



at which land is released for development in response to public demand.

The Board is vitally concerned with these issues, and the proposals contained in this report dealing with the location of future urban settlement, the amplification of water supply, drainage and sewerage works to serve these areas, and the substantial conservation of non-urban landscape within a significant part of the metropolitan region, together constitutes a first phase in the establishment of new water resource policies.

#### **Other Significant Resources :**

In areas containing important landscape and flora and fauna habitat, agricultural and mineral resources, effective management policies are required to ensure that they will be available for the use of succeeding generations. Subsequent sections identify these areas, and outline proposed management policies, and the proposed planning scheme provisions recommended for their conservation.

#### **Waste Disposal :**

The principal solid and liquid wastes arising from cities are sewage and sullage from homes and factories, domestic garbage and industrial wastes.

The most desirable means of disposing of sewage and sullage is by discharge into an adequate sewerage system, involving collection, treatment and disposal facilities. Melbourne's existing collection systems will need to be considerably expanded to cope with new development. The use of reconditioned water and by-products from treatment works is envisaged as part of the programme.

The Board has presented evidence to the State Development Committee enquiry into the disposal of garbage, and has expressed concern regarding current landfill practices, including the dumping of industrial wastes, which may lead to adverse local effects such as the pollution of surface and underground water supplies and waterways, and the reduction of natural flood storage areas. A progress report has been published by this Committee.

Landfill techniques are only a temporary solution, and in the long term, other techniques, including the conversion of wastes to marketable products, will need to be developed on a more extensive basis. For example, in France and Canada, complex plants exist in which wastes are incinerated, produce



## 2 Structural Elements

electricity and steam, and reclaim metallic and other by-products for re-use.

A further development involves the application of complementary processes, as in a major incineration and sewage treatment plant, which it is reported is to be built in New York. This will burn garbage and sewage sludge, and liquid wastes from the plant are to be used to trap ash and other residues from the smoke produced so as to minimise pollution of the air. This concept of complementing processes appears to have applications in the establishment of linked industries in which the wastes of one activity might be used as the input for another, or the wastes from several industries are blended so as to produce a non-toxic and bio-degradable waste, suitable for disposal in the sewerage system.

Other techniques, the subject of research overseas, include a Japanese technique for compressing solid wastes into building blocks

The Board is currently examining ways and means for disposal of wastes, and the controls necessary to enforce them, so that pollution of waterways and underground storages is substantially reduced.

Major sources of the waste problem are the goods with a high obsolescence factor or which are not bio-degradable, used as part of modern marketing and packaging techniques, and the present lack of incentives for industry and individuals to conform with waste regulations, and these issues need further attention. However, even these measures will, at best, only reduce the magnitude of the problem.

The solution in Melbourne might include the establishment of a single disposal authority, capable of dealing with wastes which are not suitable for entry into the sewerage system, in a manner which involves minimal adverse environmental effects, and maximal re-use and conversion to marketable products. The authority would determine areas for landfilling in co-operation with planning and servicing authorities having regard to pollution and flood control and amenity considerations.

### **Air and Noise Pollution**

The principle sources of air pollution are vehicle engines, factories, electric power plants, furnaces, and waste incinerators. Motor vehicle engines are by far the biggest source of pollution, the principle components from vehicle exhausts being carbon monoxide, hydrocarbons and nitrogen oxides.

The discharge of pollutants from these sources has major consequences in terms of effects on human health, buildings and materials and wildlife.

The best prospects for the reduction of the level of pollution produced by motor vehicles lies in the development of alternative power sources or less toxic fuels, and more efficient forms of combustion but the reduction will have to be substantial. It is estimated that by 1985 the number of motor vehicles using metropolitan roads will reach 1.3 million—three times the 1964 figure.

People are continuously subjected to noises of different kinds and intensities. Those produced by mechanical equipment cause the most annoyance, and under extreme conditions can produce hearing loss and effects on the cardiovascular system. Internal noise sources in the home and factory lie outside the ambit of this report, but external sources, including aircraft, motor vehicles, and factory noises which invade the home, office and street are of major concern.

The speedy development of new or modified power sources for motor vehicles, with substantially reduced levels of air and noise pollution, should be given the highest priority by the manufacturers, for if this problem is not solved quickly it could act as a constraint on future policies related to transport planning.

Recommendations relating to industrial development place emphasis on performance standards designed to minimise all forms of pollution, and this emphasis is reflected in the zoning provisions contained in the proposed amending planning schemes. There is scope also for the application of more rigid performance standards to existing industry, but if action is taken under the Town and Country Planning Act, this would entail compensation.

Aircraft noise in the vicinity of existing and projected airports is a factor of major concern. Later sections of this report deal with proposals to limit further housing and associated development in the vicinity of the Melbourne and Moorabbin airports.

The Board's proposals for policies and planning schemes will seek to apply where possible, the various aspects of environmental management referred to above principally through the designation and control of urban and non-urban areas, the nature and phasing of growth and the co-ordinated provision of works and services.