PLACESCORE™

CITY OF DARWIN

VEGETATION AND NATURE
COMMUNITY INSIGHTS REPORT
May 2020

CITY OF
DARWIN

TABLE OF CONTENTS

RECOMMENDATIONS METHODOLOGY & DATA SOURCES

RECOMMENDATIONS METHODOLOGY

In this report you will find a number of recommendations regarding the level of impact tree planting would have. Impact is determined by aggregating a number of datasets in three different ways:

1. PLANTING TO **INCREASE TOWN CENTRE PLACE EXPERIENCE**

Town centre catchment-level planting priorities determined by the 1,125 CF and 449 PX responses collected from the Darwin community relating to nature and vegetation and the public realm.

CF + PX

2. PLANTING TO SUPPORT **MODAL DIVERSITY**

Suburb-level planting priorities determined by the 1,125 CF responses collected from the Darwin community on the topic 'Walking, cycling or public transport options', bus stop locations, and tree cover data

CF + 🚌 + 🌳

3. PLANTING TO MAXIMISE **SOCIAL IMPACT**

Suburb-level planting priorities determined by bus stop locations, tree cover data, population and socio-economic factors.

🚌 + 🌳 + 👥 + 💰

DATA SOURCES

This report utilises six different data sources:

- 2019 Town Centre Care Factor (Source: Place Score)
- 2019 PX Assessments (Source: Place Score)
- 2019 Community Ideas for Change (Source: Place Score)
- Tree cover data (Source: Google Maps and i-Tree Canopy)
- Bus stop locations (Source: Northern Territory government)
- Socio-Economic Indexes for Areas (Australian Bureau of Statistics)

COMMUNITY IDEAS FOR CHANGE

What big or small idea do you have to bring Darwin's vision to life and make your local area a better place for you?

323 respondents shared their idea for change, which Place Score classified under different themes and sub-themes to identify trends. These insights were used to inform and refine LGA level recommendations.

CARE FACTOR (CF)

Which place attributes are most important to you in your ideal town centre?

A Care Factor survey requires respondents to prioritise the place attributes that are the most important to them. In turn, this reveals which out of the 50 Place Attributes are the most valued by the community.

Data was collected for eight Town Centres. Data has been coded using the answers of people residing in the suburb of the town centre, respondents associated with the town centre (workers, visitors, students), as well as people residing in the immediate catchment of the Town Centre.
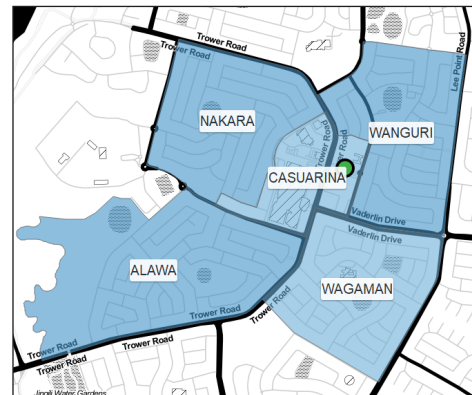
PX ASSESSMENTS (PX)

How is each place attribute impacting your personal enjoyment of this place?

12 main street environments were assessed by the Darwin community. Respondents were asked to rate how their main street performs against 50 different place attributes.

A Street PX Assessment is an observation study, which means most locations are between 200 and 400 meters in length to allow respondents to see the whole street when rating it. The following map is an example of the scale and limits of a typical location:
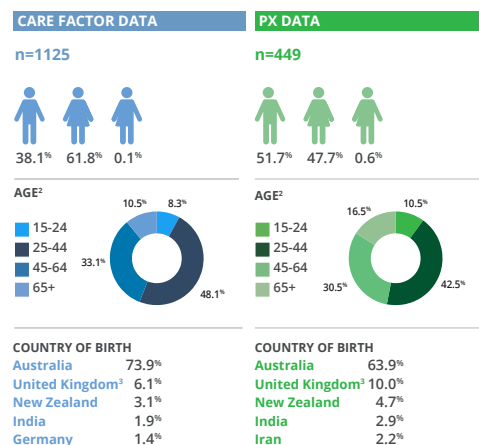
ABOUT THE RESPONDENTS

Data was collected via online and face-to-face surveys during the period of 23 of July and 15 of September 2019. A total of 1,574 people participated in this research study.

Confidence level:

Unless noted otherwise, a 95% confidence level can be expected for all results at the LGA level, with a margin of error of ±10% for overall Care Factor data, and a standard error of ±5.8pts for PX data[1]. Care Factor Data by suburb of residence is subject to lower confidence levels.

CARE FACTOR DATA	PX DATA
n=1125	**n=449**
38.1% 61.8% 0.1%	51.7% 47.7% 0.6%

AGE[2]
- 15-24
- 25-44
- 45-64
- 65+

Care Factor: 10.5% 8.3% 33.1% 48.1%

PX: 16.5% 10.5% 30.5% 42.5%

COUNTRY OF BIRTH

Australia	73.9%
United Kingdom[3]	6.1%
New Zealand	3.1%
India	1.9%
Germany	1.4%

COUNTRY OF BIRTH

Australia	63.9%
United Kingdom[3]	10.0%
New Zealand	4.7%
India	2.9%
Iran	2.2%

HOW ARE PLACE SCORE ATTRIBUTES CODED?

Place Score's Care Factor survey and PX Assessments include 50 attributes which cover a wide range of themes. For this project, Place Score has looked closely at nine attributes that have a primary or secondary association with nature, vegetation and comfort.

Place attributes with a primary association specifically relate to vegetation, natural elements and how people care for them. Meanwhile, secondary attributes relate to the places where nature may be integrated and the infrastructure that allows people to sit and enjoy the outdoors.

Primary Attributes
Elements of the natural environment (views, vegetation, topography, water etc.)
General condition of vegetation, street trees and other planting
Vegetation and natural elements (street trees, planting, water etc.)

Secondary Attributes
Amount of public space (footpaths and public spaces)
Evidence of recent public investment (new planting, paving, street furniture etc.)
Free and comfortable group seating
Free and comfortable places to sit alone
Physical comfort (impacts from noise, smells, temperature)
Quality of public space (footpaths and public spaces)

The 'Planting to Support Modal Diversity' and 'Planting to Maximise Social Impact' sections of the report use three main sources of information to identify where planting may have the greatest positive impact on the uptake of public transport: tree coverage, community values around modal options, and socio-economic profiles.

BUS STOPS AND TREE COVER

To assess the vegetation along walking paths that are connected to bus stops, Place Score aggregated the location of bus stops and the number of trees within a 400 metre radius. Place Score then classified the area around each bus stop as offering low, medium or high tree cover.

Tree cover data for the City of Darwin was extracted from Google Maps between 10 and 26 Apr 2020. Using i-Tree Canopy, a total of 4,150 sample points were collected in this research[4]. The location of each bus stop is based on data provided by the Northern Territory Government as of 11 Apr 2020[5].

PLACE SCORE TOWN CENTRE CARE FACTOR

The Planting to Support Modal Diversity results use the percentage of respondents that selected '*Walking, cycling or public transport options*' as being important to them in their ideal town centre. Place Score selected this attribute for its potential to reveal suburbs where planting could have the greatest positive impact for those who desire active and public transport options.

Care Factor results include the insights of 1,125 respondents across the different suburbs of the City of Darwin.

AUSTRALIA BUREAU OF STATISTICS' SEIFA

Socio-Economic Indexes for Areas (SEIFA) is a product developed by the ABS that ranks areas in Australia according to relative socio-economic advantage and disadvantage. The indexes are based on information from the 2016 Census[6].

In Planting for Social Impact, SEIFA of relative socio-economic advantage and disadvantage for the Northern Territory data was selected for its potential to reveal suburbs where planting could have the greatest positive impact for those who may need active and public transport options the most.

Notes: [1] PX data sample for Fannie Bay has a standard error ±8.3pts. [2]Place Score does not actively collect surveys from people aged under 15. When collecting face to face data. The ABS percentage of people aged 0-15 have been redistributed across other age groups. [3]Place Score groups the United Kingdom. [4]For more information on i-tree: https://canopy.itreetools.org/. [5] Northern Territory Government, Bus Timetable Data and Geographic Information - Darwin, https://data.CityofDarwin-Nature and Vegetation Study17nt.gov.au/dataset/bus-timetable-data-and-geographic-informa-tion-darwin. [6] ABS, Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/2033.0.55.0012016?OpenDocument.

City of Darwin - Nature and Vegetation Study   5

EXECUTIVE SUMMARY

THIS SECTION OF THE REPORT INCLUDES RECOMENDATIONS ON HOW AND WHERE TO PLANT TO

- MAXIMISE TOWN CENTRE PLACE EXPERIENCE
- SUPPORT MODAL DIVERSITY
- MAXIMISE SOCIAL IMPACT

EXECUTIVE SUMMARY - NATURE AND VEGETATION RECOMMENDATIONS

This report uses the values and ratings shared by community members, as well as tree cover around bus stops and socio-economic data to identify nature and vegetation priorities and directions for the local government area and eight town centre catchment areas across Darwin. Results show that the Darwin community highly values nature and vegetation and that planting could be beneficial to each surveyed Town Centre. However, the City Centre, Nightcliff, Karama and Casuarina are the town centres where investment is expected to have the highest positive effect on place experience, modal options and social impact.

NATURE AND VEGETATION

Natural elements and vegetation play varied roles in our built environments. They can contribute to the look and character of places and make them feel unique. They can also play a more functional role by making places comfortable. In turn, comfort impacts many aspects of how people use their town centres, from which park or main street they decide to use, to how they choose or can move from one point to another.

The impact of vegetation on choice and capacity can be more severe in tropical climates such as Darwin's. This makes it even more important to base strategies and improvement works on more than tree canopy data alone.

It is essential to look at the multiple aspects that may influence or be influenced by greenery. Such factors include the level of maintenance around vegetation, the places that surround it and how comfortable these places are perceived to be.

This report considers community values regarding ideal places, performance ratings for main streets across the city, ideas for improvements, tree cover around bus stops and socio-economic data to help guide the greening of the City of Darwin.

RESEARCH QUESTIONS

This report analyses various data sources with the objective of answering the following questions:

> **In which town centre catchments should the City of Darwin invest in vegetation and protecting natural features in order to:**
>
> • Maximise town centre place experience?
>
> • Support modal diversity?
>
> • Maximise social impact?

TREE PLANTING BENEFITS

Tree planting has a number of different positive impacts on urban design:

• Creating **points of differentiation** between different LGA and town centres

• **Shading and cooling** via canopy trees rather than structures

• Maximising **community satisfaction**[1]

• **Modal diversity**, maximising public transport use[2]

• Helping **vulnerable communities** by mitigating car dependency[3]

MAXIMISE PLANTING IMPACT

After considering all the data in this report there are five areas where increased investment in nature and vegetation will have the most positive impact on the community:

1 - CITY CENTRE (TOWN CENTRE CATCHMENT)
Use planting as a way to improve the uniqueness and overall place experience of the city centre and to provide shaded access to public transport in Larrakeyah and Stuart Park.

2 - NIGHTCLIFF (SUBURB)
Use planting to increase the lower-than-average tree canopy, support active transport corridors within the suburb and provide cool and shaded access to the bus network.

3 - KARAMA (SUBURB)
Use planting to support vulnerable communities have better access to public transport nodes and reduce private vehicle dependency.

4 - CASUARINA (SUBURB)
Use planting to improve walkable connections between Casuarina and its neighbouring suburbs. Use a combination of functional and shady trees and more unique 'feature' vegetation.

5 - FANNIE BAY (SUBURB)
Use planting to provide shade and improve the condition and maintenance of existing vegetation along and around active and public transport corridors within the suburb.

NATURE AND VEGETATION RECOMMENDATIONS

Unique natural features and vegetation are highly valued across the City of Darwin and generally, increases in tree planting to provide shade, cooling and highlight the unique environment should be the focus of investment.

In this report you will find a number of recommendations regarding the level of impact tree planting could have. Impact is determined by aggregating a number of datasets in three different ways.

IMPACT CATEGORIES

1. PLANTING TO INCREASE TOWN CENTRE PLACE EXPERIENCE

By investing in planting in the town centres of the identified areas, you are most likely to create a positive impact in relation to community satisfaction.

This is because a high percentage of respondents in these areas value nature and vegetation, but they rate it less favourably. Increasing investment will increase performance.

2. PLANTING TO SUPPORT MODAL DIVERSITY

By investing in planting in the town centres or suburbs of the identified areas, you are most likely to encourage uptake in active and public transport.

This is because a high percentage of respondents in these areas value '*Walking, cycling or public transport options*' but their area features a lower-than-average tree canopy around bus stops. Increasing investment may reduce private vehicle usage and dependency.

3. PLANTING TO MAXIMISE SOCIAL IMPACT

By investing in planting in the town centres or suburbs of the identified areas, you are most likely to have a positive social impact where it is the most needed.

This is because identified areas have a lower socio-economic reality and a smaller tree canopy around bus stops. Increasing investment may facilitate access to public transport in areas where people may need it the most.

CITY OF DARWIN OVERARCHING RECOMMENDATIONS

MAINTAIN VIEWS OR OTHER NATURAL FEATURES - PLANT FOR UNIQUENESS AND CLIMATE MITIGATION	PLANT AND MAINTAIN CANOPY TREES ON THE PATHS TO, AND AROUND, FREQUENTLY USED BUS STOPS	REDUCE CAR DEPENDENCE BY IMPROVING WALKING, CYCLING AND PUBLIC TRANSPORT VIA GREENER, COOLER ENVIRONMENTS

PRIORITISE PLANTING IN THE CATCHMENT OF THESE TOWN CENTRES TO MAXIMISE IMPACT IN EACH IMPACT CATEGORY:

1. City Centre	1. City Centre	1. Karama
2. Casuarina	2. Fannie Bay	2. Nightcliff
3. Nightcliff	3. Nightcliff	3. Malak
4. Rapid Creek	4. Parap	4. City Centre
5. Fannie Bay	5. Karama	5. Casuarina
6. Karama	6. Malak	6. Parap
7. Malak	7. Rapid Creek	7. Rapid Creek
8. Parap	8. Casuarina	8. Fannie Bay

RECOMMENDATIONS CONTINUED

RECOMMENDATIONS METHODOLOGIES

1. PLANTING TO INCREASE TOWN CENTRE PLACE EXPERIENCE

Town centre catchment-level planting priorities determined by the 1,125 CF and 449 PX responses collected from the Darwin community relating to nature and vegetation and the public realm.

CF + PX

2. PLANTING TO SUPPORT MODAL DIVERSITY

Suburb-level planting priorities determined by the 1,125 CF responses collected from the Darwin community on the topic '*Walking, cycling or public transport options*', bus stop locations, and tree cover data

CF + 🚌 + 🌳

3. PLANTING TO MAXIMISE SOCIAL IMPACT

Suburb-level planting priorities determined by bus stop locations, tree cover data, population and socio-economic factors.

🚌 + 🌳 + 👥 + 💰

PLANTING BENEFITS BY CATCHMENT

Planting in and around the town centre catchments will promote different benefits according to the rankings in the following table.

For example, planting in the City Centre is most likely to impact Town Centre Place Experience and support modal diversity.
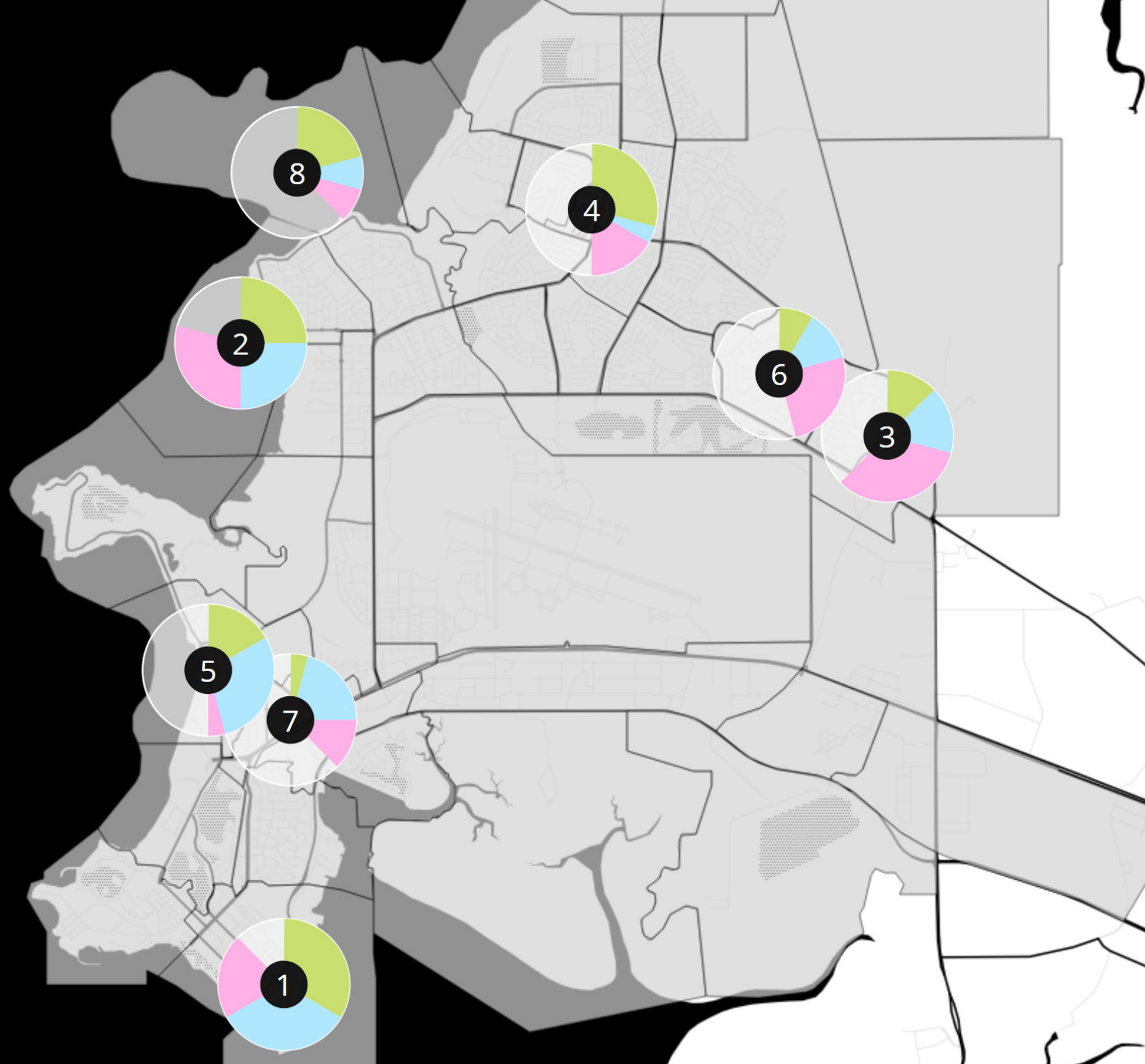
CATCHMENT	SUBURBS	Overall Priority	PLANTING BENEFITS		
			Increasing Town Centre Place Experience[1]	Supporting Modal Diversity[2]	Maximising Social Impact[3]
City Centre	City Centre, Larrakeyah, The Gardens, Stuart Park	1	1	1	4
Nightcliff	Coconut Grove, Millner, Nightcliff	2	3	3	2
Karama	Berrimah, Karama, Leanyer, Marrara	3	6	5	1
Casuarina	Alawa, Casuarina, Nakara, Wagaman, Wanguri	4	2	8	5
Fannie Bay	East Point, Fannie Bay, Ludmilla, The Gardens	5	5	2	8
Malak	Anula, Malak, Marrara, Wulagi	6	7	6	3
Parap	Ludmilla, Parap, Stuart Park, The Gardens, Woolner	7	8	4	6
Rapid Creek	Alawa, Brinkin, Coconut Grove, Jingili, Millner, Rapid Creek	8	4	7	7

CATCHMENT AREA PLANTING HIERARCHY
The map illustrates the hierarchy of catchments, based on community satisfaction, modal diversity and social impact priorities.

LEGEND

- 🟩 *Increasing Town Centre Place Experience*
- 🟦 *Supporting Modal Diversity*
- 🟪 *Maximising Social Impact*

Notes: ¹See Increasing Town Centre Place Experience for details. ²See Planting to Support Modal Diversity for details. ³See Planting to Maximise Social Impact for details.

City of Darwin - Nature and Vegetation Study   11

NATURE AND VEGETATION RECOMMENDATIONS BY IMPACT CATEGORY

THIS SECTION OF THE REPORT INCLUDES BACKGROUND ANALYTICS FOR EACH IMPACT CATEGORY:

1. PLANTING TO INCREASE TOWN CENTRE PLACE EXPERIENCE
2. PLANTING TO SUPPORT MODAL DIVERSITY
3. PLANTING TO MAXIMISE SOCIAL IMPACT

1. INCREASING TOWN CENTRE PLACE EXPERIENCE

Town Centre place experience can be improved by planting more trees in the centres where people care about vegetation and nature but rate it less favourably. The priority areas around bigger activity centres (City Centre, Casuarina) and along the coastline (Nightcliff and Rapid Creek).

This section considers three data sources:
- CF Rank: Ranking by percentage of respondents associated with a catchment that selected primary Nature and Vegetation attributes as being important to them.
- PX Rank: Ranking of Nature and Vegetation attributes based on rating provided by respondents
- Rank gap: Difference in between Care Factor Rank (how much it is valued) and Attribute Score (how it is performing).

CF + PX

The objective of this section is to answer the research question...

In which town centre catchments should the City of Darwin invest in vegetation and protecting natural features in order to maximise town centre place experience?

The following table ranks town centre catchment to plant in to improve place experience and community satisfaction:

		CF Rank	PX Rank
DARWIN LGA		3	19
1	City Centre	4	27
2	Casuarina	4	26
3	Nightcliff	3	25
4	Rapid Creek	2	24
5	Fannie Bay	4	20
6	Karama	5	18
7	Malak	3	14
8	Parap	3	13
NATIONAL		3	23

PRIORITIES BY CENTRE
The table compares the ranking of town centre catchments by order of priority for investment based on community values and performance. These planting priorities are determined by the 1,125 CF and 449 PX responses collected from the Darwin community relating to nature and vegetation and the public realm.

The higher the Care Factor and the lower the PX rank the higher the priority for investment, and the more likely investment is to have a positive impact on place experience.

Priorities by Town Centre Catchment: The map illustrates the hierarchy of nature and vegetation community priorities for catchments across the LGA.[1]

PRIORITIES

The Nature and Vegetation - Priorities table reveals that at least one Primary Attribute related to vegetation and nature can be improved in every surveyed town centre in order to increase overall place experience. This is a result of Primary Attributes being highly valued by the Darwin community.

Secondary Attributes are of lower priority across all town centres. Nevertheless, public investment in planting, paving and street furniture would benefit the place experience in most of the surveyed locations.

Nature and Vegetation - Priorities

This table summarises the priority level of different nature and vegetation attributes based on the values and performance as given by the Darwin community.

Strengths are highly valued and performing well; they should be celebrated and protected. Priorities are highly valued but not performing well in relation to how much they are valued; these are priorities for investment. Considerations are not as highly valued but are performing poorly. Attributes marked as neutral are currently performing well in relation to how much they are valued.[2]

LEGEND
- 🟩 Strength
- 🟥 Priority
- 🟧 Consideration
- ⬜ Neutral

Location	PRIMARY ATTRIBUTES			SECONDARY ATTRIBUTES					
	Elements of the natural environment (views, vegetation, topography, water etc.)	Vegetation and natural elements (street trees, planting, water etc.)	General condition of vegetation, street trees and other planting	Quality of public space (footpaths and public spaces)	Physical comfort (impacts from noise, smells, temperature)	Evidence of recent public investment (new planting, paving, street furniture etc.)	Amount of public space (footpaths and public spaces)	Free and comfortable places to sit alone	Free and comfortable group seating
CITY OF DARWIN AVERAGE (SURVEYED LOCATIONS)	Priority	Priority	Priority			Consideration			
CITY CENTRE AVERAGE	Priority	Priority	Priority			Consideration			
Bennett Street (btw The Mall and Cavenagh St)	Priority	Priority	Priority			Consideration			
Bennett Street (btw The Mall and Mitchell St)	Priority	Priority	Priority						
Cavenagh Street (btw Knuckey St and Bennett St)	Priority	Priority	Priority			Consideration			
Mitchell Street (btw Bennett St and Knuckey St)	Strength	Priority	Priority	Consideration		Consideration			
The Mall (btw Knuckey St and Bennett St)	Priority	Priority	Priority			Consideration			
SUBURBAN AVERAGE	Priority	Strength	Priority						
Angelo Street, Casuarina (btw Tower Rd and Gsell St)	Priority	Priority	Priority			Consideration			
Fannie Bay Supermarket, Fannie Bay (btw Ross Smith Ave and Hinkler Cres)	Strength	Priority	Priority		Consideration	Consideration			
Kalymnos Drive, Karama (btw Koolinda Cres and Karama Cres)	Strength	Strength	Priority						
Links Road, Northlakes (North Lakes Shopping Centre)	Strength	Strength	Priority		Consideration				
Nightcliff Market Precinct, Nightcliff (btw Phoenix St and Oleander St)	Priority	Priority	Priority			Consideration			
Parap Rd, Parap (btw Urquhart St and Gregory St)	Priority	Priority	Strength			Consideration	Consideration		
Casuarina Dr, Rapid Creek (btw Jacaranda Ave and Nightcliff Rd)	Priority	Priority	Strength	Consideration					

Notes: [1]Place Score combined the average Care Factor and Place Experience of the three Primary Attributes for each catchment to establish a hierarchy for intervention. [2]Strengths have a high CF and high PX. Priorities are the poorest performing attributes with a CF ranked in the overall top 10 and a rank gap of less than -10. Considerations are amongst the worst performing overall outside of the Top 10 CF. Order of attributes is based on the Darwin LGA overall CF ranking.

City of Darwin - Nature and Vegetation Study   15

After cleanliness, vegetation and nature comprise the most important aspects of your community's ideal town centre. Women attach a higher value to these Primary Attributes than do men, while young people attach a relatively lower value to them. Men attach a higher value to the Secondary Attributes - related to comfort in the outdoor environment - than do women.

COMMUNITY VALUES

- With 64% of respondents selecting it as being important to them, 'Elements of the natural environment (views, vegetation, topography, water etc.)' is the second most selected place attribute after 'Cleanliness of public spaces'. It is also higher than the national average of 60%.

- Unique landscapes and vegetation are especially valued by visitors (67%) and those aged 25-64 (65%) but have been chosen by fewer respondents aged under 25 (56%).

- Generally, the older the respondent, the most likely they are to value the presence and care of vegetation and natural elements. Respondents under 25 are the most likely to value Secondary Attributes related to physical comfort and places to sit.

- Gender also appears to play a role in values, with a higher percentage of women selecting Primary Attributes related to vegetation and nature and a higher percentage of men choosing Secondary Attributes related to the broader public domain.

- As we see around the country, respondents who live in higher density housing tend to express a lower interest in nature and vegetation (49%) than do those who live in suburban and rural areas (62%).

Nature and Vegetation - Community Values

The table summarises the percentage of respondents who selected each attributes as being important to them in their ideal town centre environment.[2]

LEGEND
- 🟦 More valued than the average
- ⬜ Less valued than the average

	TOTAL (n=1,125)	Gender		Age				Country of birth		Association			
		Men (n=429)	Women (n=695)	Under 25 (n=95)	25-44 (n=540)	45-64 (n=372)	65+ (n=118)	Born in Australia (n=831)	Born Overseas (n=294)	Residents1 (n=749)	Visitors (n=348)	Workers (n=143)	Students (n=41)
Primary Attributes													
Elements of the natural environment (views, vegetation, topography, water etc.)	**64%**	62%	64%	56%	65%	65%	59%	64%	62%	64%	67%	64%	61%
Vegetation and natural elements (street trees, planting, water etc.)	**58%**	54%	61%	52%	59%	60%	59%	60%	54%	60%	62%	57%	56%
General condition of vegetation, street trees and other planting	**58%**	55%	60%	47%	54%	64%	69%	60%	52%	60%	60%	52%	54%
Secondary Attributes													
Quality of public space (footpaths and public spaces)	**32%**	34%	31%	31%	32%	33%	30%	32%	33%	34%	33%	33%	20%
Physical comfort (impacts from noise, smells, temperature)	**26%**	31%	23%	37%	25%	26%	19%	26%	27%	26%	24%	28%	29%
Evidence of recent public investment (new planting, paving, street furniture etc.)	**23%**	28%	20%	31%	23%	21%	25%	23%	24%	23%	22%	23%	20%
Amount of public space (footpaths and public spaces)	**22%**	24%	21%	19%	19%	26%	25%	22%	22%	24%	20%	23%	12%
Free and comfortable places to sit alone	**16%**	17%	15%	24%	13%	16%	19%	14%	19%	15%	17%	13%	22%
Free and comfortable group seating	**13%**	13%	13%	17%	14%	10%	8%	12%	13%	12%	10%	10%	20%

BENCHMARK COMPARISON

When compared to over 22,000 respondents across Australia[2], a higher percentage of respondents in Darwin selected attributes related to shade and cooling. On average, 11% more Darwin respondents selected 'Shelter/awnings (protection from the sun, rain etc.)' and 7% more selected 'Vegetation and natural elements (street trees, planting, water, etc.)'.
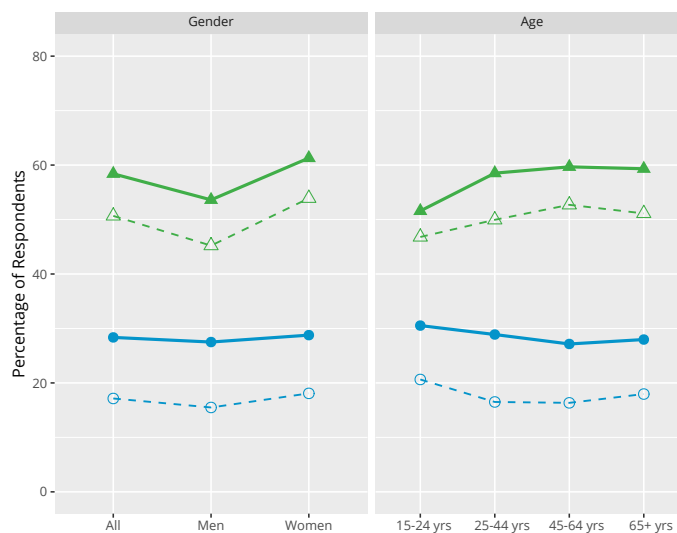
The graph above compares the Care Factor percentages of two attributes, namely 'Shelter/awnings (protection from sun, rain etc.)', and 'Vegetation and natural elements (street trees, planting, water, etc.)' for associates of City of Darwin and for respondents in other locations across Australia.
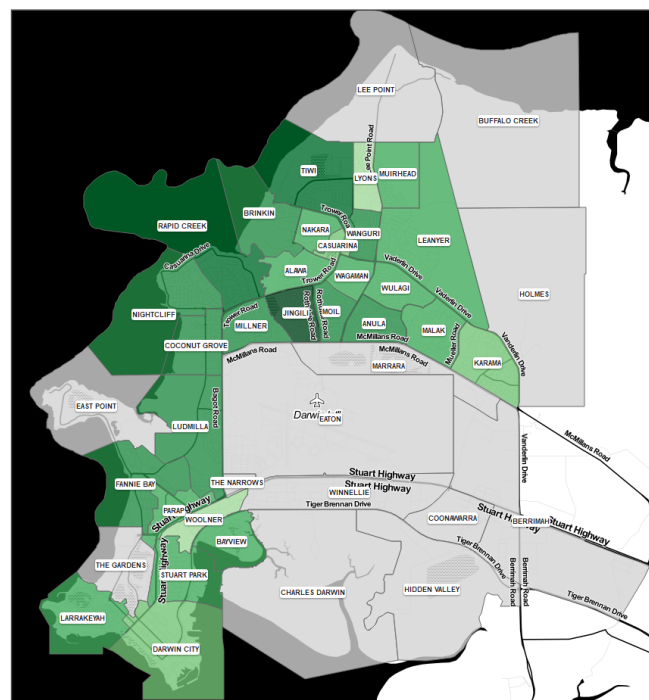
LEGEND

- ● Shelter/awnings (protection from sun, rain etc.) - Darwin
- ○ Shelter/awnings (protection from sun, rain etc.) - National
- ▲ Vegetation and natural elements (street trees, planting, water, etc.) - Darwin
- △ Vegetation and natural elements (street trees, planting, water, etc.) - National

VALUES BY SUBURBS

Compared to the average, fewer residents of larger activity and commercial centres (Darwin City and Casuarina) and newly built or fringe suburbs (Bayview, Lyons, Karama, Woolner) selected the Primary Attributes related to vegetation and nature. Conversely, a higher percentage of residents of suburbs next to larger green spaces or the coastline (Brinkin, Jingili, Nightcliff, Rapid Creek, Tiwi) selected the Primary Attributes as being important to them. Across the Darwin LGA, the median percentage for the Secondary Attributes never rises above 30%. Interestingly, the Secondary Attributes are valued by a slightly higher percentage of respondents in Darwin City and in newly built suburbs such as Lyons and Muirhead.

How much we value Primary Attributes (nature and vegetation related) by suburb

How much we value Secondary Attributes (public realm related) by suburb

LEGEND

- 0-10%
- 10-20%
- 20-30%
- 30-40%
- 40-50%
- 50-60%
- 60-70%
- 70-80%
- 80-90%
- NA[3]

Median percentage of respondents that selected 'Elements of the natural environment (views, vegetation, topography, water etc.)', 'Vegetation and natural elements (street trees, planting, water, etc.)' or 'General condition of vegetation, street trees and other planting' as being important in their ideal town centre.

LEGEND

- 0-10%
- 10-20%
- 20-30%
- 30-40%
- 40-50%
- NA[3]
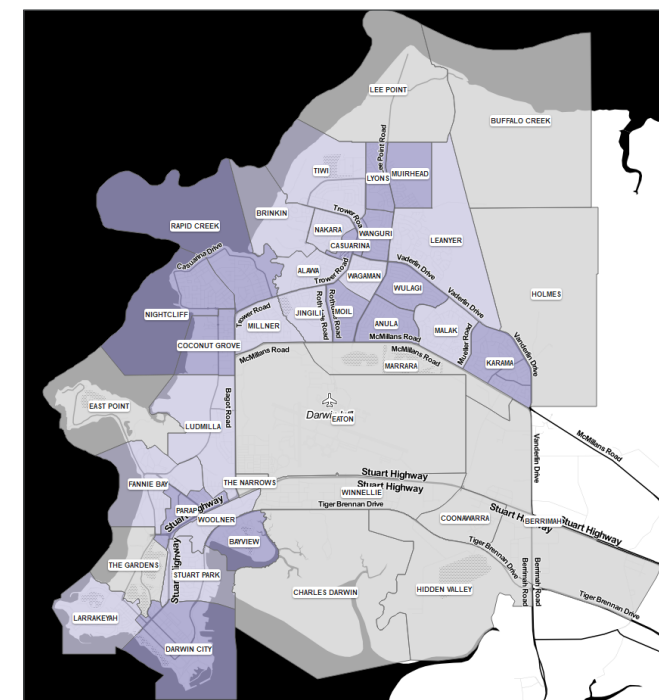
Median percentage of respondents that selected 'Amount of public space (footpaths and public spaces)', 'Quality of public space (footpaths and public spaces)', 'Physical comfort (impacts from noise, smells, temperature)', 'Free and comfortable places to sit alone', 'Free and comfortable group seating', or 'Evidence of recent public investment (new planting, paving, street furniture etc.)' as being important in their ideal town centre.

Notes: [1]Respondents could select more than one identity (e.g. resident and worker). [2]Place Score National Town Centre Care Factor Benchmark (n=22,675, April 2020). [3]Only suburbs with ten or more respondents are displayed. The colour represents the percentage of respondents residing in a suburb that selected the attributes as being important to them in their ideal town centre.

City of Darwin - Nature and Vegetation Study   17

COMMUNITY IDEAS

Place Score asked the Darwin community '*What big or small idea do you have to bring Darwin's vision to life and make your local area a better place for you?*' Improvements to open spaces, which includes vegetation, was the most common theme, coming in above the local economy and transport.

TOP MOST COMMON THEMES

Place Score asked survey respondents: '*What big or small idea do you have to bring Darwin's vision to life and make your local area a better place for you?*'. 323 community ideas were collected from respondents across the City of Darwin[1]. Ideas for change were related to the following themes

#1 OPEN SPACE
Vegetation, comfort, green spaces, unique features, amenities, leisure spaces and public spaces

#2 MANAGEMENT AND SAFETY
Sense of safety, maintenance, governance and crime

#3 ECONOMY
Retail, business support, other industries and trading

#4 MOVEMENT
Active transport, private vehicles, public transport and accessibility

#5 COMMUNITY
Activities, openness, connection and community composition

NATURE AND VEGETATION

Place Score further segmented and regrouped community ideas to analyse how they relate to the Primary Attributes (nature and vegetation).

33% of these ideas made a reference to vegetation, green spaces or the natural environment.

Overall, the community's message is simple; they would like to see more vegetation all around. When respondents elaborated on why they wanted more vegetation, shade and cooler environments were amongst the most common reasons. Some respondents went as far as specifying they wanted more trees to shade and cool paths and public spaces.

Apart from shady trees, some respondents also specifically mentioned they would like more native vegetation.

A few respondents also wished the maintenance and watering of plants, verges, or other green spaces could be improved.

Nature was also mentioned by some respondents, most of which referred to the coastline and improving the infrastructure that allows people to get there and enjoy the views.

PRIMARY ALIGNMENT (33%) | MORE OR BETTER

|	
VEGETATION	**18%**
Street trees	13%
Ground cover and plants	7%
Infrastructure or actions to improve vegetation	4%
GREEN SPACES	**13%**
Infrastructure or actions to improve green spaces	10%
Parks	2%
Gardens	1%
NATURAL ENVIRONMENT	**9%**
Protection or celebration of undeveloped land	5%
Presence and protection of flora	2%
Infrastructure or actions to protect or celebrate the natural environment	1%
Presence and protection of fauna	1%
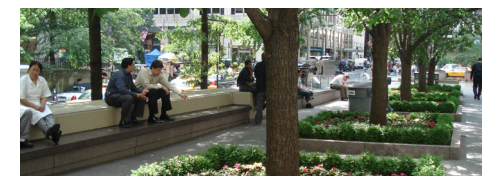
"*People need to feel safe. More shade in public areas eg the Esplanade which is quite devoid of shade trees along the pathway.*"
MALE, 55-64 YEARS OLD.

"*Great walking paths with views of natural beauty like Fannie Bay and Nightcliff. We have the habitat to grow beautiful green spaces, let's do it!*"
FEMALE, 35-44 YEARS OLD.
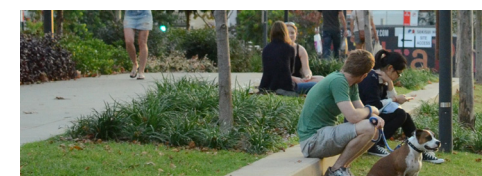
"*The best part of Darwin is outside living! More outside areas that are cool, accessible to all and well maintained/ safe! And gardens/ dog parks!*"
MALE, 25-34 YEARS OLD.

PUBLIC REALM

Place Score also segmented and grouped community ideas to analyse how they relate to the Secondary Attributes (public realm)

25% of ideas related to themes similar to those covered by Secondary Attributes such as physical comfort and public spaces.

SECONDARY ALIGNMENT (25%)	MORE OR BETTER
COMFORT	18%
Shade	11%
Cooling	7%
Infrastructure or actions to improve comfort	3%
AMENITIES	5%
Seating	2%
Toilets and changing rooms	2%
MAINTENANCE	4%
Infrastructure or actions to improve maintenance	4%
PUBLIC SPACES	3%
Infrastructure or actions to improve public spaces	3%

"Natural shade, walking city. More of the Cavenagh Street initiative."

FEMALE, 45-54 YEARS OLD.

"Solar power for all public amenities. Water features for family entertainment/cooling. Trees and plants on highrise buildings for shade, cooling and a unique aesthetic!" **MALE, 35-44 YEARS OLD.**

"Better public transport, cycling paths, community garden areas in each suburb, better outdoor spaces near the beach with good shade cover." **FEMALE, 35-44 YEARS OLD.**

Notes: [1]Responses have been classified under more than one theme when applicable. Percentages noted are for the overall total number of responses. Percentages are rounded to the first digit, which may lead to minor differences when summed.

City of Darwin - Nature and Vegetation Study   19

2. PLANTING TO SUPPORT MODAL DIVERSITY

By understanding the current level of tree cover around bus stops, we can prioritise the planting of trees to nudge interested residents towards walking, cycling or bus rides. When looking at planting within a suburb, Fannie Bay and Lyons are the areas where trees may have the highest positive impact on active and public transport uptake. When considering town centres and their catchments, planting may be best put to use within and around the City Centre, Fannie Bay and Nightcliff.

This section considers three data sources:

- How many respondents associated with a town centre value '*Walking, cycling or public transport options*'
- The location of bus stops
- The amount of tree cover within 400 metres of a bus stop
- Population by suburb

CF + 🚌 + 🌳

This section answers the question...

In which town centre catchments should the City of Darwin invest in vegetation and protecting natural features in order to support modal diversity?

The following table shows which town centre catchment to plant in to support modal diversity:

		Avg Priority	Population
	AVERAGE	37%	10,454
1	City Centre	56%	15,070
2	Fannie Bay	50%	5,095
3	Nightcliff	44%	9,451
4	Parap	42%	10,297
5	Karama	33%	11,860
6	Malak	33%	9,353
7	Rapid Creek	28%	14,032
8	Casuarina	27%	8,475

PRIORITIES BY CATCHMENT
The table ranks town centre catchments by order of priority for investment based on community values and tree cover. These planting priorities are determined by the 1,125 CF responses collected from the Darwin community relating to 'Walking, cycling or public transport options', and 4,150 tree sample points.

The higher the Care Factor and the lower the tree cover, the higher the average priority for investment, and the more likely investment is to have a positive impact on modal diversity. When two catchments have the same average - as is the case for Karama and Malak - Place Score ranked them based on their population.

POTENTIAL FOR IMPACT

The following table summarises how Place Score determined the potential for impact of vegetation on modal diversity. Planting in high and medium impact areas may maximise the effect of planting on public transport usage. Conversely, planting in areas with a low or limited impact would most likely result in limited return on investment.

Care Factor percentage of '*Walking, cycling or public transport options*'	Low tree cover	Medium tree cover	High tree cover
High (CF Percent - E > 30%)	High impact	Medium impact	No or limited impact
Medium and low (CF Percent = 30% ± E)	Medium impact	Low impact	No or limited impact

MEETING COMMUNITY VALUES

- Tree planting has a high impact potential in Fannie Bay and Lyons. In both of these suburbs, current tree cover near bus stops is lower than average, while the community's interest in '*Walking, cycling or public transport options*' is higher than in most other areas.

- Tree planting has a lower impact potential in Alawa, Anula, Coconut Grove, Ludmilla, Millner, Nakara, Rapid Creek and Tiwi where tree cover near bus stops is already high.

Expected impact of tree planting in meeting community values by suburb[1]
(Potential High Impact = red, No Impact = green)
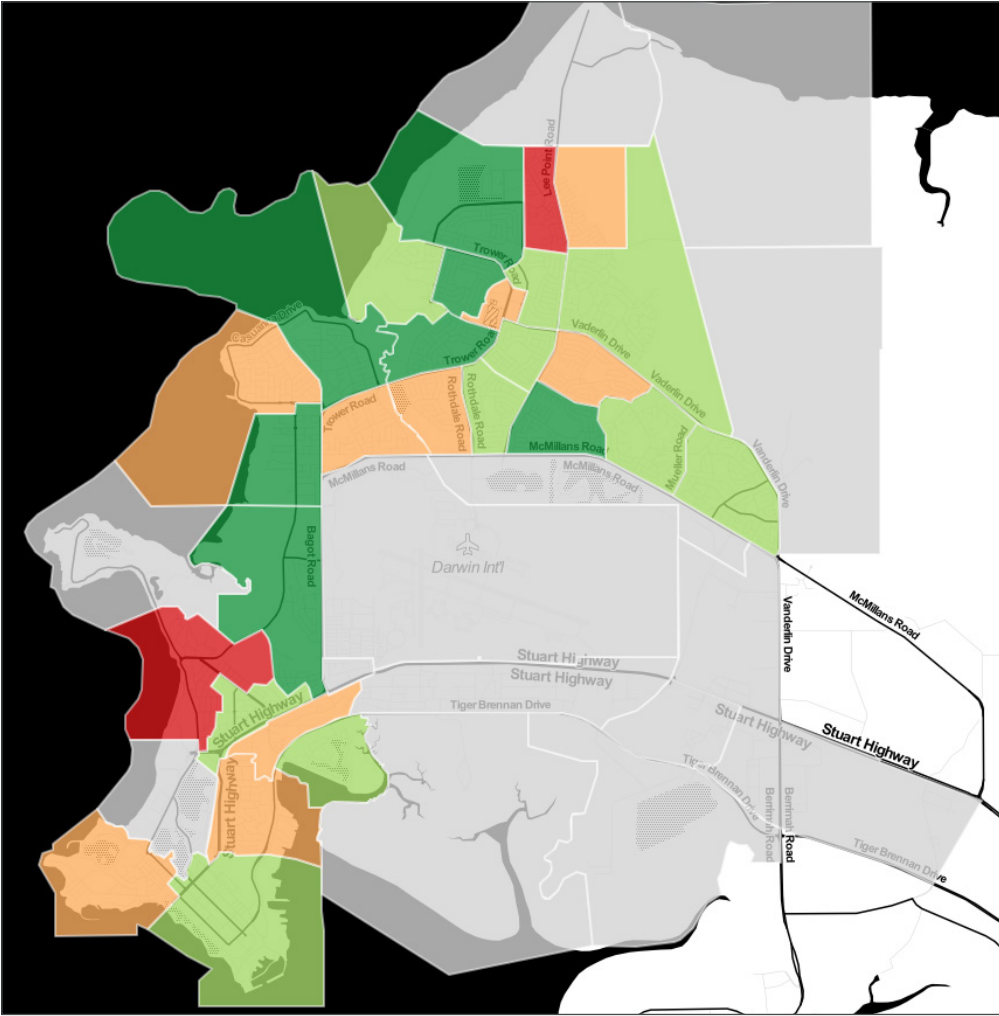
LEGEND

- High impact areas indicate where tree cover is low and where the community values 'Walking, cycling or public transport' more than average. No impact is expected where tree cover is already high. Please refer to the first table on p.20 for further details.

High (red)	
Medium (orange)	
Low (light green)	
No (dark green)	
NA (grey)	

CARE FACTOR SAMPLES
The following tables summarise the samples collected by suburb of residence.

SUBURB	n=
ALAWA	21
ANULA	39
BAYVIEW	22
BRINKIN	10
CASUARINA	12
COCONUT GROVE	18
DARWIN CITY	61
FANNIE BAY	52
JINGILI	16
KARAMA	35
LARRAKEYAH	37
LEANYER	41
LUDMILLA	19
LYONS	17

SUBURB	n=
MALAK	19
MILLNER	23
MOIL	23
MUIRHEAD	29
NAKARA	22
NIGHTCLIFF	90
PARAP	57
RAPID CREEK	52
STUART PARK	61
TIWI	19
WAGAMAN	15
WANGURI	22
WOOLNER	15
WULAGI	21

Notes: [1]This map illustrates where tree planting may have the highest positive impact in meeting community values based on tree counts within 400 metres of each bus stop and Care Factor data.

3. PLANTING TO MAXIMISE SOCIAL IMPACT

By understanding the current level of tree cover around bus stops and the socio-economic reality of each suburb, we can prioritise where planting may support those who need it the most. At the suburb level, planting may have the most significant social impact in eastern suburbs such as Leanyer, Malak and Karama. Meanwhile, more affluent suburbs such as Fannie Bay, Larrakeyah, Lyons and Muirhead would also benefit from an increase in the canopy due to lower-than-average tree cover. When considering town centres and their catchments, planting is expected to have the highest social impact within and around Karama, Nightcliff and Malak.

This section considers four data sources:

• The location of bus stops
• The amount of tree cover within 400 metres of a bus stop
• Population by suburb
• SEIFA index of socio-economic advantage and disadvantage for the Northern Territory
• Population by suburb

This section answers the question...

In which town centre catchments should the City of Darwin invest in vegetation and protecting natural features in order to maximise social impact?

The following table shows which town centre catchment to plant in to maximise social impact:

	Avg Priority	Population
AVERAGE	30%	10,454
① Karama	58%	11,860
② Nightcliff	44%	9,451
③ Malak	42%	9,353
④ City Centre	33%	15,070
⑤ Casuarina	27%	8,475
⑥ Parap	20%	10,297
⑦ Rapid Creek	17%	14,032
⑧ Fannie Bay	17%	5,095

PRIORITIES BY CATCHMENTS
The table compares the ranking of town centre catchments by order of priority for investment based on tree cover, suburb population and SEIFA decile. These planting priorities are determined by 4,150 tree sample points and ABS data.

The higher the population and the lower the tree cover and SEIFA decile ,the higher the average priority for investment, and the more likely investment is to have a positive social impact.When two catchments have the same average priority, Place Score ranked them based on their population.

POTENTIAL FOR IMPACT

The following table summarises how Place Score determined where planting should occur to maximise social impact. Planting in high and medium impact areas is expected to yield good social returns. Conversely, planting in areas with a low or limited impact may see limited social return on investment.

Decile of SEIFA socio-economic advantage and disadvantage for the NT	Suburb's population	Low tree cover	Medium tree cover	High tree cover
= < 10	>= 2,145	High impact	Medium impact	No or limited impact
	< 2,145	Medium impact	Low impact	No or limited impact
= 10	>= 2,145	Medium impact	Low impact	No or limited impact
	< 2,145	Low impact	No or limited impact	No or limited impact

MAXIMISING SOCIAL IMPACT

- Areas near the airport, Ludmilla and The Narrows already have relatively good tree cover around their bus stops.

- Neither Winnellie nor Berrimah are well covered by trees or affluent, but their populations are low by virtue of being industrial areas.

- Of the most populated and affluent suburbs, Fannie Bay, Larrakeyah, Lyons and Muirhead currently have a lower-than-average tree cover around bus stops.

- While the population of Casurina is low, and it is considered affluent, the tree cover is lower than average and it is a transport hub. Planting for social impact here is recommended.

- No suburbs are expected have a 'High' social impact from planting. This is due to the combination of population spread, existing tree cover around bus stops and socio-economic levels.

Expected impact of tree planting in maximising social impact by suburb[1]
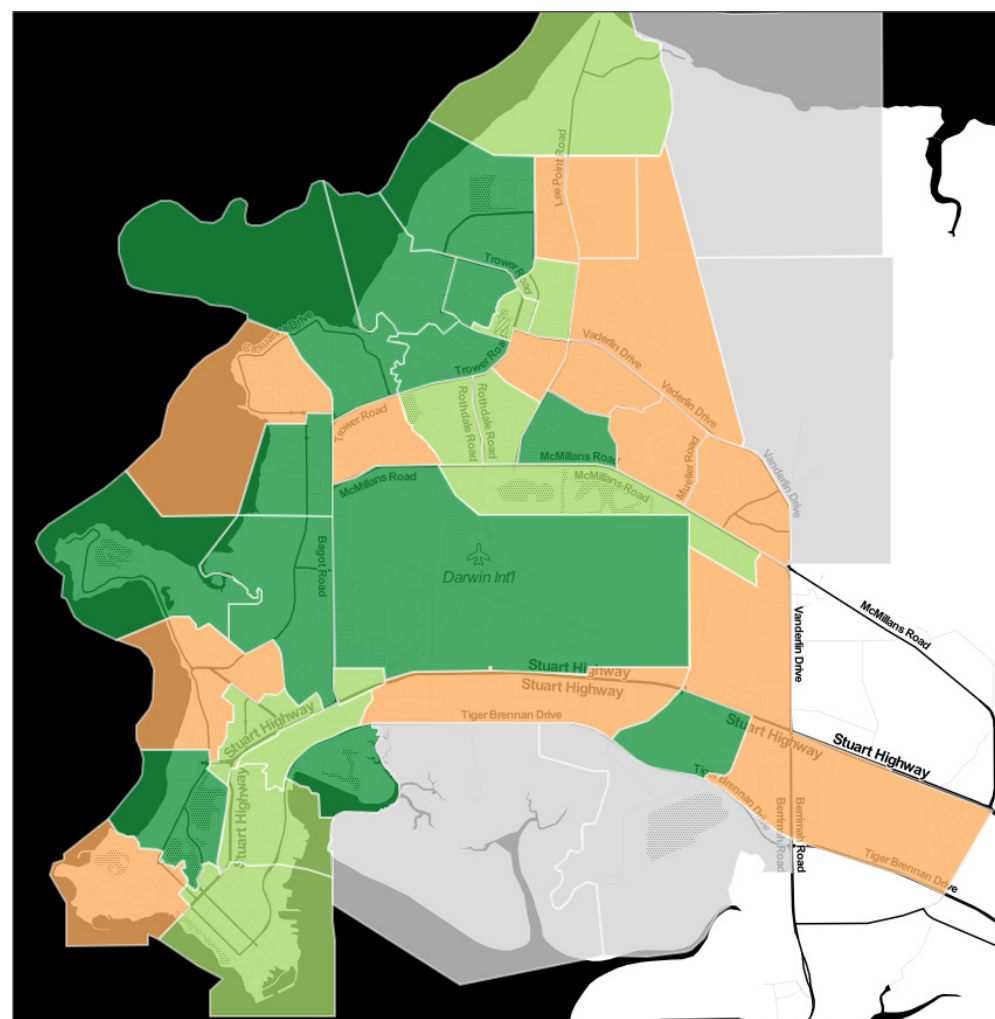
LEGEND

- High
- Medium
- Low
- No
- NA

High impact areas indicate where tree cover is low, where the socio-economic decile is below 10, and where the population exceeds 2,145. No impact is expected where tree cover is already high, as well as where tree cover is moderate, the population exceeds 2,145 and the socio-economic decile is 10.

Notes: [1]This map illustrates in where tree planting may have the highest positive impact on movement based on tree counts within 400 meters of each bus stop, the suburb's population and its SEIFA decile.

City of Darwin - Nature and Vegetation Study   23