

## Environmental Management

### 1 Management Deliverables

#### *Indicator Overview*

In 2021, stakeholder consultation highlighted environmental management as a critical factor for the sustained well-being of Darwin Harbour. Consequently, the 2021 Darwin Harbour Integrated Report Card (DHIRC) included an evaluation of key performance indicators (KPIs) for environmental management. This assessment utilised data from the Northern Territory Government Department of Environment Parks and Water Security (DEPWS) annual reports. These reports compare 'budgeted' versus 'actual' management achievements throughout the year across the Northern Territory.

However, it has been determined that this assessment method will no longer be used for evaluating Environmental Management. The decision stems from the difficulty in isolating the KPIs relevant exclusively to Darwin Harbour within the published reports. While this indicator is not scored or graded, it has been included in this year's report to encourage the development of a system that allows for the filtering of KPIs by region. Such a system would enable future reports to present findings specifically pertaining to the Darwin Harbour area.



## 2 Litter

### Indicator Overview

Litter has been included as a new indicator in the 2024 DHIRC, under the Environmental Management value. Litter serves as a valuable indicator of Darwin Harbour health due to its visibility, ubiquity, persistence, ecological impact, ability to identify pollution sources, and its role in raising public awareness. By tracking litter in waterways, stakeholders can gain insights into the extent of pollution, identify sources of contamination, and mobilise efforts to mitigate its impact, ultimately working towards the preservation and restoration of Darwin Harbour

### Methodology

Litter data in Darwin Harbour is collected by the Larrakia Rangers during Clean Up Darwin Harbour Day, an annual event begun in 2010, and hosted by the Larrakia Nation since 2019. The litter dataset includes the volumes and quantities of litter collected as well as location, and collection effort. The dataset allows for analysis of litter collected in kilograms per km per person, which provides a relative measure of the litter found at each collection site. Reviewing data over the past 13 years, an overall declining trend can be observed in the litter collected over this timeframe (Figure 2-1). The peak in litter collection at the beginning of the data series is likely a result of RAAF personnel being involved at this time using heavy machinery to retrieve large items (e.g. old car bodies). Also, it can be anticipated that the first clean-up efforts collected litter that had accumulated over many years. As a result, subsequent years were effectively cleaning up only a year's worth of litter, which may also explain the significant drop in collected litter in subsequent years.

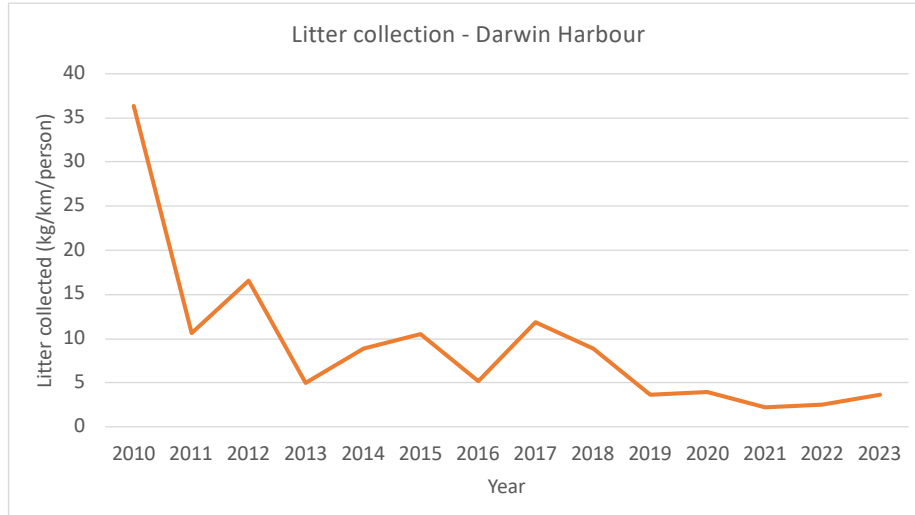


Figure 2-1 Annual litter collection, standardised for effort, along the shores of Darwin Harbour since 2010.

Based on the past five years of data collected, litter levels have been consistently below 5 kg/km/person (Figure 2-1). Based on this information and the assumption that litter levels should decrease over time with better management, a threshold of 5 kg/km/person was established for this litter indicator. As with all report card indicators, litter collection rates require conversion to the standardised report card scoring scale of 0-100% as shown in Figure 2-2 and outlined in Equation 1. The average of the previous

three-years of litter data has been used to calculate the 2024 DHIRC score for litter, aiming to minimise variability that can be observed year-to-year in the data due to

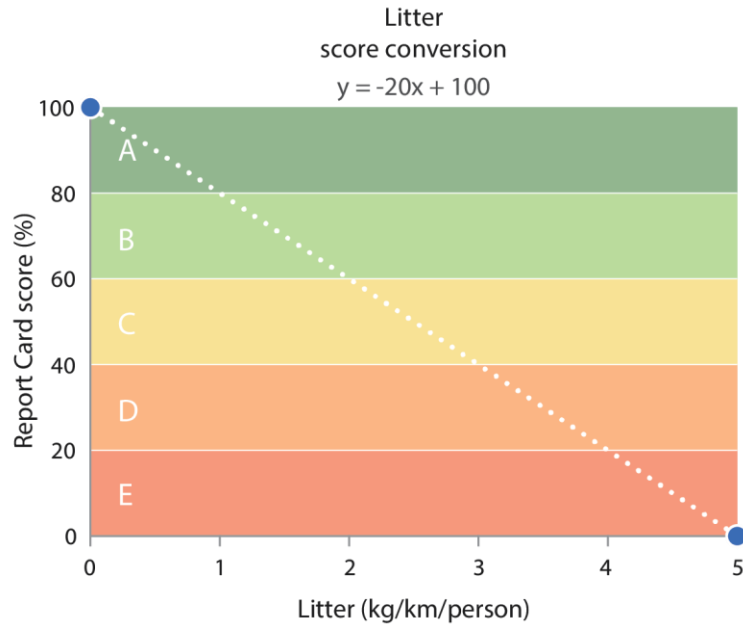


Figure 2-2 Linear relationship between litter collected and the standardised 0-100% report card scale. Report card indicator results are standardised to a common scale of 0-100% and categorised into five categories ranging from 'Very Poor' to 'Very Good'. A score of 80% or more (A grade) indicates that litter collected is below 1 kg/km/person; whilst a score of 20% or less indicates that litter collection has exceeded 4 kg/km/person (E grade). 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-).

Equation 1. Method for calculating litter scores to a standardised report card scale.

$$\text{Report card score} = -20(\text{three year average litter collected kg/km/person}) + 100$$

### Report card score and grade

The Darwin Harbour has attained an overall 'C-' grade for Litter data in the 2024 Report Card based on an average of 2.8 kg/km/person collected between 2021-2023 across all sites in the harbour (Table 2-1).

Table 2-1. Report card scores and grades for the 2024 DHIRC.

	Average 2021-2023 Litter collection rate (kg/km/person)	Report Card Score	Report Card Grade
Litter	2.8	43.9%	C-