for marine activity.

7.3 Community Feedback

Revitalisation of General Industrial Areas

Consultation has identified ongoing concerns about the interface between general industry and existing and potential future residential development. Many focused on the potential revitalisation of established areas to change the focus from general industry to business and commercial activities serving residents in the inner suburbs.



7.4 Implications for the Area Plan

Bishop Street Industrial Precinct

While industrial land in Darwin's Inner Suburbs has the potential, through urban renewal, to transition to a mix of residential and commercial uses this potential needs to be considered within the context of a framework for future development that meets the full spectrum of the needs of the community.

Although all Australian capital cities are experiencing an increased demand for higher density residential and commercial uses in or adjacent to their city centres, most have maintained a supply of land for industry and service commercial uses to support the needs of inner city residents. The potential for transition of industrial areas also needs to be considered in the context of the identification that land associated with identified activity centres and significant transport corridors within the inner suburbs is sufficient to accommodate the projected increase in residential demand.

A mix of service commercial type uses have established in the area, including automotive related businesses, wholesalers, and unit title business parks including office, warehouse and other uses. A number of commercial leisure and recreational uses have also established in the area including a yoga studio and indoor sports centre. These uses are seen to complement the growing population of both the inner suburbs and the greater Darwin region.

Within the context of interface problems, capacity in activity centres to accommodate residential growth and transitioning land uses in Bishop Street, the Area Plan needs to establish a framework to allow the continued transition from general industry to service commercial and light industry. Strengthening the emerging land use pattern in the area and maintenance of Bishop Street as a service commercial precinct will also create opportunities for the relocation of businesses displaced by urban renewal in other localities. For example, it is anticipated that a concentration of residential and commercial uses along the Stuart Highway in Stuart Park will put pressure on the viability of lower yield businesses such as car yards. The availability of alternate land at Bishop Street will allow these businesses to relocate whilst maintaining a connection to their existing customers and suppliers and proximity to the City Centre.

The Bishop Street precinct will continue to provide a buffer between primarily residential areas, and industrial uses to the east in Winnellie. Allowing for the transition to service commercial in the Bishop Street precinct will not preclude light industrial type development, which is characterised by activity that will not detrimentally affect adjoining or nearby residential land.

Frances Bay Maritime and Waterfront Industry

The expansion of existing waterfront and maritime industrial activities within the Frances Bay precinct will be limited in accordance with the provisions of the existing Area Plan and Zone SD10. This approach is also considered appropriate for the activity on the land at Colivas Road, guided by the requirements of SD14.

8. Social Infrastructure

8.1 Introduction

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

Consideration of the need for social infrastructure to support population growth in infill areas is a critical component of planning for such development and a Social Infrastructure Assessment has been completed to inform planning for the Darwin Inner Suburbs. This assessment is informed by a population horizon for short and long term population growth.

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

- public open spaces;
- organised recreation land;
- civic and community facilities;
- childcare centres;
- pre-schools;
- primary and high schools, both government and independent;
- tertiary education facilities;
- welfare and support services;
- libraries and cultural facilities;
- health services and medical facilities; and
- aged care facilities and services.

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

8.2 Context

Public Open Space

There are a range of publicly available open spaces in the Darwin Inner Suburbs including local, district and regional parks. Analysis of land readily available for use by the public for recreational purposes focused on within Zone PS (Public Open Space) demonstrates a total of 97.9 ha freely available. A number of areas were not included in the analysis for a range of reasons including limitations on access or lack of development. Areas excluded include:

- regional recreational open space including the Racecourse, The Gardens Amphitheatre, Gardens Ovals, Richardson Park, Darwin Tennis Club, Golf Links and other areas within Zone OR (Organised Recreation);
- 8.5 ha of vacant but undeveloped Crown land at Woolner within Zone PS (Public Open Space) land within Zone CN (Conservation);
- privately owned land used for organised recreation and not publicly accessible, including the foreshore clubs, marinas and the Qantas Hanger in Parap; and
- ovals associated with education facilities.

Analysis demonstrates that a total of 97.9 ha of open spaces are available for use by the public.

It is noted that whilst plentiful, open space is not evenly distributed within the study area. Generally speaking, the western coastal components of the Darwin Inner Suburbs are well supplied with readily accessible local open space while the eastern suburbs have less generous supplies.

The George Brown Botanic Gardens and foreshore areas contribute to open space available in The Gardens, with a significant network of pocket parks contributing to availability in Fannie Bay. Suburbs to the east, including Ludmilla, Bayview and parts of Stuart Park are less generously provided for. It is noted that these areas generally correlate with areas characterised by lower density residential development and the associated larger private open spaces.

The consideration of access to local open space cannot ignore the proximity of the inner suburbs to the regional recreational opportunities provided for by East Point Reserve.

Organised Recreation

Various sporting fields and recreation facilities within the inner suburbs provide for organised recreation opportunities. Whilst located within the inner suburbs, many of these facilities serve the broader region, in addition to providing area for public open space when not being used for organised recreation purposes (e.g. the use of Dinah Beach Oval in Stuart Park utilised for junior cricket matches during the season). Table 4 identifies the existing organised recreation sporting fields available within the study area.

Other major organised recreation and sporting facilities within the inner suburbs include:

- The Parap Swimming Pool, which provides for recreational swimming, swimming clubs, various water based sports, and water safety courses.
- The Gardens Tennis Centre operated by the Darwin Tennis Association.
- sailing, skiing and boating clubs;
- Gardens Park Golf Club;
- Darwin Bowls and Social Club; and
- A number of privately owned and operated recreational and sporting facilities including private gyms and various other sporting clubs.

Table 4: Sports Fields with the Inner Suburbs

Field	Zone	Sporting Facilities	Ownership/Tenure
Dinah Beach Oval (Guy Street, Stuart Park)	PS	Cricket Pitch	City of Darwin
Fannie Bay Oval (Waratah Crescent, Fannie Bay)	PS	Soccer Posts	City of Darwin
Gardens Oval 1 (Gilruth Avenue, The Gardens)	OR	AFL Posts Turf Cricket Pitch	City of Darwin
Gardens Oval 2 (Gilruth Avenue, The Gardens)	OR	AFL Posts Softball Batting Backstops Cricket Nets Soccer Posts	City of Darwin
Richardson Park (Richardson Drive, Ludmilla)	OR	Dedicated Rugby League Field	NT Government (Crown Lease Term to Northern Territory Rugby League Inc)
Fannie Bay Race Course	OR	The interior grassed area is used by Touch Football NT.	NT Government (Crown Lease in Perpetuity to Darwin Turf Club)

There is evidence to suggest that demand for sporting fields is outstripping supply across Darwin. It is acknowledged that future development in the inner suburbs will contribute to further increases in demand but that this will not necessarily equal need for additional sporting facilities in the inner suburbs as other localities where land availability is greater may provide better options to address the needs for a suitable metropolitan network.

The use of the Darwin Amphitheatre at the George Brown Botanical Gardens as Darwin's premier open air venue is recognised. Development around this facility needs to be managed with respect to ensuring land use conflicts (including from a noise perspective) are mitigated.

Community Uses

The purpose of 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. The CP zone is commonly used for uses such as schools, childcare centres, hospitals, community centres, libraries, post offices, churches, police stations, museums, healthcare clinics, universities and social or cultural clubs. Zone CP also covers uses such as airports, barge landings and telecommunication facilities. Due to historical zoning of land, not all CP zoned land is appropriate for its current use. For example, the Darwin Motor Vehicle Registry at Parap has operated on the site for more than 35 years and represents more of a light industrial use than a community purpose.

There are 41 sites in the inner suburbs within Zone CP which due to the broad purpose of the zone, encompass an expansive range of uses (refer Figure 7) including:

- educational facilities including schools (public and private) and early learning centres;
- childcare facilities;
- aged care facilities;
- health service facilities including mental health facilities and an ambulance station;
- community facilities such as family centres;
- cultural buildings such as art galleries and museums;
- emergency accommodation/refuges;
- clubs;
- charity shops;
- churches and religious organisation offices;
- broadcasting/communications equipment and buildings;
- cemeteries;
- administrative offices for non-profit organisations such as the Australian Red Cross;
- NT Government department/agency offices such as Motor Vehicle Registry, Training and employment boards, Power and Water, NT Fire and Rescue Services; and
- Components of essential infrastructure such as telecommunications equipment and various Power and Water assets.

Land For Community Uses

Of the 41 Zone CP (Community Purposes) sites within the study area, only five are currently vacant. Two of these sites, with a combined area of 5.2 ha (The Old Pints Club and Telstra Sites on Blake St, The Gardens) were originally owned by Commonwealth Agencies, and are now privately owned. The current owners consider the land at Blake Street, The Gardens has potential for residential development.

The other vacant site in The Gardens is 3.5 ha of crown land which adjoins Darwin Middle/High School on Conacher Street. This site has been earmarked as a possible site for the extension of Darwin Middle and High Schools, given the capacity pressures these two establishments currently face.

The other two vacant sites within Zone CP include parcels of land stretching along Tiger Brennan Drive at Stuart Park.

The Motor Vehicle Registry in Parap is considered to be nearing the end of its useful life. Therefore the future use of this land requires further consideration.

Community Meeting And Activity Spaces

Community meeting and activity space plays an important role in building community networks, supporting health and well-being of residents, promoting community identity and addressing local social issues.

Although a number of private facilities within the inner suburbs including recreation clubs and churches have rooms available for hire for public use, costs to hire limit their use to private functions such as weddings and corporate events. That being the case there is a noticeable lack of general multi-purpose community meeting and activity spaces within the inner suburbs. Analysis suggests that the current population warrants a new local level multi-purpose community centre or meeting and activity space within the inner suburbs area.

Parameters which should be considered in determining a site for such a facility include:

- a location central to the catchment population and easily accessible by the majority of potential users;

- proximity to commercial centres to ensure an activity level and critical mass to create a lively centre; and
- co-location with other community facilities to provide for shared and efficient use of resources (i.e. shared open space, car parking etc.).

Underutilised land at the Parap Pool site accords with these parameters and would be an ideal location for meeting and activity spaces and associated facilities to meet the needs of social support services in the inner suburbs.

Education

Assessment of the operating capacity of education facilities has demonstrated that:

- Preschools have spare capacity (75% utilisation), particularly at Ludmilla, and Parap to a lesser extent;
- the four primary schools collectively comprise an utilisation rate of 81%, indicating some capacity across the precinct;
- Darwin Middle School is exceeding its capacity, while Darwin Senior School is at 85% utilisation; and
- capacity exists at St Johns College across both middle and senior campuses.

By 2018, future population growth within the study area is expected to generate a 7.8% increase in enrolments for Government Schools in the area. In the longer term, enrolment growth is projected to grow by 25%. Combined with an expected increase in the Government market share from 85% to 88% across all schools in the study area, this longer term growth is expected to exceed the collective capacity in Government schools in the inner suburbs.

With respect to non-government schools, both have capacity to absorb their market share of enrolments past 2018. While St Johns College Middle School may experience enrolment pressure, vacant capacity within the senior campus and the potential for further development on the large sites suggest growth could be accommodated. With regard to tertiary education, there is available capacity within the campuses (Palmerston and Brinkin) of Charles Darwin University to accommodate forecasted population growth.

Childcare Centres

Five child care centres are located within the study area, with an additional three centres located within the city centre. As existing centres are at, or close to capacity with little ability to meet future demand, the provision of childcare centres to accommodate future growth will be important.

Future population could generate demand of 15 additional places for children over the next 5-10 years with long term growth suggesting the need for a new facility (potentially one large 75 place facility).

Libraries

Library services are provided for inner suburbs residents via the City of Darwin's Library network, including the central library in the CBD and branches at Nightcliff, Karama and Casuarina.

The central library is considered to be a popular, well utilised facility needing expansion to adequately meet the needs of the growing population of its catchment area (including the inner suburbs). Concepts for this facility are included in the Darwin City Centre Master Plan.

Cultural and Entertainment Facilities

Major regional cultural facilities within the Inner Suburbs include:

- Museum and Art Gallery of the Northern Territory;
- the Defence of Darwin Museum;
- multiple Art Galleries;
- the historical Fannie Bay Gaol, which serves as a museum and provides a venue for cultural events;
- the Darwin Amphitheatre within the Botanic Gardens; and
- Skycity Casino, which also provides facilities for events and functions.

A number of social and recreational clubs within the inner suburbs contain entertainment facilities, such as bars/bistros/lounges, and have the potential to host social events and private functions.

Health Services

The Northern Territory Health Needs Assessment prepared by the NT Medicare Local in 2013, indicates that the inner suburbs contain three private General Practitioner (GP) practices. Residents also have access to GP practices in other areas including Darwin City Centre (4 practices), Nightcliff (5 practices) or Casuarina (5 practices). Generally within the Northern Territory, the level of provision of GPs equates to 1 GP per 750 people, which is well above the national average of 1 GP per 900 people.

Community health services used by the population within the inner suburbs are delivered by facilities in the wider region. Expansion of hospital and community health services will be required in appropriate localities to meet the needs of the regional population as a whole.

The Tamarind mental health facility at Parap is the one regional facility currently within the inner suburbs. The Department of Health is considering the future relocation of this service to a larger site where it could be amalgamated with other mental health services. This relocation would provide vacant floor space within Zone CP (Community Purposes) with potential to accommodate community services for residents of the inner suburbs.

Establishment of a new health "super clinic" within the inner suburbs/CBD area is a possibility in the long term. Such a facility is likely to be located in a health precinct providing a wide range of services and work in tandem with the broader regional network. The lack of information about the possible scale, location and timing of a "super clinic" precludes identification of specific site requirements at this time.

Figure 7 - Land uses within Zone CP (Community Purpose)



Darwin Inner Suburbs Area Plans.dgn

Social Support Services

Social support services located within the study area include:

- Amity Community Services in Stuart Park, providing a range of services relating to drug and alcohol abuse;
- Anglicare op-shop at Ludmilla;
- Anglicare Resolve Counselling services in Parap;
- Carers NT, in Bayview, providing support services for carers including rural/remote respite services, advocacy and support groups;
- Employee Assistance Service Australia, in Stuart Park, which provides psychological and organisation services;
- the offices of Northern Territory Legacy in Ludmilla;
- Tiwi Islands Training and Employment Board at Woolner; and
- offices of the National Association for Prevention of Child Abuse and Neglect in Fannie Bay.

These services are generally provided by non-government organisations and require access to low cost facilities for their offices and service delivery, as they rely on government grants and fund raising and often struggle to pay commercial rents. As values continue to rise in the city centre and inner suburbs, such services are likely to relocate to alternate areas with lower rents.

The previously identified lack of community meeting and activity spaces in the inner suburbs is associated with a lack of local active community organisations and interest groups. In addition to the lack of opportunities for health, well-being and learning activities and the creation of local social networks, the lack of space for community uses in the inner suburbs also limits options for local community based and or non-government support organisations.

Accommodation And Services For The Elderly

Analysis shows that government funded residential care places are provided at a rate of 54 places per 1000 people aged 70+ in the Darwin region, representing a significant under provision when compared to a national rate of 82.6 places. The current situation represents an existing significant need for an increased provision of residential aged care places for the Darwin region which will intensify as the population increases and continues to age.

The Commonwealth Respite and Carelink Centre in Bayview, also accommodating Carers NT, provides services to support people to remain living in their own homes and is the only community aged care service within the inner suburbs. Residents otherwise rely on services sourced from the city centre or other parts of Darwin. This lack of provision is not considered a problem as services are delivered directly into homes.

8.3 Community Feedback

Public Open Space

Consultation with the community has demonstrated that there is a general feeling that Darwin is losing its green space and tropical character. There is consensus in the community on the importance of retaining available open space, in addition to ensuring that its use is maximised.

The community also emphasised that meeting future needs is not just about the reliance on the 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 corresponding areas for open space, either for use by residents, or by the broader community – a “green space to match growth” approach.

Organised Recreation

Similar to the community’s thoughts around retaining and embellishing existing public open space, many agree that organised recreation facilities within the inner suburbs need to be utilised more effectively. Recommendations on how this might occur includes the redevelopment and improved management of existing facilities, to ensure that they appeal to a greater cross section of the community.

“The organised recreation area on Ross Smith Avenue, consisting the old netball courts is another facility that should be redeveloped. Many of the future needs of the population may be met by making better use of (recreational) facilities and spaces that are already available in the inner suburbs”.

Resident, Fannie Bay

Community Uses

Many advocate that if the inner suburbs are to grow to forecasted population figures, commensurate growth in the provision of community facilities is integral. Using land currently within Zone CP to provide for community facilities is seen as vital.

The community agrees that any future proposals to rezone land within Zone CP should be considered within the context of the need for social infrastructure to support future population growth in the district, and investigate the mechanisms necessary to fund and coordinate this infrastructure.

The community also identified the need for more efficient use of existing community land, particularly underdeveloped sites.

8.4 Implications for the Area Plan

Public Open Space

It is recognised that in order to meet the future requirements of publicly accessible open space within the inner suburbs, existing open space must be retained and embellished. It is also important that the plan facilitates the provision and distribution of additional open space to meet the needs of the increased population particularly in areas where population growth is proposed to be concentrated.

Allowing for the improvement of the current open space stock will foster more intensive and efficient use into the future. Enhancing the utilisation of existing networks of public open space can be achieved through improvements to the facilities onsite. These improvements include providing shading for all playgrounds, installation of toilets, lighting, seating and barbeque facilities to improve the capacity of open space for families, large gatherings and evening use.

In addition to upgrading existing formalised open spaces the plan recognises the potential for various existing undeveloped sites within Zone PS (Public Open Space) to provide open space and recreation opportunities to meet the needs of the increased population (Refer Figure 8).

To facilitate the provision of public open space to meet the needs of the increased population, consideration will be given to the need for additional open space in association with larger residential and mixed use developments particularly where higher densities are proposed. To maximise the benefits of this open space, public accessibility will be a priority.

Organised Recreation

Given the limited opportunities for new organised recreational facilities within the inner suburbs, the need to maintain accessibility to facilities for both existing and future residents will depend on implementation of strategies to allow more intense use of the existing network.

Potential strategies include:

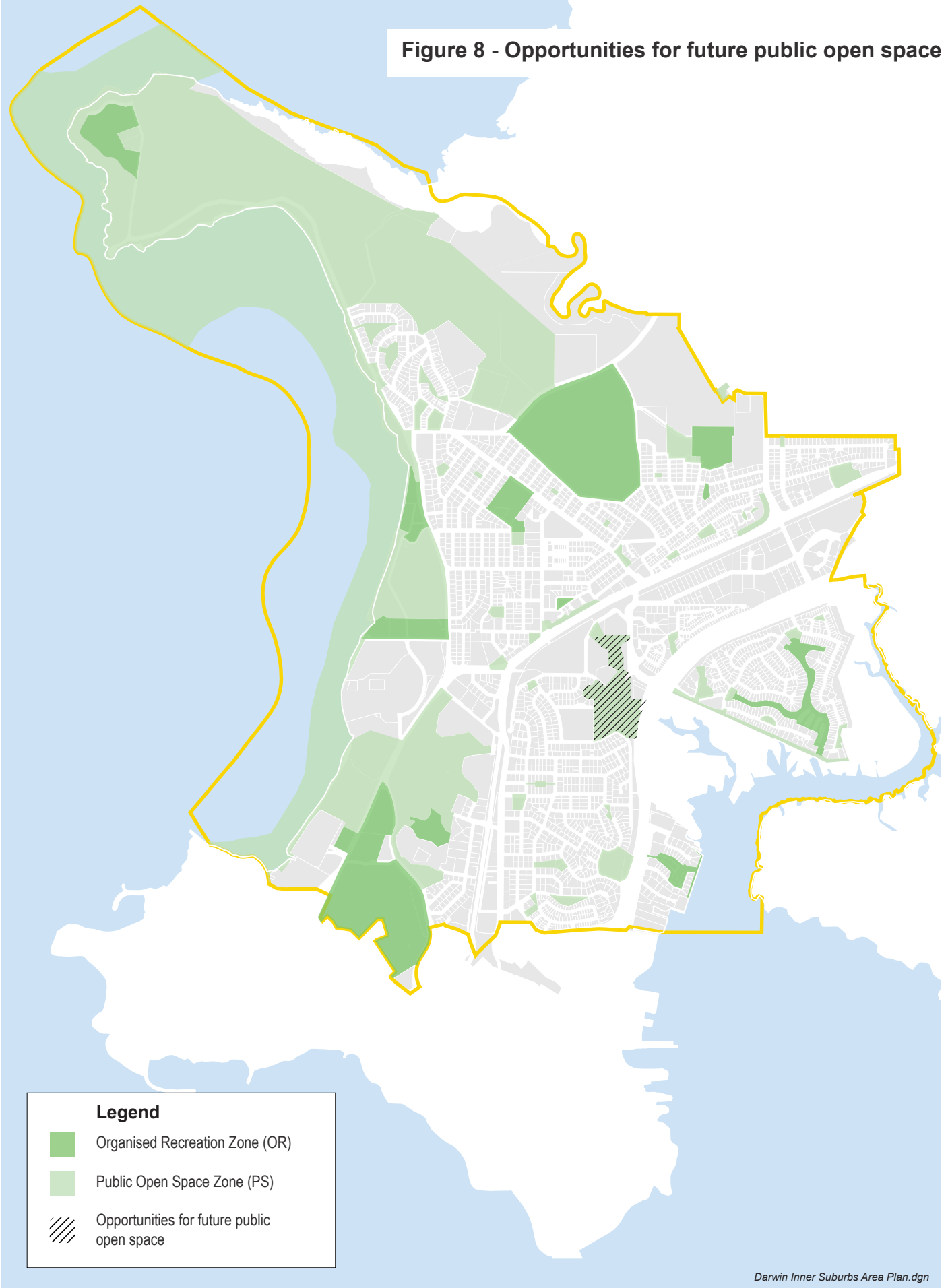
- the installation of lighting, surface upgrades and improvements to amenities at sporting fields;
- master planning of currently underdeveloped land around the Parap Pool as a priority recognising the potential of the site as a leisure and recreation hub serving both the inner suburbs and the broader locality;
- Encouraging shared, rather than exclusive, use of sporting facilities amongst different clubs and codes.
- Necessary controls of future development proximate to the Amphitheatre to allow it to continue to function as Darwin's premier open-air venue for live entertainment.

Land For Community Purposes

It is recognised that some Zone CP land is underutilised or vacant and as such not providing the highest and best benefit to the community. Therefore, the Area Plan should identify a framework for consideration of redevelopment opportunities to ensure development of underutilised or vacant land occurs within the context of the need to provide for the wider community. Future redevelopment may provide for the opportunity to incorporate a range of uses, improving the function of the land for the broader community.

It is important to remember that community uses can occur in zones other than Zone CP. These include the allowance for a range of community based uses in residential, commercial and open space/organised recreation zones. A specific example is the allowance for supporting accommodation and group homes in all residential zones.

Figure 8 - Opportunities for future public open space



The plan also recognises that some of the land with Zone CP, such as the extensive area along Tiger Brennan Drive in Stuart Park, is not capable of supporting community facilities to meet future demand. Alternate designation of this land to reflect its highest and best use being to provide bike paths and linkage to other areas of open space will clarify the availability of community purpose land.

Community Meeting And Activity Space

The Area Plan responds to the identified need for a new multi-purpose facility. Best practice suggests a floorspace of 1 000 m² will be required to meet short term growth forecasts requiring a site of 2 000 m². The concepts identify the potential to locate this facility in association with other community uses centred on the existing Parap Pool. In the longer term upgrading to accommodate a range of community activities and events, community arts and facilities for community organisations and social service providers will require a total site area of 3 500 m² to accommodate a floorspace of 1 750 m². As such, it will be important the initial site provides opportunities for future expansion.

Education

Future population growth in the inner suburbs will require consideration of a multi-faceted approach to meeting both the short and long term education needs of residents.

Government Schools in the inner suburbs are considered to have the capacity to accommodate short term demand for education facilities subject to implementation of a range of measures including:

- utilisation of spare capacity in existing pre-schools;
- utilisation of spare capacity at Ludmilla Primary School;
- upgrades to classroom capacities at Stuart Park Primary and Darwin Middle Schools; and
- the implementation of enrolment management to increasingly limit enrolments to students living in the Priority Enrolment Area for each school.

Potential options to cater for longer-term growth in the inner suburbs include:

- the potential to expand Parap Primary School, through the intensification of its current site;
- the expansion of Darwin Middle/Senior Schools, resulting in the requirement of the Zone CP land over Lots 5218 and potentially part of 8986 Town of Darwin (Conacher Street and Atkins Drive, The Gardens); and
- the redevelopment of Ludmilla Primary School to make it a school of choice.

While most of these measures can be accommodated on the existing sites, there is the possibility that the expansion of the Stuart Park Primary School will require construction of buildings on the existing oval. The land use plan is cognisant of the potential need to include land to the east of the school site within Zone PS (Public Open Space) to accommodate the relocated oval.

The need for education facilities within the inner suburbs may be influenced by development in adjacent localities. The potential for a school within the adjacent CBD has been identified in the Darwin City Centre Master Plan. Should this eventuate it may have capacity to meet some of the demand generated by future growth in the inner suburbs.

Opportunities for lifelong learning, such as adult classes will depend on the expansion of community meeting space, as outlined in the 'Community Meeting And Activity Space' section above.

Childcare Centres

While community childcare centres are usually located within Zone CP (Community Purposes), centres can also be located within commercial zones and Zone HR (High Density Residential). Activity centres within the inner suburbs will provide opportunities for future childcare centres to meet the needs of the increased population.

Libraries

Libraries in Darwin serve district level catchments. Programmed upgrades across the wider Darwin metropolitan area will provide services for residents in the inner suburbs.

Cultural And Entertainment Facilities

The study area is considered to have relatively good access to cultural and entertainment facilities in both the inner suburbs and the city centre. The Darwin City Centre Master Plan proposes the creation of an arts, culture and youth oriented precinct at the current bus terminus at Harry Chan Avenue. The land use plan recognises that focusing future cultural and entertainment facilities in the CBD will reinforce its role as Darwin's civic heart.

Health Services

In order to maintain an acceptable rate of GPs per capita commensurate with forecast population growth in the inner suburbs, two additional GPs would be required to deal with short term population growth, with an additional 10 required in the longer term representing a need for an additional 2-3 GP practices. Medical clinic facilities, similar to childcare centres are allowed in commercial and high-density residential zones, with the provision of these services left up to market forces.

In the event the need is established for a new "super clinic" facility and associated health precinct, the service corridor and or land within Zone CP would provide appropriate locations. The plan also recognises that there may be an opportunity for this facility to be incorporated in other areas proximate to, or within the CBD.

Social Support Services

The Area Plan acknowledges the potential role of land within Zone CP in accommodating a wide range of social support services including multi-purpose floorspace to cater for a variety of services and accommodation such as group homes or supporting accommodation for disadvantaged groups within the community. Given that many of these services are regional in their focus there may be more appropriate locations than the inner suburbs for such facilities.

Accommodation And Services For The Elderly

Expansion of existing residential aged care facilities within the inner suburbs will improve the provision of residential care places in the inner suburbs. It is important to note that supporting accommodation is permissible through a number of residential zones in keeping with the principle of integrating, rather than segregating older people, and people with disabilities. The ageing of the regional population indicates that the provision of low maintenance retirement housing accessible to public transport and a range of facilities will be increasingly important as will the care services to support this sector of the community. Existing residential zones in the inner suburbs provide opportunities for residential development targeting older residents and the retention of community purposes sites will ensure the availability of affordable options to accommodate support services.

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 choice can also contribute to a reduction in the carbon footprint of an urban area.

Movement and transport systems that are effective and safe usually 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

Tiger Brennan Drive

Tiger Brennan Drive is a Territory controlled primary arterial road connecting Palmerston with the Darwin CBD. Together with the Stuart Highway, Tiger Brennan Drive caters for the peak period commuter, freight and other traffic demands in and out of the city.

The Stuart Highway

The Stuart Highway is a Territory controlled, multi-lane divided road providing a primary arterial function for access into the Darwin CBD and suburbs abutting the corridor. The Stuart Highway provides critical linkages between the CBD, the Northern Suburbs, the Airport and Palmerston.

Bagot Road

Bagot Road is a Territory controlled, multi-lane divided road (6 lanes) which provides access to the 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.

Gilruth Avenue and East Point Road

Gilruth Avenue and East Point Road provide an alternative route into the CBD from the Northern Suburbs, through Fannie Bay and The Gardens.

Gilruth Avenue is a four lane divided road at its widest point, reducing to a two-lane undivided road at its connection with East Point Road, at the intersection with Goyder Road. East Point Road continues north past Fannie Bay and into East Point, merging into Ross Smith Avenue, then Dick Ward Drive as it heads to the Northern Suburbs.

Gardens Road

Gardens Road is a two-lane road connecting the CBD with Gilruth Avenue.

Woolner Road

Woolner Road is a two-lane road linking the Stuart Highway with Tiger Brennan Drive. In addition to serving as a local collector road, the Woolner Road connection provides alternative access for traffic entering the CBD from the Northern Suburbs.

Ross Smith Avenue

Ross Smith Avenue is a mostly four-lane divided primary connector road which links the Stuart Highway with Fannie Bay and Dick Ward Drive.

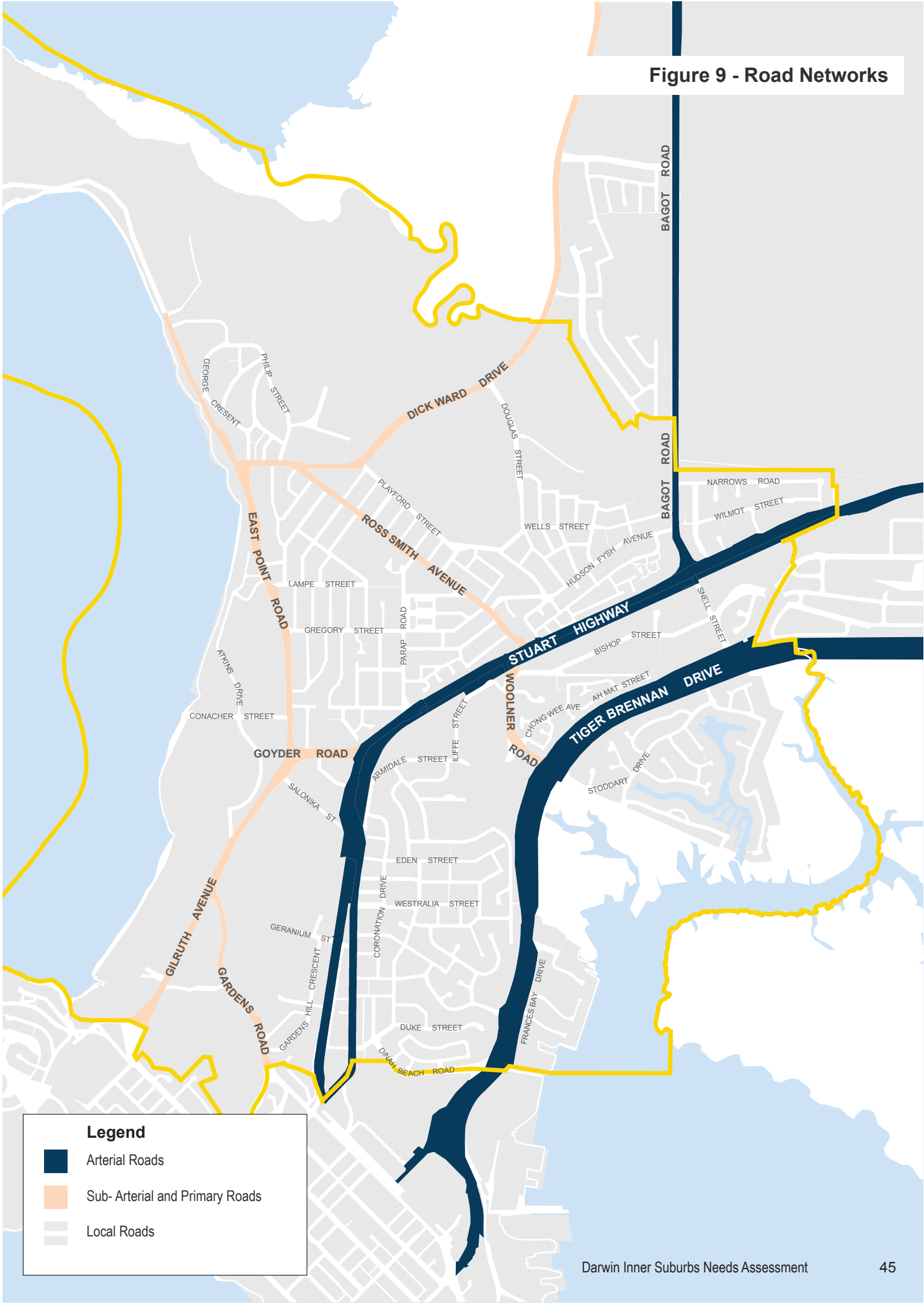
Goyder Road

Goyder Road is a four-lane road separated by an approximate 20 m wide median connecting Stuart Highway with Gilruth Avenue/ East Point Road.

Local Roads

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

Figure 9 - Road Networks



Existing Network Function

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

Moderate queueing occurs during peak times at the intersections along Stuart Highway. Observations of traffic conditions in peak hours reveal long delays for turning traffic at Goyder Road and Nylander Street, long queues at intersections of Gilruth Avenue/ East Point Road, Stuart Highway/ Westralia Street, Stuart Highway/ McMinn Street and Woolner Road/ Tiger Brennan Drive.

Growth in the inner 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 inner suburbs have been considered within the context of anticipated future traffic demand that will be generated by development in both the inner suburbs and the broader region to provide an understanding of how the road network will cope with the 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 needed.

Potential Future Upgrades

Arterial Roads

Tiger Brennan Drive

Over time, changes to Tiger Brennan Drive will be required to ensure the efficient movement of regional traffic to and from the Darwin CBD. Current proposals at various stages in the planning process include:

- A link to the CBD via Barneson Street to better distribute traffic and relieve peak demands on Tiger Brennan Drive and Bennett Street.
- Grade separation in the far term at the Tiger Brennan Drive, Woolner Road and Stoddart Drive intersection to allow the uninterrupted movement of regional traffic to and from the Darwin CBD, while maintaining local access to Tiger Brennan

Drive, Woolner, Bayview, Stuart Park and the Darwin CBD.

- A potential future connection of Bagot Road to Tiger Brennan Drive via Snell Street to allow regional traffic from the northern suburbs to avoid the Stuart Highway to access Darwin CBD or Palmerston.

Stuart Highway

Investigations into the future function of this network have identified a number of possible improvements to the Stuart Highway that may be required in the long term to cater for growth in traffic volumes to and from the CBD. These improvements may also be of benefit in providing opportunities to facilitate access to strategically located sites with potential for redevelopment. Possible improvements include:

- The upgrading and signalisation of intersections at the junction of the Stuart Highway and Goyder Road, and the Stuart Highway and Parap Road. These augmentations will assist with existing traffic circulation at these intersections, improving safety and decrease traffic delays, and improve pedestrian and cyclist access across these intersections. Provision of these intersections will facilitate access into the Woolner precinct for future redevelopment.
- Development of a bypass post 2030 of the Stuart Highway through Stuart Park along the alignment of the disused rail corridor (between Salonika Street and McMinn Street in the CBD). Subsequent to the development of the Stuart Highway Bypass post 2030, there may be potential for the existing Stuart Highway corridor through Stuart Park to function as a main street. The main street treatment of the existing corridor could include elements such as an improved pedestrian realm, a dedicated public transport corridor, and on-street parking in off-peak periods. Whilst contingent on the development of the Bypass, the eventual transition of the existing corridor will facilitate significant urban renewal of the corridor. Until the development of the Bypass, the existing Stuart Highway corridor is required to continue to perform as a major arterial corridor.
- The upgrading and signalisation of the intersection at McMinn Street, and the existing Stuart Highway at the southern end of the bypass. There is also

opportunity for an alternative access route to the CBD for the existing Stuart Highway corridor connecting to Day Street.

- The upgrading and signalisation of a further intersection with Geranium Street.

Sub-arterial and Primary Roads

Woolner Road/Ross Smith Avenue

To cater for future population growth locally and regionally, Woolner Road will require duplication between Iliffe Street and Chong Wee Avenue in the far term.

The offset of the Stuart Highway and Ross Smith Avenue/ Woolner Road intersections results in increased signal times as traffic connects between the two roads and also poses challenges for the safe movement of traffic through this large intersection.

The direct alignment of Woolner Road with Ross Smith Avenue is considered to be the preferred method of addressing the efficiency and safety issue of this intersection. Realignment of these roads will require:

- the use of existing road reserve on the south eastern corner of Stuart Highway and Woolner Road; and
- the acquisition of land from the lot on the north-western corner of Ross Smith Avenue and the Stuart Highway.

Local Roads

Nylander and Salonika Streets

Analysis has shown that without any improvement of access to the Salonika Precinct from the Stuart Highway, any development in either Salonika Street or Nylander Street will exacerbate existing delays and further reduce the performance of the Nylander Street intersection.

The Nylander Street intersection with the Stuart Highway imposes significant constraints on distribution and queuing capacity. It is therefore highly desirable to encourage traffic to access Salonika Street via Nylander Street from Goyder Road. Conversion of Nylander Street to two-way operation will be required, which may result in the loss of on-street car parking on one side of the road.

Development capacity thresholds will also be required on land on Nylander Street and Goyder Road currently within Zone SC (Service Commercial) as new and more intense development in this area and the associated traffic increases will contribute to capacity and performance problems at the regionally significant Goyder Road/ Stuart Highway intersection.

Within this context, appropriate redevelopment of the Nylander Street and Goyder Road locality should be limited to low-rise commercial buildings and some associated residential use, provided the residential use is:

- a relatively small component of the overall land use mix; or
- associated with a corresponding reduction in commercial floorspace.

Kurringal Court Extension

City of Darwin recently began public exhibition of a concept to connect Kurringal Court in Fannie Bay North to Dick Ward Drive. This proposal aims to alleviate traffic congestion issues that may occur as a result of new developments on Waratah Crescent and Kurringal Court. Such a concept may also include connecting Buntine Road and Kurringal Court via a four way signalised intersection at Dick Ward Drive.

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 carriage way is wide enough to cater for informal and formal car parking on the street. Where the carriage way is less than 7m 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 Inner Suburbs are well served by public transport services, along the Stuart Highway, East Point Road and Gilruth Avenue Corridors which link the study area to Darwin's CBD (inbound), and to Casuarina, Palmerston and Darwin's rural area (outbound). The location of the CBD on a peninsula adjacent to the inner suburbs means public transport routes create a high level of service in the study area, particularly along the Stuart Highway corridor and most areas within 600m walk of a bus stop.

The public transport connections currently available along regional and sub-arterial and primary roads within the inner suburbs provide relatively good coverage and level of service compared to the rest of the region. Areas proximate to the Stuart Highway corridor have the highest accessibility to frequent inbound and outbound public transport services, representing peak frequencies of 30 minutes or better. This corridor provides frequent services to Westralia St, Parap Village and Winnellie Shops and to the service commercial corridor extending from the CBD to Woolner.

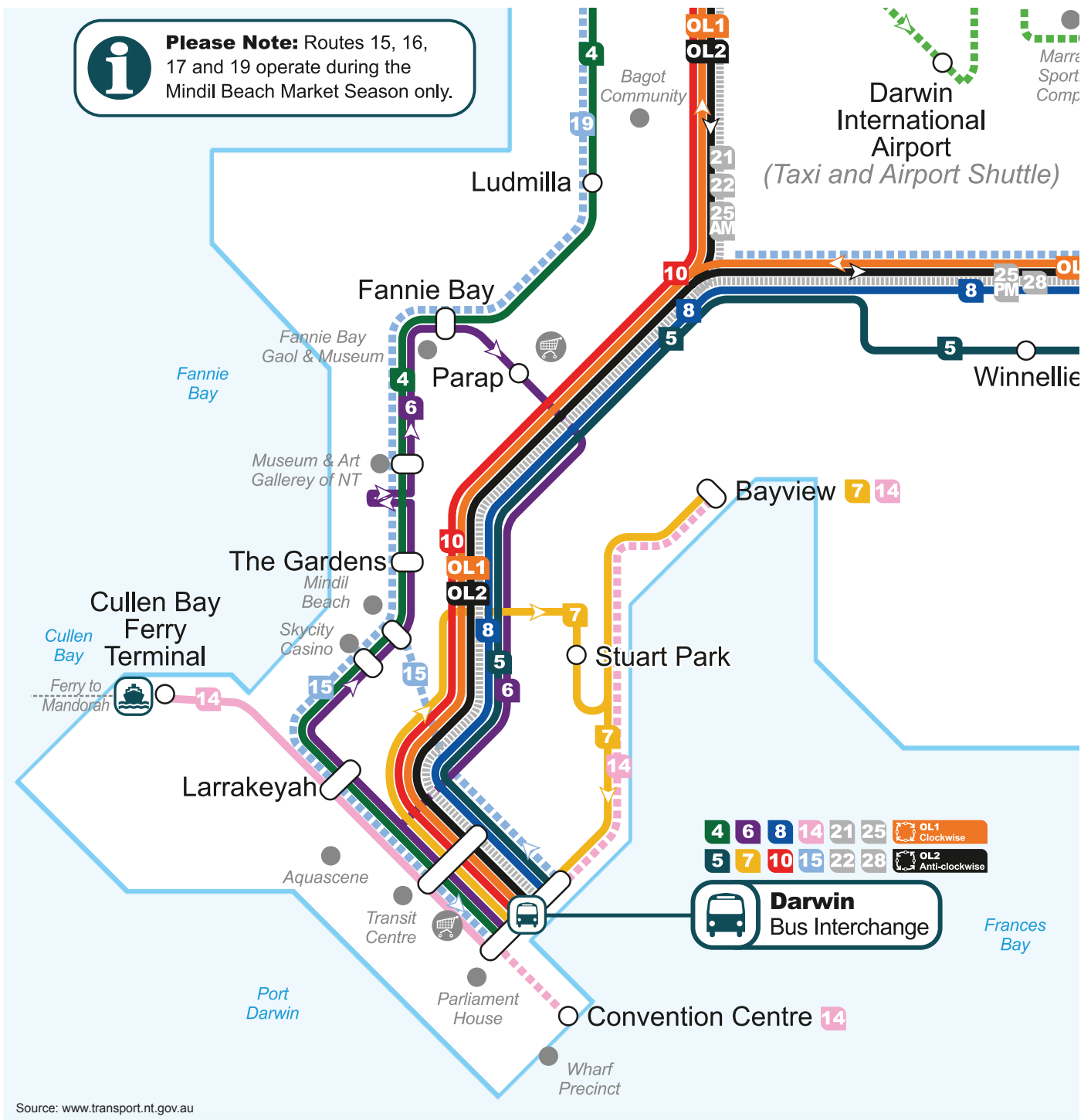
Route 4 services those parts of the inner suburbs proximate to East Point Road, Gilruth Avenue and Dick Ward Drive with a relatively frequent service running between Casuarina and Darwin CBD.

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 400m to bus stops along major public transport corridors generally consist of low-rise and low density areas of Stuart Park, Parap, Bayview and Ludmilla. Local services within the inner suburbs provide connections within these areas (routes 6 and 7), with connectivity to the CBD interchange only. It is noted that these services operate at reduced levels across the board (frequency, times of service and days of operation throughout the week).



Figure 10 - Bus routes servicing Darwin's Inner Suburbs



Source: www.transport.nt.gov.au

Bicycles and Pedestrians

Darwin has the highest per capita percentage of bike riders of all Australian cities, in addition to a high proportion of people commuting and recreating on foot. Complementing this high participation, the Darwin Inner Suburbs are served by a well-established bicycle and pedestrian network (refer Figure 11 opposite) as part of a regional network comprising over 70km of off road paths. This network connects the Inner Suburbs to the CBD, Palmerston, and the Northern Suburbs, and provides for a variety of users and needs. Key links within this network include:

- higher order regional shared routes running along the Stuart Highway and within the future proposed Stuart Highway bypass corridor, and adjacent to Tiger Brennan Drive;
- shared routes between Cullen and Fannie Bays via the series of public open spaces along the foreshore and East Point, also providing further access to Darwin's northern suburbs via Dick Ward Drive; and
- 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.

Notwithstanding the extent of the shared pedestrian and cycle networks within the inner suburbs, there are issues with the connectivity of the network. Most notably, studies suggest that the limited connectivity both along and across the Stuart Highway fail to cater for desire lines.

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 on the peninsula 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 11 - Cycling and walking paths in Darwin's Inner Suburbs



Darwin Airport/RAAF Base Controls

Due to the proximity of the Darwin International Airport/RAAF Base Darwin to the Inner Suburbs area, various constraints exist on land uses external to the airport. Given this, in addition to the land use controls of the NT Planning Scheme, airport control legislation further regulates development. Most notably, these constraints include the affect of aircraft noise on development, and reverse sensitivities on airport activities including building heights, extraneous lighting and bird and Flying Fox strikes.

Defence (Areas Control) Regulations

Airspace for the safe operation of aircraft in the vicinity of RAAF Base Darwin is protected by the Defence (Areas Control) Regulations (DACR). The DACR control the height of objects (structures and vegetation) including temporary structures such as cranes, and the purpose for which they may be used within an area of approximately 15km radius of the Airport. The restrictions on height enforced by the DACR need to be considered in relation to any future proposed development within the study area.

The areas of The Narrows and Woolner, east of Snell Street is subject to a height control of 15 metres whereby any development in excess requires the consent of the Department of Defence. All other areas within the Inner Suburbs have a DACR height control of 45 metres.

Aircraft Noise

The Australian Noise Exposure Forecast (ANEF) maps produced by the Department of Defence provide information on the impacts of aircraft noise proximate to Darwin International Airport/RAAF Base Darwin. The Building Site Acceptability Based on ANEF Zones (Table 2.1) within AS2021:2015 provides a guide as to the acceptability of certain land uses subject to certain noise exposure levels. In certain locations, development must be cognisant to the guidance of the ANEF maps, and the AS2021:2015.

Figure 12 illustrates the ANEF contours and level of exposure each suburb faces within the Inner Suburbs scope area. The exception to this includes land north of Fannie Bay, Ludmilla, The Narrows, and areas of East Point.

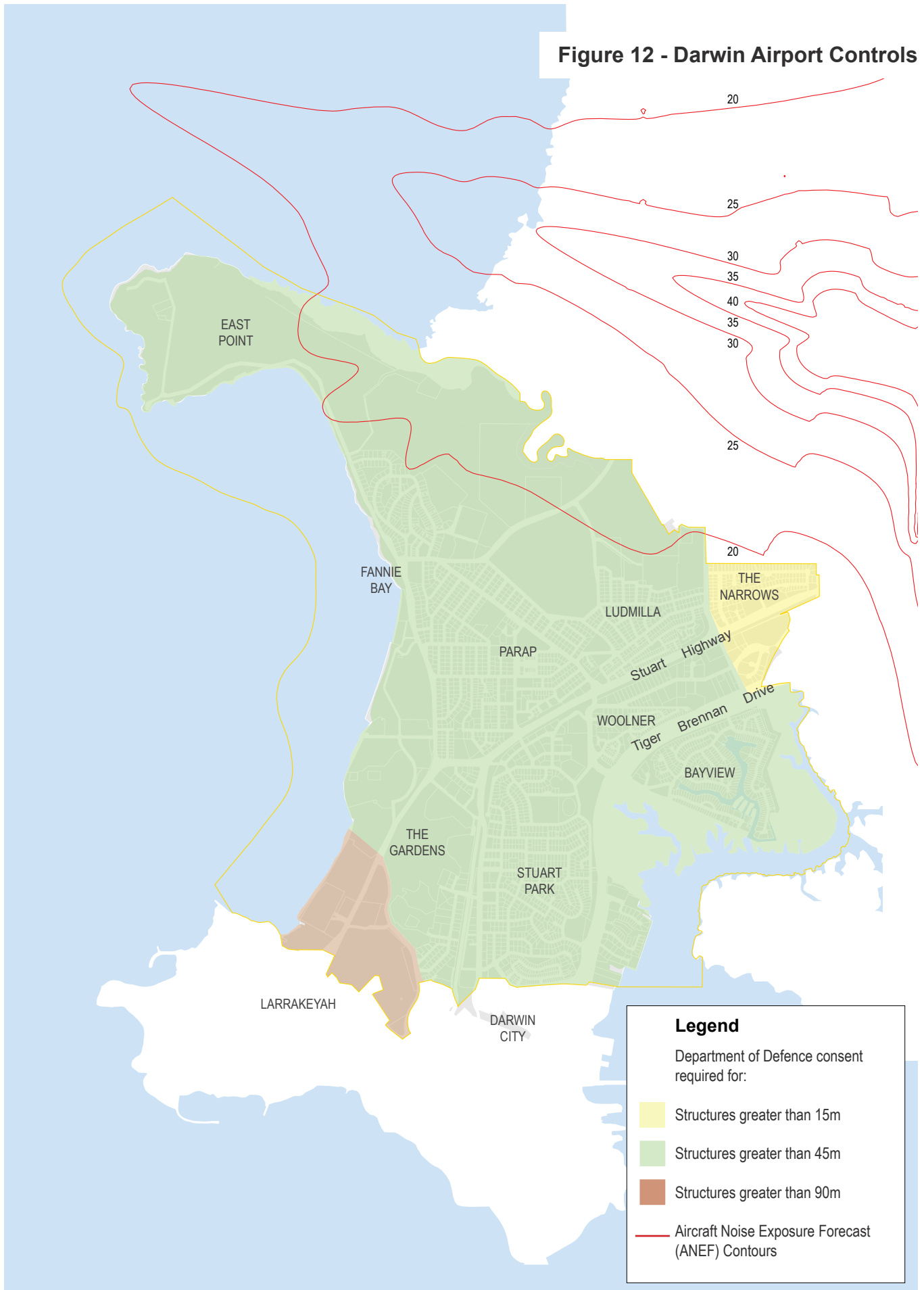
ANEF contour	Acceptable Use
< 20	residential, hotel/motel/hostel, commercial, light industry, general industry
< 25	hotel/motel/hostel, commercial, light industry, general industry
< 30	light industry, general industry
> 30	general industry only

Other Considerations

Other reverse sensitivities issues including Extraneous Lighting and Bird and Flying Fox strikes are considered to be harmful to the activities of the Airport. These present safety issues due to the potential for impacts on aircraft operations. As areas proximate to the airport intensify, these issues have the potential to be exacerbated.

With respect to these issues, guidance within Part 4 of the Northern Territory Planning Scheme exists to ensure that development is not of a nature to exacerbate these issues and prejudice the safe operation of the airport.

Figure 12 - Darwin Airport Controls



9.3 Community Feedback

Road Networks and Car Parking

Some submitters noted that transport capability and access to local roads and the highway must be considered prior to any up zoning.

The impact of higher density development on parking, transport and movement, particularly in narrow, predominantly residential streets was also an issue for a majority of respondents.

It was felt this could be alleviated by better design and approval processes, ensuring there is adequate parking allowance for new developments to keep additional cars off the street.

“All new apartment developments should be required to have at least three off street parking spaces for each unit. In older suburbs such as Fannie Bay where the streets are narrow and winding (part of its charm) the on-street parking is becoming a real problem and danger.”

Resident, Fannie Bay

Public Transport

The community recognises the importance of providing for high quality public transport connections to support future growth within the Darwin Inner Suburbs. The need to synthesise the public transport network with active transport modes is also seen as a priority.

Consultation has outlined that higher density requires improved public transport and that the Area Plan must include provisions for light rail, rapid transport systems. The potential for improved Public Transport routes and a dedicated Rapid Transport Corridor needs to be identified through the Area Plan in order to protect future opportunities.

Submitters have supported the incorporation of a Rapid Transit route along the Stuart Highway, with an associated Public Transport interchange central to the study area. The provision of an interchange facility is supported as it would sustain development growth along this corridor by maximising accessibility to public transport.

Some submitters advocate a light rail network from Howard Springs to the City in the future, with some urging to plan for this now, for the Territory's future needs –

“With modern technology this can only be done if (a) light rail corridor is kept open.”

Bicycles and Pedestrians

Consultation with the community has highlighted the importance of retaining and upgrading the inner suburbs pedestrian and bicycle network. In addition to achieving a greater degree of accessibility for users throughout the area, the embellishment of this network is integral in encouraging the use of active transport as a travel mode within the region.

Improvements identified by the community as being required to improve the usability of the local pedestrian and bicycle network, include:

- Extending paths to link the existing network between Bayview, Tipperary Waters, the Waterfront and the CBD;
- Improve safety of crossings around major intersections;
- Improved infrastructure on the network including increased signage, mid trip facilities and shading; and
- End of trip facilities within important destinations.

“The shared path network is a great asset that needs investment to defer road and parking upgrades and keep suburbs connected to the CBD. Improvements that increase usage should be a transport priority.”

Parap Resident

9.4 Implications for the Area Plan

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

The Area Plan recognises that transport corridors within the inner suburbs operate on the regional, sub-arterial and primary, and local levels. As such, the 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 inner suburbs.

Road Networks

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

Most of these upgrades include signalling and reconfiguration of existing intersections and potentially new intersections in particular locations, and will occur on the regional road networks, such as the Stuart Highway and Tiger Brennan Drive. In the longer term future traffic demand may require the construction of the Stuart Highway Bypass in Stuart Park.

It is to be noted that variation from the framework for growth established by this Area Plan may result in the need to re-visit the traffic management solutions.

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 carriageway is less than 7m wide, indented car parking bays may assist in improving traffic circulation.

However, it is noted that car parking in residential streets provides an opportunity to calm traffic and that the demand for on-street car parking in the inner city suburbs may reduce as modal shift from the car to public transport occurs in line with an improved public transport network.

Public Transport

Future Public Transport in the Darwin Inner Suburbs Area

The attractiveness and benefits of infill development within the Darwin Inner Suburbs will be enhanced by high quality public transport services. The increase in population of the Darwin Inner Suburbs along major transport corridors will be supported by increased service frequencies.

Investigations into the regional public transport system identify the potential for 15 minute all-day bus service frequencies down the Stuart Highway, Gilruth Avenue and East Point Road within the Darwin Peninsula.

To supplement the frequencies on these major corridors, a bi-directional east west route utilising Parap Road/ Ross Smith Avenue would provide a connection between the west and the east of the Inner Suburbs.

A central interchange to provide for the synthesis of connections within the study area and beyond and for safe and convenient pedestrian access will be a major factor in encouraging mode shift from car to public transport. Future development of the Woolner Precinct will create the opportunity for an interchange central to future development areas.

Impact of the future Stuart Highway Bypass on Public Transport Networks

In the short to medium term the public transport network will continue to operate on the Stuart Highway. In the longer term, it is proposed that the public transport links be relocated onto a Rapid Transit Corridor down the centre of the Stuart Highway through Stuart Park, and crossing onto a dedicated corridor within the former rail corridor heading north/east. This option has the potential to cater for other public transport options such as light rail into the future.

It will also be important to plan for the Rapid Transit Corridor's connection to the rest of the region. Opportunities for the future Rapid Transit Corridor to connect beyond Bagot Road into Winnellie include south along the Stuart Highway corridor proximate to the existing old railway corridor. Available options to connect the Rapid Transit Corridor to the CBD include:

- **Option 1:** a rapid transit corridor utilising the existing route along the Stuart Highway, connecting into Daly Street; or
- **Option 2:** deviating from the Stuart Highway towards the city via Day Street and McMinn Street.

Detailed investigation will be required to determine the most appropriate route.

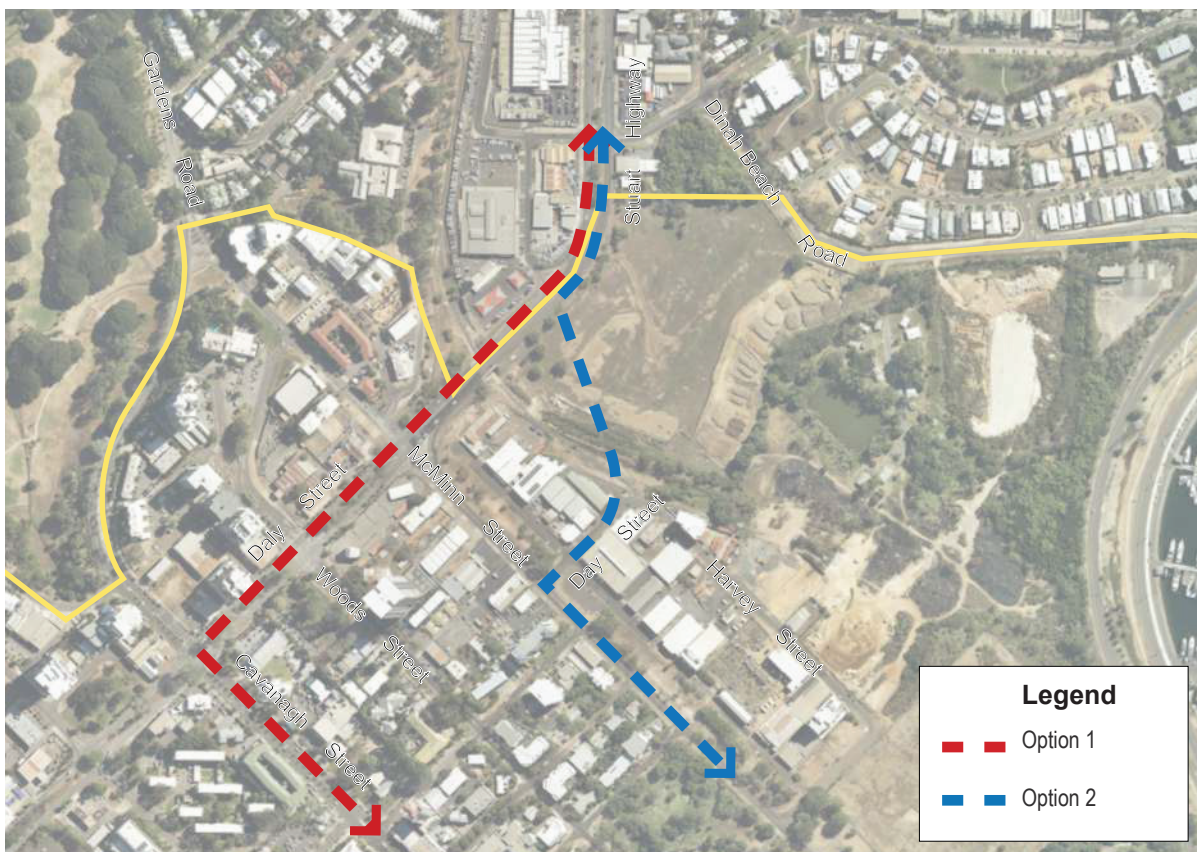


Figure 13 - Potential Rapid Transport Corridor linkages with the CBD

Bicycles and Pedestrians

As densification within the inner suburbs increases, a proportionate increase in people utilising active transport and associated infrastructure is expected. Current issues identify the need for improved interconnection of the pedestrian and cycling networks to improve functionality of the network.

The Darwin Inner 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;
- expanding on and off road links within the existing network throughout the Inner Suburbs, and upgrades to links in association with key corridors; and
- providing for the embellishment 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.

Potential transport infrastructure upgrades providing opportunities to enhance the pedestrian and cycling networks include:

- Tiger Brennan Drive and Stuart Highway;
- The Stuart Highway Bypass;
- Conversion of the existing Stuart Highway to a main street environment;
- Incorporation of a dedicated active transport link adjacent to Bagot Road; and
- Major intersection upgrades including Parap and Goyder Roads into Woolner, Ross Smith Avenue and Woolner Road.

Darwin Airport/RAAF Base Controls

The impact of activities from the Darwin International Airport/RAAF Base on the inner suburbs will be acknowledged within the Area Plan. This will include the identification of areas subject to controls over aircraft noise, and building heights and allowing for appropriate development in affected areas.

Cognisance will also need to be given to the potential for development to comprise inappropriate lighting, and encourage the congregation of birds and bat species that may increase the risk of strikes to aircraft. As highlighted, these considerations are also controlled by the requirements of the NT Planning Scheme.



10. Essential Services

10.1 Introduction

The synthesis of land use planning and essential infrastructure planning is imperative to ensure that the essential services required to support future development are provided. Area Planning for the Darwin Inner Suburbs plays an important part by providing the blueprint of where and how development can be expected within the Inner Suburbs.

Investigations undertaken in parallel with the preparation of the Area Plan assessed the existing capacity of water, sewer, power and telecommunications infrastructure, and determined likely upgrade and augmentation required to serve development in accordance with the preliminary concepts.

10.2 Context

Water Supply

The majority of the inner suburbs are within the Stuart Park Zone of the Darwin Water Supply. The Stuart Park zone is supplied by the Stuart Park ground level tank, with local reticulation from elevated tanks at Parap and Goyder Road. Tanks in the city are also linked to the Stuart Park zone.

The Narrows is supplied from the Karama zone ground level tank, with elevated tanks in Karama and Winnellie providing local reticulation.

Both the Stuart Park and Karama zones are supplied via 30km of pumped rising main from the McMinns Transfer Complex at Freds Pass. That complex is supplied from surface and groundwater resources at Darwin River Dam and McMinns/Howard East Borefields.

Power Supply

Electricity reticulation within Darwin Inner Suburbs is supplied by the three zone substations, City and Frances Bay Zone Substations in the CBD, and Woolner Zone Substation in Woolner. Distribution from these zone substations to the end user are through a mixture of overhead and underground feeders.

The interconnections of the Darwin Inner Suburbs and Central Business District require coordinated consideration upgrades or augmentation to serve development in the two localities.

Wastewater Network

The Darwin Inner Suburbs is in the catchment of the Ludmilla Waste Water Treatment Plant (LWWTP). The northern portion of the study area including Parap, Fannie Bay, Ludmilla, The Narrows and part of Woolner is in the direct gravity catchment of the plant. The balance of the study area is within the catchment of various sewage pump stations, including the Dinah Beach pump station which receives discharge from the CBD, Larrakeyah, Cullen Bay, and the Waterfront/Wharf areas.

A major consideration for planning is the hydraulic constraints of the LWWTP. The significant size of the catchment and potential for future infill density across this catchment mean the capacity of the existing plant is likely to require significant augmentation. The future upgrade will depend on programming of the required capital expenditure and the timing will influence the timing of future development.

A by-product of the LWWTP is unpleasant odours associated with the treatment of waste water. The Power and Water Corporation has strategies in place to control and manage the impacts of odour from the facility, including the designation of a 700m odour buffer, where development is to be limited.

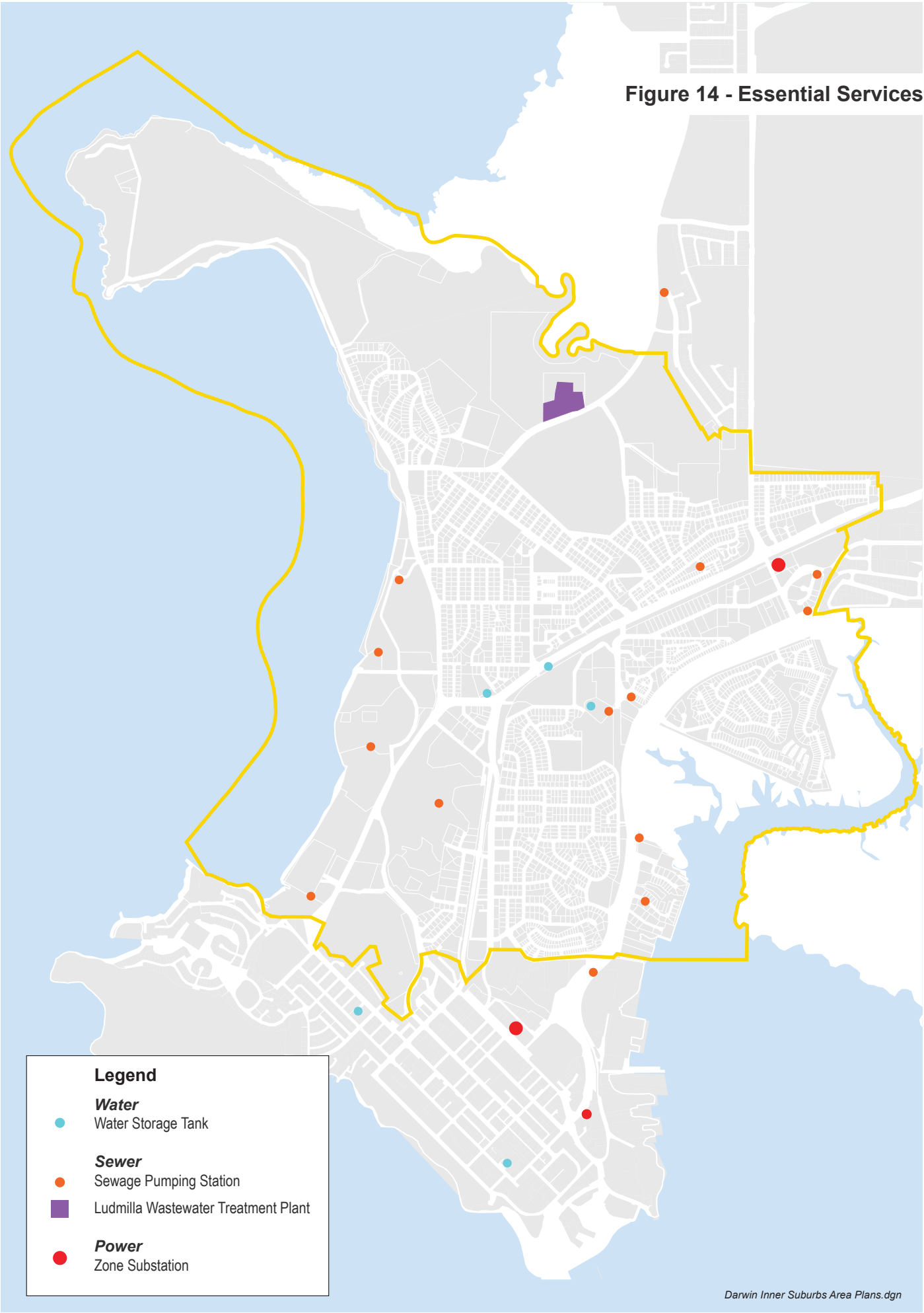
Telecommunications

A range of telecommunication services are available to the Inner Suburbs including a range of fixed line and mobile telephone and data services. The availability of telecommunication services is considered to be acceptable for the area.

Stormwater Drainage

The majority of trunk stormwater infrastructure and drains within the Darwin Inner Suburbs are the responsibility of the City of Darwin. Drainage systems associated with Northern Territory controlled road networks, and on Commonwealth controlled land contribute to the significant volumes of water from the Darwin Inner Suburbs channelled into a network of underground pipes and open drains.

Figure 14 - Essential Services



The City of Darwin currently administers a Developer Contribution Plan for Stormwater Drainage within discrete areas of Stuart Park. This policy facilitates the orderly development of land and an equitable and enforceable contribution toward the cost of Council's stormwater infrastructure upgrades. Other areas within the Inner Suburbs are not subject to Developer Contribution Plans which means trunk upgrade works are at the cost of the relevant developer.

Currently, a number of stormwater infrastructure works and investigations have or are currently being carried out. These include:

- Flood mitigation work around Ludmilla and The Narrows pursuant to the recommendations of the Darwin Region Flood Mitigation Advisory Committee.
- Stormwater drainage investigations of Parap and Fannie Bay South (south of Ross Smith Avenue and Dick Ward Drive).
- Expected stormwater drainage requirements around developing land within the Iliffe Street precinct in Woolner.

10.3 Community Feedback

Feedback received during consultation with the public highlighted the importance of infrastructure planning and investment.

Feedback emphasised the need for an integrated approach to planning; incorporating a range of agencies to ensure growth in the inner suburbs is supported by infrastructure, transport, public housing and environmental planning.

There is concern that increased density within certain areas of Darwin Inner Suburbs is putting pressure on existing services, and that consideration must be given to infrastructure capacity before developments are approved.

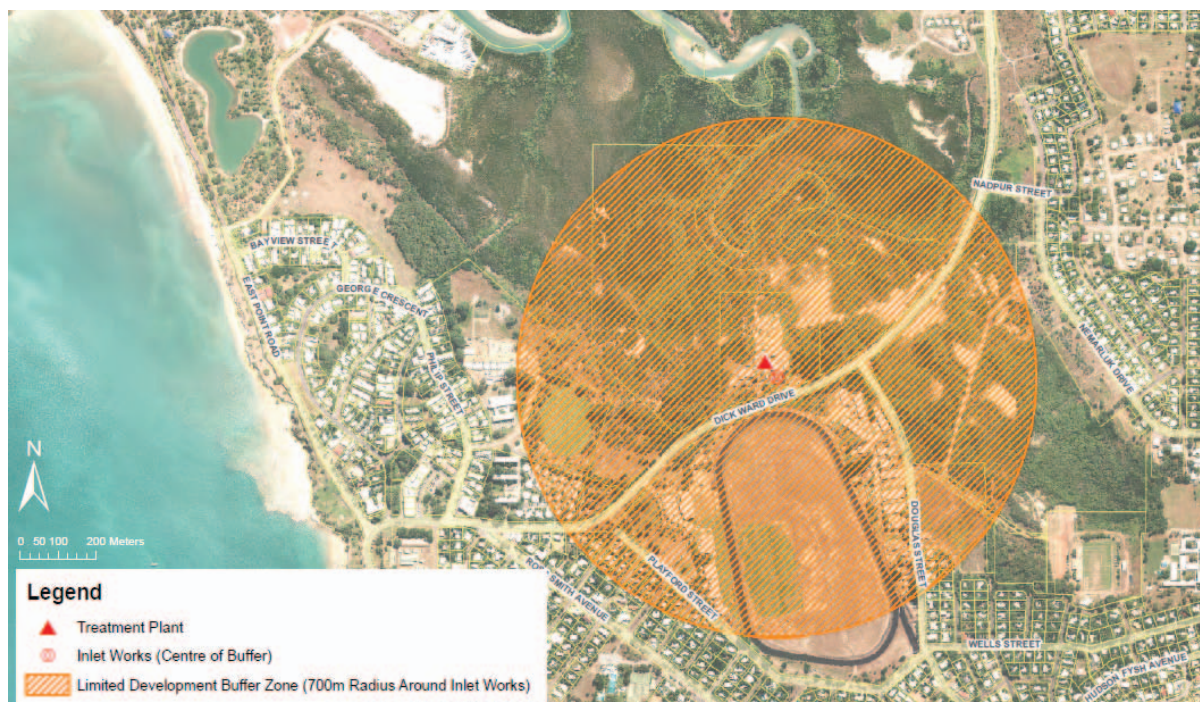


Figure 15 - 700m odour buffer around the Ludmilla Sewage Treatment Plant

10.4 Implications for the Area Plan

Water Supply

Power and Water are currently in the process of modifying the Stuart Park and Karama zone systems to incorporate a proposed new Berrimah ground level storage to connect to the existing Winnellie elevated tank. This new zone will decrease the load on the Karama tank, improve the utilisation of the Winnellie tank thereby improving capacity in Stuart Park and Parap. The creation of the separate zone serving the inner suburbs will reduce the interdependencies with the CBD.

Beyond creation of this new zone, development growth within the inner suburbs will require some upgrades and augmentation of the existing water network. Opportunities for new water servicing infrastructure needs to be recognised and retained.

Power Supply

Electrical loads associated with future growth in the CBD will also have implications for the Inner Suburbs, as the City and Frances Bay Zone Substations provide electrical supply to both areas. Future development within the CBD and Darwin Inner Suburbs may require a new zone substation. Staged provision of a new zone substation would create opportunities to match load growth and reduce initial capital investments.

Modelling and investigations into the siting and development of this zone substation suggests that an appropriate location is in the vicinity of Woolner Road and Tiger Brennan Drive close to 66 kV power lines. Lot 5763 on Iliffe Street in Woolner is a site currently owned by Power and Water which represents an opportunity for this infrastructure.

Wastewater Network

Opportunities currently exist to augment the existing sewer network within the Inner Suburbs. In addition potential development growth within the inner suburbs will require upgrades to the sewer network, which may include new augmentation. Similar to the water supply network, opportunities for the implementation

of this infrastructure need to be retained.

A specific example of this is the sewage pump station at Vestey's Beach, which has been identified to require relocation and upgrade into the future.

Potential future development within the Woolner precinct and the Zone FD (Future Development) area to the east of Bayview will require location specific augmentations to the network. In this respect multiple opportunities for the siting of infrastructure need to be maintained. Additionally, future CBD growth will require upgrades to infrastructure within the Darwin Inner Suburbs, due to the inherent link in the infrastructure that underpins these areas.

The hydraulic load limitation of the Ludmilla Waste Water Treatment Plant is acknowledged. As this facility services 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.

Telecommunications

Future growth within the Darwin Inner Suburbs will only require minor upgrades to the existing telecommunications infrastructure. Existing provisions within the NT Planning Scheme will ensure appropriate provision of required infrastructure.

Stormwater Drainage

Pursuant to the report by the Darwin Region Flood Mitigation Committee, further investigation is required to ensure that increasing development does not exacerbate any existing stormwater drainage issues. These investigations will be focussed in areas of expected development growth, including the suburbs of Parap, Stuart Park and The Gardens. The Darwin Inner Suburbs Area Plan provides the blueprint to inform these investigations.

The establishment of fund-capturing mechanisms will be important to facilitate necessary stormwater infrastructure upgrades and this will be addressed through ongoing work on an essential infrastructure program.

11. Environment and Heritage

11.1 Introduction

Local environment and heritage features play a vital role for Darwin residents' social, cultural and economic wellbeing. The land and sea are culturally and spiritually significant to the Aboriginal population, and also appreciated and valued by residents and visitors across the region for their inherent environmental, historic and recreational values. A healthy environment is also important to the economic welfare of Darwin, including resources supporting commercial fishing and aquaculture, and scenic and recreational values that support tourism.

Along with these benefits, the coastal location of Darwin also presents natural hazards including the potential for cyclones, severe storms, storm tides, inundation and the breeding of biting insects. Preservation of environmental values and consideration of natural hazards is an important part of catering for Darwin's growing population.

The importance of the inner suburb's rich archaeological and heritage places also needs to be recognised. These places represent the region's rich and colourful past, and appropriate conservation will ensure that future generations have an understanding of Darwin's history.

11.2 Context

Darwin Harbour Values

Darwin's Inner Suburbs adjoin Darwin Harbour and its associated internationally significant estuarine, freshwater and terrestrial environments including extensive areas of tidal mudflats and mangrove communities which provide habitat to some of the region's diverse native fauna. Habitats in the Darwin Inner Suburbs support a multitude of species including critically endangered communities of Northern Quoll, endangered Gouldian Finch and Atlas Moth, as well as vulnerable water monitors, the Red Goshawk, Partridge Pigeon, Australian Bustard and Christmas Frigatebird.

Areas of environmental significance, such as mangrove communities and estuarine areas associated with the harbour such as Ludmilla and Sadgroves Creeks and East Point Reserve are predominantly included within Zone CN (Conservation). The primary purpose of Zone CN (Conservation) over these areas is to conserve and protect the flora, fauna and character of natural areas. Zone CN imposes strict limits on development to ensure that it is sensitive to the natural features and habitats.

Other coastal areas and important green spaces within the inner suburbs are largely within Zones PS (Public Open Space) and OR (Organised Recreation). These areas contribute to the tropical character of Darwin, sustain residents' active outdoor lifestyle, and represent limitations on development to protect open space and recreational values. Recognition also needs to be given to the environmental functions of these open space areas as a component of the Darwin Harbour region.

Figure 16 - Primary and Secondary Storm Surge



Water discharge into Darwin Harbour

The large volumes of rainwater associated with the wet season present challenges in relation to the management of stormwater drainage. Soils often become waterlogged, there can be localised flooding and pollutants can be washed into natural watercourses and Darwin Harbour.

The Darwin Harbour Strategy, the Darwin Harbour Water Quality Protection Plan and the subsequent Stormwater Strategy for the Darwin Harbour Region, all offer goals and management actions to help guide development to ensure that the Darwin region remains a biologically rich and diverse marine and terrestrial environment into the future.

The Darwin Harbour Region Stormwater Strategy by the Northern Territory Environmental Protection Authority (NTEPA) provides a basis for improving stormwater management and maintaining high water quality within the Harbour. The strategy identifies NTEPA actions and the required support and involvement of various industry, government agencies, local government and community interests.

Storm Surge and inundation

The location of Darwin on and around the coast presents benefits along with significant hazards associated with extreme weather conditions. For the inner suburbs area, one such hazard with significant impacts is storm surge.

There are many low lying areas within the inner suburbs located within the Primary Storm Surge Area (PSSA) and Secondary Storm Surge Area (SSSA).

The PSSA represents coastal areas where the likelihood of a surge occurring represents a 1% chance (1 in 100) chance in any given year. The SSSA represents a 0.1% chance of (1 in 1000) of a storm surge occurring in any given year.

The NT Planning Scheme states that residential uses, strategic and community services (such as power generation, defence installations, schools, hospitals, public shelters and major transport links) should be avoided in storm surge areas.

The large volumes of rainwater commonly experienced through significant wet periods have the potential to present issues for stormwater discharge within the inner suburbs. Currently, parts of Ludmilla and The Narrows have experienced inundation through flooding events occurring frequently since the 1990s.

Cultural and Heritage Places

Due to its rich Aboriginal history, and being the site of the first European settlement in the region, the Darwin peninsula and immediate environs include many heritage and archaeological places protected by the *Heritage Act*. The object of the Act is to provide for the conservation of the Northern Territory's cultural and natural heritage. Table 5 on the opposite page outlines the places within the inner suburbs that are protected by the Act, and represent tangible reminders of Darwin's vibrant past.

Within the Northern Territory, the concept of "adaptive reuse" of heritage places is encouraged. Adaptive reuse is an approach to preserve, care for, reveal or interpret the fabric of a place, whilst making better use of the place itself. The effective repurposing of the Old Vestey's Meatworks water tank at Darwin High school as a gymnasium is a prime example of adaptive reuse. The Sidney Williams Hut in Stuart Park provides another example of how this can be achieved.

Zone HT (Heritage) is seen as an appropriate land use designation to allow for adaptive reuse of significant places. The purpose of Zone HT is to conserve and enhance those elements that contribute to the heritage significance of an area, ensuring that subsequent uses are compatible with the heritage value and character of the area.

Table 5: Declared Heritage Places within Darwin's Inner Suburbs

Declared Heritage Place	Street Address	Town Planning Zone
Darwin Botanic Gardens	200 Gardens Road, The Gardens	PS (Public Open Space)
Fannie Bay Gaol	82 East Point Road, Fannie Bay	CP (Community Purposes)
Gardens Road Cemetery	191 Gardens Road, The Gardens	CP (Community Purposes)
Qantas/Guinea Airways Hangar	22 Macdonald Street, Parap	OR (Organised Recreation)
Ludmilla Salt Pans	152 Alec Fong Lim Drive, East Point	PS (Public Open Space)
North Australia Railway Corridor - The Narrows	Stuart Highway Corridor	M (Main Road)
Palmerston Cemetery	9 Wilkinson Street, Parap	CP (Community Purposes)
Vestey's Tank (Darwin High School)	Darwin State High, The Gardens	CP (Community Purposes)
WWII East Point Fortifications	152 Alec Fong Lim Drive, East Point	PS (Public Open Space)
WWII Frances Bay Explosives Complex, Bayview	57 Bayview Boulevard, Bayview and part of the Tiger Brennan Road Reserve	PS (Public Open Space), SD (Single Dwelling Residential), PM (Proposed Main Road)
WWII Navy Victualling Yards, The Gardens	28 and 30 Gardens Hill Crescent, The Gardens	SC (Service Commercial)
WWII Sidney Williams Hut, Stuart Park	28 Westralia Street, Stuart Park	SD (Single Dwelling Residential)
O'Ferrals Rock	Bayview Haven	CN (Conservation)

11.3 Community Feedback

Darwin Harbour

The community identifies the significance of the local environment, and that retention of areas of environmental and conservation significance are important to the protection of the environmental values of the inner suburbs.

Maintenance of existing green belts and declared conservation areas within the inner suburbs were identified as a priority because of both their intrinsic environmental value, and the role they play in reinforcing Darwin's tropical character. Allowing for pedestrian linkages through certain conservation areas such as Ludmilla Creek was seen to be important for the enjoyment of these vital areas, in addition to supporting education around the importance of their conservation.

Mangrove communities, were also identified as being of importance for a number of reasons including the contribution of the range of species to local biodiversity and the opportunities these communities provide for local indigenous populations to retain traditional skills and cultural heritage

"Natural values enhance our lives and marine biodiversity. Protect all natural areas. Don't bulldoze habitat, densification is alright in areas that are already built on"

Local resident

Storm Surge and inundation

The community recognise that impacts of inundation and storm surge on property are significant issues for consideration and that the increase in impervious surfaces associated with future development will increase the importance of considering potential impacts.

Cultural and Heritage Features

Protection of and respect for places of cultural and historical significance is seen as a priority by many in the community, although there is also a general appreciation of the benefits of adaptive reuse.

"Densification should be balanced by environmental and heritage networks, walking and bike tracks as an offset for higher density development and for the health of the community"

Parap Resident



Sidney Williams Hut 2012

11.4 Implications for the Area Plan

Darwin Harbour

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 Zone PS (Public Open Space) and OR (Organised Recreation), whereby these areas will be retained to promote their inherent ecological values, in addition to ensuring that their recreational values are also maintained. In this respect, the identification of a walking link between Ludmilla Creek and East Point is a good example of providing for the recreational and educational value of a significant area.

The principle of preservation and promotion of intrinsic 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).

This Area Plan also encourages coordination with the NT EPA, 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.

Storm Surge and Inundation

Future development within the area should protect property from undue environmental risks.

Pursuant to the requirements of the NT Planning Scheme, the development of inappropriate uses is discouraged within the Primary Storm Surge and Secondary Storm Surge extents. The Area Plan recognises the importance of this, and as such does not advocate for increased development in these areas.

The management of stormwater discharge within the inner suburbs needs to be in accordance with the requirements of the relevant controlling agencies. Considerations should also be given to the recommendations of the Darwin Region's Flood Mitigation Advisory Committee.

Cultural And Heritage Features

The Area Plan will acknowledge existing heritage in the inner suburbs and establish a context for appropriate adaptive reuse. Many places within the inner suburbs including those associated with World War II and the North Australian Railway Corridor present opportunities to present the rich history of the inner suburbs.

Along with recognition of history through the public realm, allowing for adaptive reuse of specific significant places in private and government ownership will also be encouraged. Zone HT is conducive to allowing for this re-use, whilst also ensuring use is sympathetic to the sensitive nature of these places.



Sidney Williams Hut 2015

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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 in response.

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