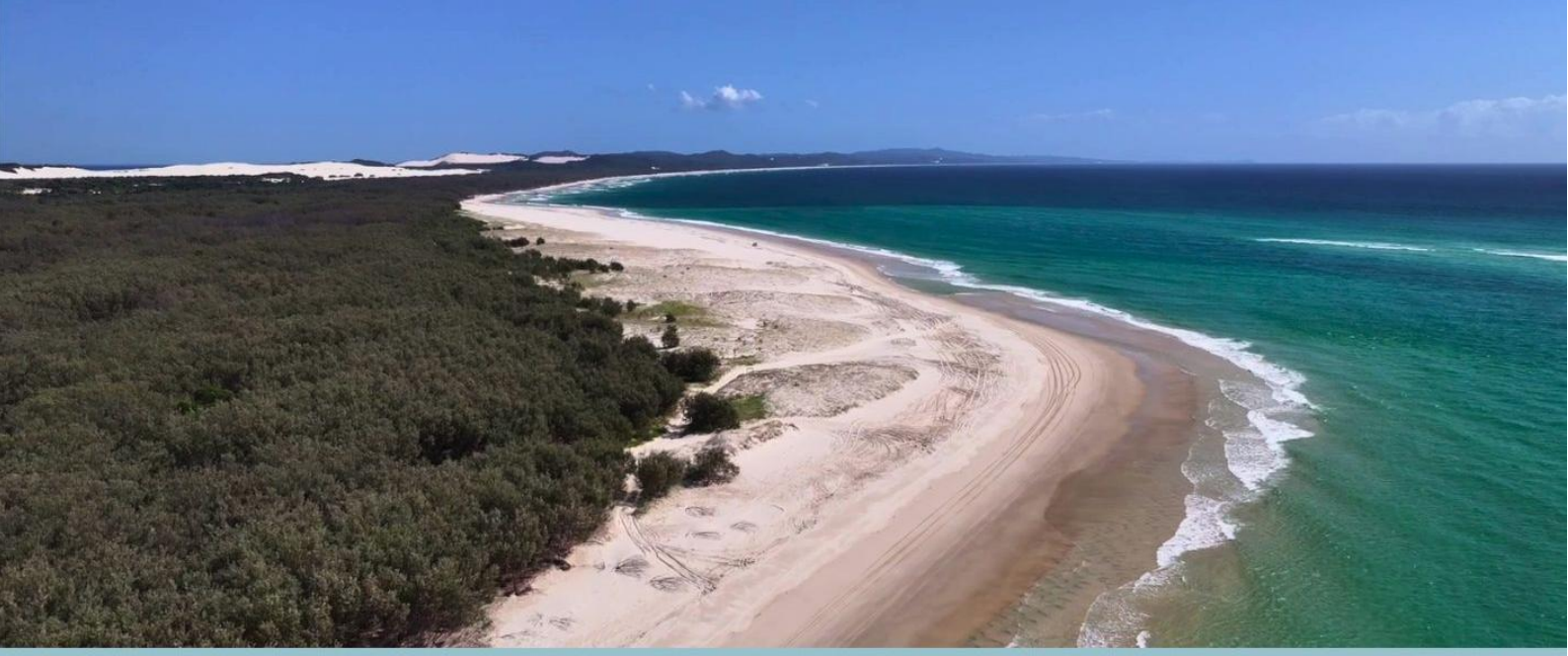


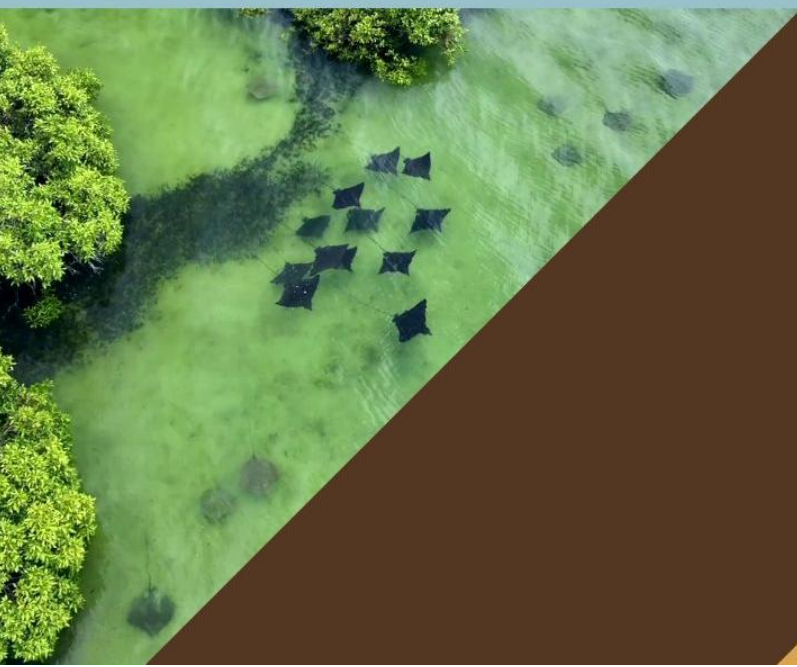
Sedimentation impacts in Moreton Bay: a priority knowledge synthesis

IMPACTS:

Visual Amenity

DBC
David Brewer Consulting

THE MORETON BAY FOUNDATION



moretonbayfoundation.org

This impact statement is drawn from

Sedimentation Impacts in Moreton Bay, a priority knowledge-synthesis

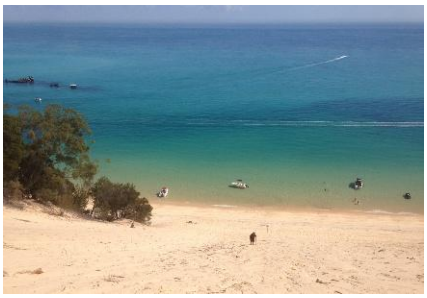
The report was commissioned by The Moreton Bay Foundation in 2025 to summarise key evidence on how sedimentation affects Moreton Bay's coastal and marine ecosystems, and the ecological and cultural values they support. The report brings together published and grey literature, conceptual models, and expert review to provide a clear, high-level understanding of sedimentation pressures, their impacts, and remaining knowledge gaps.

This standalone document can be found in the full report. Where references are made to other sections, these are indicated by this symbol: †. A full list of external citations, data sources, and methods used in this document is included in the complete report, available at **moretonbayfoundation.org**

David Brewer Consulting (DBC) has prepared this report for The Moreton Bay Foundation under the contract titled 'TMBF Priority Knowledge Synthesis: Sedimentation Impacts in Moreton Bay'. Information about the Moreton Bay Foundation can be found at: https://moretonbayfoundation.org/

Authors:	David Brewer, Alex Milward
Approved:	David Brewer (Director, Upwelling Pty Ltd trading as David Brewer Consulting)
Version:	Final Report
Date issued:	2026
Issued to:	The Moreton Bay Foundation
Citation:	Brewer, D. T. and Milward, A. S. E. (2026) 'Sedimentation Impacts in Moreton Bay: a Priority Knowledge Synthesis for The Moreton Bay Foundation'. TMBF, Brisbane, Australia. 244 pp.

Visual Amenity: Sedimentation Impact Statement



Eastern Moreton Bay
Photo credit: D. Brewer

Status and trend summary

The visual appeal and beauty of Moreton Bay - including its colours, flora, fauna, and water clarity - is highly valued, but is vulnerable to the impacts of pollution and unchecked development (Sarker *et al.*, 2008; Ross *et al.*, 2019a). There has been a notable decline in Moreton Bay's visual amenity, largely due to the physical impacts of development and urbanisation in the catchment and pollution from sewage (Pollard *et al.*, 2004; Sarker *et al.*, 2008; Ross *et al.*, 2019a). This change is primarily described as a deterioration or loss (Ross *et al.*, 2019a).

Table 1 provides a qualitative assessment of the visual amenity in Moreton Bay, its their current condition, future trajectory and the impacts of sedimentation. The overall current condition of the Bay's visual amenity is rated as 'Fair, with 'High confidence. This reflects increased suspended sediment loads from development impacts and pollution, which significantly affect water quality and visual amenity. Hence, the contribution of sedimentation to the current condition of visual amenity in Moreton Bay is considered 'Moderate' with 'Medium' confidence.

The condition trend of visual amenity in the Bay is assessed as 'Declining', with 'High' confidence. The contribution of sedimentation to the condition trend of visual amenity in Moreton Bay is considered 'Major' with 'High' confidence due to the unprecedented loads of sediment currently residing in the bay and the high likelihood of ongoing resuspension into the future.

Table 1. Qualitative assessment of the overall status and trend in condition, and of the likely severity and direction of sedimentation-specific impacts, for visual amenity in Moreton Bay.

Value condition assessment	Assessment	Confidence
Current condition	Fair	High
Contribution of sedimentation to the current condition	Moderate	Medium
Condition trend	Declining	High
Contribution of sedimentation to trend	Major	High

Overview

In the context of the marine environment, visual amenity (also referred to as scenic amenity) is defined as a measure of the physical appeal and beauty of a place (Preston, 2006; Ross *et al.*, 2019a), as it contributes to the collective appreciation of open space by the community (Preston, 2006). The terms 'visual amenity' and 'scenic amenity' are used interchangeably in this document, based on the terminology found in the respective reference sources.

Visual amenity encompasses the aesthetic qualities of the environment, such as the colours (e.g. the blues and beiges of the Bay), flora, fauna, and the clarity of the water (Ross *et al.*, 2019a). It also includes the scenic quality of wider landscapes and seascapes (Ross *et al.*, 2019a).

Visual amenity is a widely shared and deeply appreciated value among residents and Traditional Custodians alike in Moreton Bay and its associated waterways (Ross *et al.*, 2019a). Approximately 71% of non-Aboriginal participants in one study expressed an appreciation for the beauty of the waterways (Ross *et al.*, 2019a).

Visual amenity is quantitatively measured by combining two components (Preston, 2006):

1. A scenic preference rating, which is the community's liking for scenery, often measured through photographs (Preston, 2006).
2. A visual exposure rating, which measures the extent to which a place is seen from important public viewing locations (e.g. roads, recreation areas, schools, golf courses) (Preston, 2006).

Visual amenity is considered an element of Landscape Character and is applicable across various environments, including coastal areas, oceans, estuaries, beaches, and dunal vegetation (Preston, 2006).

While non-Aboriginal people value the current beauty of the waterways, Traditional Custodians also hold this value but often recall the past beauty, regretting its long-term deterioration due to ongoing development, urbanisation, and population growth (Ross *et al.*, 2019a). Traditional Custodians also use the aesthetic qualities of waterways as indicators of ecosystem health (Ross *et al.*, 2019a).

The importance of visual amenity in Moreton Bay

Visual amenity is a highly important feature of Moreton Bay and its associated waterways. Key characteristics that underpin this importance include:

1. Economic contribution: scenic amenity is a primary driver of economic wealth in coastal cities within the region, significantly boosting tourism and urban development industries (Preston, 2006).
2. Quality of life and identity: visual amenity contributes to the quality of life and prosperity of the region, and waterways can convey cultural, community, and personal identity (Preston, 2006; Ross *et al.*, 2019a).

3. Recreational value: visual amenity supports a wide range of recreational activities, with the loss of visual amenity impacting these opportunities (Pollard, 2004; Ross *et al.*, 2019a, b).
4. Environmental coincidence: areas with high scenic amenity often align with areas of high environmental value (Preston, 2006).

However, the visual amenity of Moreton Bay is also vulnerable. Issues like poor water quality and sewage overflows can lead to a significant loss of visual amenity, impacting recreational quality and reflecting environmental degradation (Pollard, 2004; Sarker *et al.*, 2008).

Factors which cause loss of visual amenity in Moreton Bay

The loss of visual amenity in Moreton Bay can be attributed to several factors, primarily stemming from the impacts of development and pollution (Ross *et al.*, 2019a).

Development, urbanisation and poor water quality

Ongoing development, urbanisation, and population growth within the Moreton Bay catchment have led to a significant degradation of marine environments and a lamentable loss of past beauty, particularly from the perspective of Traditional Custodians (Ross *et al.*, 2019a). Historical land clearing and agricultural practices in the Moreton Bay catchment have contributed to substantial erosion, and the problem is exacerbated by low retention of riparian vegetation (Sarker *et al.*, 2008). The historical removal and low retention of riparian (riverfront) vegetation also contribute to the problem of sediment and nutrient runoff into rivers, thereby affecting water quality and its visual appeal (Sarker *et al.*, 2008).

Turbidity caused by high sediment loads from catchments significantly affects water quality and visual amenity (Sarker *et al.*, 2008). Turbidity can result in 'brown, turbid water' (Sarker *et al.*, 2008). Run-off of nutrients (nitrogen and phosphorus) from sources like fertilisers and stock dung is also a significant problem, contributing to water quality issues (Sarker *et al.*, 2008) which can lead to algal blooms (Sarker *et al.*, 2008). These algal blooms may then visually degrade the waterways.

Traditional Custodians often use the aesthetic qualities of waterways, including water clarity, as indicators of ecosystem health (Ross *et al.*, 2019a).

Sewage overflows and gross pollutants

The discharge of untreated sewage into local waterways, particularly during system overloads or breakdowns, directly impacts visual amenity (Pollard *et al.*, 2004). Sewage overflows, in both dry and wet weather, also pose an unacceptably high public health hazard for potential swimmers, leading to a 'loss of amenity for recreational activities' until the overflow stops and there's a complete tidal exchange (Pollard *et al.*, 2004).

Major investments in the early 2000s to reduce nitrogen loads from sewage treatment plants by approximately 70% led to an apparent stabilisation of these loads into the Bay (Saeck *et al.*, 2019b; Coates-Marnane *et al.*, 2020).

Recommendations

Improving visual amenity in Moreton Bay requires a multi-faceted approach involving policy, community engagement, and environmental restoration efforts. Key recommendations include:

1. Prioritise water quality improvement:
    - Use upstream management options, such as controlling stormwater ingress and using larger sewers, to store and transport wet weather flows to wastewater treatment plants (Pollard *et al.*, 2004).
    - Adopt a common-pool resource (CPR) approach for water quality management, fostering cooperation and co-investment between upstream landholders and downstream beneficiaries, such as the city of Brisbane and its water supply authority (Sarker *et al.*, 2008).
    - Implement market-based instruments (MBIs), like payments for ecosystem services, to compensate landholders for setting aside land for riparian buffer strips and adopting practices that reduce soil erosion and nutrient flows (Sarker *et al.*, 2008). A managed fund with a 'broker' (e.g. SEQ Catchments) could facilitate these payments (Sarker *et al.*, 2008).
    - Rehabilitate whole reaches of rivers with riparian vegetation, focusing on areas with severe erosion, which also helps filter sediments and nutrients (Sarker *et al.*, 2008).
2. Community engagement and awareness
    - Develop programs to educate and raise community awareness about the importance of visual amenity and the impacts of pollution (Pollard *et al.*, 2004; Preston, 2006).
    - Regularly monitor and report sewage overflows to the public, along with notifications to warn potential swimmers of health risks (Pollard *et al.*, 2004).
    - Recognise and integrate the diverse values people hold towards waterways (e.g. aesthetic, emotional attachment, naturalistic) into management strategies and public communication (Ross *et al.*, 2019a, b).
    - Shift from a 'control' focused management approach to one that incorporates the positive dimensions of caring and collaboration (Ross *et al.*, 2019b).
    - Improve the connection between land and sea management to mirror the holistic perspective of Indigenous people regarding their coastal estates (Ross *et al.*, 2019b).
    - Expand monitoring and evaluation to include social, economic, and cultural benefits in addition to biophysical indicators (Ross *et al.*, 2019b).

Expert review

Prof Helen Ross (School of Agriculture and Food Sustainability, University of Queensland) has kindly provided an expert review of the Visual amenity value: Sedimentation Impact Statement.

References

Coates-Marnane, J., Pausina, S., Burton, J., Haynes, D., Oudyn, F. and Olley, J. (2020) 'A record of diatom community response to catchment land-use change in Moreton Bay, Australia'. *Marine and Freshwater Research*. 72. 823-837. 10.1071/MF20110.

Pollard, P.C., Leeming, R., Bagraith, S., Greenway, M. and Ashbolt, N. (2004). *The impact of sewage overflows on an urban creek: a case study of Lota Creek in Brisbane.* Brisbane: Cooperative Research Centre for Coastal Zone, Estuary and Waterway Management.

Preston, R. (2006) *The Meaning and Intent of Scenic Amenity and Related Terms for Urban and Rural Planning*. Scenic Amenity Report No. 2. Brisbane: Forest Images Pty Ltd for Gold Coast City Council.

Ross, H., Jones, N., Witt, K., Pinner, B., Shaw, S., Rissik, D. and Udy, J. (2019a) 'Values towards Moreton Bay and catchments'. In Tibbetts, I. R., Rothlisberg, P. C., Neil, D. T., Homburg, T. A., Brewer, D. T. and Arthington, A. H. (eds.) *Moreton Bay Quandamooka & Catchment: Past, present, and future*. Brisbane: The Moreton Bay Foundation, pp 47-60. doi: 10.6084/m9.figshare.8072498.

Ross, H., Rissik, D., Jones, N., Witt, K., Pinner, B. and Shaw, S. (2019b) 'Managing for the multiple uses and values of Moreton Bay and its catchments'. In Tibbetts, I. R., Rothlisberg, P. C., Neil, D. T., Homburg, T. A., Brewer, D. T. and Arthington, A. H. (eds.) *Moreton Bay Quandamooka & Catchment: Past, present, and future*. Brisbane: The Moreton Bay Foundation, pp 563-578. doi: 10.6084/m9.figshare.8085710.

Saeck E., Udy J., Maxwell P., Grinham A., Moffatt D., Senthikumar S., Udy D. and Weber, T. (2019b) 'Water quality in Moreton Bay and its major estuaries: Change over two decades (2000-2018)'. In Tibbetts I.R., Rothlisberg P.C., Neil D.T., Homburg T.A., Brewer D.T., and Arthington AH (eds.) *Moreton Bay Quandamooka & Catchment: Past, present, and future.* Brisbane: The Moreton Bay Foundation, pp 187-210. doi:10.6084/m9.figshare.8072597.

Sarker, A., Ross, H. and Shrestha, K.K. (2008) 'A common-pool resource approach for water quality management: An Australian case study'. *Ecological Economics*, *68*, pp. 461–471. doi:10.1016/j.ecolecon.2008.05.001.

This impact statement is drawn from

Sedimentation Impacts in Moreton Bay, a priority knowledge-synthesis

The report was commissioned by The Moreton Bay Foundation in 2025 to summarise key evidence on how sedimentation affects Moreton Bay's coastal and marine ecosystems, and the ecological and cultural values they support. The report brings together published and grey literature, conceptual models, and expert review to provide a clear, high-level understanding of sedimentation pressures, their impacts, and remaining knowledge gaps.

This standalone document corresponds to **Section 5.16** of the full report. A full list of external citations, data sources, and methods used in this document is included in the complete report, available at

moretonbayfoundation.org

Cover Images: Photo Credit: R. Figueiredo

The Moreton Bay Foundation

DBC
David Brewer Consulting