Landforms of the Kakadu region

There are six main landforms in Kakadu National Park:

- **the stone country** which includes the Arnhemland plateau and escarpment complex
- **the outliers**
- **the lowlands**, known as the Koolpinyah surface
- **the southern hills and basins**
- **the floodplains**
- **the tidal flats**.

Each landform has its own characteristic habitats. Kakadu's varied landscapes and the habitats they contain are features that contributed to its listing as a World Heritage Area.

The stone country

It is believed that 140 million years ago much of Kakadu was under a shallow sea. The prominent escarpment wall formed sea cliffs and the Arnhem Land plateau formed a flat land above the sea. Today the escarpment, which rises to 330 metres above the plains, extends over 500 kilometres along the eastern boundary of the Park. It varies from vertical cliffs in the Jim Jim Falls area to stepped cliffs and isolated outliers in the north.

![Image of Kakadu Stone Country](image)

**The stone country**

The rock platforms of the plateau are dissected by a network of chasms and gorges. The top of the plateau is a harsh, dry place. Water drains away quickly. In most areas soil is scarce. The small patches of soil that are to be found consist mostly of coarse sand and leaf litter trapped in rock fissures or shallow depressions. Sparsely distributed pockets of woodland and open forest have developed on these coarse soils.

Along the escarpment, creeks have etched deep incisions to form gorges in which tall monsoon forests have developed. Water seeping from rock walls and the deep alluvial soils provide an important micro-environment for plants and animals. Many animals rely on these areas for refuge during the drier months. The dominant plant species is *Allosyncarpia ternata*, a large, spreading, shady tree that is found only in the Kakadu and Arnhemland region.

Typical examples of Kakadu's stone country can be seen from the Gunlom lookout walk and at Maguk and Jim Jim and Twin Falls.
The outliers

The outliers are essentially pieces of the Arnhemland plateau that have, through past erosive action, become separated from the plateau complex. They were islands in the ancient seas that once covered much of Kakadu. Nourlangie Rock and Ubirr are good examples of outliers.

The lowlands

The gently undulating lowland plains—the Koolpinyah surface—stretch over much of the Top End. The soils are shallow and often overlie extensive sheets of laterite (ironstone) and a thick profile of strongly leached rocks. These mottled yellow-brown rocks can be seen in road cuttings north of Cooinda on the Kakadu Highway. Resistant ancient rocks remain as low strike ridges or hills in various places.

The floodplains

During the wet season, water carried down from the Arnhemland plateau often overflows from creeks and rivers onto nearby floodplains. Alluvial soils carried in the floodwaters add nutrients to the floodplains. Nutrient-rich soils along with an abundance of water and sunlight make the floodplains an area of prolific plant and animal life. During the dry season the water recedes into rivers, creeks and isolated waterholes or billabongs. Kakadu’s wetlands are listed under the Convention on Wetlands of International Importance (the Ramsar convention) for their outstanding ecological, botanical, zoological and hydrological features. The most accessible places to view the floodplains are Yellow Water, Mamukala, Iligadjarr, Ubirr and Bubba wetland.
The southern hills and basins

Escarpments surrounding the southern hills and basins

The southern hills and basins cover a large area in the south of the Park, including the headwaters of the South Alligator River. Rocks here have been exposed from beneath the retreating Arnhem escarpment; they are of volcanic origin and are extremely old (2,500 million years). This landform is characterised by rugged strike ridges separated by alluvial flats. Its features can be easily observed from the top of Gunlom Falls and on the Yurmikmik walking tracks.

The estuaries and tidal flats

Lower South Alligator River

Kakadu's coast and the creeks and river systems under tidal influence (extending about 100 kilometres inland) make up this landform. The shape of the estuaries and tidal flats varies considerably from the dry season to the wet season. During the dry season tidal action deposits silt along the river beds and banks. During the wet season the river beds are eroded by the floodwaters and large quantities of fresh and saline water flow out across the tidal flats, where silt is deposited. Large silt loads are also carried out to sea, some of the silt being deposited as a nutrient-rich layer on the sea floor, contributing to the muddy waters that characterise Kakadu's coastline.

The estuaries and tidal flats are home to an array of plants and animals adapted to living in the oxygen-deficient saline mud. The dominant habitats are mangrove swamps and samphire flats. Where freshwater springs occur along the coasts and river banks, isolated pockets of coastal monsoon rainforests form, as at Manngarre.

Estuaries and tidal flats can be seen at West Alligator Head and in the lower sections of the South and East Alligator Rivers.