

## EXECUTIVE SUMMARY

Nutrient levels in inshore GBR waters are reaching levels that have caused detrimental effects to corals elsewhere, though the evidence of damage to coral communities in the Marine Park is still primarily circumstantial. Preliminary studies indicate that nutrient levels in the central GBR are almost twice as high as those in the northern more pristine waters. Whether levels of nutrients have increased in parts of the Marine Park over the past couple of decades has still not been established.

Further research is required to evaluate the actual effect on GBR coral reef biota of present levels of nutrients and the levels of nitrogen and phosphorus and exposure time required to result in both short and long term damage to coral reef communities. Appropriate research and monitoring to resolve these questions are long term and costly. In the meantime, the implications of Reef deterioration are serious and consideration must now be given to ensuring that levels of nutrients do not increase in the future due to human activities.

Sources of nutrient input into the Marine Park are many and range in volume, extent of impact, and continuity. Minor inputs such as shipping and dredging are regulated, not only by the GBRMP Act but also by the Commonwealth Environment Protection (Sea Dumping) Act 1981 and Protection of the Sea Legislation Amendment Act 1986. The latter, being the means of implementation of Annexes IV and V of the MARPOL Convention, has important implications for ports, marinas, and boat construction. Relevant information needs to be directed to those affected.

Terrestrial run-off is a major source of nutrient input to Reef waters. As the central GBR is more greatly subjected to heavy run-off, due to higher rainfall and the reef being close to the coast, management action should focus on this area. Consultation with Queensland government agencies is essential to address this challenge.

Point source discharges into the Marine Park may have serious but relatively localised effects. The scale of impact is related to the volume of nitrogen (N) and phosphorus (P) discharged, circulation characteristics of receiving waters and whether the discharge is chronic. Most major coastal urban discharges are to rivers adjacent to the Marine Park and are thus under Queensland jurisdiction. The Marine Park Authority has a clear mandate to regulate discharges directly into the Marine Park, such as discharges from island and coastal resorts and pontoons. These are identifiable and relatively controllable inputs. This paper recommends guidelines for point source waste discharge subject to consultation with appropriate Queensland government agencies.

## Recommendations

1. A major long term objective is that present levels of nutrients in GBR waters not be allowed to increase through human use. Where existing levels near coral reefs are shown to be higher than those which are compatible with coral reef health or which have occurred historically, the levels should be reduced to levels which are compatible to coral reef health.
2. Attention to direct waste discharge into the Marine Park needs to be given a higher priority by appropriate government agencies and by tourist operations. It is reasonable to expect that, where necessary, upgrading of treatment facilities will be phased in over a period of time to take account of the facility cost, operator training requirements, and to provide time for feedback from monitoring programs.

3. Applications for permits to discharge waste into the Marine Park will be considered on a site specific basis, taking into account alternative methods of disposal, proximity and condition of environmentally sensitive sites, hydrodynamics, and ambient water quality.
4. Applicants for new discharges should be required to instal the equivalent of secondary treatment with provision for nutrient removal to be added at a later stage. In environmentally sensitive areas, applicants should be required to establish that the proposed treatment process and dispersion characteristics are such that ambient nutrient levels or levels compatible with reef health at such sites are not increased. If secondary treatment and use of prevention and dilution techniques do not meet established criteria, nutrient removal should be considered.
5. To accurately determine characteristics of effluent from tourist operations, all permittees will be required to monitor nitrogen and phosphorus in effluent on a fortnightly basis at their expense over the next year. Additional monitoring parameters may also be required in consultation with Queensland government agencies. Sampling will be designed to be representative taking into account peak discharges.
6. A thorough assessment of existing treatment plants which discharge into the Marine Park should be undertaken with site visits to inspect treatment plant maintenance, outfall location, and effects on adjacent sensitive sites.