



Two options for the beaches.



## Options for Queensland's sands

We have heard a lot recently about Fraser Island, Cooloola, and Stradbroke Island. Arguments about how they should be used have deeply divided the community. Perhaps the main lesson that has come out of the disputes is that in spite of the shouting we really don't know very much about these areas.

Mining and conservation of the natural environment are perhaps the most publicized of a number of options that can be applied on southern Queensland's coastal sands, which stretch from Bundaberg in the north to Coolangatta.

Being very permeable, most of the sandy areas contain large quantities of fresh groundwater—a largely untapped resource. Many could also be used for housing, recreation, forestry, or agriculture. Some of these

options conflict—once an area is covered with houses, for instance, there is no going back.

As the population around Brisbane increases, so does the pressure on the nearby coastal areas. Decisions probably will need to be made within the next 20–30 years on what will be the future permanent uses of the uncommitted sandy areas.

At the CSIRO Cunningham Laboratory at St Lucia, Brisbane, Mr Cliff Thompson of the Division of Soils has carried out a preliminary survey of all the coastal lands between Coolangatta and the northern tip of Fraser Island. Using aerial photographs and examining the soils on the ground, he has delineated 12 land forms within the area and commented on the possible land-use conflicts that may arise within each unit.

Mr Thompson points out that present and all foreseeable land-use conflicts have four factors in common:

- ▶ not much is known in detail about the land forms or their potential value to the community
- ▶ nobody knows much about the natural processes operating within them
- ▶ there appear to be few adequate management guidelines
- ▶ most of the land forms are under constant pressure for more housing and industrial development, regardless of the future consequences

Take for instance Bribie Island, north-east of Brisbane. This is an example of the land form that consists of a series of beach ridges. Pressure is building up here for more housing development. But this island also contains a sizeable untapped water resource. Just how much it can produce, nobody seems to know. Nevertheless nearby mainland developments may need it one day. Household waste water from any extensive housing developments on the island could easily pollute this groundwater beneath the sandy soils.

Beach ridges similar to those on Bribie Island occur on Fraser Island, Moreton Island, North Stradbroke Island, Hervey Bay, Inskip Point, and parts of the south coast. Most of the south coast areas have already been developed for housing.

'Lenses' of heavy minerals also occur on beaches and nearby sandy landscapes. In places these minerals have been worked for more than 30 years. Usually, the mined areas have been revegetated or used for housing.

Mr Thompson suggests that if the future permanent use for an area is to be



housing, then it would be sensible to give mining companies the option to take out whatever minerals it contains first.

Developments along the Gold Coast involve reclamation of a number of the mangrove islands and tidal coastal mud flats in that area. These represent another of Mr Thompson's land forms. Developers have pumped sand onto the mud flats to cover them to a sufficient depth to allow them to be used for housing.

Yet undeveloped areas like mangrove mud flats have other uses, which must be considered. For instance, the mangrove mud flats of the Gold Coast support several species of edible fish, crabs, prawns, and oysters, whose existence seems to depend largely on the mud flats remaining intact. So, even in terms of a direct financial return, these flats are probably worth a substantial figure each year to the fishing industry.

The brightly coloured sands of Rainbow Beach and the Coolooloa coast are a third land form. They attract many tourists, and to a lot of people destroying these would be unthinkable. Smaller areas occur on Fraser

Island, Moreton Island, and on the mainland south of Noosa Heads. The coloured sands are merely remnants of areas, once bigger, that extended eastwards.

Coolooloa's coloured sands have now been incorporated in the new Coolooloa National Park. But preserving those sands elsewhere depends very much on the decisions made about the use and management of the sands that lie on top of them. The coloured sands themselves are of little value to miners, but any mining along their coastal margins is likely to at least accelerate their erosion. We don't know how far they extend inwards under the coastal dunes.

One of the most spectacular features of the Coolooloa area is its high dunes. These are a fourth land form. Similar dunes occur on all the sand islands in the region. They reach 280 metres in height at Mount Tempest on Moreton Island. Mining these huge sand hills on North Stradbroke Island caused a great deal of controversy. Nobody can say for sure that it will be possible to permanently stabilize them once they have been mined.

The high dunes all originated from sand blown in from the beach at some time in the past. All are covered with vegetation, but they are not as stable as they may appear to the casual observer. Most have been modified by water erosion to some degree, and measurements by scientists at the Division of Soils have revealed that at present some sand is moving down all of them, even under the thickest vine scrub. This indicates that they are fragile land forms that will erode rapidly if the vegetation cover is removed.

Sand movement raises management problems. The dunes of the Coolooloa area, for example, are now incor-

porated in the Coolooloa National Park. Because they are so fragile, it will probably be necessary to carefully control the movement of vehicles and pedestrians, and to concentrate these where the most protection can be provided.

Without proper control, tourists could damage the naturalness of the area almost as much as mining. However, adequate knowledge to guide proper management of the area probably doesn't yet exist.

A research team from the Division of Soils is now studying the ecology of the Coolooloa area. These studies will add to the pool of knowledge about Coolooloa, and so help to make proper management possible. Nevertheless, the main aim is to gain background information about the six undisturbed land forms represented there. This information can then be used for comparison with disturbed parts of similar land forms elsewhere.

For example, the investigations should make it possible to gauge the success of restabilizing mined dunes. Most disturbed dunes can be successfully revegetated in the short term. In fact, when revegetated, some—such as the geologically very young land forms that front onto parts of the coast—may be more stable than they were when covered by the original vegetation. However, in the long term, we can't seriously judge whether the revegetation techniques have returned the dunes to something approaching their original stability until we know what they were like before they were disturbed.

Coastal areas of southern Queensland: some land-use conflicts. C. H. Thompson. *Proceedings of the Royal Society of Queensland*, 1975, 86, 119-20.