

Lifestyle and Wellbeing

1 Fisher Satisfaction

Indicator Overview

Fisher satisfaction has been introduced as a new indicator in the 2024 DHIRC. This indicator measures the overall contentment or satisfaction levels of individuals involved in fishing activities, encapsulating elements like catch success, economic profitability, personal gratification, and the fulfillment of cultural or social requisites.

The most recent data available for this indicator dates back to 2018/19, rendering it too outdated for inclusion in the current reporting cycle. However, the significance of fisher satisfaction as an indicator in future report cards remains undiminished due to its pivotal role in the pursuit of sustainable fisheries management and the enhancement of fishing communities' welfare. Consequently, despite not being scored or graded, fisher satisfaction has been incorporated into this year's report card to encourage more frequent collection and reporting of this important data set.



2 Park Visitation

Indicator Overview

Access to nature is identified as a key component of lifestyles in the Northern Territory, with its significance raised in early stakeholder consultation in 2021. The 2021 Darwin Harbour Integrated Report Card (DHIRC) reported on Park Visitation as an indicator for the then Lifestyle and Recreation value with a focus on identifying local visitation to parks, which at the time was impacted by Covid-19. The approach for the 2024 DHIRC remains similar, but the assessment is limited to one park - Casuarina Coastal Reserve, due to its proximity to the harbour and dominant usage by people local to the Darwin region.

Methodology

Park visitation numbers are collected by the Department of Environment, Parks and Water Security (DEPWS) who record the approximate number of visitors to parks and reserves. This is done through vehicle and people counters, camping numbers and ticket sales. The data is [publicly reported](#) on an annual basis and provides the data for assessing park visitation for the DHIRC. The most recent data available for the 2024 DHIRC was from 2022.

The first step in preparing a report card score for park visitation is to assess the most recent annual visitor numbers reported for Casuarina Coastal Reserve, as a proportion of visitor numbers for the previous five years, as outlined in Equation 1 and Table 2-1.

Equation 1. Equation for calculating park visitation in 2022, as a percentage of the previous 5-year average visitation numbers.

$$\text{Report card score} = \left(\frac{\text{2022 visitor numbers}}{\text{5 year average of visitor numbers}} \right) \times 100$$

Table 2-1. Park visitation results for 2022.

Park	2022 visitor numbers	5 year rolling average 2017-21	2022 park visitation (%)
Casuarina Coastal Reserve	1,411,300	1,192,600	118.34

Step two in preparing the report card score for this indicator, is to convert the park visitation score from Figure 2-1, to the standardised 0 – 100% report card scale used across all indicators in the report card. This conversion takes into account stakeholder consensus, sought when developing the indicator in 2021, that a visitation rate of 50% of the previous 5-year average equals a 0% report card grade, and a visitation number of 100% or greater equals a 100% report card grade Figure 2-1.

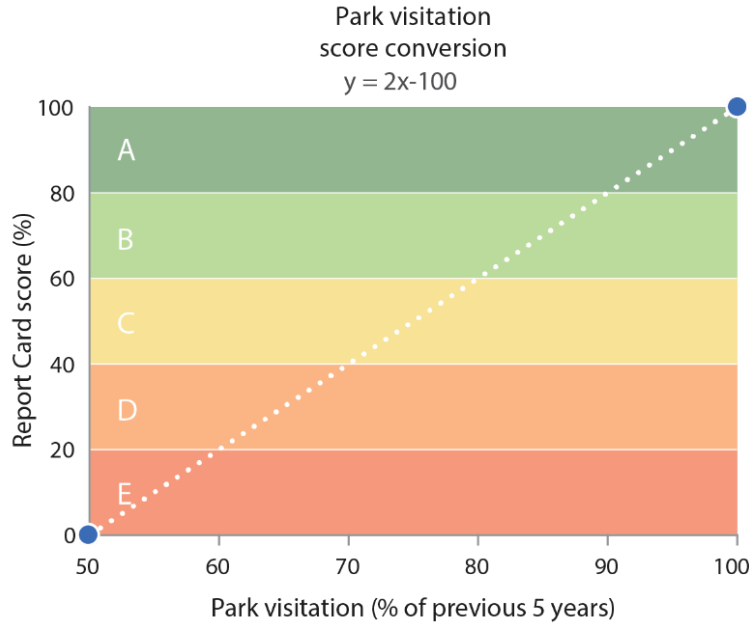


Figure 2-1. Report card indicator results are standardised to a common scale of 0-100% and categorised into five categories ranging from 'Very Poor' to 'Very Good'. If a score is within 5% of a grade boundary, a '+' or '-' is added to the grade (e.g. a score of 58% = C+, whereas a score of 62% = B-). Linear relationship between the park visitation and the standardised 0-100% report card scale.

Report card score and grade

The results of this conversion are shown in Table 2-2. As the results for Casuarina Coastal Reserve were greater than 100%, the park attained a maximum report card score of 100%.

Table 2-2. Comparison of 2022 and 2024 Park Visitation scores

Park	2022 Park Visitation Score (%)	2024 DHIRC Report Card Score (%)
Casuarina Coastal Reserve	118.34	100

For the 2024 DHIRC Report Card Score, the indicator 'Park Visitation' received an A+ score, the same as received in 2021 (Table 2-3).

Table 2-3. 2024 DHIRC results for Park Visitation

	DHIRC 2021	DHIRC 2024
Report Card Score	100.0	100.0
Report Card Grade	A+	A+

3 Air Quality

Indicator Overview

Stakeholder consultation in 2021 identified air quality as having a key impact on the health and well-being of people living within the Darwin Harbour catchment. Air quality in the Darwin region is seasonally affected by smoke pollution from remote fires, both planned and unplanned, which occur frequently across the dry season.

Three air quality stations are located within the Darwin Harbour catchment at Stoke Hill, Winnellie and Palmerston. The Northern Territory Environment Protection Authority (NT EPA) monitors and operates these air quality stations that each collect data for six metrics:

- NO₂ ppb
- SO₂ ppb
- O₃ ppb
- CO ppm
- PM_{2.5} µg/m³
- PM₁₀ µg/m³

The NT EPA has identified smoke from fires in the region as a common source of PM_{2.5} ([Air quality | NTEPA](#)), and this indicator was chosen as the best air quality metric for measuring the impacts of smoke pollution in the DHIRC. PM_{2.5} refers to particulate matter 2.5 micrometres or less in diameter and is generally described as fine particles.

Methodology

PM_{2.5} data for the 2024 DHIRC was sourced from the NT EPA that reports daily average PM_{2.5} µg/m³. This has been reported between 01/07/2022 and 30/06/2023 (FY22-23) and divided into dry (May to October) and wet (November to April) season.

Air quality over this period has been assessed against the AirRater air quality standards. The AirRater project is a collaboration between the Menzies Institute for Medical Research and a range of other partners aimed at providing real time air quality information ([Smoke & Air Quality Monitoring Explained - AirRater](#)). It is based on a scale of good (<9) to extremely poor (>300).

Air pollution (PM _{2.5} µg/m ³)	AirRater (from 2021)
0 to 9	Good
10 to 24	Fairly good
25 to 49	Fairly poor
50 to 99	Poor
100 to 299	Very poor
300+	Extremely poor

Figure 3-1. AirRater classification scale.

All report card indicator results are standardised to a common scale of 0 – 100% and categorised into five categories ranging from ‘Very Poor’ to ‘Very Good’ as per Figure 3-2. A score of 100% indicates that all indicator measures have met their threshold (objective), whilst a score of 0% indicates none of the indicator measures have met their threshold. If a score is within 5% of a grade boundary, a ‘+’ or ‘-’ is added to the grade (e.g. a score of 58% = C+, whereas a score of 62% = B-).

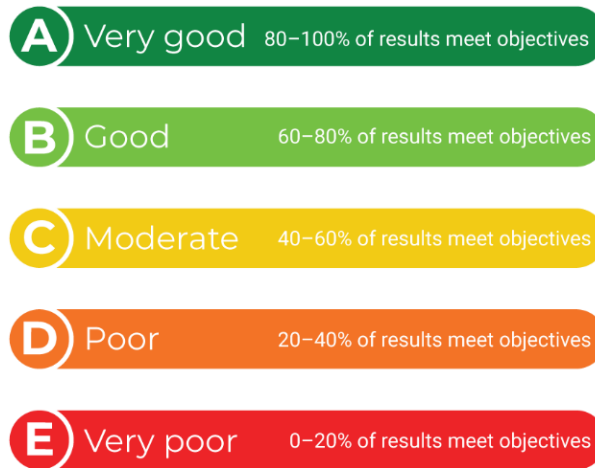


Figure 3-2 DHIRC grade categories and scores

Data for the metric $PM_{2.5}$ were converted to a 0-100% scale by calculating the average number of days that daily average $PM_{2.5}$ were below or equal to $9 \mu\text{g}/\text{m}^3$, as a percentage of all days within the reporting period (01/07/2022 to 30/06/2023) as shown in Equation 2. The indicator is based on the principle that when no exceedances of the air quality guideline occur throughout the year, the report card score should be 100% and receive a grade of A+. Whereas, when exceedances of the air quality guideline occur every day of the year, the report card score should be 0% and receive a grade of E-.

Equation 2. Method for converting $PM_{2.5}$ to the standardised 0-100% report card scale.

$$\text{Report card score} = 100 - \left(\frac{\text{Number of days that that exceed the threshold}}{\text{Total days in reporting period}} \times 100 \right)$$

Report card score and grade

Average air quality scores for Palmerston, Stokes Hill, and Winnellie for the current and previous reporting periods are shown for the wet and dry seasons.

Wet Season

The Air Quality indicator has attained an ‘A’ grade for the wet season in the 2024 Report Card applying the AirRater threshold. The results highlight high air quality within Darwin Harbour through the wet season.

Table 3-1. Summary of wet season PM_{2.5} results for the 2024 DHIRC.

	Wet Season		
	Number of days of available data	Number of days ≥ the PM _{2.5} threshold (9 µg/m ³)	DHIRC 2024 score (0-100%)
Palmerston	166	8	95
Stokes Hill	177	6	97
Winnellie	120	12	90
Average (%)		9	94

Table 3-2 Wet Season 2024 DHIRC score and grade for air quality.

	DHIRC 2024
Report Card Score	94.0%
Report Card Grade	A

Dry Season

The Air Quality indicator has attained an ‘D+’ grade for the dry season in the 2024 Report Card applying the AirRater threshold. These results highlight a decrease in air quality within the Harbour through the dry season which is commonly attributed to an increase in smoke pollution from fires.

Table 3-3. Summary of dry season PM_{2.5} results for the 2024 report card.

	Dry Season		
	Number of days of available data	Number of days ≥ the PM _{2.5} threshold (9 µg/m ³)	DHIRC 2024 score (0-100%)
Palmerston	169	107	37
Stokes Hill	184	74	60
Winnellie	179	140	22
Average (%)		107	39

Table 3-4. Dry Season 2024 DHIRC score and grade.

	DHIRC 2024
Report Card Score	39.0%
Report Card Grade	D+

Summary

Overall air quality receives a score of '67' and a 'B' grade for the 2024 DHIRC. This grade is calculated as the average of wet and dry season results which highlight better air quality in the wet season ('A' grade) and poor air quality during the dry season ('D+' grade) when smoke pollution is more prevalent.

Table 3-5 Summary of DHIRC 2024 air quality results inclusive of both wet and dry seasons.

	Report Card Score	Report Card Grade
Wet Season	94.0%	A
Dry Season	39.0%	D+
DHIRC 2024	66.5%	B