Reports, recommendations and supporting documentation can be accessed via the City of Darwin Council Website at www.darwin.nt.gov.au, at Council Public Libraries or contact Arweena Smit on (08) 89300 685.

OPEN SECTION

CITY OF DARWIN

TOWN PLANNING COMMITTEE

TUESDAY, 6 AUGUST 2013

MEMBERS: Member H I Galton, (Chairman); The Right Worshipful, Lord Mayor, Ms Katrina Fong Lim; Member J M Anictomatis; Member R K Elix; Member G J Haslett; Member R M Knox; Member G A Lambert; Member G Lambrinidis; Member R Lesley; Member A R Mitchell; Member S J Niblock; Member R Want de Rowe; Member K J Worden.

OFFICERS: Chief Executive Officer, Mr B Dowd; General Manager Infrastructure, Mr L Cercarelli; Manager Design, Planning & Projects, Mr D Lelekis; Strategic Town Planner, Miss C Robson; Graduate Town Planner, Mr C Logan; Executive Assistant, Miss A Smit.

Enquiries and/or Apologies: Arweena Smit
E-mail a.smit@darwin.nt.gov.au - PH: 89300 685

Committee's Responsibilities

THAT effective as of 16 April 2012, Council in pursuant to Section 32(2)(b) of the Local Government Act 2008 hereby delegates to the Town Planning Committee the power to make decisions within the approved budget relating to:

* All Development Applications referred from the Development Consent Authority
* All Town Planning related matters referred from the NT Government
* Town Planning Strategy, Policies and Procedures
* Development Application and Town Planning Matters referred to Council from Developers, Community Groups and Individuals
* Signage Applications, Policies and Procedures
* Liquor Licence Applications

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3. DECLARATION OF INTEREST OF MEMBERS AND STAFF ............ 3
Reports, recommendations and supporting documentation can be accessed via the City of Darwin Council Website at [www.darwin.nt.gov.au](http://www.darwin.nt.gov.au), at Council Public Libraries or contact Arweena Smit on (08) 89300 685.

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1. MEETING DECLARED OPEN

2. APOLOGIES AND LEAVE OF ABSENCE

2.1 Apologies

2.2 Leave of Absence Granted

A. THAT it be noted that Member G Lambrinidis is an apology due to a Leave of Absence being previously granted on 14 May 2013 for the period 27 June 2013 to 10 August 2013.

B. THAT it be noted that Member G A Lambert (Chairman) is an apology due to a Leave of Absence being previously granted on 30 July 2013 for the period 2 – 7 August 2013.

DECISION NO. 21(06/08/13)

3. DECLARATION OF INTEREST OF MEMBERS AND STAFF

4. CONFIDENTIAL ITEMS
5. WITHDRAWAL OF ITEMS FOR DISCUSSION

5.1 Items Withdrawn by Staff

THAT the Committee resolve under delegated authority that the following items be withdrawn by staff as Items of Significance, be considered: ….

DECISION NO.21() (06/08/13)

5.2 Items Withdrawn by Members

THAT the Committee resolve under delegated authority that the Information Items and Officers Reports to the Town Planning Committee Meeting held Tuesday, 6 August 2013, be received and considered individually.

DECISION NO.21() (06/08/13)

6. CONFIRMATION OF MINUTES PERTAINING TO THE PREVIOUS TOWN PLANNING COMMITTEE MEETING

THAT the Committee resolve that the minutes of the previous Town Planning Committee Meeting held on Tuesday, 2 July, 2013, tabled by the Chairman, be received and confirmed as a true and correct record of the proceedings of that meeting.

DECISION NO.21() (06/08/13)

7. BUSINESS ARISING FROM THE MINUTES PERTAINING TO THE PREVIOUS TOWN PLANNING COMMITTEE MEETING

7.1 Business Arising

8. GENERAL TOWN PLANNING REPORTS

Nil
Presenter: Manager Design, Planning & Projects, Drosso Lelekis
Approved: General Manager Infrastructure, Luccio Cercarelli

PURPOSE

The purpose of this report is to refer to Council for endorsement, a submission in response to the Northern Territory Government’s Discussion Paper entitled Towards an Area Plan for the Knuckey and Ironstone Lagoons Locality – Investigation into Land Use Options - June 2013.

LINK TO STRATEGIC PLAN

The issues addressed in this Report are in accordance with the following Goals/Strategies of the City of Darwin 2012 – 2016 as outlined in the ‘Evolving Darwin Towards 2020 Strategic Plan’:-

Goal
1. Collaborative, Inclusive and Connected Community
Outcome
1.4 Improved relations with all levels of government and significant stakeholders
Key Strategies
1.4.2 Play an active role in strategic and statutory planning processes

KEY ISSUES

- As a part of its strategic planning role, the Northern Territory Planning Commission has issued a Discussion Paper entitled Towards an Area Plan for the Knuckey and Ironstone Lagoons Locality – Investigation into Land Use Options - June 2013 for comment.
- The development of appropriate Area Plans is strongly supported by Council.
- The outcomes of the Discussion Paper may inform a draft Knuckey and Ironstone Lagoons Area Plan, with the intention of inserting the final Area Plan into the Northern Territory Planning Scheme as a guiding document.
- The Discussion Paper introduces the concept of considering three (3) different growth scenario levels, being low, medium and high growth.
- The study area covers the Darwin municipality and Litchfield shire.
- The area within the Darwin municipality is bounded by Amy Johnson Avenue, McMillans Road, Vanderlin Road and the Stuart Highway.
- Studies should be undertaken to ascertain the extent of infrastructure requirements such as stormwater drainage and transport networks and social and community infrastructure required to support the various future development options contained within the Discussion Paper. The assessment needs to
consider the impacts and requirements not only within the study area, but also the areas adjoining the study area or downstream of it.

- It is important to ensure that any stormwater drainage flows from the study area into downstream catchments of the airport and Rapid Creek do not exceed current flows or adversely impact upon the downstream catchments.
- It is also recommended that the Berrimah North Area Plan is reconsidered and replaced through the development of a Knuckey and Ironstone Lagoons Area Plan.
- It is recommended that Council endorse the comments provided to the Northern Territory Planning Commission as included in the submission provided at Attachment B, in the response to the Discussion Paper.

RECOMMENDATIONS

THAT the Committee resolve under delegated authority:-


BACKGROUND

The Northern Territory Planning Commission has provided for comment a Discussion Paper entitled Towards an Area Plan for the Knuckey and Ironstone Lagoons Locality - Investigation into Land Use Options – June 2013. This Discussion Paper is included as Attachment A of this report.

The Knuckey and Ironstone Lagoons locality incorporates the area of land designated as the Study Area as provided in this report. It has been identified as a priority area by the Planning Commission within the Discussion Paper and is considered by the Northern Territory Planning Commission to be an area of strategic importance in terms of its positioning in relation to Darwin, Palmerston, Berrimah and East Arm. The Discussion Paper states that area contributes to biodiversity.

The outcomes of the Discussion Paper will inform a draft Knuckey and Ironstone Lagoons Area Plan, with the intention of inserting the final Area Plan into the Northern Territory Planning Scheme as a guiding document for future development in the area.

DISCUSSION

The study area as described in the Discussion Paper, consisting of the Knuckey and Ironstone Lagoons, associated wetlands and links to Holmes Jungle, is considered a strategic land asset within the Darwin region with significant environmental values in the Discussion paper.

In order to address the increasing importance of the strategic positioning of the study area and aspirations in terms of “environmental protection, economic development and social equity”, a review of land uses in the area is underway.

The Discussion Paper provides contextual background and outlines possible development opportunities. The stated intent of this document is to inform discussion on opportunities to grow existing land uses, establish new businesses, provide local employment, increase property values, alternative housing options, whilst at the same time protecting the natural environment and a unique sense of place.

The key objectives of the Discussion Paper are to:

i.) Provide background on the existing policy framework, zoning and land use in the study area;

ii.) Identify land use issues and their implications on future use and development;

iii.) Establish parameters to inform future land use in the area and put forward options, taking into account protection of the natural environment and opportunities presented by the strategic location of the study area.

Current Situation

The Knuckey and Ironstone Lagoons are considered to contribute significantly to biodiversity conservation within the Darwin Region according to the Discussion Paper. It is further stated that the lagoons and wetlands within the area are part of a larger hydraulic system via the aquifer connection between Holmes Jungle and Marlow Lagoon and Hudson Creek in Palmerston. Current land uses within the area include a range of rural, rural living, community and commercial activities. The Discussion Paper states that existing land uses are largely a result of the existing location on the outskirts of Darwin, as well as environmental and airport restrictions.

The site is located equidistant from Darwin and Palmerston and in close proximity to significant employment centres including the airport, defence facilities, East Arm port and associated industrial areas.
Study Area

The study area covered under the Discussion Paper is the area extending from Amy Johnson Avenue in the west to McMillans Road in the east and from the Stuart Highway north to Holmes Jungle and the Mickett Creek Shooting complex, as shown below.

Current Regulatory Context/Land Use Policy

The section of the study area to the west of Vanderlin Drive is located with the City of Darwin Municipality, whilst the land to the east of Vanderlin Drive is located within Litchfield Shire. The entire area is controlled under the Planning Act and Northern Territory Planning Scheme, with additional controls covering specific sections, such as the Berrimah North Area Plan, covering the Boulter Road area and The Litchfield Planning Concepts and Land Use Objectives 2002, covering areas to the east of Vanderlin Drive.
The stated intent of the Discussion Paper is to review the issues which informed the existing policy and zones within the study area and identify possible changes and their implications.

**Discussion Paper**

The Discussion Paper lists issues and opportunities for development in the area. These include:
- Land capabilities
- Hydrology
- Environmental sensitivities
- Flight paths
- Biting insects
- Existing land use
- Land tenure
- Infrastructure

The following are a summary of the main issues that impact Council.

**Stormwater Drainage**

The treatment of stormwater drainage is identified in the Discussion Paper as a significant feature of and constraint to the site. Surface water within City of Darwin boundaries either flows westwards into the airport lands and then into Rapid Creek, or across Vanderlin Drive into Ironstone Lagoon. Any increased development in these areas is likely to increase stormwater runoff into the adjoining areas.

The Discussion Paper states that the aquifer running between Holmes Jungle and Palmerston, does not directly affect land within the City of Darwin’s boundaries.

The approximate surface drainage paths are shown below.
Airport Operations

The study area is located directly to the east of the Darwin International Airport and is therefore subject to noise and operational restrictions. The Australian Noise Exposure Forecast (ANEF) takes into account a number of factors including the movement, frequency and types of aircraft, the quantity and duration of their noise during take-off and landing and the daily distribution of arrivals and departures, into an index value, as illustrated in the contours below.
These contours restrict potential development, as outlined below:

<table>
<thead>
<tr>
<th>Building Site Acceptability Table (Table 2.1 from AS2021)</th>
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<tbody>
<tr>
<td>BUILDING TYPE</td>
</tr>
<tr>
<td>House, home unit, flat, caravan park</td>
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<tr>
<td>Hotel, motel, hostel</td>
</tr>
<tr>
<td>School, university</td>
</tr>
<tr>
<td>Hospital, nursing home</td>
</tr>
<tr>
<td>Public building</td>
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<tr>
<td>Commercial building</td>
</tr>
<tr>
<td>Light Industrial</td>
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<tr>
<td>Other Industrial</td>
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</tbody>
</table>
Current Development Proposals

According to the Discussion Paper, there are a number of current development proposals across the study area. In relation to land within the City of Darwin’s jurisdiction, these include the industrial development (Site G) and urban subdivision (Site F) as shown below. These do not include developments within the area subject to the Berrimah North Area Plan, which also fall within the City of Darwin’s jurisdiction.

Berrimah North Area Plan

The area covered by the Berrimah North Area Plan is shown below.
The Discussion Paper includes the possibility of continued development of the Berrimah North Area and to the south for urban residential and community uses, subject to the consideration of an appropriate local road network and available service infrastructure capacity.

Council will be recommending that the Berrimah North Area Plan is reconsidered and replaced through the development of a Knuckey and Ironstone Lagoons Area Plan.

By considering the Berrimah North Area Plan in a future Knuckey and Ironstone Lagoons Area Plan, the necessary studies and infrastructure can be planned for, and also tie in to the greater region.

Existing Zones

The existing zones within the study area, as provided in the Discussion Paper, are shown below and include Zone CN (Conservation), Zone CP (Community Purpose), Zone R (Rural), Zone RL (Rural Living), Zone RD (Restricted Development), Zone U (Utilities), Zone C (Commercial), Zone SC (Service Commercial) and Zone TC (Tourist Commercial).
The roads within the study area, with the exception of the Boulter Road precinct, fall under the care and responsibility of the Northern Territory Government. Consequently, the impacts of any future development within the subject area on the existing road network, will be the responsibility of the Northern Territory Government.

The responsibility of providing other services for the area, including water, sewerage and electrical works, also falls to the Northern Territory Government.

Growth Scenarios

The Discussion Paper discusses two (2) alternative approaches to growth. The first is to continue the existing low growth intensity of development identified under the Berrimah North Area Plan, with minor variations dependent on the capacity of servicing infrastructure to support proposals and the second alternative involves the investigation of growth scenarios, with consideration of the viability of providing supporting infrastructure and measures required to protect the natural environment in the area.

The various growth scenarios as outlined in the Discussion Paper, are described below. It is stated in the Discussion paper that future development may not necessarily reflect any one of these scenarios, but may include elements from each scenario. The Discussion Paper provides these scenarios to “stimulate informed discussion of the potential future directions for land use and development” within the study area.

Low Growth Scenario

- Assumes trunk services will not be provided, limiting significant infill development in the medium to long term;
- Components may include:
  i.) continued development of the area covered by the Berrimah North Area Plan for urban residential and community uses, subject to the consideration of an appropriate local road network and available service infrastructure capacity;
  ii.) planned expansion of Peter McAulay Centre to the east;
  iii.) planned expansion of Crocodylus Park;
  iv.) infill rural residential (1 ha) development between Secrett Road and the Peter McAulay Centre;
  v.) development of community uses in area between Mickett Creek Shooting Range and the Knuckey Lagoons Recreation Reserve;
  vi.) continued management of the Knuckey Lagoon Conservation Reserve and extension of the Holmes Jungle Nature Park to include drainage lines to the east of Crocodylus Park;
vii.) enhanced passive recreation activities around lagoons and public access along the lagoon peripheries, subject to protection of flora and fauna habitats and the privacy and amenity of adjoin properties;

- Parameters/Outcomes include:
  i.) lack of reticulated water and sewerage would limit the potential for subdivision of existing rural and rural living lots and result in continued ad hoc consideration of individual development proposals;
  ii.) lack of reticulated services may impact economic viability of services required to service potential developments within Berrimah North and Berrimah Farm;
  iii.) potential impacts on ground and surface water resources caused by continued ground water extraction for domestic use and use of on-site effluent disposal
  iv.) limited potential to provide passive recreation opportunities or improve Reserves management;
  v.) limited opportunities to improve stormwater drainage to minimise potential impacts on lagoons system.

A visual representation of the Low Growth Scenario is shown in the discussion paper.

Medium Growth Scenario

- Assumes that strategic development near the study area (eg. Berrimah Farm and East Arm Port) and associated trunk services upgrading, have the potential to create service delivery within the study area;
- Assumes that many existing land owners may wish to retain the rural/natural character of the area;
- In addition to the components of the Low Growth Scenario, this Scenario may include:
  i.) potential for commercial, tourist commercial or light industrial uses within the area immediately to the south of Boulter Road (which is constrained by the ANEF 20 contour, but complies the Building Site Acceptability Table provided in this report);
  ii.) potential for urban residential use (as an extension to the area covered by the Berrimah North Area Plan) of the land outside of the ANEF 20 contour in the vicinity of the Boulter Road/Vanderlin Drive intersection;
  iii.) opportunity for low intensity recreational related activities in the existing Zone RD (Restricted Development) area to the south Precinct A;
  iv.) potential relocation and expansion of existing Flight Path Golf Facility, which is currently constrained by planned upgrading of Power and Water infrastructure;
v.) potential for development of specific industrial uses that minimise potential for exposure to aircraft noise in areas not directly under the flight path;

vi.) opportunities for extension of commercial and industrial uses on Power and Water land to the west of Vanderlin Drive, dependent on land they require for future infrastructure;

vii.) redevelopment of rural and rural living lots to provide 1 ha rural residential lots;

viii.) urban infill residential development of portion of existing Indigenous Corporation Village that falls outside the ANEF 20 contour and a potential culture/visitors/environmental education centre on the portion of this site within the ANEF 20 contour;

- Parameters/Outcomes include:
  i.) responds to the strategic location of the subject area within the regional context, whilst providing “a degree of protection for the rural amenity and natural character of the area”;
  ii.) scenario will be dependent on economic viability of providing the necessary infrastructure for the development and opportunities to create funding from further development;
  iii.) increased intensity of land uses may assist in the implantation of more stringent environmental protection guidelines; increased passive recreation; improved stormwater drainage; and reduce impacts of continued groundwater and on-site waste disposal on water resources and the environment.

A visual representation of the Medium Growth Scenario is shown in the discussion paper.

**High Growth Scenario**

- Assumes that the strategic location of the study area and potential for development in the adjoining areas will result in pressure on the study area to become and interface between the urban and rural areas;

- The intensity of the development which can occur in the study area will depend on the financial feasibility of providing the necessary infrastructure to service the area and on being able to effectively manage the potential impacts on the natural environment;

- In addition to the components of the Medium Growth Scenario, this Scenario may include:
  i.) development of rural residential lots (0.4 ha) at land directly adjoin and surrounding the lagoons;
  ii.) provision of non-residential land uses adjacent Ironstone Lagoon;
  iii.) development of “eco resort” near the lagoon;
  iv.) extension of tourist related development to Vanderlin Drive
v.) extension of urban related land uses in area to the north of proposed tourist commercial area outside of ANEF 20 contour;
vi.) further development of equestrian activities at Darwin Pony Club facility;
vii.) development of a highway commercial precinct on properties between the Stuart Highway and Agostini Road;
viii.) expansion of tourist related activities at the existing crocodile farm on Lagoon Road or redevelopment of this area for rural residential purposes as part of “equestrian estate”;
ix.) tourist related activities and possible low intensity tourist accommodation at land north of indigenous village impacted by the ANEF 20 contour;

- Parameters/Outcomes include:
  i.) development of a range of land uses in line with the strategic location of the area;
  ii.) enhanced protection of the natural environment through design and implementation of controls to minimise the impacts of development;
  iii.) balance land use intensification with services provision;
  iv.) creation of unique community with strong sense of place.

A visual representation of the High Growth Scenario is shown in the discussion paper.

Summary of Matters of Particular Interest to the City of Darwin

There are three main areas of infrastructure that Council consider important in terms of developing an area plan;
- Stormwater drainage
- Transport
- Social and community

Understanding the likely impact of future development in regards to this infrastructure allows for a considered, controlled and potentially funded approach to ensuring it is provided as development occurs.

The studies need to consider the effects of and upgrade requirements, as a result of these developments, in areas beyond the identified Discussion area.

Stormwater Drainage

Stormwater drainage is a significant feature and constraint of the area. Stormwater runoff flows within City of Darwin’s boundaries either flow westwards in to the airport lands and then into Rapid Creek or across Vanderlin Drive into Ironstone Lagoon.
Increased development in these areas is likely to increase storm water runoff into these adjoining areas.

In order to determine how an increase in stormwater flow will be managed, for all stakeholders, it is recommended that a comprehensive stormwater drainage study is carried out prior to the development of an Area Plan.

A comprehensive stormwater drainage study will allow for the Area Plan to have guidelines and requirements in place as to where, how and who pays for stormwater drainage infrastructure to be detailed prior to development occurring. This should also include consideration of the ongoing responsibilities for maintenance through easements or properties.

Transport

It is important that any future development in this area allows for an appropriate transport network. A study should be undertaken on road and transport network planning required to facilitate any further development in these areas. This would also take into consideration the stormwater drainage study and the need for drainage infrastructure.

Social and Community Infrastructure

It is recommended that a master plan be developed for the area identifying the areas to be set aside for social and community infrastructure. Where suitable, this land should be acquired prior to development occurring. Social and community infrastructure is vital to the development of regions. In the Knuckey and Ironstone Lagoons area, the development is likely to be disjointed due to the significant number of lots and property owners in the area. A master plan ensures particular areas can be set aside and developers contribute towards and connect to this vital infrastructure.

Funding

It is vital that all infrastructure identified and deemed critical to a future Area Plan and the region are funded by the developers within the region, rather than the broader community. Detailed planning of the Area Plan will allow for the infrastructure to be costed, land identified (and acquired) and then implemented. Contribution plans should be developed in line with the Area Plan to ensure that the cost of infrastructure is fairly distributed.
CONSULTATION PROCESS

In preparing this report, the following City of Darwin officers were consulted:

- Team Coordinator Development & Waste Management
- Manager Assets and Engineering Projects
- Strategic Town Planner

POLICY IMPLICATIONS

Increased development in the area may result in the need for future roadworks and stormwater drainage infrastructure upgrading and the need for the City of Darwin to prepare contribution plans for upgrading of this infrastructure.

BUDGET AND RESOURCE IMPLICATIONS

The cost of infrastructure upgrading to cater for increased development in the study area will likely be significant and it will be recommended that a contribution plan is developed in line with the Area Plan.

RISK/LEGAL/LEGISLATIVE IMPLICATIONS

Appropriate studies are required in relation to stormwater drainage, transport and social and community infrastructure for the study area in order to ascertain the City of Darwin’s exposure to the requirement for infrastructure upgrade works.

ENVIRONMENTAL IMPLICATIONS

The Knuckey Lagoons Conservation Reserve was declared a protected area under Section 22 of the Territory Parks and Wildlife Conservation Act in 1985.

Both the Knuckey Lagoons Reserve and Holmes Jungle Nature park are subject to management plans and managed by the Parks and Wildlife Commission.

It is important to ensure the protection of these important areas in any development proposals provided in any future Area Plan covering these areas.

Increased development within the study area is likely to result in increased stormwater run-off flows, which may impact upon the Rapid Creek and Ironstone Lagoon areas. Rapid Creek has been identified as an important drainage corridor.
COUNCIL OFFICER CONFLICT OF INTEREST DECLARATION

We the Author and Approving Officers declare that we do not have a Conflict of Interest in relation to this matter.

DROSSO LELEKIS
MANAGER DESIGN, PLANNING & PROJECTS

LUCCIO CERCARELLI
GENERAL MANAGER INFRASTRUCTURE

For enquiries, please contact Cindy Robson on 8930 0528 or email: c.robson@darwin.nt.gov.au.

Attachments:

Attachment B: Response letter to the Northern Territory Planning Commission
Discussion Paper

Towards an Area Plan for the Knuckey and Ironstone Lagoons Locality

- Investigation into Land Use Options –

JUNE 2013
Environmental protection is a key philosophy underpinning appropriate land use and development when responding to opportunities for growth. There are very few situations where there is a greater need for adherence to this philosophy than in the Knuckey and Ironstone Lagoons locality with the significant natural features of the lagoons and connections with Holmes Jungle and the strategic position of the locality within the Darwin region. Current land use reflects the historic position of the area on the outskirts of early Darwin and later land use controls that responded to the constraints associated with the natural environment and the proximity to the airport.

Ties to the rural heritage and amenity are still strong with some residents and land owners keen to see the existing land use controls remain. However proximity to Darwin, Palmerston and Berrimah and East Arm is generating interest in land uses which are currently precluded. Opportunities for alternate use need to be considered within the context of the views of land owners and the community, the significant contributions the wetland habitat makes to the conservation of biodiversity, and the relationship of water resources to other environmentally sensitive areas in the broader locality, particularly Holmes Jungle.

The area immediately around Knuckey and Ironstone Lagoons is part of Litchfield Shire and shares some issues and opportunities with other localities within the shire, particularly rural amenity and the need for infrastructure to support any further development. Notwithstanding the similarities, there are also distinct differences. Proximity of the locality to the range of facilities and services available in urban areas suggests the natural environment, rather than local facilities and services, will provide the focus for development of a coherent local community. The area to the west of Vanderlin Drive is within Darwin City. The proximity to the urban area is generating interest in development opportunities in this section of the locality.

The Challenge

This Discussion Paper is the first step in exploring a sustainable approach to future use and development within the Knuckey and Ironstone Lagoons locality. The challenge is to examine the tensions between the various aspirations of land owners and the community within the context of the constraints associated with the natural environment and to explore options for future use. The outcome of these discussions will inform the preparation of a draft area plan.
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1. INTRODUCTION

Land use planning in the Darwin region is a dynamic process responding to various environmental and physical influences. While environmental sensitivity and external impacts are significant influences on land use and development in the Knuckey and Ironstone Lagoons locality, its strategic location and amenity value encourages some land owners to entertain alternate land use options.

The interests of land owners vary, as do opinions about the factors which contribute to the amenity and what is necessary to protect what is valued. Some consider that smaller rural residential or rural living lots would be detrimental to the environment. Others are keen to explore opportunities for smaller lots. Some consider that the low density of development associated with the existing larger lots should be maintained. Others are interested in more intense development of the existing larger lots, advocating such development has the potential to enhance recognition of the significance of the natural environment.

The existing zones reflect the past response to the constraints associated with proximity to the Darwin International Airport and the ecological importance of the lagoons.

Given the increasing significance of the strategic position of the locality, a review of current policy is timely to ensure any future development balances the tensions generated by various aspirations in relation to environmental protection, economic development and social equity.

The review is proposed as a two stage process. The first stage will involve consultation with land owners and the community about issues and opportunities and possible options which respond to these. This Discussion Paper is designed to inform that consultation.

The second stage of the process will involve refinement of the options, reflecting the outcomes of the community consultation and, depending on the outcome of that process, may include preparation of a draft Area Plan to be considered for inclusion in the NT Planning Scheme.

You, as a land owner in the Knuckey and Ironstone locality or as a member of the broader community, are invited to consider the issues and contribute to a discussion of possible future land use options.
1.1 Objectives of this Discussion Paper

The first objective of this Discussion Paper is to provide contextual background to the existing policy framework, zoning and land use.

The second objective is to identify land use issues and explore the implications of these for future use and development.

The third objective is to establish parameters which will inform future land use and identify options within the context of these parameters with a focus on protection of the natural environment and appropriate responses to opportunities associated with the strategic position of the locality in the region.

1.2 Study Area

Regional and Local Context

Knuckey and Ironstone Lagoons make a significant contribution to biodiversity conservation in the Darwin Region. The lagoons and wetlands and the hydraulic connection to Holmes Jungle via the aquifer that extends to Marlow Lagoon in Palmerston and Hudson Creek contribute to the importance of this habitat.

Current land use is characterised by a range of rural, rural living and commercial activities. The first influence on land use was the area’s historical positioning on the outskirts of early Darwin, separated from the urban areas by the airport. The significance of the natural environment and the constraints associated with the proximity to the airport informed land use controls which continue to guide development.

Today, in the regional context, the locality is strategically located equidistant from Darwin and Palmerston and proximate to significant employment centres including Darwin International Airport, various Defence facilities and East Arm Port and associated industrial areas.

The Stuart Highway, McMillans Road, Amy Johnson Avenue and Vanderlin Drive form part of the arterial road network providing excellent access to and from the broader region.
Study Area

The principal focus of the study is the area extending from Amy Johnson Avenue in the west to McMillans Road in the east and from the Stuart Highway north to Holmes Jungle and the Mickett Creek Shooting Complex, which includes the conservation areas associated with Knuckey Lagoons and Holmes Jungle and various rural and community uses. Although relatively confined, the study area is significant in terms of linkages to adjacent natural areas and its location within a regional context. This confirms the need for consideration of both local and regional issues.
Things to be considered:

Are there issues with the ongoing maintenance of the natural environment?

If there are issues how can they be addressed?

What are the factors which contribute to the amenity of the locality?

How should these be protected?

Should land uses in the locality be allowed to further diversity?

If so how are land use conflicts to be minimised?

Is there potential to create a more coherent community?

How might this be achieved?

What factors would contribute to a balance between protection of the natural environment and the amenity it provides and providing opportunities for development?
2. BACKGROUND

2.1 Strategic Context

As Darwin continues to grow the quality of life enjoyed by the existing community and future generations will depend on the management of that growth. Clear and coherent frameworks for future development in the region or for key localities within the region will assist in management of the future use and development of land.

Creative responses to the key interdependent imperatives of the needs of the natural environment and the human community that lives within it will provide for both immediate and long term needs. Effective, efficient and sustainable development responds to available opportunities within the context of prevailing constraints.

A vision for the Knuckey and Ironstone Lagoons locality may be characterised by:

- the creation of a place where people enjoy a strong sense of community and live in balance with the natural environment; and
- protection and appreciation of the value of biodiversity and the natural landscape.

2.2 Regulatory Context and Land Use Policy

The use and development of land in the Ironstone and Knuckey Lagoons locality is regulated by the Planning Act and NT Planning Scheme. The Litchfield Planning Concepts and Land Use Objectives 2002, a policy in the Planning Scheme relevant to interpretation of specific provisions of the scheme, promulgates the intent of the Knuckey and Ironstone Lagoons locality to be continued development for rural living and community uses subject to consideration of issues associated with the proximity to the Darwin International Airport and the potential impacts on the natural environment.

The intention of the current review is to revisit the issues which informed the existing policy and zones and to identify possible changes and the implications of those changes.
The Berrimah North Planning Principles and Area Plan (in the NT Planning Scheme) establish the intended future use and development of land bounded by McMillans Road, Vanderlin Drive, Boulter Road and Amy Johnson Avenue.

The Principles and Area Plan establish a framework for this part of the study area which provides for a diversity of uses and reinforces the focus of this area on urban land uses including residential, commercial and community purposes.
The existing zones within the study area reflect the intent of the policy established by the Litchfield Planning Concepts and Land Use Objectives.

The Knuckey Lagoons Conservation Reserve, Holmes Jungle Nature Park and associated drainage lines which form an integral part of the ecological system, are included in Zone CN (Conservation). This zone recognises the value of these natural environments and ensures that any development is sensitive to natural features and habitats.

Zone CP (Community Purposes) provides for community services and facilities whether publicly or privately owned or operated, including facilities for civic or government administration. Government uses within the study area include the Peter McAulay Police Centre (31 ha) and the CSIRO facility (21 ha). Non government uses include the indigenous village on the Stuart Highway (20 ha), a private school (19 ha) and various community housing and support facilities on Crerar Road. Privately owned community purpose sites to the north of Boulter Road are being rezoned in accordance with the policy established by the Berrimah North Planning Principles and Area Plan.
The areas included in Zone R (Rural) have a minimum lot size of 8 ha and reflect the area previously subject to the Australian Noise Exposure Forecast (ANEF) 20 unit contour associated with the Darwin International Airport. Coincidentally, land within Zone R includes the areas that drain into Ironstone and Knuckey Lagoons. Therefore the limitation imposed on residential density by exposure to aircraft noise, also provided a degree of protection for the significant and unique systems associated with the lagoons.

Land to the north of Secrett and McMillans Road which drains to the north rather than into the lagoons is included within Zone RL (Rural Living) with a minimum lot size of 2 ha. The Rural Living area between Secrett Road and McMillans Road is subject to Restricted Rural Residential provisions to ensure clearing of native vegetation is subject to consideration of possible impacts on Holmes Jungle.

Land between Vanderlin Drive and Amy Johnson Avenue directly under the flight path and in close proximity to the main run way of Darwin International Airport is included within Zone RD (Restricted Development). This zone is intended to limit the number of people who reside and work in the area and retain the non-urban character of the land to ensure development does not prejudice the safety and efficiency of the airport. Land in this area not directly under the flight path is subject to specific use zones intended to facilitate development of the land for light industrial purposes that minimise the impacts from exposure to aircraft noise and do not inhibit the operation of the Darwin International Airport.

The major Power and Water infrastructure to the west of Vanderlin Drive is included within Zone U (Utilities) and various existing and proposed commercial activities are within Zone C (Commercial), Zone SC (Service Commercial) and Zone TC (Tourist Commercial) e.g. Crocodylus Park.
3. ISSUES AND OPPORTUNITIES

Various natural and physical attributes of the study area have and continue to influence the form and direction of land use. Some of these attributes appear to severely constrain options for future development but there is also potential that within the context of a focus on protection of key environmental assets, there may be opportunities for economic growth and creation of a socially cohesive community.

3.1 Land Capability

Land Units reflect the characteristics of soils, vegetation and land form and consequently provide a guide to the capability of land to support various land uses and an indication of areas where degradation may occur as a result of inappropriate land use. Land Units within the study area can be grouped in the following categories:

- **Rises**
  - 2b1 – moderately deep gravelly yellow massive earths along gentle side slopes.

- **Plains**
  - 3a, 3b and 3c - characterised by flat to gently undulating upland surfaces with soils ranging from deep red massive earth and minor yellow massive earths to gravelly yellow massive earths with minor lateritic lithosols; and
  - 3e – flat to undulating surfaces consisting of hard setting deep mottled yellow massive earths subject to high wet season water table.

- **Drainage Systems and Swamps**
  - 6b – broad lowland plains with minimal slope and underlain by deep sands;
  - 8a and 8b – upland depressions and floodways of the lagoons consisting of deep siliceous and earthy sands and surrounding swamp depressions characterised by ponded drainage and friable duplex soils.
Implications for land use

Land Units 8a and 8b centered on the lagoons are unsuitable for development. Development of Land Unit 3e, which borders the lagoons and floodways, will require detailed investigation of storm water infrastructure required to deal with the high wet season water table.

Land Units 3a, 3b and 3c which characterise the majority of the study area pose little constraint on development.

3.2 Hydrology

Both surface and ground water issues will be significant influences in determining future land use in the study area.

Surface Water and Drainage

Darwin’s high and concentrated wet season rainfall combined with the relatively flat landscape creates conditions where surface drainage is of particular concern.
Nowhere is this more relevant than in less well drained localities such as the Ironstone and Knuckey Lagoons locality.

The area to the west of Lagoon Road and south of Secrett Road drains towards Ironstone Lagoon which discharges to the south east to Knuckey Lagoons. The area to the east of Lagoon Road and south of Farrar and Brandt Roads also drains into Knuckey Lagoons which then discharges to the east. The area to the north of Secrett and Farrar Roads drains to the north-west via Palm Creek to Holmes Jungle, the area to the north of Brandt Road drains to the north east and the area to the north of Bowerlee Road and the west of Vanderlin Drive drains to north west to Marrara Swamp.

The lagoons function as large natural storage basins and, in association with constructed overflow outlets on the lagoons, provide a degree of flood attenuation.

In addition to the natural drainage from Ironstone Lagoon into Knuckey Lagoons storm water drains along Agostini and Secrett Roads concentrate and channel runoff into Knuckey Lagoons.
The 1% AEP flood identified in a Stormwater Drainage Study in 1984 provides a guide to the extent of land subject to inundation in the Ironstone and Knuckey lagoons locality. This study also considered possible drainage improvement works with regard to the reduction of the area of land subject to flooding. Given the complexity of the system and the interaction with the environment, the study concluded there was little opportunity to significantly reduce the effects of flooding.

**Implications for Land Use**

Development in the study area, whether it be in the catchment of the lagoons or Palm Creek, presents numerous challenges and will require demonstration of effective engineering solutions to maintain both quantity and quality of surface water flow into the lagoons and environmental values.

Maintenance of the flood peak attenuation provided by the natural storage basins of the lagoons will depend on maintaining the relationship between the storage and discharge. Increased concentration of runoff associated with more intense development has the potential to affect the existing balance. Potential impacts
include increases in the level of inundation around the lagoons and/or exacerbation of flood peaks downstream of the lagoon.

The potential for concentration of runoff to carry contamination from fertilizers, pesticides, weeds, or silt from erosion, hydrocarbons and other contaminants are issues of significance given the potential detrimental impacts on the water quality and environment of the lagoons.

Water sensitive urban design which focuses on stormwater management which is sensitive to natural hydrological and ecological processes may provide a mechanism to ameliorate any potential impacts of development on both and quality and quantity of runoff.

**Groundwater**

The study area is underlain by a narrow dolomite aquifer 700m wide and 7 km long which extends from Holmes Jungle in the north to Hudson Creek in the south. A groundwater divide is located immediately to the south of Knuckey Lagoons on the alignment of the Stuart Highway. From this divide, the groundwater flows north to emerge as springs at the sudden drop in topographic elevation within the aquifer. These springs sustain perennial Palm Creek and Holmes Jungle. The gradual drop in the land surface to the south results in diffuse discharge through perennial seepage over a wider area.
Knuckey Lagoons are karstic depressions likely to be associated with sink holes in the dolomite aquifer which provide a hydraulic connection between surface runoff and the cavernous and fractured aquifer. The diagram below illustrates how the lagoons link surface runoff and the spring which sustains Holmes Jungle.

The water level in the aquifer below the lagoons varies from approximately 31.5 m AHD during the Wet season to 27 m AHD in the dry season. Although the bottom of the lagoons at 28 m AHD is above the dry season level in the aquifer, capillary action maintains the moisture levels in the lagoons.

The quality of the water in the lagoons differs from the quality of the groundwater. Lagoon water, surface water derived from rain, is acidic with low pH and TDS. The
groundwater is high in pH, EC and TDS and is bicarbonate water containing Ca and Mg derived from the dissolution of the dolomite by infiltrating acidic water. Water in the springs and Palm Creek originates from groundwater. Water quality data indicates that approximately 30% of the water in the lagoon infiltrates into the aquifer.

Groundwater discharges to the south and north are estimated to be similar in quantity and estimates of that discharge suggests an average annual recharge rate to the aquifer of about 3 500 ML. The 30% of the water in the lagoons that infiltrates into the aquifer contributes about 500 ML to the total recharge. The remainder results from diffuse recharge and equates to approximately 30% of the mean annual rainfall falling on the area overlying the aquifer.

**Implications for land use**

The continued health of Holmes Jungle is largely controlled by the maintenance of groundwater flow. Investigations into the hydrology of the Knuckey lagoons and Holmes Jungle Nature Park (Report N0. 43/2001) suggest that either additional artificial groundwater discharge or reduced discharge due to increased extraction of groundwater has the potential to adversely impact on the ecosystem of Holmes Jungle.

Consideration of the potential impacts on groundwater will be particularly important when determining appropriate development in the locality.

The hydraulic link the lagoons provide between the surface water and the aquifer create potential for either surface runoff or discharge from on-site waste disposal systems to enter the subsurface groundwater. Effectiveness of engineering solutions to minimise any potential adverse impacts will need to be demonstrated.

Also requiring consideration is the possible impact of more intense development on the diffuse recharge of the aquifer. The increased runoff associated with more intense development has the potential to impact on the quantity of recharge. Much of the land overlying the aquifer is constrained not only by the need to protect diffuse recharge but also by land units characterised by a high wet season water table. Areas with potential for development which may impact on diffuse recharge are limited to the area to the east of Knuckey Lagoons around Thorak Road and the area to the north of the lagoons to McMillans Road.
3.3 Environmental Sensitivity

The Knuckey Lagoons Conservation Reserve includes Section 2933 (110 ha) which was declared a protected area under Section 22 of the Territory Parks and Wildlife Conservation Act in 1985. The Reserve and the Crown Lease in Perpetuity over NT Portion 2852 (14.5 ha), which is vested in the Conservation Land Corporation, recognise the ecological sensitivity of the area and the significance of the connection to Holmes Jungle.

![Water Cycle diagram]

Both the Knuckey Lagoons Conservation Reserve and the Holmes Jungle Nature Park are subject to Management Plans and managed by the Parks and Wildlife Commission.

The management plan for the Knuckey Lagoons Reserve recognises the importance of the wetlands as part of the ‘Top End’ wetland system and to the local community. An indication of the significance of the area to the local community is the formation of the Knuckey Lagoons Wildlife Sanctuary Incorporated, a community group which has a formal agreement with the Parks and Wildlife Commission to assist with the planning and management of the Reserve.
The primary values of the reserve are associated with the wetland habitat and include:

- cultural - the use of the area by the Larrakia people who continue to collect traditional food;
- recreation – the large congregations of waterbirds including magpie geese, egrets and curlews which attract birdwatchers particularly during the dry season; and
- natural – the locally significant wildlife refuge provided during the late dry season and the presence of the vulnerable species the Darwin Cycad (Cycas Armstrongii.)

The Reserve is within Zone C (Conservation) under the NT Planning Scheme. The Management Plan identifies ‘zones’ which inform the management of activity within the Reserve. The two zones within the Management Plan are focused on the conservation of the values and the protection of the wetland lagoons and their habitat. The distinction between the zones is that:

- the Dispersed Use Zone may provide for low key recreational facilities in a natural setting including a rest and viewing area and walking and cycling trails on elevated boardwalks; and
- the Special Purpose Zone provides particular protection of the bird habitat at the northern section of the Reserve and does not provide for visitor facilities.
Parks and Wildlife management objectives are currently focused on:

- protecting the natural values of the Reserve;
- maintaining low-key, non-vehicular access for bird watchers; and
- supporting the needs of the Aboriginal custodians to maintain their connection to country.
Challenges to achievement of these objectives fall into three broad categories: environmental, social and managerial.

Environmental issues include fire and weeds which are exacerbated by the high groundwater levels which limit access until well into the fire season and the proximity to major arterial roads which creates traffic management issues during burn off operations. The location of the reserve at the end of road side drains and surrounded by rural blocks contributes to the spread of noxious weeds in the locality.

Social factors which require specific and targeted management accidental fire, litter and dumping, and illegal hunting and various views and interests of neighbours.

The prioritisation assessment of Parks and Wildlife assets also influences what management can achieve. The Reserve is not a high priority in terms of biodiversity conservation or level of visitor services. This evaluation influences the priority and resources available to tackle issues.

**Implications for land use**

Further development in the locality combined with the strategic regional location and accessibility of the reserve have the potential to generate increased interest in low impact recreation and tourism activities focused on the aesthetic, natural and historic values of the reserve. While this increased activity will bring pressure to increase management and infrastructure, there is potential for a framework for future development to address some of the current management challenges.

Provisions requiring improved setbacks from the boundaries of the lagoons and associated drainage areas may improve accessibility for both users and maintenance vehicles so improving management particularly of fires and weeds. Increased activity and associated passive surveillance may also assist in reducing some of the social challenges of management.

### 3.4 Proximity to the flight paths of Darwin International Airport

The Australian Noise Exposure Forecast (ANEF) take account of a number of factors including the movement, frequency and types of aircraft, the qualities and duration of their noise during take off and landing, and the daily distribution of aircraft arrivals and departures into one index value. When equal ANEF values are plotted, the resulting ANEF ‘contours’ are the widely used planning tool for land use around
The ANEF is the measure of aircraft noise impact referenced by the NT Planning Scheme and in association with Australian Standard 2021 – 2000 (AS 2021) provides guidance for the siting and construction of buildings to minimise aircraft noise intrusion for defined uses in the vicinity of airports.

Table 2.1 from AS 2021, shown below, uses ANEF contours to indicate whether the extent of aircraft noise intrusion would make a building ‘acceptable’ (no need for noise attenuation measures); ‘conditionally acceptable’ (noise attenuation required); or ‘unacceptable’ (building should not be constructed).
The table indicates that residential buildings, including caravan parks, may be conditionally acceptable between the 20 and 25 ANEF contour but these conditions are difficult to meet in a tropical climate where natural ventilation has other appeal and benefit. The implication is that in the tropics the ANEF 20 contour establishes the limit of land suitable for permanent residential uses. Some residential land uses, such as short stay tourist accommodation, may be acceptable up to ANEF 25.

Although ANEF contours are a very practical planning tool, the national agenda on aircraft noise has moved towards providing additional information to better inform the community on the nature of impacts in noise sensitive areas. The draft National Airports Safeguarding Framework is concerned with managing the impacts of noise from airports, and advocates that best practice land use planning for airports should consider the range of noise information available. Airport Master Plans now provide much of this additional information in the form of swoosh diagrams indicating aircraft movements and N70 charts which indicate the number of aircraft noise events greater than 70 decibels (dB). The lighter red shading on the ANEF map on page 22 indicates 10 to 19 events above 70 dB per typical day and the darker red indicates 20 to 49 events per day.
The draft Guidelines recognise that there is often a need to balance housing demand against the operational needs of the airport and that there may be circumstances where increasing settlement in the area exposed to some degree of aircraft noise would be desirable given other benefits the area has to offer.

*Implications for land use*

Consideration of the proximity of the Knuckey and Ironstone Locality to the Darwin International Airport and the associated ANEF contours and N70 charts will be particularly relevant to the identification of opportunities for more intense residential use and limitations under the runway approaches.

Another possible influence of the proximity of the airport is the risk of bird strike in approach paths. These risks are currently being assessed by Darwin International Airport.

### 3.5 Biting Insects

Uncontrolled mosquito breeding can provide both a significant nuisance and a serious health risk. Although there has not been any baseline mosquito trapping in the Knuckey and Ironstone Lagoons Locality, ad hoc trapping (mostly in response to complaints) has revealed moderate to high levels of vectors responsible for transmission of Ross River, Barmah Forest and Murray Valley Encephalitis viruses and malaria and pest mosquitoes.

The shallow grassy and semi aquatic reed areas of the Knuckey Lagoons system are the major mosquito breeding sites affecting the area mainly between March and August when water levels recede, leaving behind isolated shallow vegetated pools free from mosquito larvae predators. There may be another short spike in numbers in the mid wet season associated with widespread shallow flooding around the lagoons. Other potential localised breeding sites include the two small paperbark swamps to the north of Campbell Road, ineffective on-site waste disposal systems (including the Lagoon Road Crocodile Farm effluent ponds) and drainage swales and other seasonally flood areas.

The deep open water and the absence of adjacent seasonally flooded grassy areas around Ironstone Lagoon mean it is a minimal breeding site.
Implications for land use

The standard buffer of 1.6 km required between significant mosquito breeding areas and urban development impacts on that part of the Knuckey and Ironstone Lagoons locality to the east of Vanderlin Drive. A recommended minimum lot sizes within 500 m of the seasonally flooded extent of the lagoons is 2 ha with a minimum of 4 000m² between 500 m and 1.6 km. The extent of these buffers is indicated on the figure below.

Specific mosquito investigations which would involve fortnightly trapping for a 12 month period may support a reduction in these recommended buffers. The modification of the Knuckey Lagoons System to create steep sides, deep water, elimination of isolated ponds within seasonally inundated areas and elimination of (unlined) drainage swales would virtually eliminate the mosquito breeding sites and render the locality suitable for urban development.

There may also be potential for elimination of shallow isolated pools left behind as water levels recede and (unlined) drainage swales combined with control of weeds in seasonally inundated areas and / or aerial control to minimise potential breeding sites. Such an approach has the potential to reduce the buffer required between the lagoons and rural residential lots of 4 000m². Another response to the constraint associated with potential biting insect breeding sites may be the provision of larger (1 or 2 ha) lots directly adjacent to the lagoons as a buffer to more intense 4 000m² lots. The provision of reticulated sewerage would also assist in reducing the potential constraint to development associated with biting insects as it would eliminate the need for onsite waste disposal.

Further detailed investigation will be required to establish the potential costs and benefits of such an approach and the available implementation methods. Whether these investigations are required will depend on what is established as the vision for future use in this locality.
3.6 Airservices Australia – Portion 2864

Airservices Australia is a Government-owned corporation providing services to the aviation industry. Portion 2864, situated on the eastern boundary of the study area, is in their ownership and currently accommodates aviation communications and radio navigation related infrastructure providing a service to the Darwin International Airport. There are specific protection zones applicable to the radar systems allocated on this property. The area of interest zone (2km radius) overlaps the eastern portion of the study area. This means that all development applications within this zone will be submitted to the VHF/HF technical authority for assessment.
3.7 Existing Land Use

Existing land uses within the study area are generally consistent with the current town plan zones. Historically this locality is one of the first rural living areas within greater Darwin and many residents on both 2 ha rural living lots and larger lots immediately adjacent to the lagoons are passionate about the unique environment within and surrounding the study area.

However there is increasing interest in alternate uses particularly on the larger lots bordering the lagoons. The strategic position of the locality in terms of accessibility is generating interest in more intense land uses considered by the proponents to have minimal potential impact on the environment. The need to accommodate continued growth in the Darwin region suggest interest will continue and in all likelihood increase. Current interests are summarised below:
<table>
<thead>
<tr>
<th>LAND PORTION</th>
<th>EXISTING ZONING</th>
<th>ASPIRATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Portion 4458</td>
<td>CV – Caravan Park</td>
<td>To implement existing land use rights</td>
</tr>
<tr>
<td>B Portion 2834</td>
<td>R - Rural</td>
<td>To rezone to allow development of a caravan park / resort development.</td>
</tr>
<tr>
<td>C Portion 4861 &amp; 5200</td>
<td>R – Rural</td>
<td>To subdivide into 1 ha RR lots fronting Secrett and McMillans Roads</td>
</tr>
<tr>
<td>D Area bounded by Fiddlers Lane, McMillans Road, Stuart Highway and Knuckey Lagoons</td>
<td>R – Rural</td>
<td>Mixed use development including accommodation village, diversity of housing and small scale commercial.</td>
</tr>
<tr>
<td>E Sections 3370 &amp; 3371</td>
<td>R - Rural</td>
<td>To subdivide existing 4 ha lots</td>
</tr>
<tr>
<td>F Area bounded by Boulter Road and Bowertee Road</td>
<td>R - Rural</td>
<td>To subdivide to create urban residential lots</td>
</tr>
<tr>
<td>G Area known as Jacks Melon Farm</td>
<td>R - Rural</td>
<td>To develop for industrial purposes.</td>
</tr>
</tbody>
</table>
An indication of the recent response to development interest is the Berrimah North Area Plan. This north-western corner of the study area includes some of the least constrained land in the locality and is currently being developed for urban related land uses.

Implications for future land use

An adopted framework for future development will reduce the potential for detrimental impacts associated with ad hoc consideration of individual proposals. The inclusion of appropriate principles would provide the opportunity the opportunity to minimise the impacts of future development on those factors considered by the community to contribute to the amenity valued by many.
3.8 Land Tenure

The majority of properties within the study area are privately owned. The vision of these property owners as to the future of the area will be pivotal in determining the form of future development.

3.9 Infrastructure

Rocks Infrastructure

The study area is bounded by major transport routes which provide excellent vehicular access to and from the area not only locally, but also from a sub-regional perspective. The Stuart Highway and McMillans Road respectively provide major east-west linkage to Darwin CBD, Palmerston and Casuarina and the northern suburbs, while Amy Johnson Avenue and Vanderlin Drive via Berrimah Road provide direct access to Tiger Brennan Drive and the East Arm Port.
Head works Infrastructure

The existing water and sewerage head works infrastructure within the study area is limited and mostly utilised to full capacity.

There is limited town water supply and servicing of new developments along Boulter Road require upgrades. Major water network upgrades will be required to service any future development intended for Berrimah Farm. These upgrades could be the catalyst to initiate supply to the study area. In the absence of development of Berrimah Farm significant development will be needed to establish the economic viability of required infrastructure upgrades.

Power and Water have plans to develop a new water supply zone at East Arm to serve the port. This work, together with minor upgrading in the Casuarina zone might create sufficient storage capacity within the Karama zone to serve the study area.

The existing watershed which bisects the study area in an east-west direction requires any future major trunk sewer upgrades to be connected to either the Leanyer treatment ponds to the north, or the Berrimah treatment ponds to the south.
Future planned extensions to the Berrimah treatment ponds are likely to have sufficient capacity to serve future development at East Arm and Berrimah Farm. Again significant development will be required to justify the costs related to the extension of the existing sewage treatment facilities.

- Can the lack of services be addressed in order for identified development potential to be realised?

- Could land use densification make reticulated services a viable option? And how much densification would be needed for cost effective infrastructure?

- What degree of densification would be acceptable on the existing rural character of the area?

- Should the study area remain a low density rural residential area? – preservation of the existing character with development limited to the planned areas west of Vanderlin Drive...

- Should low intensity development be allowed throughout the study area?

- Should the optimum development potential of the area be investigated?
4. LAND USE OPTIONS

4.1 Approach

It is clear that the study area has its fair share of challenges. These challenges can be collated into three distinctive categories:

- Local aspirations and related development pressure
- Environmental sensitivity
- Lack of services infrastructure to support sustainable development

Proximity to the Darwin International Airport, the significance of the natural environment and the location of the study area in relation to existing and planned urban development creates a volatile situation in terms of the direction of future land use and development.

Some within the community are passionate about the lifestyle and amenity of the locality but the pressure to allow for various more intense land uses is increasing.

Parameters to guide consideration of the options for future land use and development are summarised below:
<table>
<thead>
<tr>
<th>Parameters</th>
<th>Acceptable Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lagoons and associated drainage areas</strong></td>
<td></td>
</tr>
<tr>
<td>Maintain the natural values of the lagoon system and associated fauna and flora.</td>
<td>Appropriate design to minimise potential environmental impacts on the lagoons and associated fauna and flora.</td>
</tr>
<tr>
<td><strong>Surface Water and Drainage</strong></td>
<td></td>
</tr>
<tr>
<td>Maintain the flood peak and attenuation provided by the lagoon system.</td>
<td>Continued low intensity development; or Engineering design to maintain quantity and timing of runoff.</td>
</tr>
<tr>
<td>Minimise potential for contamination or sitation from erosion resulting from runoff.</td>
<td>Stormwater drainage design sensitive to potential hydrological and ecological impacts.</td>
</tr>
<tr>
<td><strong>Groundwater</strong></td>
<td></td>
</tr>
<tr>
<td>Maintain groundwater flows which are vital to continued health of Holmes Jungle.</td>
<td>Continued low intensity development; or Engineering design to maintain the discharge from the aquifer to Holmes Jungle.</td>
</tr>
<tr>
<td>Maintain groundwater quality</td>
<td>Appropriate design and maintenance of onsite waste disposal; or Provision of reticulated sewerage; and Management of surface runoff via surface water and drainage methods mentioned above.</td>
</tr>
<tr>
<td>Protect diffuse aquifer recharge.</td>
<td>Control of runoff from continued low intensity development; or Appropriate design to limit the impacts of increased runoff normally associated with more intense development.</td>
</tr>
<tr>
<td><strong>Environmental Sensitivity</strong></td>
<td></td>
</tr>
<tr>
<td>Protect the natural, historic and aesthetic values of the KnucKey Lagoons Conservation Reserve and its links to Holmes Jungle.</td>
<td>Parks and Wildlife review of prioritisation and management; or Implementation of contributions schemes in association with development to assist funding.</td>
</tr>
<tr>
<td>Improve passive recreation opportunities and access to the lagoon for fire and weed management.</td>
<td>Increased informal passive surveillance associated with increase in population; and Buffers between lot boundaries and the lagoons.</td>
</tr>
<tr>
<td><strong>Proximity to Darwin International Airport</strong></td>
<td></td>
</tr>
<tr>
<td>Minimise impacts of noise on residents and of development on future operation of the Airport.</td>
<td>Development in accordance with Australian Standards.</td>
</tr>
<tr>
<td><strong>Biting Insects</strong></td>
<td></td>
</tr>
<tr>
<td>Minimise exposure to biting insects.</td>
<td>Limitations on more intense development; or Subject to the outcomes of further investigation - remediation works to reduce exposure.</td>
</tr>
<tr>
<td><strong>Existing Land Use</strong></td>
<td></td>
</tr>
<tr>
<td>Minimise impacts on the rural amenity valued by residents and the community</td>
<td>Protection of those factors valued by the community; and Retaining the rural amenity of the locality</td>
</tr>
</tbody>
</table>
whilst achieving a balance between various aspirations in relation to future development

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Continued utilisation of groundwater and onsite effluent disposal; or Establish thresholds necessary to establish the economic viability of infrastructure to serve development options.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited existing water and sewerage headworks infrastructure and capacity.</td>
<td></td>
</tr>
</tbody>
</table>

The preferred framework for future development will be one which gives priority to protection or enhancement of the natural landscape and creates a place where people enjoy a strong sense of community and live in balance with that landscape.

Successful implementation of the preferred option will depend on:

- effective management of the natural environment; and
- in the event the preferred option involves more intense development, the financial feasibility of providing the infrastructure necessary to fulfill the aspirations of land owners.

This context suggests two alternative approaches. The first is the continuation of the existing low intensity of development with some potential minor variations depending on the capacity of service infrastructure to support individual proposals.

The second alternative is to investigate growth scenarios with consideration of the viability of infrastructure necessary to support the level of development and the measures required to appropriately protect the natural environment.

4.2 Growth Scenarios

The following scenarios identify what various levels of development may look like. The options include low, medium and high growth scenarios and include a summary of the implications and outcomes associated with each. Future development will not necessarily reflect any one of these scenarios but may incorporate components from each. The intention of presenting these three possible responses to the issues requiring consideration is to stimulate informed discussion of the potential future directions for land use and development.
4.3 Low Growth Scenario

The low growth scenario assumes that trunk services will not be provided with the result that opportunities for significant infill development even in the medium to long term will be strictly limited. This is basically a ‘status quo’ option with limited potential for some infill in areas proximate to existing service infrastructure with available capacity.

Components of this low growth scenario may include:

A – Continued development of the area covered by the Berrimah North Area Plan for urban residential and community uses subject to consideration of an appropriate local road network and availability of required service infrastructure capacity.

B – Planned expansion of the Peter McAulay Centre to the east of the existing complex on Portion 2708.

C – Planned expansion of Crocodylus Park.

D – Infill rural residential (1 ha) development between Secrett Road and the Peter McAulay Centre utilising capacity potentially available when reticulated water and power are provided to serve development in accordance with the Berrimah North Area Plan.

E – Development of the area between the Mickett Creek Shooting Range and the Knuckey Lagoons Recreation Reserve for a range of community uses.

F – Continued management of the Knuckey Lagoon Conservation Reserve and extension of the Holmes Jungle Nature Park to incorporate drainage lines to the east of Crocodylus Park to ensure the long term sustainability of the natural environment.

G – Enhanced opportunities for passive recreational activities focused on the natural amenity of the lagoons through formalisation of a recreation area on unconstrained land adjacent to the southernmost lagoon north of Stuart Highway within the Knuckey Lagoons Conservation Reserve. The provision of public access along the lagoon edges will be considered within the context
of protection of sensitive fauna and flora habitats and the privacy and amenity value of abutting properties.

Parameters / outcomes

The parameters and outcomes particularly relevant to this scenario include:

- the lack of reticulated water and sewerage will limit the potential for subdivision of existing rural and rural living lots and result in continued ad hoc consideration of individual development proposals;
- the lack of reticulate urban services may impact on the economic viability of services required to support other potential developments in the locality including Berrimah North and Berrimah Farm;
- the potential impacts on the natural ground and surface water resources associated with continued extraction ground water for domestic uses and utilisation of on-site effluent disposal;
- limited potential to respond to passive recreation opportunities provided by the natural environment or improve management of Reserves; and
- limited opportunities for improvements in stormwater drainage to minimise potential impacts on the natural values of the lagoons system.
4.4 Medium Growth Scenario

The medium growth scenario assumes that strategic development initiatives near the study area (e.g. Berrimah Farm and East Arm Port) and the associated upgrading to trunk services have potential to create opportunity for service delivery within the study area. This scenario also takes into account that many existing land owners may prefer to retain the rural / natural character of the area.

As well as the components identified in low growth scenario this medium growth scenario may include:

A – Land immediately to the south of Boulter Road is constrained by the ANEF 20 contour but in compliance with the Building Site Acceptability Table (see Paragraph 3.3 above) may have potential for commercial, tourist commercial or light industrial uses. Land on the corner of Boulter Road and Vanderlin Drive and outside the ANEF 20 contour could be considered for urban residential use as an extension of the area identified on the Berrimah North Area Plan. Development for residential purposes will require consideration of a buffer from adjoining community purpose and industrial development.

B – The existing Zone RD (Restricted Development) to the south of the Precinct A recognises constraints associated with the position of this land under the flight path and proximity to the main runway of the Darwin International Airport. Although the intention is to limit the number of people who work and reside in the area the land may provide opportunities for low intensity recreational related activities. The existing Flight Path Golf Facility currently established on Vanderlin Drive is such a use, and consideration may be given to the relocation and expansion of this facility which is currently constrained by planned upgrading of Power and Water infrastructure.

C – Recent amendments to zoning of areas not directly under the flight path recognise the potential for specific industrial uses that minimise potential for exposure to aircraft noise and do not inhibit the operation for the airport.

D – Depending on the land required to accommodate future Power and Water infrastructure their existing site to the west of Vanderlin Drive may provide opportunities for extension of recent commercial and industrial in this
locality. Industrial and commercial development would make optimal use of this strategically located land.

E – Redevelopment of rural and rural living lots to provide rural residential lots (1 ha) as prescribed in the NT Planning Scheme for rural residential lots within Litchfield Shire.

F - Infill urban style residential development of that part of the existing Indigenous Corporation village on the corner of Stuart Highway and Lagoon Road that is outside the ANEF 20 noise contour. The portion of the site within the ANEF 20 contour has potential to accommodate a culture / visitors / environmental education centre where tourists could be introduced to the arts and crafts of the indigenous people as well as environmental, heritage and cultural aspects of the Knuckey Lagoons.

Parameters / outcomes

The parameters and outcomes particularly relevant to this scenario include:

- a response to the strategic location of the locality within the regional context while providing a degree of protection for the rural amenity and natural character of the area;
- implementation of this scenario will be depend on determination of the economic viability of infrastructure necessary to support development and the opportunities further development may create to provide funding;
- increased intensity of land uses with appropriate infrastructure could assist in:
  - the introduction and implementation of more stringent environmental protection guidelines and policies;
  - increased passive recreation opportunities;
  - establish the viability of improved stormwater drainage regime; and
  - reduce the potential impacts of continued use of groundwater and on site waste disposal on the water resources and the environment.
4.5 High Growth Scenario

The high growth scenario assumes that the strategic location of the study area, within the regional context, and the potential for development in adjoining localities will result in continuous pressure on this area to evolve into a peri-urban environment as an interface between the urban and rural areas.

Ultimately the intensity of development which can be accommodated will depend on effective management of potential impacts on the natural environment and the financial feasibility of the providing the infrastructure necessary to support such development.

As well as the components identified in the medium growth scenario, components of a high growth scenario may include:

**A** – Development of land directly abutting and surrounding the lagoons is rural residential development to create lots of 0.4 ha. The increased density has the potential to establish the economic viability of protection of the natural environment. The attractiveness of such lots to conservation conscious residents has the potential to generate active and ongoing interest in the management of both their land and the recreation reserve to limit any potential impacts on the environment. Development for non residential uses on land directly abutting Knuckey Lagoons, which would attract visitors, will require careful consideration to counteract any potential impacts of a reduced commitment to the environmental values of the locality. A framework to achieve a coordinated approach to development will be required to minimise potential impacts on the environment.

**B** - A possible alternative location for the provision of non residential land uses may be on land adjacent to Ironstone Lagoon. This area is in pristine condition and its reasonably undisturbed state provides an ideal opportunity for development of an ‘eco-resort’. The amenity value of the undisturbed vegetation and the lagoon combined with the single ownership of all land surrounding the lagoon would maximise the potential for a coordinated development that could be managed to minimise potential impacts on the environment. Extension of this tourist related development to Vanderlin Drive also has the potential to minimise the impacts of associated traffic on the
rural amenity. The lower intensity tourist related activities would provide a transition from the higher intensity commercial / industrial uses to the west of Vanderlin Drive to the more rural uses around Knuckey Lagoons.

C - The area to the north of the proposed tourist commercial area and outside the ANEF 20 contour has potential for further extension of urban related land uses in the Boulter Road area though the rural living area to the north of Secrett Road.

D – The Darwin Pony Club facility on the corner of Lagoon and Secrett Roads could be further developed to provide a focus for equestrian activities in the locality. The current Pony Club activities appear to be limited to the eastern portion of the site which suggests potential to relocate the current stabling facilities on Vanderlin Drive to this site. This consolidation of equestrian activities has the potential to ensure the long term sustainability of the pony club facility while allowing for land use intensification along Vanderlin Drive. The surrounding potential urban and rural residential properties could form part of an equestrian themed development serviced by the centrally located equestrian facilities. Such an approach would allow ready access for urban residents to rural activities in a managed way to reduce potential environmental impacts.

E – Properties between the Stuart Highway and Agostini Road are severely impacted by wet season inundation. Redevelopment for more intense use may create opportunities for implementation of appropriate engineering solutions to address this problem. Accessibility and exposure from the Stuart Highway could see this area transform into a highway commercial precinct similar to those currently being developed in other locations along the Stuart Highway which are similarly impacted by noise from the airport.

F - The existing crocodile farm on Lagoon Road has the potential to develop as an expansion of tourist related activities in the locality or to be redeveloped for rural residential purposes as part of the ‘equestrian estate’.

G – Land immediately north of the Indigenous village impacted by the ANEF 20 contour has the potential to accommodate tourist related facilities. Such facilities could link with the possible culture / visitors / environmental
education associated with the Indigenous village. Given the location adjacent to the less sensitive zone of the Knuckey Lagoons Conservation Reserve there may also be potential for a low intensity tourist accommodation.

Possible Implications / outcomes

The parameters and outcomes particularly relevant to this scenario include:

- development of a range of land uses in response to the strategic location of the locality;
- potential enhanced protection of the natural environment through appropriate design and implementation of controls focused on minimising the impacts of development;
- an outcome with potential to balance land use intensification with formal services provision within the context of enhanced environmental protection; and
- the creation of a community with a unique identity and strong sense of place.
5. CONCLUSION

The Knuckey and Ironstone Lagoons, the associated wetlands and the links to Holmes Jungle contribute to the significance of the natural environment in this locality. It is also a key strategic land asset within the Darwin region.

This document is not advocating any particular approach to the future directions for use and development in the locality but provides the contextual background and identifies possible responses.

The intention is to inform community discussion of the various opportunities including growing existing and establishing new businesses, providing possible local employment, increasing property values, providing alternative and a variation in housing, within the overarching objectives of protection or enhancement of the natural landscape and creating a place where people live in balance with that landscape.

The outcomes of the community discussion may inform preparation of a draft Area Plan for consideration for inclusion as policy within the NT Planning Scheme.
Dear Mr Nairn

Towards an Area Plan for the Knuckey and Ironstone Lagoons Locality -Discussion Paper

Thank you for the Discussion Paper referred to this office in June 2013, concerning the above. The City of Darwin supports the development of area and precinct plans and we commend the Northern Territory Government on this initiative. The development of an Area Plan for the Knuckey and Ironstone Lagoon locality will allow for the strategic planning of future development and assist in ensuring that both social and physical infrastructure is planned for as development occurs.

Council supports the development of an Area Plan for the Knuckey and Ironstone Lagoons locality and makes the following comments for your consideration.

Infrastructure

There are three main areas of infrastructure that Council consider important in terms of developing an area plan;

- Stormwater drainage
- Transport
- Social and community

Understanding the likely impact of future development in regards to this infrastructure allows for a considered, controlled and potentially funded approach to ensuring it is provided as development occurs.

The studies need to consider the effects of and upgrade requirements, as a result of these developments, in areas beyond the identified Discussion area.

Stormwater Drainage

Stormwater drainage is a significant feature and constraint of the area. Stormwater runoff flows within City of Darwin’s boundaries either flow westwards in to the airport lands and then into Rapid Creek or across Vanderlin Drive into Ironstone Lagoon. Increased development in these areas is likely to increase storm water runoff into these adjoining areas.
The management of stormwater drainage across the study area will become a critical factor for any proposed growth scenarios, both from an environmental and capacity perspective.

In order to determine how an increase in stormwater flow will be managed, for all stakeholders, it is recommended that a comprehensive stormwater drainage study is carried out prior to the development of an Area Plan.

The study should include the following:
- the quantum and direction of existing pre-development flows
- the quantum and direction of expected post-development stormwater flows (for each growth scenario)
- recommend controls and infrastructure to ensure post-development flows are not detrimental to any area
- identify the land to be used for infrastructure so it can be acquired prior to development
- provide cost estimates for infrastructure

A comprehensive stormwater drainage study will allow for the Area Plan to have guidelines and requirements in place as to where, how and who pays for stormwater drainage infrastructure to be detailed prior to development occurring. This should also include consideration of the ongoing responsibilities for maintenance through easements or properties.

**Transport**

It is important that any future development in this area allows for an appropriate transport network. A study should be undertaken on road and transport network planning required to facilitate any further development in these areas. This would also take into consideration the stormwater drainage study and the need for drainage infrastructure.

A transport plan should include the following:
- an analysis of the potential development of the area and traffic generation (vehicle, bike and pedestrian), for each scenario
- a recommended road network to accommodate public transport routes and infrastructure
- cyclist and pedestrian routes and infrastructure
- impact on the existing road network, including identifying any upgrades
- identify the land to be used for infrastructure so it can be acquired prior to development
- provide cost estimates for infrastructure

The development of a transport plan will provide similar benefits to the stormwater drainage study, as any required infrastructure can be identified and planned for.
Social and Community Infrastructure

Social and community infrastructure includes the following:

- parks, playgrounds and open spaces
- landscaping
- linkages to transport
- community centres and facilities
- education requirements
- retail and commercial areas

It is recommended that a master plan be developed for the area identifying the areas to be set aside for social and community infrastructure. Where suitable, this land should be acquired prior to development occurring. Social and community infrastructure is vital to the development of regions. In the Knuckey and Ironstone Lagoons area, the development is likely to be disjointed due to the significant number of lots and property owners in the area. A master plan ensures particular areas can be set aside and developers contribute towards and connect to this vital infrastructure.

Funding

It is vital that all infrastructure identified and deemed critical to a future Area Plan and the region are funded by the developers within the region, rather than the broader community. Detailed planning of the Area Plan will allow for the infrastructure to be costed, land identified (and acquired) and then implemented. Contribution plans should be developed in line with the Area Plan to ensure that the cost of infrastructure is fairly distributed.

An appropriate system needs to be developed and implemented as part of any area plan.

Berrimah North Area Plan

The Discussion Paper includes the possibility of continued development of the Berrimah North Area and to the south for urban residential and community uses, subject to the consideration of an appropriate local road network and available service infrastructure capacity.

Council recommends that the Berrimah North Area Plan is reconsidered and replaced through the development of a Knuckey and Ironstone Lagoons Area Plan.

The current Berrimah North Area Plan did not have the studies and master plans for stormwater, transport and social and community infrastructure undertaken prior to its development. This has resulted in rezoning occurring and developments being proposed that have no correlation to one another or the infrastructure in place to support them jointly.

In particular there are concerns with the lack of infrastructure for stormwater drainage as the fall of the properties requires easements to be created or land acquired.
The easements and land were not identified in the Berrimah North Area Plan and as such each development is looking to provide its own infrastructure, which could lead to a disjointed network of infrastructure.

By considering the Berrimah North Area Plan in a future Knuckey and Ironstone Lagoons Area Plan, the necessary studies and infrastructure can be planned for, and also tie in to the greater region.

**General comments on the Discussion Paper and preparation of a possible Area Plan**

An Area Plan should provide clear strategic indicators for the development of Knuckey and Ironstone Lagoon over the likely development period and beyond. It will become the key strategic planning document for directing and managing urban growth and change within the area.

The Area Plan should guide the allocation of resources, such as the use of land and the construction of capital infrastructure, by way of informing changes to both the Northern Territory Planning Scheme and Strategic documents as well as Council’s contribution plans. The Area Plan should be a detailed planning document that sets the framework for spatially based decision making in the future and outlines the actions needed to achieve the strategic direction over the life span of the proposed strategic direction.

Issues that currently face the Knuckey and Ironstone Lagoon locality should be identified and a planning approach to address these issues outlined. The plan should provide the framework to guide planning and land use outcomes for the Northern Territory Government and other relevant Consent Authorities.

In the preparation of the Area Plan, with the appropriate infrastructure studies and master plans completed, a detailed plan and budget for what will be delivered to the community in the coming years should address the following:

- likely growth and proposed growth timelines
- priorities for new initiatives
- level of servicing and infrastructure and who will provide and maintain
- what new services and funding will be needed to keep the area growing in a sustainable manner

Plans that should be within in the proposed Area Plan include:

- layout plan
- release area strategic plan
- transport plan
- road hierarchy plan
- social and community infrastructure plan
- topography and landscape constraint plans
- services plans
- stormwater drainage and catchment plans
- biodiversity attributes plan
- heritage plan
- ground water/ hydrological plan

By acknowledging the aspirations identified by The Territory Towards 2030, Planning Act and NT Planning Scheme, any future Area Plan should result in a document that supports government objectives and meets the needs and aspirations of the community, while preserving the environmental values.

Council is supportive of the development of an Area Plan for the Knuckey and Ironstone Lagoons locality to ensure a considered and cohesive approach to the future development of the area.

If you require any further discussion in relation to this application please feel free to contact Luccio Cercarelli on 8930 0581.

Yours faithfully

BRENDAN DOWD
CHIEF EXECUTIVE OFFICER

Approved by: General Manager Infrastructure, Luccio Cercarelli.

PURPOSE

The purpose of this report is to refer to Council for consideration, the Proposed Amendment to the Northern Territory Planning Scheme in order to incorporate the Northern Territory Land Suitability Guidelines as a Referenced Guideline; and Amend Clause 11.4.1 Site Characteristics of Subdivisions of Rural and Unzoned Land to Require a Land Suitability Assessment and a Stormwater Management Plan with Applications, unless otherwise approved by a Relevant Authority - PA2012/0675.

LINK TO STRATEGIC PLAN

The issues addressed in this Report are in accordance with the following Goals/Strategies of the City of Darwin 2012 – 2016 as outlined in the ‘Evolving Darwin Towards 2020 Strategic Plan’:

Goal 1. Collaborative, Inclusive and Connected Community.

Outcome 1.4 Improved relations with all levels of government and significant stakeholders.

Key Strategies

1.4.1 Actively engage with all levels of government to coordinate efficiencies and develop opportunities.

1.4.2 Play an active role in strategic and statutory planning processes.

KEY ISSUES

- It is recommended that Council support the proposed Planning Scheme Amendment (PA2012/0675) and that the response to the Department of Lands, Planning and the Environment in regard to the proposal be endorsed.

- There are a limited number of sites within the Darwin Municipality that fall within Rural Zones.

- Council would require sufficient time to assess and comment on any information provided by the applicant in relation to the proposed amendment.
PROPOSED AMENDMENT TO THE NT PLANNING SCHEME IN ORDER TO INCORPORATE THE NT LAND SUITABILITY GUIDELINES AS A REFERENCED GUIDELINE; AND AMEND CLAUSE 11.4.1 SITE CHARACTERISTICS OF SUBDIVISIONS OF RURAL AND UNZONED LAND TO REQUIRE A LAND SUITABILITY ASSESSMENT AND A STORMWATER MANAGEMENT PLAN WITH APPLICATIONS UNLESS OTHERWISE APPROVED BY A RELEVANT AUTHORITY - PA2012/0675.

- It is considered that the proposed amendments will result in improved information relating to an application therefore allowing for informed decision making.

RECOMMENDATIONS

A. THAT Report Number 13TS0164CR:mm entitled, Proposed Amendment to the NT Planning Scheme in Order to Incorporate the NT Land Suitability Guidelines as a Referenced Guideline; and Amend Clause 11.4.1 Site Characteristics of Subdivisions of Rural and Unzoned Land to Require a Land Suitability Assessment and a Stormwater Management Plan with Applications Unless Otherwise Approved by a Relevant Authority - PA2012/0675, be received and noted.

B. THAT Council endorse the submission to the Department of Lands Planning and the Environment provided as Attachment B to Report Number 13TS0164CR:mm entitled, Proposed Amendment to the NT Planning Scheme in Order to Incorporate the NT Land Suitability Guidelines as a Referenced Guideline; and Amend Clause 11.4.1 Site Characteristics of Subdivisions of Rural and Unzoned Land to Require a Land Suitability Assessment and a Stormwater Management Plan with Applications Unless Otherwise Approved by a Relevant Authority - PA2012/0675.
DISCUSSION

The intent of the proposed Planning Scheme amendment described above is to incorporate the Northern Territory Land Suitability Guidelines as a Referenced Guideline; and amend Clause 11.4.1 Site Characteristics of Subdivisions of Rural and Unzoned Land to require a Land Suitability Assessment and a Stormwater Management Plan with Applications, unless otherwise approved by a Relevant Authority, which in the case of stormwater management plans would be the City of Darwin for lots within the Darwin Municipality.

To achieve this, it is proposed that the existing wording below be replaced with the subsequent wording that follows the existing wording, with changes highlighted and underlined.

The following is an extract from the Northern Territory Planning Scheme:

Existing Wording:

<table>
<thead>
<tr>
<th>Schedule 3</th>
<th>Schedule to Clause 2.8 - Reference to Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Guidelines for Reclamation in Coastal Areas</td>
<td>Department of Natural Resources, Environment and the Arts</td>
</tr>
<tr>
<td>AS 2021 – 2000 Australian Standard Acoustics – Aircraft Noise Intrusion – Building Siting and Construction Table 2.1 Building Site Acceptability</td>
<td>Standards Australia</td>
</tr>
<tr>
<td>Rapid Creek Flood Study</td>
<td>Connell Wagner – May 1999</td>
</tr>
<tr>
<td>Priority Environmental Management Areas – Litchfield Shire (Litchfield Planning Concepts and Land Use Objectives 2002)</td>
<td>Department of Infrastructure, Planning and Environment</td>
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<td>Land Clearing Guidelines</td>
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<td>Community Safety Design Guide</td>
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</table>
11.4 **Subdivision of Rural and Unzoned Land**

11.4.1 Site Characteristics of Subdivisions of Rural and Unzoned Land

1. The purpose of this clause is to ensure subdivisions of rural and unzoned land respond to the physical characteristics of the land.

2. Subdivision design of rural and unzoned land should:
   
   (a) avoid the development of land of excessive slope, unstable or otherwise unsuitable soils (e.g. seasonally waterlogged) and natural drainage lines;
   
   (b) retain and protect significant natural and cultural features;
   
   (c) minimise the number of lots in, or exclude from subdivision, areas of high conservation significance and drainage protection areas;
   
   (d) avoid development of land affected by a 1% AEP flood or storm surge event and be situated above the RL 6.0 AHD contour where subdivision adjoins tidal areas;
   
   (e) minimise alteration or disturbance to natural drainage systems including drainage areas, recognisable watercourses, lagoons and seepage areas;
   
   (f) minimise potential for erosion, sedimentation and pollution of watercourses; and
   
   (g) minimise potential for localised flooding.

3. An application to subdivide land within the Shire of Litchfield that includes land identified on the map “Priority Environmental Management Areas – Litchfield Shire” as an area potentially of environmental significance should, on the advice of the Department of Natural Resources, Environment, The Arts and Sport, be accompanied by and the consent authority shall have regard to an evaluation by a suitably qualified person of the environmental significance of the native vegetation and land form (e.g. lagoons, wetlands, rugged terrain and drainage systems).

4. An application described in sub-clause 3 must demonstrate that the proposed subdivision design does not adversely affect the environmental values as identified in the evaluation.
Proposed Wording:

2.8 **REFERENCE TO GUIDELINES**

1. Applications for a use or development must demonstrate consideration of and the consent authority must have regard to any guidelines applicable to the use or development appearing in Schedule 3 and ensure that a use or development or proposed use or development is consistent with them.

2. Where there is an inconsistency between any applicable guideline and this Planning Scheme, the provisions of the Planning Scheme will prevail.

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11.4 Subdivision of Rural and Unzoned Land

11.4.1 Site Characteristics of Subdivisions of Rural and Unzoned Land

1. The purpose of this clause is to ensure subdivisions of rural and unzoned land respond to the physical characteristics of the land.

2. An application to subdivide rural or unzoned land should include the following documents prepared by suitably qualified professionals:
   (a) a Land Suitability Assessment addressing the NT Land Suitability Guidelines; and
   (b) a stormwater management plan including but not limited to; the potential impact on neighbouring land, external roads, internal roads and the 1ha of land identified as unconstrained, the upstream and downstream flows and any proposed mitigation measures.

3. The subdivision design must address the constraints as identified in the Land Suitability Assessment and stormwater management plan in relation to the location of internal roads, lot boundaries and the identified 1ha of unconstrained land.

4. The consent authority must not consent to a subdivision that does not include 1ha of land per lot identified as unconstrained in relation to:
   a) Storm tide flooding;
   b) Riverine flooding;
   c) Localised stormwater flooding;
      in accordance with the Land Suitability Assessment and stormwater management plan.

5. The consent authority must not consent to a subdivision unless the relevant government agencies, local government and service authorities provide formal comment to the consent authority in relation to the Land Suitability Assessment and stormwater management plan and the possibility of storm tide flooding, riverine flooding and localised stormwater flooding of the identified 1ha of land.

6. The consent authority may consent to an application that is not in accordance with subclauses 2 to 5 if the application includes preliminary land assessment and stormwater management plans prepared by the applicant and approved by the relevant government agency and or service authority, demonstrating that 1ha of land per lot and all internal roads are unconstrained by localised stormwater flooding and by those issues addressed in the NT Land Suitability Guidelines.

7. An application to subdivide land on the map “Priority Environmental Management Areas – Litchfield Shire” as an area potentially of environmental significance should, on the advice of the relevant government agency, be accompanied by and the consent authority shall have regard to an evaluation by a suitably qualified professional of the environmental significance of the native vegetation and land form (eg lagoons, wetlands, rugged terrain and drainage systems).

8. An application described in sub-clause 7 must demonstrate that the proposed subdivision design does not adversely affect the environmental values as identified in the evaluation.
9. Subdivision design of rural and unzoned land should:
   a) Retain and protect significant natural and cultural features;
   b) Minimise the number of lots in, or exclude from subdivision, areas of high conservation significance and riparian zones;
   c) Minimise alteration or disturbance to natural drainage systems including drainage areas, recognisable watercourses, lagoons and permanent and semi-permanent springs; and
   d) Minimise erosion hazard, sedimentation and pollution of watercourses.

The proposal also adopts the Northern Territory Land Suitability Guidelines as a Reference Guideline. A complete copy of these Guidelines are included within Attachment A to this report.

Site Description

The majority of the Darwin Municipality is zoned for urban uses, however, there are a limited number of sites that are either within Rural Zones or Unzoned land.

The main Rural Zones that may undergo subdivision in the future are located between Amy Johnston Avenue, McMillans Drive, Vanderlin Drive and the Stuart Highway. It should be noted that these remaining rural lots are likely to seek rezoning to uses other than rural prior to subdivision and therefore the proposed amendment would not be applicable.

There are also Rural Residential lots in Coconut Grove and Rural Living lots in Leanyer.

Under the proposed changes to clause 11.4.1 of the Northern Territory Planning Scheme, applications for the subdivision of Rural and Unzoned land, it will be required to perform a land suitability assessment of the subject land using the land constraints identified within the Guidelines and stormwater management impacts. Applicants will need to perform either a preliminary land assessment or a full land assessment, depending on the constraints of the land.

Preliminary Land Assessment

Under this level of assessment, the Applicant will be required to utilise a range of resources and tools to demonstrate that a minimum of 1ha of land is unconstrained by localised flooding and the other issues addressed in the Guidelines. If the preliminary assessment can demonstrate the above, the relevant Northern Territory
Government agency or local government authority would provide written approval to lodge an application.

Full Land Assessment

Under this scenario, if the relevant Northern Territory Government agency or local government authority does not consider that a preliminary assessment is sufficient, the Applicant will be required to undertake a full assessment. A full assessment would include a Land Suitability Assessment addressing the Guidelines and a stormwater management plan, both of which would need to be completed by a suitably qualified professional.

Northern Territory Land Suitability Guidelines

The Northern Territory Land Suitability Guidelines address seven (7) important land suitability management areas. These include:

1. Drainage;
2. On-site wastewater management;
3. Erosion risk;
4. Soil salinity;
5. Acid sulphate soils;
6. Storm tide flooding; and
7. Riverine flooding.

The mapping and provision of information on these matters is largely managed by the Northern Territory Department for Land Resource Management, and the City of Darwin would not be the relevant authority to provide formal comment on the suitability of land based on the above criteria. However, above attributes may impact upon areas that relate to the City of Darwin, such as the effect of a soil’s ability to drain and flooding from riverine and storm surge, which may impact upon stormwater drainage infrastructure, within the City of Darwin’s care and control.

The existence of acid sulphate soils may also impact upon and damage proposed and existing infrastructure and if identified, should be addressed accordingly.

In addition to an assessment against the Northern Territory Land Suitability Guidelines, an Applicant would also need to provide a stormwater management plan. The City of Darwin maintains the majority of stormwater drainage infrastructure with the Darwin Municipality and would likely be the relevant agency to comment on any proposed subdivision within the Municipality, as is currently the case.
Assessment and Key Council Issues

Proposed sub clause 2(b)

2(b) a stormwater management plan including but not limited to; the potential impact on neighbouring land, external roads, internal roads and the 1ha of land identified as unconstrained, the upstream and downstream flows and any proposed mitigation measures.

In regard to this proposed Clause, the City of Darwin currently requires that all subdivision applications where there are likely to be implications for stormwater drainage, undertake a Stormwater Impact Study to inform the preparation of a stormwater management plan for approval by the General Manager Infrastructure.

This would include an assessment of the capacity of the downstream drainage system to receive any additional flows from new development. Any upgrading works required to the existing drainage system as the result of new development would need to be identified. The City of Darwin would not change its current practice of requesting sufficient stormwater drainage information to assess an application as a result of the proposed amendment.

Proposed sub clauses 5 and 6.

5. The consent authority must not consent to a subdivision unless the relevant government agencies, local government and service authorities provide formal comment to the consent authority in relation to the Land Suitability Assessment and stormwater management plan and the possibility of storm tide flooding, riverine flooding and localised stormwater flooding of the identified 1ha of land.

6. The consent authority may consent to an application that is not in accordance with subclauses 2 to 5 if the application includes preliminary land assessment and stormwater management plans prepared by the applicant and approved by the relevant government agency and or service authority, demonstrating that 1ha of land per lot and all internal roads are unconstrained by localised stormwater flooding and by those issues addressed in the NT Land Suitability Guidelines.

The above proposed amendments would encourage the Applicant to undertake preliminary assessment prior to lodgement of their application to avoid the need for a full assessment. This would encourage developers to seek preliminary advice from the City of Darwin and would likely to reduce the probability of unforeseen stormwater drainage issues that may arise during the two (2) week statutory comment/assessment period currently provided for subdivision applications.
The City of Darwin would require sufficient time to assess stormwater drainage impact studies and stormwater management plans. It may not be possible to undertake this assessment within the normal two (2) week development assessment/comment period. Consequently, the formal development assessment process would need to allow sufficient time for the City of Darwin to assess, comment and where applicable, request further information and / or design changes.

Summary

The proposed amendment applies to a limited number of sites within the Darwin Municipality and the proposed changes reinforce existing City of Darwin practice of requiring Stormwater Impact Studies on sites of concern.

If the proposed scheme amendments were to apply to a subdivision application within the Darwin Municipality, the City of Darwin would require sufficient time to properly assess any study provided by the Applicant and request further information where required. This process would be best undertaken prior to lodgement rather than during the two (2) week development application assessment process that currently occurs, as two (2) weeks is not considered sufficient time to properly assess stormwater drainage studies as well as provide development assessment.

It will be recommended that Council support the Planning Scheme Amendment (PA2012/0675) as detailed in Attachment B to this report.

CONSULTATION PROCESS

In preparing this report, the following City of Darwin officers were consulted:

- Design Team Leader.
- Team Leader Waste and Development

POLICY IMPLICATIONS

There are no policy implications for Council as a result of this application.

BUDGET AND RESOURCE IMPLICATIONS

Appropriate staff resources would need to be made available for assessment of any stormwater management plans provided by the developer for assessment.

RISK/LEGAL/LEGISLATIVE IMPLICATIONS

The proposed amendment will increase the current requirements for assessment of land capability and stormwater drainage management plans, which should lead to better design and environmental outcomes, reducing risk to the community.
PROPOSED AMENDMENT TO THE NT PLANNING SCHEME IN ORDER TO INCORPORATE THE NT LAND SUITABILITY GUIDELINES AS A REFERENCED GUIDELINE; AND AMEND CLAUSE 11.4.1 SITE CHARACTERISTICS OF SUBDIVISIONS OF RURAL AND UNZONED LAND TO REQUIRE A LAND SUITABILITY ASSESSMENT AND A STORMWATER MANAGEMENT PLAN WITH APPLICATIONS UNLESS OTHERWISE APPROVED BY A RELEVANT AUTHORITY - PA2012/0675.

ENVIRONMENTAL IMPLICATIONS

Improper treatment of stormwater drainage flows may lead to flooding, erosion and sedimentation issues for surrounding properties, waterways and lagoons.

COUNCIL OFFICER CONFLICT OF INTEREST DECLARATION

We the Author and Approving Officers declare that we do not have a Conflict of Interest in relation to this matter.

DROSSO LELEKIS
MANAGER DESIGN, PLANNING & PROJECTS

LUCCIO CERCARELLI
GENERAL MANAGER INFRASTRUCTURE

For enquiries, please contact Cindy Robson on 8930 0528 or email: c.robson@darwin.nt.gov.au.

Attachments:

Attachment A: NT Planning Scheme Amendment proposal, PA2012/0675.
Attachment B: City of Darwin, Letter of Response to Department of Lands, Planning and the Environment
NORTHERN TERRITORY OF AUSTRALIA

PROPOSAL TO AMEND NT PLANNING SCHEME
PA2012/0675

The Minister for Lands, Planning and the Environment has initiated an amendment to the NT Planning Scheme in order to incorporate the NT Land Suitability Guidelines as a Referenced Guideline and amend Clause 11.4.1 Site Characteristics of Subdivisions of Rural and Unzoned Land to require a land suitability assessment and a stormwater management plan with applications unless otherwise approved by a relevant authority.

Attached are:

- the Notice of Exhibition under section 17 of the Planning Act;
- an explanation of the proposed changes;
- an extract from the NT Planning Scheme relating to Schedule 3 and Clause 11.4.1 Site Characteristics of Subdivisions of Rural and Unzoned Land;
- the proposed amendment to Schedule 3 and Clause 11.4.1 Site Characteristics of Subdivisions or Rural and Unzoned Land; and
- the NT Land Suitability Guidelines.

The exhibition period is from Friday 12 July 2013 to Friday 9 August 2013.

Written submissions about the proposed planning scheme amendment are to be received by 4.00pm on Friday 9 August 2013 and made to:

Director, Lands Planning
Department of Lands, Planning and the Environment
GPO Box 1680
DARWIN NT 0801; or

Email: planning.dlpe@nt.gov.au

Fax: (08) 8999 7189 or

Hand delivered to Ground Floor, Arnhemica House, 16 Parap Road, Parap.

For more information please contact Mark Meldrum, Lands Planning on telephone (08) 8999 6109.
NORTHERN TERRITORY OF AUSTRALIA

Planning Act

NOTICE OF EXHIBITION OF PROPOSAL
TO AMEND NT PLANNING SCHEME
PA2012/0675

I, PETER GLEN CHANDLER, Minister for Lands, Planning and the Environment give notice under section 17 of the Planning Act of the following:

(a) a proposal to amend the NT Planning Scheme, as described in (e), is to be exhibited;

(b) the proposed amendment is to be exhibited at the offices of the Department of Lands, Planning and the Environment:
   - Ground Floor, Arnhemica House, 16 Parap Road, Parap;
   - Level 1, Alice Plaza, Todd Mall, Alice Springs;
   - Level 1, Government Centre, 5 First Street, Katherine; and
   - Regional Office, Leichhardt Street, Tennant Creek.

(c) the period of exhibition is for 28 days, commencing upon first newspaper publication of the notice required by section 17(1);

(d) written submissions regarding this exhibition should be made to:

   Director, Lands Planning
   Department of Lands, Planning and the Environment
   GPO Box 1680
   DARWIN NT 0801 or

   Fax: (08) 8999 7189 or

   Email: planning.dlpe@nt.gov.au; and

(e) the proposed amendments to the NT Planning Scheme are:
   - Schedule 3 to Clause 2.8 to include the NT Land Suitability Guidelines as a Referenced Guideline; and
   - amend Clause 11.4.1 Site Characteristics of Subdivisions of Rural and Unzoned Land to require a land suitability assessment and a stormwater management plan with applications unless otherwise approved by a relevant authority.

Dated 2 July 2013.

PETER GLEN CHANDLER
Minister for Lands, Planning and the Environment
The Northern Territory Land Suitability Guidelines

The Northern Territory Land Suitability Guidelines (the Guidelines) take internationally recognised land suitability categories and apply them to seven land suitability characteristics of the NT. These Guidelines also provide developers and consultants with information on what Development Assessment Services expects in regard to land suitability information.

The Guidelines will be incorporated into the Northern Territory Planning Scheme in the Schedule to Clause 2.8 (Reference to Guidelines). Under this clause, where applicable, development applications must demonstrate consideration of, and the consent authority must have regard to, the Guidelines and ensure that the proposal is consistent with them. Further, in relation to Section 11.4 (Subdivision of Rural and Unzoned Land), the Guidelines establish what is “unconstrained land” and outline the information required as part of a Land Suitability Assessment, a requirement of the proposed changes.

Applications for Subdivision of Rural and Unzoned Land

Under the proposed changes to Clause 11.4.1 of the NT Planning Scheme, applications for subdivision of rural and unzoned land will be required to perform a land suitability assessment of the subject land using the land constraints identified within the Guidelines and stormwater management impacts. Applicants will need to perform either a preliminary land assessment or a full land assessment, depending on the constraints of the land.

Preliminary Assessment Path

A preliminary land assessment may be conducted using tools such as Natural Resource Maps NT, Environmental Health Fact Sheets and Council Subdivision Guidelines. Applicants are encouraged to contact the relevant government department and/or local government authority. A preliminary land assessment must demonstrate that 1ha of land per lot and all internal roads are unconstrained by localised stormwater flooding and by those issues addressed in the Guidelines. If the preliminary assessment can demonstrate the above, the relevant government agency and/or local government authority will provide written approval to lodge an application. The written approvals to lodge and the preliminary assessment material are to be provided with the application.

Full Assessment Path

If the appropriate government agency or the local government authority do not consider a preliminary assessment is sufficient, the applicant will be required to undertake a full assessment. A full assessment includes a Land Suitability Assessment addressing the Guidelines and a stormwater management plan, both of which are to be completed by a suitably qualified professional. A suitably qualified professional is someone who has professional indemnity insurance to provide advice on land suitability assessment as it applies to specific land. The Land Suitability Assessment, stormwater management plan and any other land information the applicant thinks fit, is to be lodged with the application.
Assessment of Subdivisions of Rural and Unzoned Land

Preliminary Assessment Path
Under the proposed changes to Clause 11.4.1, a subdivision application which includes written approvals to lodge will not be required to address proposed subclauses 2 to 5 of Clause 11.4.1 (Site Characteristics of Subdivisions of Rural and Unzoned Land). The application will be assessed against the relevant provisions of Part 5 of the NT Planning Scheme.

Full Assessment Path
Under the proposed changes to Clause 11.4.1, where a full assessment is required, the consent authority must not consent to an application without formal comment from the relevant government department and/or local government authority in relation to the Land Suitability Assessment and stormwater management plan. This is to ensure that the agencies that specialise in and/or are responsible for, land suitability and stormwater management, provide feedback on the proposed subdivision.

The subdivision design must address the constraints as identified in the Land Suitability Assessment and stormwater management plan in relation to the location of internal roads, lot boundaries and the identified 1ha of unconstrained land per lot. The consent authority will assess the responsiveness of the subdivision design based on formal comment from the relevant agencies, advice from the Department and the consent authorities experience.

The consent authority must not consent to a subdivision that does not include an identified 1ha of unconstrained land per lot in relation to storm tide flooding, riverine flooding, localised or stormwater flooding in accordance with the Land Suitability Assessment and stormwater management plan.
### Schedule 3

#### Schedule to Clause 2.8 - Reference to Guidelines

<table>
<thead>
<tr>
<th>Guidelines/Study</th>
<th>Author/Creator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Guidelines for Reclamation in Coastal Areas</td>
<td>Department of Natural Resources, Environment and the Arts</td>
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</tr>
</tbody>
</table>
11.4 Subdivision of Rural and Unzoned Land

11.4.1 Site Characteristics of Subdivisions of Rural and Unzoned Land

1. The purpose of this clause is to ensure subdivisions of rural and unzoned land respond to the physical characteristics of the land.

2. Subdivision design of rural and unzoned land should:
   (a) avoid the development of land of excessive slope, unstable or otherwise unsuitable soils (e.g. seasonally waterlogged) and natural drainage lines;
   (b) retain and protect significant natural and cultural features;
   (c) minimise the number of lots in, or exclude from subdivision, areas of high conservation significance and drainage protection areas;
   (d) avoid development of land affected by a 1% AEP flood or storm surge event and be situated above the RL 6.0 AHD contour where subdivision adjoins tidal areas;
   (e) minimise alteration or disturbance to natural drainage systems including drainage areas, recognisable watercourses, lagoons and seepage areas;
   (f) minimise potential for erosion, sedimentation and pollution of watercourses; and
   (g) minimise potential for localised flooding.

3. An application to subdivide land within the Shire of Litchfield that includes land identified on the map “Priority Environmental Management Areas – Litchfield Shire” as an area potentially of environmental significance should, on the advice of the Department of Natural Resources, Environment, The Arts and Sport, be accompanied by and the consent authority shall have regard to an evaluation by a suitably qualified person of the environmental significance of the native vegetation and land form (e.g. lagoons, wetlands, rugged terrain and drainage systems).

4. An application described in sub-clause 3 must demonstrate that the proposed subdivision design does not adversely affect the environmental values as identified in the evaluation.
PROPOSED CHANGES

2.8 REFERENCE TO GUIDELINES

1. Applications for a use or development must demonstrate consideration of and the consent authority must have regard to any guidelines applicable to the use or development appearing in Schedule 3 and ensure that a use or development or proposed use or development is consistent with them.

2. Where there is an inconsistency between any applicable guideline and this Planning Scheme, the provisions of the Planning Scheme will prevail.

<table>
<thead>
<tr>
<th>SCHEDULE 3</th>
<th>SCHEDULE TO CLAUSE 2.8 - REFERENCE TO GUIDELINES</th>
</tr>
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</tr>
<tr>
<td>Land Suitability Guidelines for the NT</td>
<td>Department of Land Resource Management and the Department of Health</td>
</tr>
</tbody>
</table>
11.4 **SUBDIVISION OF RURAL AND UNZONED LAND**

11.4.1 Site Characteristics of Subdivisions of Rural and Unzoned Land

1. The purpose of this clause is to ensure subdivisions of rural and unzoned land respond to the physical characteristics of the land.

2. An application to subdivide rural or unzoned land should include the following documents prepared by suitably qualified professionals:
   
   (a) a Land Suitability Assessment addressing the NT Land Suitability Guidelines; and
   
   (b) a stormwater management plan including but not limited to; the potential impact on neighbouring land, external roads, internal roads and the 1ha of land identified as unconstrained, the upstream and downstream flows and any proposed mitigation measures.

3. The subdivision design must address the constraints as identified in the Land Suitability Assessment and stormwater management plan in relation to the location of internal roads, lot boundaries and the identified 1ha of unconstrained land.

4. The consent authority must not **consent** to a subdivision that does not include 1ha of land per lot identified as unconstrained in relation to:
   
   (a) Storm tide flooding;
   
   (b) Riverine flooding;
   
   (c) Localised stormwater flooding;
   
   in accordance with the Land Suitability Assessment and stormwater management plan.

5. The consent authority must not **consent** to a subdivision unless the relevant government agencies, local government and service authorities provide formal comment to the consent authority in relation to the Land Suitability Assessment and stormwater management plan and the possibility of storm tide flooding, riverine flooding and localised stormwater flooding of the identified 1ha of land.

6. The consent authority may **consent** to an application that is not in accordance with subclauses 2 to 5 if the application includes preliminary land assessment and stormwater management plans prepared by the applicant and approved by the relevant government agency and or service authority, demonstrating that 1ha of land per lot and all internal roads are unconstrained by localised stormwater flooding and by those issues addressed in the NT Land Suitability Guidelines.

7. An application to subdivide land on the map “Priority Environmental Management Areas – Litchfield Shire” as an area potentially of environmental significance should, on the advice of the relevant government agency, be accompanied by and the consent authority shall have regard to an evaluation by a suitably qualified professional of the environmental significance of the native vegetation and land form (eg lagoons, wetlands, rugged terrain and drainage systems).

8. An application described in sub-clause 7 must demonstrate that the proposed subdivision design does not adversely affect the environmental values as identified in the evaluation.
9. Subdivision design of rural and unzoned land should:
   (a) Retain and protect significant natural and cultural features;
   (b) Minimise the number of lots in, or exclude from subdivision, areas of high conservation significance and riparian zones;
   (c) Minimise alteration or disturbance to natural drainage systems including drainage areas, recognisable watercourses, lagoons and permanent and semi-permanent springs; and
   (d) Minimise erosion hazard, sedimentation and pollution of watercourses.
NT Land Suitability Guidelines

June 2013
Summary

The land and water resources of an area, including flooding information should be the first consideration when considering potential development over a parcel of land. The accurate delineation of the relevant land resources and potential flood levels ultimately provides the proponent with the information they require to plan and implement a development.

The Northern Territory (NT) Land Suitability Guidelines applies internationally recognised land suitability classes to seven known land suitability management areas in the NT. The guidelines aim to outline the information required to address the term “unconstrained land” in Section 11.4 of the Northern Territory (NT) Planning Scheme. The guidelines provide developers and consultants with information on what the NT Government expects in regard to land suitability information for general developments. In doing so, the land suitability guidelines can assist streamlining the development assessment process.

Land suitability (FAO, 1976) promotes land uses that utilise land for its most suitable economic use while also reducing potential environmental and social risks. It does not necessarily prevent a land use from occurring, but in most situations indicates that additional inputs in terms of costs, design, planning and ongoing management could be required in order to adequately address social, economic and environmental risks.

The NT guidelines address seven important land suitability management areas. These include:

1. Drainage
2. Onsite Wastewater Management
3. Erosion Risk
4. Soil Salinity
5. Acid Sulfate Soils
6. Storm Tide Flooding
7. Riverine Flooding

The seven land suitability management areas generally follow national standards and terminology. For each land suitability management area the guidelines generally provide (i) a definition of terminology, (ii) the importance of managing the issue for economic, health, social and/or environmental benefits and (iii) a definition of what is deemed to be potentially constrained under the NT Planning Scheme.
1.0 Defining Land Suitability

*Land suitability* is the fitness of a given area for a land utilisation type, or the degree to which it satisfies the land user (Van Gool et al, 2008). It is generally presented as a class or rating. *Land utilisation* is a system of land use with explicit management methods in a defined technical and socio-economic setting, and with a specific duration or planning horizon (Van Gool et al, 2008). A *land evaluation* is the process of estimating the potential of land for alternative kinds of land use/utilisation so that the consequences of change can be predicted (Van Gool et al, 2008). Where a landscape characteristic doesn’t meet the requirements of a land use, it is considered a potential limitation or ‘constraint’. Constraints (limitations) are commonly rated to express the degree of severity to which they may impair a land utilisation.

Internationally recognised suitability classes outlined in FAO (1976) can be adapted and applied to regional and local suitability assessments. Adapted FAO (1976) suitability classes are presented in Table 1.

<table>
<thead>
<tr>
<th>Suitability Classes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class S1 - Highly Suitable</td>
<td>Land having no significant limitations to sustained application of a given land use, or only minor limitations. Nil to minor negative economic, environmental, health and/or social outcomes.</td>
</tr>
<tr>
<td>Class S2 - Moderately Suitable</td>
<td>Land having limitations which in aggregate are moderately severe for sustained application of a given land use. Appreciably inferior to S1 land. Potential negative economic, environmental, health and/or social outcomes if not adequately managed.</td>
</tr>
<tr>
<td>Class S3 - Marginally Suitable</td>
<td>Land having limitations which in aggregate are severe for sustained application of a given use. Moderate to high risk of negative economic, environmental, health and/or social outcomes if not adequately managed.</td>
</tr>
<tr>
<td>Class S4 - Not Suitable</td>
<td>Land having limitations which may be insurmountable. Limitations are so severe as to preclude successful sustained use of the land in the given manner. Very high risk of negative economic, environmental and/or social outcomes if not managed.</td>
</tr>
<tr>
<td>Class S5 - Not Suitable</td>
<td>Land having limitations which appear so severe as to preclude any possibilities of successful sustained use of the land in the given manner. Almost certain risk of significant negative economic, environmental and/or social outcomes.</td>
</tr>
</tbody>
</table>

*Table 1: Adapted Land Suitability Classes based on FAO (1976) in Van Gool et al (2008)*
2.0 Land Suitability and the NT Planning Scheme

Section 11.4 of the NT Planning Scheme commonly refers to the identification and extent of “unconstrained” and “constrained” land. For the purposes of the NT Planning Scheme, “constrained” land is land that contains characteristics that do not entirely match the requirements of the proposed land use. The Suitability Classes in Table 1 are applied to the “unconstrained” and “constrained” land terms used in the NT Planning Scheme. Suitability Classes 1-2 are considered to be generally “unconstrained” whereas Suitability Classes 3-5 are considered to varying degrees “constrained”.

Where a Suitability Class is determined to be 3-5 it may (i) prevent development but (ii) in some cases not necessarily prevent the land use from occurring but indicate that additional inputs in terms of costs, design, planning and ongoing management could be required by the proponent, and in some cases involve significantly higher economic, social and environmental risks to the public.

3.0 Common Land Suitability Management Areas in the NT

3.1. Drainage

Drainage, defined by the National Committee on Soil and Terrain (2009) summarises “local soil wetness conditions, that is, it provides a statement about soil and site drainage likely to occur in most years. It is affected by a number of attributes, both internal and external, that may act separately or together. Internal attributes include soil structure texture, porosity, hydraulic conductivity, and water-holding capacity, while external attributes are source and quality of water, evapotranspiration, gradient and length of slope, and position in the landscape”

Drainage is an environmental, health, social and cultural issue for a number of land utilisation types. For example, traditional absorption based septic systems require well drained type soil characteristics to operate successfully during both the dry season and wet season, especially during monsoons. Development and disturbance of poorly drained landscapes also has health implications with increased occurrence of soil borne diseases such as melioidosis (*Burkholderia pseudomallei*) (Kaestli et al, 2011). Cultural and social limitations may include occupants having to live and undertake day to day activities whilst the soil and land is saturated, inundated or “muddy” for a significant period, often sometime after the cessation of the wet season. Although different to flooding in its strict definition, there can be significant overlap with flooding issues in terms of drainage constrained landscapes. It can also represent for some land uses, a substantial additional financial cost to develop.

Under the NT Planning Scheme land evaluated as being imperfectly to very poorly drained (Suitability Classes 3-5 in Table 2) are considered constrained for a number of land utilisations that involves human occupation.

The seasonality, amount and intensity of rainfall are also an important consideration.

Typical landscapes constrained by drainage considerations include intertidal areas, coastal floodplains, wetlands, swamps, lakes, drainage depressions, alluvial plains, lowland plains,
levees and margins of these areas where subsurface water moves to lower positions within the landscape (transition zones).

**Land potentially constrained by Drainage in the NT is defined as:**

Areas that are wet or (saturated) either at, above or close to the land surface for a period of weeks to months typically during the wet season but may extend into the dry season as a result of rainfall, landscape function and/or position or soil hydrology factors.

### 3.2. Onsite Wastewater Management

Onsite wastewater systems are systems for the bacterial, biological, chemical or physical treatment of sewage, and include all tanks, trenches, beds, sewers, drains, pipes, fittings, appliances and land used in connection with the system. This includes wastewater treatment systems such as onsite wastewater treatment systems, including septic tanks and associated absorption trenches and aerated wastewater treatment systems.

The key performance objectives for onsite wastewater systems are to protect public health, maintain and enhance the quality of the environment and community amenity, and protect resources in unsewered developments.

The majority of onsite wastewater systems in areas such as the Darwin rural area comprise septic tanks with absorption trenches or beds. It is essential in an area with high annual rainfall, light highly permeable soils and poorly drained soils that septics are constructed on suitable land. For onsite wastewater systems to operate properly they require certain soil landscape properties principally surrounding drainage, clay content, gravel content, soil depth, and rockiness.

If a soil landscape cannot absorb waste water during all weather conditions, potentially contaminated wastewater is released into the landscape impacting soil, ground water and streams. Consequently, this may pose a significant risk to public health and the environment.

The Department of Health has developed *Guidelines for Land Capability Assessment for Onsite Wastewater Management* to explain the process of undertaking a land capability assessment for onsite wastewater management for unsewered development proposals. The Guidelines apply across the NT and describe the level of detail required for investigations and reporting, for a range of different development scenarios. This document is supported by a series of risk maps for onsite wastewater management, however the extent of mapping is predominantly limited to the Darwin rural area.

**Land Constrained for Onsite Wastewater Management is defined as:**

Soil-landscapes that have one or more of the following: slopes greater than 5%; are imperfectly to very poorly drained; contain minimal clay (5%) or too much clay (>35%) at depth; shallow soils (<0.5m); contain extensive exposed rock (>10%); or greater than 25% gravel.
3.3. Erosion Risk

Erosion risk is the intrinsic susceptibility of a parcel of land to the prevailing agents of erosion. It is dependent on a combination of climate, landform and soil factors (Houghton & Charman, 1986).

The effects of erosion are economic, social and environmental. Erosion can be significantly accelerated in the wet dry tropics of northern Australia when the landscape is altered. The removal of vegetation and exposure to intense rainfall can cause severe erosion. Accelerated erosion can be mitigated against through erosion and sediment control practices, but in some landscapes under particular land utilisations it is difficult unless significant and sometimes costly engineering structures are appropriately designed and built. The implications of not controlling soil erosion have implications for the water quality of streams, wetlands and tidal environments ultimately affecting aquatic and marine ecosystems. Additionally unmanaged soil erosion and sedimentation may impact adjoining property, infrastructure, roads and drainage systems.

Some soils are inherently highly erodible (Suitability Classes 3-5 in Table 1) due to physical and chemical properties of the soil (ie. loose sands & sodic soils). Others soils are at high erosion risk due to their position in the landscape (ie. land with significant slope and areas where runoff is concentrated such as drainage areas). Erosion risk is also dependant on the intensity of the proposed land utilisation.

Soil-landscapes in the NT are generally a moderate to high or very high erosion risk due to the sandy nature of the landscapes and the intense rainfall.

**Land Constrained by an Erosion Risk is defined as:**

Soil landscapes that have a moderate to very high erosion risk (Suitability Classes 3-5).

3.4. Soil Salinity

Soil salinity refers to the accumulation of water soluble salts. These are mainly sodium, but also potassium, calcium and magnesium, which may be chlorides, sulfates or carbonates (Hazelton & Murphy, 2007).

Soil salinity is an issue generally restricted to low rainfall areas. Upland soils in the wet dry tropics have generally been leached of salts over many thousands of years or weathering and intense rainfall. Soil salinity can be exacerbated by changes in the water balance (ie removal of native vegetation and intensification of land uses such as increased irrigation)

The effects of not identifying and managing this risk are economic, environmental and social. Public and private infrastructure such as housing can be severely degraded or destroyed over time. The environmental effects may include the impact increased salt concentrations have on aquatic ecosystems and water quality. Scalded landscapes are also aesthetically undesirable.
3.5. Acid Sulfate Soils

Acid sulfate soils are naturally occurring sediments and soils containing iron sulfides (principally pyrite) and/or their precursors, or are affected by the oxidation products of sulfides (Sullivan et al, 2011). The exposure of sulfides to oxygen by drainage or excavation leads to the generation of sulfuric acid.

The effects of not managing acid sulfate soils can result in serious long term economic, environmental, cultural and social impacts. The potential severe outcomes are well documented in both north and southeast Queensland, along significant areas of the central and northern coastline of New South Wales and south west of Western Australia.

Economic impacts can result in substantial costs to replace public and private infrastructure, especially concrete infrastructure. The impact on water quality and aquatic and marine ecosystems from a range of acidic compounds including heavy metals may also be severe. The environmental impacts are long term, costly and very difficult to remediate.

Acid sulfate soils, both sulfidic and sulfuric are known to occur in intertidal and coastal floodplains in the Darwin region and most other parts of the NT coastline. Information published by the NT Government (Hill and Edmeades, 2008) indicate that the Darwin region has some of the most potentially toxic acid sulfate soils in Australia.

Land Constrained by acid sulfate soils is defined as:

Soils where greater than 0.02% oxidisable sulfur is present (Suitability Classes 3-5 in Table 1) as indicated by NATA accredited soil testing results, undertaken according to nationally recognised methods and recognised in a standard test (ie Chromium Reducible Sulfur or SPOCAS), and collected at appropriate depth and density, preferably in accordance with the published Queensland sampling guidelines (Ahern et al 1998). The level of risk is dependent on both the level of oxidisable sulfur and volumes of soil disturbed.
3.6. Storm Tide

Flooding caused by temporary sea-level rises associated with storm surges is restricted to coastal areas.

Storm surges occur when sea levels are raised due to the combined effects of the lowering of atmospheric pressure and wave run-up due to onshore winds during cyclones. Storm surge mapping is progressively being completed to identify potential land development constraints for major coastal population centres in the NT.

**Land Constrained by risk of Storm Surge is defined as:**

Coastal areas at elevations below the Primary (100 year Annual Recurrence Interval (ARI) Storm Tide inundation extent.

3.7. Riverine Flooding

This flooding is associated with the depth and extent of inundation caused when rivers rise above their bank levels. Floodplain modelling and mapping to identify land potentially constrained by this type of flooding is progressively being completed for areas where there is greatest risk to human life and/or infrastructure.

**Land Constrained by risk of Floodplain Flooding is defined as:**

Land that is below the 1% Annual Exceedence Probability (AEP) flood level.
4.0 Applying the Land Suitability Guidelines

Detailed land suitability assessments will generally require the collection of new field verified information. Land unit information published at various scales across the NT is a useful guide for planning but the scale and consequent accuracy of this published information is more often than not insufficient for detailed peri-urban planning. The requirement under the NT Planning Scheme for lots in peri-urban areas to contain at least 1 ha of suitable or unconstrained land adjacent to public access, implies that the information provided by a proponent needs to collected at a very fine scale, be field verified, clearly presented and at sufficient accuracy so the consent authority has a very high level of confidence that the land is suitable.

Table 2 applies the land suitability framework to the seven important land suitability management areas. There may be in some situations a requirement for specific additional land suitability management areas, not included in Table 2 to be investigated.

The presence and importance of some land suitability management areas in Table 2 are often regionalised. Issues such as flooding and drainage are generally more prevalent in the Top End whereas salinity is generally restricted to drier climatic regions. A similar statement could also be made with regard to onsite wastewater systems for developments which will be connected to reticulated sewerage. For any one development not all seven land suitability issues will be relevant and therefore may not be required to be addressed in detail.

There can also be significant overlap between the seven land suitability management areas. Flooding, drainage and the suitability of soils for onsite wastewater management (when related to soil drainage or flooding) are all generally associated with the length and depth of potential inundation, and the impacts inundation could have on private and public infrastructure and public and environmental health. Assessments undertaken to address the extent of poorly and very poorly drained land across a proposed subdivision may at the same time address flooding and also the suitability of the soils for onsite wastewater management.
<table>
<thead>
<tr>
<th>Suitability Classes</th>
<th>Description</th>
<th>Drainage</th>
<th>Onsite Wastewater Management</th>
<th>Equivalent Criteria**</th>
<th>Erosion Risk</th>
<th>Soil Salinity</th>
<th>Acid Sulfate Soils</th>
<th>Storm Tide Flooding</th>
<th>Riverine Flooding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class S1 - Highly Suitable</td>
<td>Land having no significant limitations to sustained application of a given land use, or only minor limitations. Nil to minor negative economic, environmental, health and/or social outcomes</td>
<td>Rapid to Well</td>
<td>Low</td>
<td>AS/NZS 1547 - Soil category classes: 2 &amp; 3, Clay content: 5-25%, Soil depth: &gt;0.5m, Stock outcrops: &lt;10%, Surface gravel: &lt;25%, Slope: &lt;5%</td>
<td>No runoff occurs</td>
<td>&lt;2 ECe dS/m or no potential to be &gt;4dS/m</td>
<td>Not Present</td>
<td>Secondary Storm Tide (1000 year ARI) inundation risk for entire land parcel – Nil Risk not applicable</td>
<td>≤0.5% AEP risk of river floodplain flooding for entire land parcel – No Risk</td>
</tr>
<tr>
<td>Class S2 - Moderately Suitable</td>
<td>Land having limitations which in aggregate are moderately severe for sustained application of a given land use. Appreciably inferior to S1 land. Potential negative economic, environmental, health and/or social outcomes if not adequately managed.</td>
<td>Moderate</td>
<td>Medium</td>
<td>AS/NZS 1547 - Soil category classes: 4 &amp; 5, Clay content: 20-50%, Soil depth: 0.25-0.5m, Rock outcrops: 10-20%, Surface gravel: 25-50%, Slope: 5-10%</td>
<td>&lt;0.75% slope</td>
<td>2-4 ECe dS/m or no potential to be &gt;4dS/m</td>
<td>Oxidisable Sulfur &gt;0.02% but very low and &lt;50 tonnes to be disturbed*</td>
<td>Primary Storm Tide (100 year ARI) inundation risk for entire land parcel – Nil No Risk</td>
<td>≤1% AEP risk of river floodplain flooding for entire land parcel – No Risk</td>
</tr>
<tr>
<td>Class S3 - Marginally Suitable</td>
<td>Land having limitations which in aggregate are severe for sustained application of a given use. Moderate to high risk of negative economic, environmental, health and/or social outcomes if not adequately managed.</td>
<td>Imperfect</td>
<td>High</td>
<td>AS/NZS 1547 - Soil category classes: 1 &amp; 6, Clay content: &lt;5% &amp; &gt;35% Soil depth &lt;0.25m, Rock outcrops: &gt;20%, Surface gravel: &gt;50%, Slope: &gt;10%</td>
<td>0.75-5% slope, Development will require best practice erosion and sediment control involving engineered works. On-going land management required</td>
<td>Soil salinity &gt;4dS/m or potential to be &gt;4dS/m</td>
<td>Oxidisable Sulfur &gt;0.02%, &lt;100 tonnes to be disturbed*</td>
<td>Primary Storm Tide (100 year ARI) inundation risk for part of land parcel – Low Risk</td>
<td>≤1% AEP risk of river floodplain flooding on part of the land parcel other than floodway – Low risk and mitigated</td>
</tr>
<tr>
<td>Class S4 - Not Suitable</td>
<td>Land having limitations which may be insurmountable. Limitations are so severe as to preclude successful sustained use of the land in the given manner. Very high risk of negative economic, environmental and/or social outcomes if not managed.</td>
<td>Poor - Very Poor</td>
<td>High</td>
<td>Poor to very poorly drained or inundated. Onsite wastewater systems will not operate during periods of inundation</td>
<td>&gt;5% slope, Development will require considerable best practice erosion and sediment control involving engineered works. High level of on-going land management essential</td>
<td>Soil salinity &gt;8dS/m or potential to be &gt;8dS/m</td>
<td>Oxidisable Sulfur &gt;0.02%, &gt;200 tonnes to be disturbed*</td>
<td>Primary Storm Tide (100 year ARI) inundation risk for entire land parcel including occupied area and emergency exit route - Medium Risk and mitigated</td>
<td>≤1% AEP risk of river floodplain flooding for entire land parcel other than floodway – Medium risk and mitigated</td>
</tr>
<tr>
<td>Class S5 - Not Suitable*</td>
<td>Land having limitations which appear so severe as to preclude any possibilities of successful sustained use of the land in the given manner. Almost certain risk of significant negative economic, environmental and/or social outcomes.</td>
<td>To be determined on assessment of specific cases</td>
<td>Unsuitable for onsite wastewater management</td>
<td>To be determined on assessment of specific cases. Environmental, social, health or economic risks are considered to high</td>
<td>To be determined on assessment of specific cases. Environmental, social, health or economic risks are considered to high</td>
<td>To be determined on assessment of specific cases. Environmental, social, health or economic risks are considered to high</td>
<td>Primary Storm Tide (100 year ARI) inundation risk for entire land parcel and the storm tide level is 2m or more above ground level – Very High risk and mitigation not feasible</td>
<td>Primary Storm Tide (100 year ARI) inundation risk for entire land parcel and the storm tide level is 2m or more above ground level – Very High risk and mitigation not feasible</td>
<td></td>
</tr>
</tbody>
</table>


*Land Suitability classes for acid sulfate soils is based on Table 3 in Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils in Queensland 1998 (Ahern, Ahern and Powell, 1998). Table 3 in Ahern, Ahern and Powell (1998) should be referenced for exact treatment categories

If Class 5 (Not Suitable) can sometimes only be assessed for specific cases

**Refer to the DoH Guidelines for Land Capability Assessment for Onsite Wastewater Management for more information about these risk categories including the level of detail required for investigation and reporting of land capability assessment.
References


Hazelton PA, Murphy B.W 2007 *Interpreting Soil Test Results. What do all the numbers mean?* NSW Department of Natural Resources. CSIRO Publishing, Collingwood.


Dear Mr Meldrum

Proposal: Proposed Amendment to the NT Planning Scheme in order to incorporate the NT Land Suitability Guidelines as a Referenced Guideline; and amend Clause 11.4.1 Site Characteristics of Subdivisions of Rural and Unzoned Land to require a land suitability assessment and a stormwater management plan with applications unless otherwise approved by a relevant authority.

- PA2012/0675.

Thank you for the proposed amendment to the NT Planning Scheme referred to this office 11 July 2013, concerning the above. This letter may be placed before a City of Darwin Town Planning Committee Meeting. Should this letter be varied or not endorsed by Council, you will be advised accordingly.

The following issues are raised for consideration:

It is acknowledged that there are limited areas within the City of Darwin Municipality where the proposed amendment would apply as most unconstrained Rural land would likely to be rezoned prior to subdivision.

The proposed amendment would encourage Applicants to undertake a preliminary assessment of a site’s capability for subdivision, prior to lodgement of their application. This would encourage developers to seek preliminary advice from City of Darwin and other relevant authorities and would reduce the probability of unforseen constraints and well as other development related issues arising during the statutory comment / assessment period provided for subdivision applications, leading to better design and environmental outcomes.

The amendment also incorporates the requirement for a stormwater management plan to be prepared. The City of Darwin currently requires that all subdivision applications, where there are likely to be implications for stormwater drainage, undertake a Stormwater Impact Study and an Environmental and Construction Plan to inform the management of the site during construction and the preparation of a stormwater management plan for approval by the General Manager Infrastructure, City of Darwin. This includes an assessment of the capacity of the
downstream drainage system to receive any additional flows from new development. Any upgrading works required to the existing drainage system as the result of new development and any works are to be undertaken at the applicant’s expense to the satisfaction of the General Manager Infrastructure. In this regard, Council’s current requirements are in line with the proposed amendment, if not greater.

In addition to any requirements of the planning scheme, Council will encourage applicants to give consideration in preparing stormwater management plans to attempting to keep post-development stormwater run-off at pre-development levels and importantly the water quality of the run-off should be maintained if not improved.

The City of Darwin would require sufficient time to assess stormwater management plans and any other information provided to support an application. It may not be possible to undertake this assessment within the normal two (2) week development assessment/comment period. Consequently, the formal development assessment process would need to allow sufficient time for the City of Darwin to assess, comment and where applicable, request further information and/or design changes relating to stormwater drainage and any other affected aspects of the development such as access and road design.

The proposed amendment applies to a limited number of sites within the Darwin Municipality and the proposed changes reinforce existing City of Darwin practice of requiring stormwater management plans for subdivision and development applications on sites of concern. In this regard the City of Darwin supports the proposed amendments and notes that sufficient time to assess any associated submissions from an Applicant be supported by the Consent Authority, along with any requests from Council for additional related information and design changes that may be requested as a result of information provided in support of a subdivision application.

If you require any further discussion in relation to this application please feel free to contact me on 8930 0528.

Yours faithfully

CINDY ROBSON
STRATEGIC TOWN PLANNER
Presenter: Manager Design, Planning and Projects, Drosso Lelekis

Approved: General Manager Infrastructure, Luccio Cercarelli

PURPOSE

The purpose of this report is to update Council on the Darwin CBD Study and Precinct-based Master Plan Project.

LINK TO STRATEGIC PLAN

The issues addressed in this Report are in accordance with the following Goals/Strategies of the City of Darwin 2012 – 2016 as outlined in the ‘Evolving Darwin Towards 2020 Strategic Plan’:-

Goal
1. Collaborative, Inclusive and Connected Community

Outcome
1.4 Improved relations with all levels of government and significant stakeholders

Key Strategies
1.4.2 Play an active role in strategic and statutory planning processes

KEY ISSUES

- The City of Darwin has been successful in obtaining an Australian Government grant to develop a Darwin CBD Study and Precinct –Based Master Plan, under the Liveable Cities Program.
- The project is being funded by the Australian Government ($250,000), Northern Territory Government ($125,000) and City of Darwin ($125,000). Total project value is $500,000.
- The project has received written support from the Property Council of Australia (NT) and Northern Territory Chamber of Commerce.
- The projects current completion date is December 2013.
- On 19 March 2013, the Terms of Reference for this project were jointly signed by the City of Darwin’s CEO, Brendan Dowd and the CEO of the Northern Territory Government’s Department of Lands and Planning, Ken Davies.
- Mr Steve Thorne of Design Urban Pty Ltd has been appointed by Council to assist in the delivery of this significant body of work.
- The core study area and zone of influence for the study has been established.
- A number of consultancy briefs have been developed and issued.
The Project Control Group is meeting regularly.

Regular updated reports will be presented to Council.

A series of workshops have been planned. The first is listed for 20 or 21 August 2013.

BACKGROUND

At its Ordinary Meeting on 29 November 2011 Council resolved the following:

**Liveable Cities Program – Grant Funding**

*Report No. 11TC0105 (29/11/11) Common No. 2141759*

A. THAT Council receive and note report 11TC0105 entitled Liveable Cities Program – Grant Funding.

B. THAT Council submits a funding application to develop a Precinct-Based Master Plan for the Darwin CBD in partnership with the Northern Territory Government.

C. THAT Council approve “in principle” Council funding of $125,000 should the application be successful.

D. THAT the funding for this Precinct-Based Master Plan be referred to the Third Quarter Budget Review.

**DECISION NO.20/4668  (29/11/11) Carried**

In accordance with the Council decision, City of Darwin officers finalised the successful application for Australian Government funding to prepare a Darwin CBD Study and Precinct-Based Master Plan.

This funding is from the Australian Government’s Department of Infrastructure and Transport and falls under the Liveable Cities Program. The program aims to improve planning and design in capital cities and major regional cities that are experiencing population growth pressures and housing and transport affordability cost pressures.

It aims to achieve this by improving the capacity of major regional cities to undertake strategic planning in-line with Council of Australian Government’s (COAG) agreed planning criteria and by supporting the development of demonstration projects that drive urban renewal and strategic urban development.

The Liveable Cities Program also seeks to foster innovative solutions to address issues of poor urban design and the need for improved quality open space and public places, high levels of car dependency and traffic congestion; and rising carbon emissions.
Program Objectives

The Program seeks to improve the capacity of major regional cities to undertake strategic planning in line with the COAG agreed criteria and will support the development of demonstration projects that facilitate urban renewal and strategic urban development.

The Department sought projects that achieve:

- improved alignment of urban planning and design with the National Urban Design Protocol and COAG principles;
- partnerships for action or planning where these have not previously existed;
- governance arrangements resulting in lasting partnerships between levels of government, parts of government, and government and private interests;
- lessons or successful outcomes that can be transferred or applied to other partnership projects;
- planning approaches that break down specialist silos; and
- enhanced collaboration resulting in improved outcomes in urban planning and delivery.

The City of Darwin’s submission was for a Precinct-Based Master Plan for the Darwin CBD.

The submission stated:

“A Precinct-Based Master Plan for the Darwin CBD will identify how we will accommodate a growing and changing population and how we can build our economy. The Plan will highlight key strategic planning areas within the CBD to enable further development of precinct areas. Darwin City Council (DCC) and the Northern Territory Government (NTG) want future development to follow strategic plans which address challenges and opportunities such as; an ageing population, global warming and climate change, and a global economy.

Without a current Master Plan for the Darwin CBD in place it creates a risk of future development failing to address important principles for building a productive, sustainable and liveable city. DCC and NTG are working to develop a hierarchy of strategic planning to shape the future of Darwin and the Greater Darwin Region. The strategic plans will align with the objectives of the National Urban Policy and the COAG National Criteria for Cities. The planning hierarchy will contribute to the Northern Territory building a planning structure consistent with the National Planning ‘Line of Sight’ (this is further described in Q6.2). A key component to achieving this hierarchy is the development of a CBD Master Plan.

Darwin is known for its unique, relaxed tropical lifestyle and diverse culture. The aim is to maintain this tropical lifestyle and deliver a city that is also productive and sustainable. Darwin has major projects planned for the near future, including the increased US Marine Base, the INPEX oil and gas project and new mines. Darwin is
also known as a popular tourism destination and was recently named as one of the top 10 destinations to visit in 2012 by the internationally renowned travel guide Lonely Planet. The future is bright for Darwin but the growing economic industries and population requires long term strategic planning to ensure the sustainability and liveability of the area.”

The application demonstrated that this project would meet the COAG National Criteria for Cities requirements. Importantly it is a joint project between all levels of government and has received the support of the Property Council of Australia (NT) and Northern Territory Chamber of Commerce. The Commonwealth Government has set a number of milestones for the project, which is to be completed by September 2013.

At its 2nd Ordinary Meeting in September 2012, Council resolved:

**Darwin CBD Study and Precinct – Based Master Plan Project – Update Number 1**

Report No. 12TS0154 LC:KB (25/09/12) Common No. 1952026

A. THAT Report Number 12TS0154 LC:KB entitled, Darwin CBD Study and Precinct – Based Master Plan Project – Update Number 1, be received and noted.

B. THAT Council endorse the core study area and zone of influence for the Darwin CBD Study and Precinct – Based Master Plan Project as shown in Attachment A to Report Number 12TS0154 LC:KB.

DECISION NO.21\481 (25/09/12) Carried

DISCUSSION

This project required a joint approach with the Northern Territory Government as the Master Plan will ultimately need to be incorporated into the Northern Territory Planning Scheme. The project falls under the terms of reference of the Capital City Committee, and as such, will be a joint project with the Northern Territory Government (NTG).

On 19 March 2013 the Terms of Reference were jointly signed by the CEO’s of the City of Darwin and the Department of Lands and Planning. A Project Control Group (PCG) has been agreed, which will include staff representation from the City of Darwin, the Department of Transport and the Department of Lands, Planning and the Environment. The PCG will manage the day to day running of the project with Project Director, Steve Thorne, and report regularly to the Council, the Department of Transport, the Department of Lands, Planning and the Environment, and the NT Planning Commission.

The first PCG meeting was held on the 18 April 2013. During this meeting the project schedule was discussed and found to be too tight. It was resolved to approach the...
Commonwealth Government for an extension of time given the delays caused by the changes in Government in the Northern Territory. This has been approved.

A high level of professional expertise is required to complete this project in an ever contracting timeframe. For this reason a number of sub-contracts have been let to provide professional input and support to the Project Director.

The sub-contracts include the following:

**Consultation and Stakeholder Engagement Consultant**

This work has been awarded to Michels Warren Munday. A Stakeholder Engagement Strategy has been drafted and has been evaluated by the City of Darwin project team. The first workshop is expected to in August 2013. A number of stakeholder meetings and workshops have been planned.

**Landscape Consultant**

A key component and underlying basis for the Darwin CBD Master Plan will be natural systems and networks. The integration of landscaping into the overall strategy is vital to ensure a close “fit” between the human and natural environments. This sub-contract will be let to a local landscape architectural firm because of the importance of local knowledge regarding landscaping and the tropical context. A public request for submission of proposals for this consultancy was undertaken work has commenced on this element. This contract was awarded to Clouston Associates.

**Urban Retail Consultant**

It is generally accepted that retail in the Darwin CBD is under pressure from other centres and online shopping. The role of the Darwin CBD needs to be defined not only in retail terms but in terms of its cultural role and ability to inspire other land uses, including employment generators. A specialised consultant covering this broad range will be sought to assist in the definition of the role of the Darwin CBD as a retail and commercial destination. In addition to this role, this consultant will also be required to work closely with the spatial movement consultant to develop a responsive strategy to land use and land values and rental levels within the study area as they relate to the movement model. A public request for submission of proposals for this consultancy has been undertaken and the work awarded to Urbacity Pty Ltd and Foresight Partners. Work has commenced on this element.

**Spatial Analysis and Movement Modelling**

As part of the Master Plan, an analysis of the city form in facilitating movement of all modes will be undertaken. This is quite different from a traffic model as it uses urban form itself as the determinant of movement patterns. Each city has its own unique urban form and what is termed “natural movement” derived from urban form. This is highly specialised work and there are few consultants in the world who do this highly technical work. Similar studies have been undertaken in Perth, Sydney and
Melbourne and have contributed to a clear understanding of the role urban form plays in determining land use pattern, retail viability, residential desirability, and community safety.

The spatial analysis techniques will enable the City of Darwin and Northern Territory Government to gain a fresh understanding of the way Darwin CBD operates now, and provide a tool to assess any proposed changes to the city. This is a very useful design tool and essential to “test” ideas for the potential growth and development of the CBD. The international consultants Space Syntax Laboratory are undertaking this work, for the reasons outlined above. Work on this element has commenced.

**Design Urban Consultant**

It is expected that the urban designer will co-ordinate input from City of Darwin staff, Department of Lands Planning & Environment and Department of Transport staff, and sub-consultants to ensure that a coherent and integrated Master Plan is developed for the Darwin CBD. As previously reported to Council, Steve Thorne of Design Urban Pty Ltd has been engaged to undertake this role.

The team will now complete background research prior to the first stakeholder workshop.

**Project Timeline**

The project will need to be completed by 30 December.
Key milestones for the project are as follows:

- Stakeholder Workshop 1: 20 or 21 August 2013
- Stakeholder Workshop 2: 17 September 2013
- Master Planning Workshop: 23 September 2013 to 4 October 2013
- Stakeholder Workshop 3: 22 September 2013
- Project Finalisation: 10 December 2013

Following this workshop, briefing and presentation regular update reports will be presented to Council.

**CONSULTATION PROCESS**

The signing of the Terms of Agreement between the City of Darwin and the Northern Territory Government triggered a restart to the process of holding Scoping Workshops with key stakeholders. During this process Stakeholders were informed about the scope of the project and asked how they would like their members to be engaged through the process of developing a Master Plan.
To date, approximately 60 stakeholder engagement workshops have been held with a wide range of stakeholders. In many cases, more than one workshop has been held to engage with members of organisations. Amongst the stakeholders engaged to date are the following:

- Institute of Architects;
- NT Government Architect;
- Property Council of Australia;
- Chamber of Commerce;
- Tourism NT;
- Department of Arts and Museums;
- Department of Transport;
- Department of Lands, Planning and the Environment;
- Department of Education;
- NT Business Council;
- CPA NT;
- Urban Development Institute of Australia;
- Real Estate Institute of the NT;
- Council of the Ageing (COTA);
- Planning Commission and DCA;
- Planning Action Network (Plan);
- City of Darwin (CoD);
- CoD Parking Advisory Committee;
- Department of Housing;
- Department of Local Government;
- Planning Institute of Australia/Surveyors;
- Australian Institute of Landscape Architects;
- Defence;
- Larrakia Nation;
- Youth Advisory Group, Grind (CoD);
- Individual Landowners;
- Darwin Traders;
- Heritage Advisory Council;
- Department of Treasury, and
- Department of Business.

On 5 July 2013, the Lord Mayor met with members of the media to announce the appointment of consultants and to introduce the retail consultant to the media, as this is an issue of particular importance in the Darwin CBD. The Capital City Committee was provided with an update briefing on 31 July 2013. Consultation with stakeholders will continue throughout the project and be reported on.

Given the significance of this project a comprehensive consultation and stakeholder engagement plan has been developed. Consultation with the stakeholders and the broader community is an important component in ensuring the success of the project.
The first of a series of workshops with stakeholders is being planned for the end of August, with a tentative date of either the 20 or 21 of August. Elected members will receive invites to attend once arrangements have been finished.

Three (3) Stakeholder Workshops, and one (1) technical Master Planning Workshop are envisaged. The first Workshop will be focused on information and evidence sharing. The bulk of material to be shared will be delivered by technical studies currently underway.

Background papers will be prepared and circulated to all stakeholders well before Workshop 2. Workshop 2 will be focussed on obtaining stakeholder input to the Master Planning process. This information will be captured and will be provided as input to the Master Planning Workshop, where a draft Master Plan will be formulated. This will be presented for comment and approval at the third Stakeholder Workshop. Once comments have been taken on board, the adjusted Master Plan will be delivered to Council for approval to proceed to public exhibition and comment.

In preparing this report, the following City of Darwin officers were consulted:

- Strategic Town Planner
- Design Urban Pty Ltd
- Michels Warren Munday

**POLICY IMPLICATIONS**

No Policy implications at this stage of the project but these will be identified as the project progresses.

City of Darwin Policy Number 025 – Community Consultation

**BUDGET AND RESOURCE IMPLICATIONS**

The total value of the project is $500,000.

The funding for the project is as follows:

- Australian Government $250,000
- Northern Territory Government $125,000
- City of Darwin City Council $125,000

**RISK/LEGAL/LEGISLATIVE IMPLICATIONS**

To be identified as the project progresses.

The intent is that the final Master Plan delivery will be incorporated into the Northern Territory Planning Scheme.
ENVIRONMENTAL IMPLICATIONS

To be identified as the project progress.

COUNCIL OFFICER CONFLICT OF INTEREST DECLARATION

We the Author and Approving Officers declare that we do not have a Conflict of Interest in relation to this matter.

DROSSO LELEKIS
MANAGER DESIGN, PLANNING AND PROJECTS

LUCCIO CERCARELLI
GENERAL MANAGER INFRASTRUCTURE

For enquiries, please contact Drosso Lelekis on 8930 0414 or email: d.lelekis@darwin.nt.gov.au.
10. INFORMATION ITEMS

10.1 Greater Darwin Plan
Common No. 1878045 (06/08/13)

COMMITTEE’S DECISION

A. THAT the briefing paper from the Northern Territory Planning Commission, be received and noted.

B. THAT Council note a further report will be presented to the 2nd Ordinary Council Meeting in August.

DECISION NO.21\() (06/08/13)
BRIEFING NOTE – GREATER DARWIN REGIONAL LAND USE PLAN

July 2013
BRIEFING NOTE - GREATER DARWIN REGIONAL LAND USE PLAN

1 Introduction
The Northern Territory Planning Commission is developing a new Greater Darwin Regional Land Use Plan. The plan provides a framework for facilitating growth in the region. As a strategic planning policy, the plan will be referenced in the Northern Territory Planning Scheme and future development proposals will be measured against it.

This briefing note invites you to share feedback and comments as the Planning Commission develops the Greater Darwin Regional Land Use Plan.

As a guide for providing feedback, a series of questions are presented throughout this briefing note. Nevertheless, you are welcome to comment on any issue relating to strategic land use planning for the Greater Darwin Region.

Your responses will inform the Planning Commission on developing a Greater Darwin Regional Land Use Plan that responds to the needs and aspirations of the community.

2 Role of Northern Territory Planning Commission
The Northern Territory Planning Commission’s primary role is to develop strategic plans and policies. Under the Planning Act, the Planning Commission must perform its functions and exercise its powers independently, impartially and in the public interest, taking into account the objects described in the Planning Act.

The integrated strategic plans prepared by the Planning Commission will identify future transport corridors, utility corridors and sites for essential facilities. They will support urban renewal and provide guidance through master plans on where and how communities or urban areas should grow. The master plans may include matters such as housing, transportation, economic development, the environment, open space and conservation.

The Planning Commission is engaging with the community to develop a strategic plan for the Greater Darwin Region.

Further information on the Planning Commission can be found at http://www.planningcommission.nt.gov.au/home

3 Importance of Greater Darwin Regional Land Use Plan
A successful planning system facilitates sustainable growth, protects environmental, cultural and heritage assets, and connects people and place. It underpins the provision of adequate and affordable housing and employment, fosters urban renewal, and integrates land use with infrastructure provision.
The Greater Darwin Region is continuing to experience strong growth. A Greater Darwin Regional Land Use Plan will identify opportunities to accommodate growth and preserve the character and lifestyle valued by residents.

4 Study Area
The study area encompasses the sub-regions of Darwin, Palmerston, East Arm, Litchfield, Cox Peninsula, Finniss and Coomalie. Figure 1 illustrates the boundaries of the study area.

Figure 1: Study Area – Greater Darwin Regional Plan

Questions:

- What are the issues for strategic land use planning for the Greater Darwin Region now and in the long-term?
- What should be the priorities and overall vision for the Greater Darwin Region?

5 Process
The Northern Territory Planning Commission is currently reviewing existing work and reports to inform the Greater Darwin Regional Land Use Plan. As part of this work, the Planning Commission is reviewing the work in the Greater Darwin Plan 2012 and Planning for Greater Darwin – A Dynamic Harbour City.

Input from government agencies, stakeholders and community members will be essential in completing an analysis of knowledge gaps.

The Planning Commission will be contacting key stakeholders in July 2013 to understand what information is available, how stakeholders can contribute and what stakeholders want from the development of the Greater Darwin Regional Land Use Plan.
This briefing note is the first step in having a conversation with you on the Greater Darwin Regional Land Use Plan. The Planning Commission will provide further opportunities throughout 2013 for community feedback.

Following the completion of reviews and background studies, the Planning Commission will develop the Greater Darwin Regional Land Use Plan for community feedback by the end of 2013.

**Question:** Do you have suggestions on community engagement methods to ensure that the community has opportunities to participate in developing a Greater Darwin Regional Land Use Plan?

### 6 Scope of the Plan

The Greater Darwin Regional Land Use Plan will have two parts:

- **Greater Darwin Regional Land Use Structure Plan** – a long term plan for the whole region that contains clear land use policy statements and identifies locations for all foreseen land uses. Inter-relationships will be highlighted and explanatory information about 'where' and 'why' land uses are included and specifically located in the region.

- **Greater Darwin Regional Development Strategy** – a companion to the ‘structure’ plan addressing a shorter period. The plan will define the sequence and timing of specific implementation projects in the region, answering the ‘how’, ‘who’ and ‘when’ questions. A timetable will be identified for all essential statutory procedures and studies, the completion of design documentation, cost estimates and funding, including contributions from public agencies and the private sector.

**Questions:**

- What are the long-term issues and priorities that should inform a Greater Darwin Regional Land Use Plan?

- What are the projects and plans (both current and future) that a Greater Darwin Regional Development Strategy should consider?

### 7 Key issues

The Northern Territory Planning Commission has identified the following key issues to be addressed in the Greater Darwin Regional Land Use Plan:

- growth and development – development aspirations and expectations, protecting environmental and heritage assets, and exploring growth drivers and rates;

- hazard risks – land use implications arising from cyclones, biting insects, climate change and other natural hazards;

- essential resources – fresh water supply, land resources and capability, and energy sources;

- urban residential serviced land – urban form and infill options, and new urban residential location options;
• rural serviced land – aquifer use and protection, lot size options, densification in existing localities and new development localities;

• primary industries and mining land – horticulture, agriculture, grazing, soils excavation and construction materials mining;

• industrial land – light and general industry, major industry and location options;

• commercial land – retail and offices, and service commercial;

• community services land – health and welfare, education and training, sport, recreation, entertainment and tourism, and community groups;

• essential services infrastructure – water and electricity supply, and waste management; and

• regional transport – road, railway, ports, airports, ferries and public transport.

Questions:

• Where do we want to focus growth?

• How can the Greater Darwin Regional Land Use Plan protect the environment and heritage assets while also meeting the housing and economic needs of a growing population?

• How can the Greater Darwin Regional Land Use Plan improve the approach to planning and development in areas that could be at risk from natural hazard?

• Should the Greater Darwin Regional Plan focus on development in existing areas and/or identify greenfield sites? What existing areas of the Greater Darwin Region could be improved by allowing for increased density and a mix of uses (e.g. residential, retail and commercial)?

• How can the Greater Darwin Land Use Plan support key infrastructure such as the port and airport, transport and utility corridors, and sites for essential facilities, such as communication, water and power supply, gas and similar condensates, effluent treatment and regional waste?

• Do you have any other comments on the above key issues? Are there other key issues that need to be identified?

8 Land constraints and priority land uses

The Greater Darwin Regional Land Use Plan will acknowledge the constraints in developing land. Natural constraints such as flooding, coastal storm tide, water logged areas, wetlands, biting insect breeding areas and soil types will need to be considered. Priority land uses also restrict the development of land.

Land use implications arising from conservation reserves, Department of Defence bases, installations and training areas, Darwin International Airport, cultural heritage sites and Aboriginal owned land will also need to be considered.

Question: What and where are the land constraints that need to be considered in the Greater Darwin Region?
9 Get involved
You can provide your feedback online at www.planningcommission.nt.gov.au, or you can send the Planning Commission a submission by 9 September 2013 to:

- Email: ntpc@nt.gov.au
- Post: Northern Territory Planning Commission, GPO Box 1680, DARWIN NT 0801

All submissions will be publicly available on the Northern Territory Planning Commission website. If you do not want your personal details to be publicised, please state this in your submission. A Submissions Report will be issued after the closing date.

10 Contact and Registration of Interest
If you wish to be kept informed on the Planning Commission’s work on the Greater Darwin Regional Land Use Plan and its work program throughout the Northern Territory, please contact:

Planning Commission Secretariat
Telephone: 08 8924 7941    Email: ntpc@nt.gov.au

Further information on the Planning Commission, its work program and media releases can be found at www.planningcommission.nt.gov.au

11 Further Information
The following links highlights some current and past projects and relevant information on the Greater Darwin Region.

Northern Territory Planning Scheme - Darwin Region, Coomalie and Finnis Land Use Frameworks

Litchfield Planning Concepts and Land Use Objectives 2002

Coomalie Planning Concepts and Land Use Objectives 2000

Finniss Planning Concepts and Land Use Objectives 2002

Capital City Charter

Darwin CBD Master Plan Project
http://wwwdarwin.nt.gov.au/cbdmasterplan

Palmerston City Centre 2030 Master Plan
11. GENERAL BUSINESS