

Soil erosion

Principle:

Accelerated soil erosion can occur through land disturbance and uncontrolled runoff. Sound land use planning and appropriate timing of operations will minimise erosion hazard.

High intensity rainfall, massive sandy soils and long slopes make much of the region inherently prone to sheet, rill and gully erosion, and Hollingsworth (2003) considered most of the Tiwi Islands at risk from erosion. Most areas of coastline and river banks are also naturally susceptible to erosive processes.

Soil erosion issues within the region arise out of the location of infrastructure in erosion prone areas, and disturbance activities that can accelerate natural erosion processes. Protection of red earths in the region is particularly important due to their potential economic value.

As discussed elsewhere, Paru outstation and the three main communities of Nguuu, Pirlangimpi and Milikapiti are located on the coast, and coastal erosion issues have emerged through natural cliff regression and accelerated erosion from concentrated stormwater runoff. Similarly, disturbance associated with the Port Hurd airstrip has led to severe localised gully erosion.

Most of the main roads within the region are generally located along lateritic ridge lines, which reduces the risk of soil erosion from road location. Past construction and maintenance techniques, however, have created issues with erosion of road and track surfaces, and surface and side drainage. Flat grading of both main roads and access tracks has resulted in lowering of the surface, and the creation of soil windrows along alignments.

In many areas this has led to concentration of flow, rill erosion, ponding and sedimentation of watercourses. Repeated grading out of surface depressions has progressively worsened the problem in some areas, and side drainage has been rendered ineffective. Many tracks constructed without side drainage have become eroding watercourses during the wet season, and those located in wetter areas have created localised wetland degradation.

As with other areas in the Northern Territory, off-shoot drains along main roads have historically been constructed as V drains. Drain construction and alignment has led to concentrated flow in many areas, causing gully erosion and subsequent sedimentation. Improved construction and drainage techniques recently implemented on road upgrades on Melville Island should be actively encouraged, and maintenance programmes should be developed that maintain the integrity of the works.

The main land disturbance activity proposed for the region is development of plantation forestry. Initial issues with soil erosion have now been addressed through planning and operational activities that include smaller catchment areas, improved planting alignments, erosion control structures along internal roads and firebreaks and regular monitoring. Erosion and sediment control plans are also prepared and implemented for each discrete planting area.

Uncontrolled and sustained access has caused erosion of river banks in several areas, due to vehicle and foot traffic, semi-permanent camp sites, and informal boat launching. Codes of Practice developed for recreational users and tour operators should address these issues, and could be supplemented by education and awareness activities.

The level of impact from feral animal activity on erosion and soil structure within the region has not been quantitatively assessed, although there is evidence of gully erosion in areas frequented by buffalo in southern Melville Island, and areas of soil compaction in pig infested areas on Bathurst Island.



Outcome:

Protection of the region's economic and natural resource values from the hazard and incidence of soil erosion.

Objective:

17. Develop and implement processes and procedures that minimise erosion hazard.

Recommended Actions:

- 17.1 Extend land capability mapping to identify areas of inherent erosion risk, and use as a basis for land use planning.
- 17.2 Identify key land use activities that contribute to soil erosion, and develop and disseminate sector specific guidelines/ awareness material for erosion minimisation.
- 17.3 Carry out an erosion survey of the region, and enter results onto the Tiwi GIS.
- 17.4 Prepare and cost a plan for erosion control works prioritised on the level and extent of active soil erosion.

