

TRANSPORT AND COMMUNICATIONS

This chapter contains information on transport and communications and the government bodies concerned with these activities. More detailed figures and particulars for earlier years are included in the publications listed in the bibliography at the end of the chapter. Two special articles have been included in this chapter, and can be found on pages 772 and 775.

TRANSPORT ORGANISATIONS

The Australian Transport Advisory Council—ATAC

In April 1946, Commonwealth and State Governments agreed to establish a co-ordinating and advisory council at Ministerial level with the principal function of reviewing annually the various laws and regulations deemed necessary to safeguard the interests of the State governments and road users generally, and to consider matters of transport policy. The Australian Transport Advisory Council comprises Federal, State and Territory Ministers responsible for transport, roads and marine matters. The New Zealand Minister of Transport is also represented on the Council as an observer.

At present, ATAC meets twice each year and its primary role is to review and co-ordinate various aspects of transport policy, development and administration. ATAC functions through initiating discussion and reports on any matter raised by Council members, and by providing advice on matters which will promote better co-ordination and development of transport to the benefit of Australia. ATAC has one policy advisory group reporting directly to it, the Standing Committee on Transport (SCOT). SCOT comprises a representative of each ATAC Minister, usually the Heads of the relevant departments, and deals with overall issues of policy co-ordination and development. SCOT is supported by four groups of specialist advisers covering the interests of road, rail, road safety and marine and ports.

In addition, the following technical committees and subsidiary bodies report to the Marine and Ports Group and the Road Safety Group:

- Ship Standards Advisory Committee
- Marine Pollution Advisory Committee
- Advisory Committee on Promotion and Education for Road Safety
- Road User and Trauma Advisory Committee
- Advisory Committee on Transport of Dangerous Goods
- Vehicle Standards Advisory Committee
- Advisory Committee on Vehicle Emissions and Noise
- Advisory Panel on Recall and Unsafe Parts
- Data Working Group
- Australian Motor Vehicle Certification Board.

Transport Industries Advisory Council—TIAC

The Transport Industries Advisory Council was formed following the March 1971 Australian Transportation Conference. The Council advises the Commonwealth Minister for Transport and Communications on national transport issues.

The members of TIAC are drawn from senior management of authorities representing all modes of transport, including user groups, government bodies and unions. The Minister appoints members on the basis of personal expertise and the contribution they may be able to make to Council affairs. The full Council, which meets three times a year, operates through an Executive Committee and subject-specific Project Committees. A report of TIAC activities is published annually in the Department of Transport and Communications Annual Report.

Australian Road Transport Advisory Committee—ARTAC

The Australian Road Transport Advisory Committee comprises representatives of all sectors of the road freight industry and others with relevant specialist expertise. This Committee provides a specific channel of road freight industry advice to the Commonwealth Minister. Membership of ARTAC is drawn from TIAC.

Aviation Industry Advisory Council—AVIAC

AVIAC was established in 1978 to enhance the level of consultation between the aviation industry and the government. The Council provides advice to the Commonwealth Minister for Transport and Communications on policies, plans and programs relating to the aviation industry within Australia, promotes the continuing development of a safe, efficient, economic aviation industry, and provides a forum for discussion of important matters of joint concern to the aviation industry and government.

Membership of the Council consists of the Commonwealth Minister for Transport and Communications (Chairman); Secretary to the Department of Transport and Communications; Chairman of Qantas Airways Ltd; Chairman of Australian National Airlines Commission (Australian Airlines); Chairman of Regional Airlines Association of Australia Ltd; Chairman of East-West Airlines; National Chairman of the General Aviation Association; Joint Chairman of Ansett Transport Industries Ltd; National President of the Royal Federation of Aero Clubs of Australia and President of the Aircraft Owners and Pilots Association of Australia.

AVIAC has established a Committee of Advisers to assist in the analysis and preparation of matters to put to the Council for deliberation and decision.

The Federal Bureau of Transport Economics—BTE

The Federal Bureau of Transport Economics is a professional research body which undertakes independent studies and investigations to assist the Commonwealth Government in formulating policy relating to all modes of transport.

The primary function of the BTE is to advise the Commonwealth Government on the economic, financial and technical aspects of air, road, rail and sea transport in Australia. In pursuit of this overall function, the BTE analyses the nature, capacity, performance and finance of transport systems. It also investigates the economic and resource allocation implications of such systems. The BTE has a secondary function of providing assistance to State and local governments, Commonwealth and State instrumentalities and the private sector to identify and address transport problems.

Although formally linked to the Federal Department of Transport and Communications, the BTE has a considerable degree of professional and administrative autonomy and reports directly to the Minister for Transport and Communications on its program of research work.

Independent Air Fares Committee

The Independent Air Fares Committee was established by the *Independent Air Fares Committee Act 1981*, with the responsibility for approving all passenger fares charged on domestic air services by trunk route, regional and commuter operators. The Act, which is part of the 'two-airline policy' legislation, came into operation in January 1982. The Committee's role is that of a fare determining authority.

Operators may request the Committee to conduct a review to determine the economy air fares to be charged. The Committee approves discount air fares on application from operators where it is satisfied that a proposal meets criteria specified in the Act. Details of economy and discount fares approved by the Committee are notified in the *Commonwealth of Australia Gazette*.

At the request of the Minister for Transport and Communications, the Committee undertakes cost allocation reviews to determine how costs attributable to domestic passenger air services should be allocated between flagfall and distance components of air fares. Public hearings and submissions form part of a cost allocation review during which the principles of fare setting are examined.

THE TRANSPORT INDUSTRY

Transport Industry Survey

This section contains statistics obtained from a survey of transport establishments conducted in respect of 1983-84 (referred to as the Transport Industry Survey). This survey was the first of its kind conducted in Australia and included establishments predominantly engaged in providing passenger or freight transport services for hire or reward by road, rail, water and air transport (collectively referred to as the modal transport industries) plus freight forwarding.

The survey was conducted as a component of the Australian Bureau of Statistics' integrated economic statistics system and the results are comparable with economic censuses and surveys undertaken annually for the mining, manufacturing and gas industries and periodically for the wholesale, retail and selected service industries.

Summary of operations

The following table shows key items of data by industry mode for transport establishments in Australia, for the year 1983-84. The industries described are based on the 1983 edition of the *Australian Standard Industrial Classification (ASIC)*.

**TRANSPORT ESTABLISHMENTS: SUMMARY OF OPERATIONS BY INDUSTRY MODE,
AUSTRALIA, 1983-84**

ASIC Code	Description	Establish- ments at 30 June 1984	Average employment over whole year(a)	Wages and salaries(b)	Stocks		Total purchases, transfers in and selected expenses	Fixed capital expenditure less disposals		
					Turnover	Opening		Closing	Value added	Value disposals
		No.	No.	\$m	\$m	\$m	\$m	\$m	\$m	
511	Road freight transport	32,943	99,606	902.5	5,187.3	47.4	49.8	2,921.8	2,267.8	237.6
512	Road passenger transport	10,615	45,841	571.2	1,528.6	34.0	37.4	593.5	938.5	56.4
5200	Rail transport	12	86,721	1,688.5	3,314.8	178.9	179.4	1,417.5	1,897.8	406.9
53	Water transport	165	8,978	212.7	1,238.9	14.9	14.7	814.5	424.3	23.2
54	Air transport	334	23,597	600.8	2,958.0	20.4	19.9	1,747.9	1,209.6	178.1
51-54	Total modal transport	44,069	264,743	3,975.7	14,227.6	295.6	301.2	7,495.2	6,738.0	902.2

(a) Includes working proprietors and partners.

(b) Excludes the drawings of working proprietors and partners.

Business Vehicle Survey

Concurrent with the Transport Industry Survey (TIS), the Bureau conducted a Business Vehicle Survey (BVS) to obtain a more complete picture of road freight transport activity in Australia. This involved the collection of road freight transport information from a sample of private enterprises whose main activity was not road freight transport but who operated at least one truck with a gross vehicle mass of 2.7 tonnes or more and used that truck to carry freight on public roads.

Results from the TIS and BVS were combined to produce estimates of road freight activity as shown in the following table.

**ROAD FREIGHT ACTIVITY OF PRIVATE ENTERPRISES: SUMMARY OF ACTIVITY BY
INDUSTRY DIVISION, AUSTRALIA, 1983-84**

ASIC Code	Description	Enter- prises at 30 June 1984	Trucks operated at 30 June 1984			Truck drivers at 30 June 1984			Wages and salaries paid to truck drivers(a)	Freight carried on trucks (b)
			Rigid	Articulated	Total	Working proprietors/ partners	Employees	Total		
A	Agriculture, forestry, fish- ing and hunting	85,796	105,446	8,163	113,609	11,727	3,416	15,143	35.3	58.5
B	Mining	557	2,151	424	2,575	62	1,810	1,872	37.6	17.3
C	Manufacturing	8,109	21,545	2,867	24,413	694	16,049	16,743	279.0	43.8
E	Construction	12,383	18,327	1,494	19,822	2,066	4,860	6,926	79.8	40.1
F	Wholesale and retail trade	19,333	34,222	3,544	37,766	4,070	16,885	20,955	297.9	55.8
511	Road freight transport	32,616	36,535	21,307	57,842	28,147	27,818	55,966	501.5	362.1
512- 580	Other transport and storage	742	1,237	251	1,488	157	684	841	13.0	5.2
G	Total transport and storage	33,358	37,772	21,558	59,330	28,305	28,502	56,807	514.5	367.3
I	Finance, property and business services	1,718	3,725	922	4,647	97	2,612	2,710	51.0	11.4
K	Community services	1,055	2,277	42	2,319	500	1,187	1,688	20.4	6.5
L	Recreation, personal and other services	1,773	2,523	159	2,682	247	677	924	10.0	6.2
	Total	164,081	227,988	39,174	267,161	47,769	75,999	123,768	1,325.5	606.9

(a) Excludes the drawings of working proprietors and partners. (b) Estimates of freight carried relate to freight uplifted by trucks and therefore, to the extent that transshipment occurs (i.e. the transfer of freight from one truck to another), estimates of freight carried will overstate the actual physical quantity of freight moved.

NOTE: Road freight activity data collected from road freight establishments included in the TIS has been tabulated against the industry to which the enterprise of the road freight transport establishment is classified, e.g. the figures for a road freight establishment of a manufacturing enterprise would be tabulated against ASIC Division C.

SHIPPING

Control of shipping

Commonwealth Government navigation and shipping legislation

Commonwealth Acts concerned with shipping are: the *Navigation Act 1912*, the *Sea-Carriage of Goods Act 1924*, the *Seamen's Compensation Act 1911*, the *Seamen's War Pensions and Allowances Act 1940*, the *Protection of the Sea (Discharge of Oil from Ships) Act 1981*, the *Protection of the Sea (Civil Liability) Act 1981*, the *Protection of the Sea (Powers of Intervention) Act 1981*, the *Protection of the Sea (Shipping Levy) Act 1981*, the *Protection of the Sea (Shipping Levy Collection) Act 1981*, the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*, the *Protection of the Sea Legislation Amendment Act 1986*, the *Australian Shipping Commission Act 1956*, the *Environment Protection (Sea Dumping) Act 1981*, the *Submarine Cables and Pipelines Protection Act 1963*, the *Lighthouses Act 1911*, the *Explosives Act 1961*, the *King Island Shipping Service Agreement Act 1974*, the *Bass Strait Sea Passenger Service Agreement Act 1984*, the *Ship Construction Bounty Act 1975*, the *Australian Shipping Commission (Additional Capital) Act 1985*, the *Ships (Capital Grants) Act 1987*, the *Trade Practices Act 1974 Part X*, the *Shipping Registration Act 1981*.

Navigation Act

The *Navigation Act 1912 as Amended*, provides for various regulatory controls over ships and their crews, passengers and cargoes, mainly for the preservation of life and property at sea. Substantial penalties are provided for serious offences. The Act gives effect to a number of important international conventions produced under the aegis of the International Maritime Organisation (IMO).

There are 25 sets of Regulations under the Act, and a system of Marine Orders which give legislative effect to various safety and technical requirements in respect of ships, their cargoes and persons on board.

Taken in the order in which they appear in the Act, the main substantive matters dealt with are as outlined below.

Masters and seamen

Some sections deal with the examination of masters, mates and engineers for certificates of competency. Other sections ensure that appropriate conditions apply to crews serving on ships by providing for the supervision of the engagement, discharge and payment of wages; discipline at sea; the settlement of wages and other disputes; the return to their home port of distressed seamen; taking charge of wages and effects of deceased seamen and of those who have deserted or been left behind; and inquiries into deaths at sea. These matters are administered by Mercantile Marine Offices established at numerous ports. The health of seamen is cared for by the prescription of scales of medicines and medical stores to be carried by ships, and there are provisions to give effect to International Labour Organisation Convention requirements for the accommodation of crews. Plans for new or altered accommodation in ships have to be approved by a Crew Accommodation Committee.

There are requirements for the manning of ships and manning disputes are often dealt with by statutory Committees of Advice. The Act provides for a Marine Council to advise the Minister on the suitability of persons for engagement as seamen.

Ships and shipping

There are particularly important provisions dealing with ship safety in such matters as survey of ships, load lines, life-saving and fire appliances, prevention of collisions, and carriage of potentially dangerous cargoes. While in Australia, all ships which trade interstate or overseas come under the survey provisions of the Navigation Act and require certificates issued by the Department of Transport and Communications, unless they are registered in a country which is a party to the Convention concerned and hold valid certificates issued by their governments and conforming to the requirements of the Safety of Life at Sea and Load Lines Conventions. There is power to detain any ship, the condition of which does not conform with the conditions set out in its certificate or which appears to be overloaded or otherwise unseaworthy.

Passengers

These provisions deal with matters necessary or convenient for regulating the carriage of passengers in respect of such matters as numbers that may be carried, accommodation and health aspects.

Offshore industry

These provisions deal with offshore industry vessels and offshore industry mobile units. Marine Orders giving effect to IMO resolutions on this sector of the marine industry were recently introduced.

Coasting trade

Under the coasting trade provisions of the Navigation Act, the Australian coastal trade is reserved for licensed vessels, i.e. those which employ seamen at Australian wage rates. The Act does not restrict the class of ships which may obtain a licence. It is open to any vessel, irrespective of the registry, to obtain a licence on compliance with this condition and to operate in the Australian coastal trade, subject to permission being given for the importation of the vessel under the Customs (Prohibited Imports) Regulations where necessary. Provision exists for unlicensed vessels to operate in the coasting trade under single voyage permits in certain circumstances where licensed vessels are not available or are inadequate to meet the needs of the trade. Strict control is exercised over the issue of permits for the carriage of coastal cargoes.

Wrecks and salvage

There are provisions in relation to wrecks and salvage, covering preservation of life and of the wreck and its cargo and related matters.

Limitation and exclusion of shipowners' liability

These sections give effect to an international convention and make provision on the widest possible basis for the limitation of shipowners' liability in Australia.

Courts of Marine Inquiry

There are provisions for the holding of Courts of Marine Inquiry to investigate the circumstances attending any casualties to ships that come within Commonwealth legislative authority, usually following a preliminary investigation.

Shipping Registration Act

The *Shipping Registration Act 1981* received Royal Assent on 25 March 1981 and was proclaimed on 26 January 1982. This Act replaces Part I of the *U.K. Merchant Shipping Act 1894* under which ships in Australia were registered as British ships. The Act provides for all ships on the British Register in Australia to be automatically transferred to the new Australian Register. The Act has two basic objectives, namely the conferring of Australian nationality on Australian-owned ships and the registration of ownership and encumbrances.

The Act was amended in 1985 to improve the general administration and the protection of registered and unregistered interests.

Taken in order in which they appear in the Act, the main substantive matters are as follows.

Registration of ships

This part deals with the obligation to register Australian-owned ships, the ships permitted to be registered, the application for registration, particulars to be entered in the Register, the issue of Registration Certificates, Provisional Registration Certificates and Temporary Passes, changes in ownership, marking and naming of the ship, nationality of ships, flags to be flown, assuming and concealing Australian nationality.

Transfers, transmissions and mortgages

This part deals with the transfer, transmission of ship and shares, the taking out, transfer, transmission and discharge of mortgages and the entry of this information into the Register. Caveats can be lodged to protect unregistered interests.

Administration

This part deals with the appointment of the Registrar, delegation of the powers of the Minister and Registrar, the establishment of the Shipping Registration Office and Branch Offices.

Register of ships

This part deals with the maintenance, rectification and inspection of the Register.

Transitional provisions

This part deals with the change over from the previous law to the new legislation. This includes the completion of transactions commenced under the previous law and the acceptability of documents prepared under the previous law. This part is now largely non-operative.

Ships (Capital Grants) Act

The *Ships (Capital Grants) Act 1987* provides shipowners with a taxable grant of 7 per cent of the purchase price of eligible new, or newly-acquired second-hand trading ships. The legislation defines the conditions and procedures under which a grant may be paid. Briefly, the Act requires that ships hold a category certificate and be crewed in accordance with crewing benchmarks specified for that category, be registered in Australia and crewed with Australian residents. If newly-acquired second-hand tonnage, the ship concerned must not have been registered in Australia before, and be no more than five years old. The grant scheme is applicable only to vessels ordered after 22 December 1986 and which commence operations between 1 July 1987 and 30 June 1992 for new ships, or 30 June 1990 for second-hand ships.

Australian Shipping Commission

The Australian Coastal Shipping Commission was established by the *Australian Coastal Shipping Commission Act 1956*. Its role has been to establish, maintain and operate interstate, overseas and territorial shipping services. In October 1974, the Commission's title was changed to the Australian Shipping Commission to reflect the increasing importance of its overseas trading activities. In 1980 the Australian Shipping Commission Act was amended to increase the Commission's borrowing powers and give it greater flexibility in determining freight rates. Further amendments to the Act were introduced in 1983, giving the Commission greater control over its day-to-day operations and allowing it to operate more commercially.

As at 30 June 1987 the Commission, trading as the Australian National Line (ANL), owned and operated a fleet of seventeen ships. The fleet included twelve ships engaged in overseas trades comprising seven liner ships totalling 181,000 deadweight tonnes, and five bulk carriers totalling 334,000 deadweight tonnes.

The fleet also included five ships engaged in coastal trade, two liner ships totalling 15,000 deadweight tonnes and three bulk carriers totalling 185,000 deadweight tonnes. A further vessel was laid up.

The Line operated specialised terminals at Adelaide, Melbourne, Burnie, Bell Bay, Sydney and Brisbane.

In recent times the Line has been affected by the general downturn experienced by the shipping industry, particularly in international trade. In 1984 it initiated a review of all its services. It instituted a major rationalisation and withdrew from unprofitable services which resulted in the disposal of obsolete vessels. In an effort to broaden its revenue base and provide a more integrated transport service, ANL has moved into shipping related activities, particularly container management, ship agency and ship management services.

Shipbuilding assistance

The shipbuilding industry has been assisted by the government since the introduction of the shipbuilding subsidy scheme in 1947.

Ships built at major yards include small cargo ships, offshore supply ships, passenger ferries, fishing ships, dredges and barges. In addition, there are numerous smaller yards building non-bountiable ships such as pleasure craft, small fishing ships, and other small craft. Construction of large ships in Australia ceased in 1978.

Under the *Bounty (Ships) Act 1980*, bounty is accorded to the production in Australia of vessels over 150 gross construction tons, or over 21 metres in the case of fishing ships. Bounty is payable on a 'cost of construction basis' at a rate of 20 per cent.

The report of the Task Force on the Australian Shipbuilding Industry submitted to the Government in January 1984 recommended action be taken to increase the through-put of Australian yards. In October 1984, a major new package designed to assist the Australian Shipbuilding Industry was announced by the Government. The package included the extension of the bounty to cover ships built for export; a proposed industrial agreement between industry and the ACTU; introduction of registration criteria for shipbuilders who want to claim bounty; and the establishment of a Shipbuilding Consultative Group to monitor progress in the industry and register shipbuilders.

In August 1986, the Government announced changes to the shipbuilding bounty arrangements, including the setting of an absolute limit of \$144 million on funds available for bountiable ships over the period to the end of June 1989. The distinction between vessels built for domestic and export markets was ended for purposes of bounty eligibility. Builders of domestic vessels, like builders of export vessels, are required to reserve bounty funds from within the \$144 million. In addition, the rate of bounty for certain classes of vessels was reduced from 20 per cent to 15 per cent from 1 January 1988. The higher rate still applies to tugs, bulk carriers, rig servicing and fishing vessels and to all vessel modifications. A further significant change has been the application of orderly development criteria to all shipbuilders seeking access to bounty.

As at 30 June 1987, 27 shipbuilders were registered for bounty purposes. In 1986-87, 64 bountiable vessels were completed—the largest number constructed in any one year since the introduction of the *Bounty (Ships) Act 1980* and an increase of 3 per cent over 1985-86.

Total financial assistance to the Australian shipbuilding industry in 1986-87 amounted to \$42.0 million (as compared to \$38.7 million in 1985-86 and \$28.5 million in 1984-85).

Ship repair

In October 1986, the Government announced a \$6 million ship repair assistance package aimed at strengthening the ship repair industry. Two major elements of the package are the bounty payable to registered ship repairers, and the extension of the Department of Transport and Communications' official ship safety inspection system to give effect to internationally accepted health and safety standards based on the International Labour Organisation (ILO) Convention 147. The bounty applies to international trading vessels of at least 6,000 deadweight tonnes whether Australian or foreign owned and is payable up to 30 per cent of the repair contract price. To be eligible for bounty, repairers must be registered under the *Bounty (Ship Repair) Act 1986*.

Importation of ships

The control of imports forms an integral part of the government's shipbuilding assistance arrangements, complementing the bounty legislation. Under the Customs (Prohibited Imports) Regulations, new ships over 150 gross construction tonnes (gct), new fishing vessels over 21 metres in length and second-hand vessels over 70 gct are prohibited imports unless the importer has permission from the Minister for Transport and Communications. All new vessels, second-hand vessels of a type not available new from Australian shipyards, dredges over 2,000 gct and second-hand vessels over 10,000 gct are eligible for permanent importation. In addition, temporary importation, generally for up to two years, of other second-hand vessels between 70 gct and 10,000 gct may be authorised in certain circumstances, as long as a suitable vessel is not already available locally for the task, or will not become available within a reasonable time.

Stevedoring industry

In December 1977, legislation was introduced which provided for new administrative, financial and industrial arrangements for the stevedoring industry, and abolished the Australian Stevedoring Industry Authority. The arrangements give the parties directly involved in the industry greater responsibility in the industry's affairs.

The Stevedoring Industry Finance Committee is responsible for the disbursement of funds collected through statutory man-hour and cargo levies.

A federal co-ordinating committee, comprising representatives of the employers and the Waterside Workers' Federation (WWF) and Broken Hill Pty Ltd (BHP) and the Australian National Line, oversees the operation of arrangements agreed to in the General Agreement between employers and the WWF. At the port level such matters are handled by Port Co-ordinating Committees set up in the major ports.

Under section 85A of the *Conciliation and Arbitration Act 1904*, a Port Conciliator Service was created to assist parties to an industry award to implement the procedures of that award for the prevention or settling of disputes.

A non-statutory Stevedoring Industry Consultative Council has been established to provide a forum for discussion and liaison between governments, user interests and the operating sections of the industry. The Chairman is appointed by the Commonwealth Government.

The Statutory provisions relating to the industry are contained in the *Stevedoring Industry Finance Committee Act 1977*, the *Stevedoring Industry Levy Act 1977*, the *Stevedoring Industry Levy Collection Act 1977*, the *Port Statistics Act 1977* and Part III, Division 4 of the *Conciliation and Arbitration Act 1904*.

Waterfront Strategy

In December 1986, the Federal Government announced a comprehensive strategy to improve the efficiency, productivity, reliability and industrial relations record of Australia's waterfront and related industries. The Waterfront Strategy was developed following consideration of the Report of the Industry Task Force on Shore-Based Shipping Costs.

The strategy involves four industry based groups working under the umbrella of the Interstate Commission, implementing solutions to problems in their separate areas of the shore-based shipping industry. The four industry groups are: Stevedoring Industry Review Committee; Importer/Exporter Panel; Industry Committee; and Australian Transport Advisory Council's Standing Committee on Transport.

Tasmanian Freight Equalisation Scheme

The Tasmanian Freight Equalisation Scheme was introduced from 1 July 1976 to provide assistance to the shippers of certain non-bulk goods between Tasmania and the mainland of Australia. The scheme aims to alleviate the additional transport costs which have to be borne by Tasmanian shippers because of their separation from the mainland by sea. Responsibility for administration of the scheme lies within the Transport portfolio.

The northbound component of the scheme applies to specified goods produced in Tasmania which are shipped by sea to the mainland for use or sale. The southbound component covers certain raw materials, machinery and equipment used in Tasmania's manufacturing, mining and primary industries. In 1986-87, \$24.7 million in assistance was paid on northbound and \$2.8 million in assistance was paid for southbound cargoes.

In 1984, the Federal Government requested that the Interstate Commission investigate the scheme. The Commission's report was published in March 1985. Following consideration of the report, the Government decided to implement a number of changes to the scheme recommended by the Commission with effect from 1 September 1985, including the establishment of a Review Authority to provide independent advice on the administration of the scheme.

Trade Practices Act

The Overseas Cargo Shipping provisions of the *Trade Practices Act 1974 (Part X—Overseas Cargo Shipping)* are administered by the Transport and Communications portfolio.

Part X establishes conditions for the operation of outwards shipping conferences and individual shipowners operating in Australia's outwards trades. Conference agreements between several shipowners in a particular trade make provision for the fixing of common freight rates. They may also include provisions for pooling arrangements and shares of the trade and rationalised sailing schedules.

Part X exempts conferences from the generally applicable anti-restrictive provisions of the Act, and seeks to ensure adequate safeguards to protect shippers through:

- requiring the filing of outwards conference agreements;
- requiring shipowners to give undertakings to hold meaningful negotiations with the designated shipper body, the Australian Shippers' Council (ASC);
- providing for disapproval of a conference agreement to be exercised by the Governor-General on a number of prescribed grounds, such as a failure on the part of the shipowner to comply with an undertaking, lack of due regard to the need for overseas shipping services to be efficient, economical and adequate, prevention or hindrance of an Australian flag operator from engaging efficiently in overseas cargo shipping to a reasonable extent.

Comparable provisions apply to individual shipowners who are not party to a conference agreement.

Marine pollution

The *Protection of the Sea (Discharge of Oil from Ships) Act 1981*, the *Protection of the Sea (Powers of Intervention) Act 1981*, the *Protection of the Sea (Civil Liability) Act 1981*, the *Protection of the Sea (Shipping Levy)* and *(Shipping Levy Collection) Acts 1981* currently provide the Commonwealth with the power to deal with matters relating to marine oil pollution.

The Acts respectively provide for the control of discharges at sea and provision of control equipment and procedures on ships; empower the Minister to intervene to take action to prevent or reduce pollution, make provision relating to limitation of liability of oil tankers for oil pollution damage; and provide for the collection of a levy to finance the National Plan to Combat Pollution of the Sea by Oil.

Two further important Acts which will apply the provisions of the International Convention for the Prevention of Pollution from Ships 1973–78 were expected to be proclaimed during 1987. The *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* and the *Navigation (Protection of the Sea) Amendment Act 1983* will implement improved provisions concerning the prevention and limitation of pollution by oil and specified noxious substances, and the prohibition or control of discharges of oil or noxious liquid substances at sea. The Acts will also, when proclaimed, require the provision of control equipment and operational procedures on ships.

Collection and presentation of statistics

Statistics relating to shipping and cargo are compiled from information provided to the Australian Customs Services (ACS) by importers, exporters, shipping companies and their agents. This information is supplied to the Australian Bureau of Statistics by ACS on a regular basis and is used to produce transport oriented statistics via the following two collections:

Shipping and Cargo (B380). A direct collection from shipping companies of details of ship movements and cargo carried.

Shipping and Air Cargo Commodity Statistics (SACCS). A collection which combines information from import and export documents submitted to the ACS with transport and shipping information to provide a comprehensive picture of the transport base of Australia's foreign trade.

Shipping and Cargo Statistics

The scope of the statistics

The statistics relate to ships calling at or departing from Australian ports for the purpose of carrying cargo from or to overseas ports. Details are not required for:

- (i) naval ships;
- (ii) yachts and other craft used for pleasure;
- (iii) foreign fishing ships that neither load nor discharge cargo;
- (iv) Australian registered fishing ships operating from Australian ports;
- (v) geographical survey ships, seismic survey ships, oceanographic survey ships;
- (vi) offshore oil drilling rigs and ships servicing them;
- (vii) ships of 200 registered net tonnes and under.

Period covered by the statistics

Shipping and cargo statistics are compiled, on a financial year basis, according to the period during which ships actually arrived or departed Australian shores.

Ship characteristics

Ship recording

Ship movement statistics are recorded as 'Ship Number' and 'Ship Calls'. 'Ship Number' relates to the number of overseas direct arrivals to, or departures from Australia. 'Ship Calls' relates to the number of port visits that an overseas ship makes in Australia. For example, an overseas ship which arrives direct in Brisbane and makes a further call in Sydney before departing for an overseas port from Melbourne is counted as one under 'Ship Number' for both arrivals (Brisbane) and departures (Melbourne) and as one arrival call and one departure call for each of the three ports.

Ship type

All ships are classified from *Lloyd's Register of Shipping* according to one of 11 ship types which describe them in terms of their structure or design. These 11 ship types are amalgamated into four broad categories.

<i>Category</i>	<i>Ship types</i>
General cargo ships	Container ships Conventional cargo ships Roll on-Roll off ships Other cargo ships
Tankers	Gas carriers Liquid tankers
Bulk carriers	Dry bulk carriers Dry/wet bulk carriers
Other ships	Multi-purpose ships Passenger ships Other ships

Type of service

Ships are also classified according to the type of service they provide. The two types of service for which statistics are shown are:

- (a) *liner service*, (according to conference and non-conference) relates specifically to a ship which is operated by a carrier providing services on a specified route on a relatively regular basis;
- (b) *other service*, which refers to all ships operating in other than a liner service.

Conference ships—A 'conference' is an association of shipowners which regulates the freight rates and terms and conditions of carriage of goods in any particular trade. Conferences only operate liner services and not charter services. Conference arrangements normally include provisions for sharing the trade, rationalising sailing schedules and pooling arrangements for resources and revenue.

Country of registration

The country of registration or flag of the ship refers to the country in which the ship is registered according to *Lloyd's Register of Shipping*.

Recording of cargo loaded or discharged

Returns for arrivals show cargo discharged, and returns for departures show cargo loaded, in terms of revenue tonnes and gross weight tonnes. A revenue tonne is the unit of quantity predominantly used in the shipping industry. It is the basis on which freight is charged and may be measured by mass (tonnes) or volume (cubic metres). Revenue tonnes statistics are consequently a mix of mass and volume units and should be used with care. Gross weight is the total weight in tonnes of cargo, excluding the weight of containers, irrespective of the basis on which freight is charged.

Container cargo

Statistics of container cargo refer only to cargo shipped in international containers (including flats but not pallets). To provide a standard measure, all statistics relating to containers are expressed in terms of twenty-foot units. A forty-foot container is therefore recorded as 2 twenty-foot equivalent units (or TEU's).

Country of loading or discharge of overseas cargo

In statistics of overseas shipping and cargo, the country of loading or discharge of overseas cargo is the country of location of the port where the cargo was loaded on to, or is to be discharged from, a reporting ship. The countries shown are not necessarily the countries of origin or ultimate destination of cargo because previous or subsequent transshipments of cargo are not taken into account. The statistics of cargo classified by the country in which it was loaded or discharged cannot therefore be compared directly with statistics of overseas trade classified by country of origin or consignment.

Trade area

Ports at which ships load or discharge cargo are allocated to their respective countries, which are in turn allocated to trade areas in accordance with the Classification of Trade Areas for Cargo Statistics.

It should be noted that a revised trade area classification became effective on 1 July 1984. Care should therefore be taken when comparing trade area statistics for earlier periods with those published using the revised trade area classification.

Units of measurement

The cargo carrying capacity of ships has in the past been measured in terms of registered net tonnage. However, as from 1 July 1979 this statistic has been replaced by deadweight tonnage (DWT).

Deadweight tonnage. A measure of the total mass (weight, in tonnes) of cargo, stores, fuel, passengers and crew carried by the ship when loaded to her maximum summer loadline.

Gross tonnage. A measure of the enclosed internal volume of a ship and its superstructure, with certain spaces exempt, in units of 1 ton per 2.83 cubic metres.

Shipping and Air Cargo Commodity Statistics—SACCS

The scope of the statistics

Inward cargo statistics relate to cargo loaded overseas which is discharged from ships and aircraft at Australian ports and in respect of which Customs import documents have been received. Similarly, outward cargo statistics relate to cargo loaded on ships and aircraft at Australian ports for discharge at overseas ports and in respect of which Customs export documents have been received. Details are not included for: (i) goods imported and exported by parcel post; (ii) direct transit trade, i.e., goods being trans-shipped or moved through Australia for purposes of transport only; (iii) migrants' and passengers' effects for which Customs documents are not required; (iv) certain materials under inter-governmental agreements for defence and similar projects for which Customs documents are not required; (v) ships and aircraft entering and departing Australia under their own power; (vi) to the extent that they can be identified, ships and aircraft purchased for use on overseas routes and any subsequent sales made of such vessels and aircraft; (vii) fish and other sea products landed in Australia and abroad directly from the high seas by Australian ships (such products landed in Australia directly from the high seas by foreign ships are included); (viii) ships and aircraft stores; (ix) export consignments where the value of the goods in each transaction is less than \$250, and import entries lodged on informal clearance documents for values not exceeding \$250.

Period covered by the statistics

Although both foreign trade statistics and SACCS are compiled from the same source, imports and exports are recorded statistically in the month in which relevant documents are lodged with ACS, whereas SACCS are compiled according to the period during which goods were actually loaded and discharged in Australia.

Commodity classification

Commodities are classified according to the Australian Transport Freight Commodity Classification (ATFCC). The ATFCC is the Australian standard for classifying goods transported by any of the transport modes; sea, rail, road, air or pipeline. It is a four level classification defining commodities in terms of one or more categories of the Standard International Trade Classification (SITC) or the dissection of the SITC categories embodied in the Australian Import and Export Commodity Classification. At the lowest (the fourth) level of classification the ATFCC has 312 items.

Valuation

The recorded value of inward cargo is the free on board (f.o.b.) equivalent of the price when the sale of such cargo is conducted under open market conditions. This is in accordance with the provisions of the General Agreement on Tariffs and Trade (GATT) relating to Customs valuation. The recorded value also includes the value of the outside package, other than international containers used for containerised cargo. As additional factors are also considered in arriving at the transaction value of goods for Customs purposes, the f.o.b. value may not always be the same as the Customs value.

For outward cargo, goods actually sold to overseas buyers prior to shipment are valued at the f.o.b. equivalent of the actual price paid to the exporter. Goods shipped on consignment are valued at the f.o.b. equivalent of the price that would have been paid to the exporter had he actually sold the goods to an importer in the country of final destination. As for inward cargo, the recorded value also includes the value of the outside package, other than international containers used for containerised cargo.

Units of quantity

Gross weight is the total weight in tonnes of cargo, excluding the weight of containers, irrespective of the basis on which freight is charged. Gross weight is not available by commodity for inward cargo.

Australian trading ships

The following table shows particulars of all Australian trading ships of 150 gross tons or more engaged in the regular overseas, interstate or intrastate services at 30 June 1986.

SUMMARY OF THE AUSTRALIAN TRADING FLEET OF SHIPS 150 GROSS TONS OR MORE, 30 JUNE 1986

(Source: Department of Transport and Communications)

<i>Ships</i>	<i>Number</i>	<i>DWT</i>	<i>Gross Tons</i>
Intrastate fleet			
Australian owned and registered	22	371,730	253,621
Interstate—			
Australian owned and registered	34	1,052,130	659,869
Australian owned, overseas registered	2	14,656	8,752
Overseas owned, Australian registered	6	87,623	63,406
Overseas owned and registered	3	100,149	58,773
Interstate fleet	45	1,254,558	790,800
Coastal fleet	67	1,626,288	1,044,421
Overseas—			
Australian owned and registered	18	1,037,996	609,520
Australian owned, overseas registered	1	41,151	29,223
Overseas owned, Australian registered	7	805,135	460,306
Overseas owned and registered	7	307,125	186,381
Overseas fleet	33	2,191,407	1,285,430
Total Australian fleet	100	3,817,695	2,329,851

Ships registered in Australia

The following table shows the number of ships registered in Australia at 30 June 1987.

SHIPS REGISTERED IN AUSTRALIA AS AT 30 JUNE 1987

(Source: Department of Transport and Communications)

<i>Location</i>	<i>Nature of registration</i>					<i>Total</i>
	<i>Demise chartered (a)</i>	<i>Other (b)</i>	<i>Government</i>	<i>Fishing</i>	<i>Pleasure</i>	
New South Wales	7	212	1	293	1,294	1,807
Victoria	2	103	12	168	420	705
Queensland	5	208	28	570	767	1,578
Western Australia	2	130	3	379	364	878
South Australia	1	42	7	236	189	475
Tasmania	—	58	4	204	151	417
Northern Territory	1	18	1	78	135	233
Total	18	771	56	1,928	3,320	6,093

(a) A Demise chartered ship is a foreign owned ship chartered by way of a charter party to an Australian based operator, who is an Australian national and who under the charter party has whole possession and control of the ship, including the right to appoint the master and crew of the ship. (b) Relates to vessels used for commercial purposes.

The following table shows the number and gross tonnage of trading ships of 150 tons or more registered in Australia at 30 June 1986, classified according to year of construction, type of trade in which the ships were engaged, and place of manufacture.

**AUSTRALIAN TRADING SHIPS OF 150 GROSS TONS OR MORE BY AREA OF OPERATION, PLACE OF MANUFACTURE AND YEAR OF CONSTRUCTION
30 JUNE 1986**

(Source: Department of Transport and Communications)

Year of construction	Area of Operation				Place of Manufacture				Total ships	
	Overseas and interstate ships		Intrastate ships		Ships built in Australian yards		Ships built overseas			
	No.	Gross tons	No.	Gross tons	No.	Gross tons	No.	Gross tons	No.	Gross tons
1976 and earlier	39	642,139	10	19,883	27	296,811	22	365,211	49	662,022
1977	9	275,468	1	2,851	3	50,333	7	227,986	10	278,319
1978	7	123,053	1	12,077	1	25,849	7	109,281	8	135,130
1979	5	154,569	—	—	—	—	5	154,569	5	154,569
1980	—	—	1	2,792	—	—	1	2,792	1	2,792
1981	7	263,486	1	1,155	—	—	8	264,641	8	264,641
1982	2	109,761	2	57,345	1	6,310	3	160,796	4	167,106
1983	2	93,693	3	151,423	—	—	5	245,116	5	245,116
1984	3	119,628	—	—	—	—	3	119,628	3	119,628
1985	2	97,317	2	378	2	378	2	97,317	4	97,695
1986	2	197,116	1	5,717	—	—	3	202,833	3	202,833
Registered in Australia	78	2,076,230	22	253,621	34	379,681	66	1,950,170	100	2,329,851

Harbour boards and trusts

For detailed information see the individual State *Year Books*.

Overseas shipping

Ship movements into and out of Australia

The following table shows the movement of ships and cargo to and from overseas countries, for the years 1980-81 to 1985-86.

OVERSEAS SHIPPING: SHIP AND CARGO MOVEMENTS

	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86
Arrivals—						
<i>ship details</i>						
ship number	5,965	5,839	5,516	6,131	6,904	6,824
DWT ('000 tonnes)	236,721	232,370	223,817	263,614	310,228	307,406
<i>cargo discharged</i>						
revenue tonnes ('000)	32,469	31,300	27,904	28,516	29,778	27,600
gross weight ('000 tonnes)	26,756	25,741	23,028	22,859	23,582	22,055
Departures—						
<i>ship details</i>						
ship number	5,884	5,798	5,706	6,025	6,760	6,622
DWT ('000 tonnes)	234,095	235,635	230,396	267,264	309,152	304,839
<i>cargo loaded</i>						
revenue tonnes ('000)	179,280	176,449	170,429	198,406	225,119	237,446
gross weight ('000 tonnes)	178,381	175,634	169,483	197,041	224,182	234,688

The following table shows particulars of overseas shipping which arrived at or departed from Australian ports according to the country of registration of ships.

OVERSEAS SHIPPING: SHIP DEPARTURES AND ARRIVALS BY COUNTRY OF REGISTRATION, 1985-86

<i>Country of registration</i>	<i>Departures</i>		<i>Arrivals</i>	
	<i>Ship number</i>	<i>DWT ('000 tonnes)</i>	<i>Ship number</i>	<i>DWT ('000 tonnes)</i>
Australia	215	10,923	219	11,677
China—excl. Taiwan	349	14,137	352	14,428
—Taiwan	141	10,848	146	10,864
Denmark	83	1,398	84	1,306
Germany, Federal Republic of	147	2,793	167	3,114
Greece	294	12,578	284	12,206
Hong Kong	239	12,046	269	12,943
India	67	2,209	70	2,355
Japan	1,386	102,496	1,417	101,817
Korea, Republic of	266	19,963	273	20,178
Liberia	475	24,469	480	24,469
Malaysia	88	2,590	90	2,699
Netherlands	112	1,521	121	1,727
New Zealand	113	1,791	157	2,389
Norway	102	5,673	103	5,498
Panama	959	26,746	976	27,150
Philippines	258	10,367	259	10,436
Singapore, Republic of	186	7,179	198	7,232
Sweden	23	853	20	869
United Kingdom	340	13,286	359	13,581
United States of America	8	191	10	239
U.S.S.R.	182	3,485	178	3,421
Other countries	589	17,295	592	16,811
Total all countries	6,622	304,839	6,824	307,406
<i>With cargo</i>	<i>6,041</i>	<i>289,039</i>	<i>2,527</i>	<i>59,162</i>
<i>In ballast</i>	<i>581</i>	<i>15,800</i>	<i>4,297</i>	<i>248,244</i>

Overseas cargo according to country of registration of ships

The following table shows total overseas cargo, loaded and discharged, according to the country in which the ships were registered.

OVERSEAS CARGO LOADED AND DISCHARGED BY COUNTRY OF REGISTRATION OF SHIPS
(*000 revenue tonnes)

<i>Country of registration</i>	<i>1983-84</i>		<i>1984-85</i>		<i>1985-86</i>	
	<i>Loaded</i>	<i>Discharged</i>	<i>Loaded</i>	<i>Discharged</i>	<i>Loaded</i>	<i>Discharged</i>
Australia	7,855	2,158	6,875	2,310	7,993	2,177
China—excl. Taiwan	5,606	531	8,267	376	10,511	373
—Taiwan	5,164	107	7,352	108	10,000	183
Denmark	840	443	835	355	947	396
Germany, Federal Republic of	1,116	1,102	1,584	1,343	1,206	1,040
Greece	10,173	1,598	12,282	1,253	10,318	1,288
Hong Kong	6,316	960	7,059	873	9,513	628
India	1,160	235	868	114	1,744	50
Japan	79,897	3,032	83,926	3,761	88,694	4,042
Korea, Republic of	9,321	433	12,312	330	15,773	747
Liberia	18,613	3,801	24,155	4,300	17,721	2,671
Malaysia	1,893	343	1,864	376	1,942	381
Netherlands	1,168	401	1,223	294	784	294
New Zealand	589	710	530	849	780	1,112
Norway	4,862	1,319	5,768	1,294	3,939	888
Panama	16,151	2,562	18,356	2,720	20,819	3,245
Philippines	3,101	358	5,647	789	8,753	811
Singapore, Republic of	3,667	699	4,701	847	5,534	1,242
Sweden	483	425	606	353	240	229
United Kingdom	7,602	3,836	7,237	4,130	6,264	3,873
United States of America	—	—	51	—	100	14
U.S.S.R.	1,408	382	1,797	409	2,359	412
Other countries	11,427	3,081	11,823	2,593	11,513	1,504
Total all ships	198,414	28,516	225,119	29,778	237,446	27,600

Shipping at principal ports

The following two tables show the movement of overseas shipping and cargo at Australian ports during 1985-86. The first provides details of the ships calling at Australian ports and the gross weight of cargo loaded and discharged. The second classifies cargo loaded and discharged in terms of whether or not it was transported in ISO containers.

OVERSEAS SHIP AND CARGO MOVEMENTS AT AUSTRALIAN PORTS, 1985-86

Australian port	Departures		Cargo loaded	Arrivals		Cargo discharged
	Ship details			Ship details		
	Ship calls	DWT ('000 tonnes)	Gross weight ('000 tonnes)	Ship calls	DWT ('000 tonnes)	Gross weight ('000 tonnes)
New South Wales—						
Sydney	1,354	35,167	7,913	1,379	35,713	2,474
Botany Bay	533	11,878	586	567	12,736	1,762
Newcastle	742	37,746	28,306	725	36,250	1,249
Port Kembla	226	11,463	8,488	229	11,329	410
Other	57	1,145	863	55	1,146	3
Total	2,912	97,400	46,157	2,955	97,174	5,898
Victoria—						
Melbourne	1,483	28,587	2,475	1,481	28,571	3,164
Geelong	313	8,706	2,872	320	8,832	1,554
Westernport	119	6,818	4,058	120	6,877	134
Other	112	3,741	1,461	113	3,812	209
Total	2,027	47,853	10,867	2,034	48,091	5,060
Queensland—						
Brisbane	935	19,136	4,979	941	19,092	1,246
Gladstone	335	21,091	15,653	335	20,947	718
Hay Point	411	33,467	27,989	412	33,312	—
Townsville	224	4,843	1,512	225	4,889	286
Weipa	94	3,518	2,534	95	3,581	48
Other	408	10,640	7,768	403	10,403	160
Total	2,407	92,695	60,435	2,411	92,224	2,458
South Australia—						
Port Adelaide	465	10,225	1,536	456	9,972	504
Port Lincoln	85	2,109	740	81	2,041	59
Port Pirie	97	1,899	893	97	1,906	33
Port Stanvac	37	1,973	318	34	1,696	787
Thevenard	32	656	221	32	656	—
Whyalla	52	1,386	526	52	1,482	203
Other	81	2,797	1,274	81	2,797	58
Total	849	21,044	5,509	833	20,550	1,644
Western Australia—						
Fremantle	976	24,232	6,992	988	24,775	2,813
Bunbury	188	6,100	3,652	184	5,898	586
Cape Cuvier	7	374	365	7	374	—
Dampier	463	43,120	37,968	462	43,187	216
Geraldton	164	4,405	1,943	160	4,311	99
Port Hedland	434	35,442	29,361	449	36,555	144
Port Walcott	100	15,378	14,008	96	14,563	—
Yampi Sound	26	2,436	2,220	25	2,298	—
Other	226	5,744	3,012	229	5,807	245
Total	2,584	137,230	99,520	2,600	137,768	4,103
Tasmania—						
Hobart	183	3,904	869	181	3,862	237
Launceston	148	4,447	1,881	147	4,455	102
Port Latta	24	1,915	1,815	23	1,850	27
Other	136	2,873	423	134	2,867	64
Total	491	13,139	4,989	485	13,034	430
Northern Territory—						
Darwin	110	1,642	37	116	1,846	531
Other	198	6,926	4,994	193	6,722	575
Total	308	8,568	5,031	309	8,568	1,106
Port not available for publication	—	—	1,975	—	—	1,336
Total all ports	11,578	417,929	234,482	11,627	417,410	22,036

**OVERSEAS CONTAINER AND NON-CONTAINER CARGO LOADED AND DISCHARGED AT
AUSTRALIAN PORTS, 1985-86**

(*000 revenue tonnes)

<i>Australian port</i>	<i>Loaded</i>			<i>Discharged</i>		
	<i>Container cargo</i>	<i>Other cargo</i>	<i>Total</i>	<i>Container cargo</i>	<i>Other cargo</i>	<i>Total</i>
New South Wales—						
Sydney	680	7,338	8,018	1,490	2,337	3,827
Botany Bay	464	169	633	1,588	873	2,462
Newcastle	231	28,440	28,671	12	1,242	1,254
Port Kembla	1	8,490	8,491	—	415	415
Other	—	863	864	—	5	5
Total	1,376	45,299	46,676	3,090	4,872	7,963
Victoria—						
Melbourne	1,973	774	2,747	2,921	1,736	4,657
Geelong	82	2,809	2,890	26	1,548	1,574
Westernport	—	4,058	4,058	—	134	134
Other	—	1,468	1,468	—	210	210
Total	2,055	9,108	11,163	2,947	3,628	6,575
Queensland—						
Brisbane	675	4,378	5,053	439	1,446	1,885
Gladstone	—	15,693	15,693	3	716	718
Hay Point	—	28,076	28,076	—	—	—
Townsville	22	1,503	1,524	4	358	362
Weipa	—	2,534	2,534	—	51	51
Other	11	7,773	7,783	4	156	160
Total	707	59,957	60,665	449	2,726	3,176
South Australia—						
Port Adelaide	234	1,344	1,579	95	847	942
Port Lincoln	—	740	740	—	59	59
Port Pirie	—	893	893	1	32	33
Port Stanvac	—	318	318	—	787	787
Thevenard	—	221	221	—	—	—
Whyalla	—	545	545	—	203	203
Other	—	1,301	1,301	—	58	58
Total	235	5,361	5,596	96	1,986	2,082
Western Australia—						
Fremantle	652	6,468	7,120	593	2,620	3,213
Bunbury	—	3,652	3,652	—	587	587
Cape Cuvier	—	365	365	—	—	—
Dampier	—	38,206	38,206	4	219	223
Geraldton	—	2,056	2,056	—	112	112
Port Hedland	—	30,133	30,133	1	148	148
Port Walcott	—	14,008	14,008	—	—	—
Yampi Sound	—	2,220	2,220	—	—	—
Other	4	3,008	3,012	4	249	253
Total	656	100,115	100,771	601	3,935	4,536
Tasmania—						
Hobart	51	854	906	2	261	263
Launceston	34	1,891	1,925	4	105	109
Port Latta	—	1,815	1,815	—	27	27
Other	115	310	425	25	40	65
Total	200	4,871	5,071	31	432	464
Northern Territory—						
Darwin	5	34	40	8	568	576
Other	—	5,138	5,138	—	644	644
Total	5	5,173	5,178	8	1,213	1,221
Port not available for publication	608	1,508	2,116	621	935	1,556
Total all ports	5,843	231,393	237,236	7,845	19,728	27,572

Overseas cargo according to trade area and ship type

The following table shows details of cargo loaded in Australia for discharge overseas, and cargo discharged in Australia from overseas, classified according to the various trade areas of the world and by ship type.

OVERSEAS CARGO BY TRADE AREA OF PORT OF DISCHARGE/LOADING BY SHIP TYPE, 1985-86

('000 revenue tonnes)

<i>Trade area</i>	<i>General cargo ships</i>	<i>Tankers</i>	<i>Bulk carriers</i>	<i>Other ships</i>	<i>All ships</i>
— Outward cargo —					
Europe	1,119	115	39,746	40	41,020
East Asia	1,178	318	25,925	301	27,722
Japan and North Asia	3,118	2,382	120,745	4	126,249
North America—E. Coast	361	397	2,922	176	3,856
North America—W. Coast	563	825	3,680	7	5,075
Central America and Caribbean	22	26	114	—	163
South America—E. Coast	42	—	1,079	—	1,121
South America—W. Coast	29	—	265	—	294
Africa—Mediterranean	8	—	2,412	—	2,419
West Africa	4	—	132	—	136
South and East Africa	100	37	345	—	482
Red Sea and Mediterranean Middle East	195	14	4,061	—	4,270
Middle East Gulf	188	140	4,436	—	4,764
West India	151	125	3,071	—	3,347
East India	66	29	1,047	—	1,142
South East Asia	1,300	647	3,607	9	5,562
New Zealand	787	573	755	2	2,116
Papua New Guinea and Solomon Islands	457	472	664	2	1,596
Pacific Islands and other countries	198	389	176	2	765
Trade area not specified	—	—	—	—	—
Trade area not available for publication	159	—	4,980	—	5,138
Total outward overseas cargo	10,042	6,489	220,163	543	237,236
— Inward cargo —					
Europe	2,511	539	289	121	3,460
East Asia	1,138	80	284	29	1,532
Japan and North Asia	2,608	248	3,265	44	6,165
North America—E. Coast	687	658	613	10	1,969
North America—W. Coast	872	376	1,759	—	3,007
Central America and Caribbean	1	6	—	—	7
South America—E. Coast	91	8	63	—	161
South America—W. Coast	14	—	9	—	23
Africa—Mediterranean	8	—	—	—	8
West Africa	7	—	120	—	127
South and East Africa	137	—	51	—	189
Red Sea and Mediterranean Middle East	68	499	142	—	709
Middle East Gulf	12	3,538	484	—	4,034
West India	57	90	—	—	147
East India	9	—	—	—	9
South East Asia	734	1,864	741	9	3,348
New Zealand	879	470	207	—	1,556
Papua New Guinea and Solomon Islands	66	5	2	—	73
Pacific Islands and other countries	75	9	959	6	1,049
Trade area not specified	—	—	—	—	—
Trade area not available for publication	—	—	—	—	—
Total inward overseas cargo	9,975	8,389	8,988	220	27,572

Overseas cargo according to trade area and type of service

The following table shows details of cargo loaded in Australia for discharge overseas, and cargo discharged in Australia from overseas, classified according to the various trade areas of the world and by type of shipping service.

OVERSEAS CARGO LOADED AND DISCHARGED IN AUSTRALIA BY TRADE AREA OF PORT OF DISCHARGE/LOADING BY TYPE OF SERVICE, 1985-86
(^{'000} revenue tonnes)

Trade area	Outward overseas cargo			Inward overseas cargo		
	Liner service			Liner service		
	Conference	Non-conference	Other ships	Conference	Non-conference	Other ships
Europe	723	252	40,045	1,688	473	1,299
East Asia	408	444	26,871	393	658	481
Japan and North Asia	1,048	570	124,631	1,148	247	4,770
North America—E. Coast	233	333	3,290	435	102	1,432
North America—W. Coast	287	395	4,392	326	717	1,964
Central America and Caribbean	13	3	147	—	—	7
South America—E. Coast	—	23	1,098	—	68	93
South America—W. Coast	—	—	293	—	9	14
Africa-Mediterranean	—	—	2,419	—	—	8
West Africa	—	—	136	—	—	127
South and East Africa	17	42	423	4	73	112
Red Sea and Mediterranean Middle East	98	66	4,105	2	49	659
Middle East Gulf	63	18	4,683	7	4	4,023
West India	89	59	3,199	45	9	94
East India	57	1	1,084	9	—	—
South East Asia	746	213	4,604	502	156	2,690
New Zealand	134	485	1,497	146	645	766
Papua New Guinea and Solomon Islands	306	58	1,232	43	8	22
Pacific Islands and other countries	116	47	602	30	18	1,000
Trade area not specified	—	—	—	—	—	19
Trade area not available for publication	—	—	5,138	—	—	—
Total overseas cargo	4,337	3,009	229,890	4,778	3,233	19,580

Overseas cargo commodity details

The following three tables classify inward and outward overseas cargo according to the Australian Transport Freight Commodity Classification (ATFCC). The second and third tables also provide details of the type of shipping service by which cargo was transported.

INWARD AND OUTWARD OVERSEAS CARGO: SEA: BY SELECTED COMMODITIES
1985-86
(\$'000)

<i>ATFCC</i> <i>Division</i>	<i>Title</i>	<i>Inward</i> <i>cargo</i>	<i>Outward</i> <i>cargo</i>
00	Live animals	84	203,690
01	Meat and meat preparations	13,865	1,633,648
02	Dairy products and eggs	75,718	439,196
03	Fish, crustaceans and molluscs and preparations thereof	311,182	427,855
04	Cereals and cereal preparations (b)	67,488	3,757,215
05	Fruit and vegetables; sugar cane (a)	253,467	322,465
06	Sugar, sugar preparations and honey (b)	22,381	647,166
09	Coffee, tea, cocoa, spices, margarine and miscellaneous edible products and preparations (a) (b)	408,090	84,950
11	Beverages, tobacco and manufactures (b)	289,887	43,646
21	Hides, skins and furskins, raw (b)	2,025	388,544
24	Wood, timber and cork (b)	327,739	15,106
25	Pulp and waste paper	103,776	14,461
26	Textile fibres (not wool tops) and wastes (not manufactured into yarn or fabric)	133,304	3,131,099
27	Crude fertilizers and minerals (excluding coal, petroleum and precious stones) (b)	251,769	127,775
28	Metalliferous ores and metal scrap (b)	25,175	2,959,124
32	Coal, coke and briquettes	2,984	5,209,248
33	Petroleum, petroleum products and related materials (a)	1,743,283	1,787,088
51	Organic and inorganic chemicals (a) (b)	803,986	68,356
53	Dyeing, tanning and colouring materials (b)	131,427	28,100
54	Medicinal and pharmaceutical products (b)	214,426	37,986
55	Essential oils, perfume materials, toilet polishing and cleaning preparations (a)	173,189	48,922
56	Fertilizers, manufactured	142,642	2,159
58	Plastic materials, artificial resins and cellulose esters and ethers (a) (b)	550,575	41,285
59	Explosives and other chemical materials and products (a) (b)	372,619	56,492
62	Rubber manufactures, n.e.s.	418,497	17,288
63	Cork and wood manufactures (excluding furniture) (a) (b)	156,968	4,494
64	Paper, paperboard and articles of paper pulp, of paper or of paperboard (a)	805,299	69,893
65	Textile yarns, fabrics, made-up articles, n.e.s. and related products (a) (b)	1,506,951	48,223
66	Non-metallic mineral manufactures, n.e.s. (a) (b)	510,081	50,491
67	Iron and steel (a) (b)	563,803	507,935
68	Non-ferrous metals (a) (b)	121,548	695,659
69	Manufactures of metal, n.e.s. (a)	803,229	146,403
71	Machinery, equipment, apparatus and appliances (a) (b)	7,113,306	598,563
78	Road vehicles and other transport equipment	3,761,636	258,336
82	Furniture and parts thereof	228,379	17,965
84	Articles of apparel and clothing accessories and footwear	590,622	9,886
87	Professional, scientific and controlling apparatus, n.e.s.; photographic apparatus, equipment and supplies; optical goods, n.e.s.; watches and clocks (a)	649,663	117,859
89	Printed matter, plastic wares, toys and other miscellaneous manufactured articles (a) (b)	1,616,604	103,736
93	Special transactions and commodities not classified by kind	1,249,834	325,400
99	Coins, n.e.s. temporary ships/structures; (includes confidential commodities (c)	806,759	4,425,747
	Other	357,005	401,303
	Total all commodities	27,681,265	29,274,757

(a) Excludes import commodities regarded as confidential. These items are included in Division 99. (b) Excludes export commodities regarded as confidential. These items are included in Division 99. (c) Includes commodities regarded as confidential.

INWARD OVERSEAS CARGO: SEA: BY COMMODITY BY TYPE OF SERVICE
(S'000)

ATFCC Section and title	Year ended 30 June	Liner Service		Other	Total
		Conference	Non- conference		
0 Food and live animals (a)	1985	609,123	315,646	120,416	1,045,186
	1986	752,781	310,869	126,050	1,189,700
1 Beverages and tobacco	1985	133,391	63,336	27,866	224,594
	1986	162,016	90,991	36,880	289,887
2 Crude materials, inedible, except fuels (a)	1985	306,421	253,657	342,277	902,355
	1986	337,118	305,606	345,192	987,915
3 Mineral fuels, lubricants and related materials (a)	1985	15,454	11,288	2,285,551	2,312,293
	1986	22,125	16,816	1,707,634	1,746,575
4 Animal and vegetable oils, fats and waxes (a)	1985	35,984	15,079	59,990	111,052
	1986	31,399	8,686	50,656	90,741
5 Chemical and related products, n.e.s. (a)	1985	841,765	512,234	531,073	1,885,072
	1986	1,130,930	628,311	629,621	2,388,863
6 Manufactured goods classified chiefly by material (a)	1985	2,452,237	1,086,178	801,050	4,339,464
	1986	2,755,513	1,354,252	850,254	4,960,019
7 Machinery and transport equipment (a)	1985	4,393,232	1,330,701	2,958,873	8,682,806
	1986	5,526,850	1,861,316	3,486,775	10,874,942
8 Miscellaneous manufactured articles (a)	1985	1,532,774	842,787	256,236	2,631,796
	1986	1,872,010	961,890	251,369	3,085,268
9 Commodities and transactions, n.e.s. (includes confidential commodities) (b)	1985	1,069,906	368,102	561,867	1,999,874
	1986	1,045,398	349,806	672,150	2,067,354
Total all commodities	1985	11,390,286	4,799,008	7,945,198	24,134,493
	1986	13,636,141	5,888,544	8,156,581	27,681,265

(a) Excludes commodities regarded as confidential. These items are included in Section 9. (b) Includes commodities regarded as confidential.

OUTWARD OVERSEAS CARGO: SEA: BY COMMODITY BY TYPE OF SERVICE
(S'000)

ATFCC Section and title	Year ended 30 June	Liner Service		Other	Total
		Conference	Non- conference		
0 Food and live animals (a)	1985	2,264,696	357,359	4,767,703	7,389,760
	1986	2,304,446	499,759	4,847,139	7,651,344
1 Beverages and tobacco (a)	1985	25,841	8,348	3,725	37,914
	1986	27,073	11,665	4,908	43,646
2 Crude materials, inedible, except fuels (a)	1985	2,613,302	819,704	2,733,718	6,166,724
	1986	2,488,206	1,135,051	3,118,662	6,741,919
3 Mineral fuels, lubricants and related materials (a)	1985	62,572	13,418	6,328,438	6,404,428
	1986	28,779	11,375	6,956,182	6,996,336
4 Animal and vegetable oils, fats and waxes (a)	1985	18,703	15,508	65,332	99,544
	1986	18,516	13,364	46,900	78,779
5 Chemical and related products, n.e.s. (a)	1985	131,189	84,378	51,931	267,498
	1986	132,293	100,904	50,103	283,299
6 Manufactured goods classified chiefly by material (a)	1985	575,283	329,509	693,744	1,598,535
	1986	514,531	435,512	671,719	1,621,762
7 Machinery and transport equipment (a)	1985	473,318	269,844	121,869	865,030
	1986	520,913	241,784	94,202	856,899
8 Miscellaneous manufactured articles (a)	1985	148,388	53,567	18,293	220,249
	1986	155,503	70,400	23,543	249,446
9 Commodities and transactions, n.e.s. (includes confidential commodities) (b)	1985	987,536	311,888	3,149,902	4,449,324
	1986	937,156	482,645	3,331,526	5,301,547
Total all commodities	1985	7,300,828	2,263,523	17,934,653	27,499,005
	1986	7,127,414	3,002,458	19,144,884	29,274,757

(a) Excludes commodities regarded as confidential. These items are included in Section 9. (b) Includes commodities regarded as confidential.

Coastal shipping cargo

The following table shows the gross weight of cargo loaded at an Australian port for discharge at another Australian port. Both inter- and intrastate cargo movements are included. Cargo loaded at, or to be discharged at, an overseas port is excluded.

COASTAL CARGO LOADED AND DISCHARGED AT AUSTRALIAN PORTS, 1985-86

('000 gross weight tonnes)

(Source: Department of Transport and Communications)

Australian port	Loaded			Discharged		
	Interstate	Intrastate	Total	Interstate	Intrastate	Total
New South Wales—						
Port Jackson	194	1	195	3,426	1,156	4,582
Botany Bay	632	299	931	4,175	—	4,175
Newcastle	446	56	502	4,157	437	4,594
Port Kembla	2,027	428	2,455	5,913	35	5,948
Other	—	1,136	1,136	11	213	224
Total	3,299	1,920	5,219	17,682	1,841	19,523
Victoria—						
Melbourne	1,195	—	1,195	1,643	—	1,643
Geelong	1,329	99	1,428	483	1	484
Westernport	8,900	1	8,901	666	—	666
Other	3	174	177	10	140	150
Total	11,427	274	11,701	2,802	141	2,943
Queensland—						
Brisbane	1,018	1,134	2,152	4,077	467	4,544
Gladstone	786	394	1,180	126	5,590	5,716
Hay Point	36	—	36	—	—	—
Mackay	66	2	68	72	314	386
Townsville	53	9	62	247	204	451
Weipa	—	5,317	5,317	—	27	27
Other	614	97	711	47	603	650
Total	2,573	6,953	9,526	4,569	7,205	11,774
South Australia—						
Adelaide	483	83	566	523	1,054	1,577
Port Pirie	126	—	126	204	30	234
Port Stanvac	425	—	425	854	482	1,336
Whyalla	481	20	501	1,208	160	1,368
Other	2,129	1,999	4,128	113	108	221
Total	3,644	2,102	5,746	2,902	1,834	4,736
Western Australia—						
Fremantle	665	744	1,409	2,261	583	2,844
Bunbury	434	—	434	9	115	124
Dampier	344	—	344	—	—	—
Port Hedland	5,150	13	5,163	—	126	126
Port Walcott	133	—	133	—	28	28
Yampi Sound	1,556	3	1,559	—	17	17
Other	680	402	1,082	15	417	432
Total	8,962	1,162	10,124	2,285	1,286	3,571
Tasmania—						
Hobart	464	61	525	1,123	169	1,292
Burnie	408	182	590	411	58	469
Devonport	482	—	482	408	1	409
Launceston	269	13	282	1,077	4	1,081
Other	70	20	90	49	30	79
Total	1,693	276	1,969	3,068	262	3,330
Northern Territory—						
Darwin	6	10	16	175	8	183
Other	403	5	408	11	23	34
Total	409	15	424	186	31	217
Total all ports	32,007	12,702	44,709	33,494	12,600	46,094

RAILWAYS

Government railways

The six government owned railway systems are operated by the State Rail Authority of New South Wales (SRA), 'V/Line' operated by the State Transport Authority of Victoria, Queensland Government Railways (QR), Western Australian Government Railways Commission (WAGRC), the State Transport Authority of South Australia (STA), and the Australian National Railways Commission (ANRC).

Data contained in the following tables have been compiled from a number of sources. These sources include annual reports of the various rail authorities; data supplied by the Rail Industry Council; and data collected directly by the Australian Bureau of Statistics.

As the Australian National system includes routes in more than one State, and the Victorian system extends into New South Wales, the system route-kilometres shown in the following table do not represent route-kilometres within each State and Territory.

GOVERNMENT RAILWAYS: ROUTE-KILOMETRES OPEN, BY SYSTEM (kilometres)

30 June—	N.S.W.	Vic.	Qld	S.A.	W.A.	Australian National	Total
1981	9,773	5,870	9,932	140	5,773	7,648	39,136
1982	9,773	5,812	9,970	141	5,609	7,638	38,943
1983	9,883	5,815	9,979	131	5,610	7,647	39,065
1984	9,884	5,783	10,381	130	5,623	7,450	39,251
1985	9,908	5,748	10,231	131	5,563	7,465	39,046
1986	9,909	5,714	10,124	127	5,553	7,333	38,760

Summary of operations

Particulars of train-kilometres, passenger journeys, freight-tonnes carried, and freight tonne-kilometres included in this section refer only to operations for which revenue is received.

GOVERNMENT RAILWAYS: SUMMARY OF OPERATIONS, SYSTEMS, 1985-86

	N.S.W.	Vic.	Qld	S.A.	W.A.	Australian National	Aust.
Train-kilometres							
('000) (a) (b)—							
Suburban passenger	25,635	14,200	5,322	n.a.	2,348	—	n.a.
Country passenger	15,598	7,857	3,791	—	3,362	2,406	33,014
Goods (b)	30,778	7,752	26,003	—	4,654	8,107	77,294
Total	72,011	29,809	35,116	n.a.	10,364	10,513	n.a.
Passenger journeys							
('000) (c)—							
Suburban	214,875	89,300	40,246	12,899	9,742	—	367,062
Country (d)	3,706	4,963	1,258	—	209	322	10,458
Total	218,581	94,263	41,504	12,899	9,951	322	377,520
Freight—							
Tonnes carried—							
('000) (d)							
	53,800	10,516	73,599	—	20,877	13,049	171,841
Net tonne-kilometres—							
(million) (e)							
	13,740	3,094	20,450	—	3,992	7,081	48,357

(a) One train (i.e. a complete unit of locomotive and vehicles, electric train set, or rail motor) travelling one kilometre for revenue purposes. (b) Includes mixed train-kilometres. (c) Based on ticket sales making allowances for periodical tickets. Tickets sold at concession rates are counted as full journeys. (d) Inter-system traffic is included in the total for each system over which it passes. (e) One tonne carried one kilometre.

GOVERNMENT RAILWAYS: TRAIN-KILOMETRES (a)
(*000 kilometres)

Year	N.S.W.	Vic.	Qld	S.A.	W.A.	Australian National	Aust.
1980-81	58,089	30,615	31,282	3,879	10,891	12,376	147,132
1981-82	59,960	31,136	32,696	3,921	10,681	12,089	150,482
1982-83	61,507	30,166	30,885	3,894	10,560	10,795	147,806
1983-84	61,659	30,702	33,303	3,697	10,333	10,238	149,932
1984-85	66,025	30,794	34,293	n.a.	11,098	11,306	n.a.
1985-86	72,011	29,809	35,116	n.a.	10,364	10,513	n.a.

(a) One train (i.e. a complete unit of locomotive and vehicles, electric train set, or rail motor) travelling one kilometre for revenue purposes.

GOVERNMENT RAILWAYS: FREIGHT CARRIED, NET TONNE-KILOMETRES, AND FREIGHT EARNINGS, SYSTEMS

Year	N.S.W.	Vic.	Qld	W.A.	Australian National	Aust.
FREIGHT CARRIED ('000 tonnes)						
1980-81	40,440	12,721	41,504	20,271	12,345	127,281
1981-82	40,393	11,623	43,659	19,776	11,882	127,333
1982-83	41,350	8,570	43,706	19,791	10,676	124,093
1983-84	46,594	10,486	53,150	19,870	12,083	142,183
1984-85	47,800	11,892	65,452	22,085	12,870	160,099
1985-86	53,800	10,516	73,599	20,877	13,049	171,841
NET TONNE-KILOMETRES (million)						
1980-81	10,543	3,704	11,982	4,489	5,751	36,468
1981-82	10,705	3,427	13,079	4,390	5,731	37,332
1982-83	9,117	2,468	13,177	4,384	5,348	34,494
1983-84	11,131	3,111	15,391	3,903	5,912	39,448
1984-85	12,393	3,543	18,438	4,337	6,270	44,981
1985-86	13,740	3,094	20,450	3,992	7,081	48,357
FREIGHT EARNINGS (\$'000)						
1980-81	364,406	140,187	383,695	148,422	150,205	1,186,915
1981-82	431,157	137,676	481,193	175,054	165,214	1,390,294
1982-83	452,626	108,803	508,223	183,632	161,480	1,414,764
1983-84	559,876	160,841	669,362	180,439	192,223	1,762,741
1984-85	641,100	182,259	828,926	209,627	213,698	2,075,610
1985-86	736,795	168,641	905,494	200,974	237,345	2,249,249

GOVERNMENT RAILWAYS: GROSS EARNINGS, SYSTEMS
(\$ million)

(Source: Rail Industry Council)

Year	N.S.W.	Vic. (a)	Qld	S.A.(b)	W.A.	Australian National(c)	Aust.
1980-81	559.6	256.3	416.8	4.5	184.6	181.4	1,603.2
1981-82	663.2	260.2	520.3	5.7	216.3	195.3	1,861.0
1982-83	694.8	248.1	549.9	6.3	229.4	193.9	1,922.4
1983-84	823.1	301.7	718.0	8.1	233.0	227.1	2,311.0
1984-85	938.6	351.5	882.5	10.7	263.6	252.5	2,699.4
1985-86	1,082.4	335.0	966.0	14.6	262.0	283.3	2,943.3

(a) Includes Metrail for years 1983-84 to 1985-86. (b) Includes urban rail operations only. (c) Includes Tasmania.

Non-government railways

The Australian non-government railways covered in this section are those which operate outside industrial estates, harbour precincts, mines and quarries with a route distance exceeding two kilometres.

The figures in the following table have been compiled from information supplied to the Bureau of Transport Economics (BTE) by the various railway operators. All operators provided details of tonnes carried and most provided details of tonne-kilometres performed. In a few cases, the tonne-kilometre figures have been estimated by the BTE using the advised average length of haul.

TRAFFIC TASK PERFORMED BY AUSTRALIAN NON-GOVERNMENT RAILWAYS

<i>Year</i>	<i>Iron ore railways</i>	<i>Sugar tramways</i>	<i>Coal railways (a)</i>	<i>Other non-government railways</i>	<i>Total(a)</i>
TONNES CARRIED (million)					
1980-81	88.5	20.6	8.1	11.4	128.6
1981-82	83.0	21.6	8.7	12.2	125.6
1982-83	78.2	20.9	7.1	8.0	114.1
1983-84	71.5	21.6	7.0	10.9	111.0
1984-85	86.9	24.0	7.9	11.1	129.9
1985-86	86.8	21.6	8.1	10.3	126.8
TONNE-KILOMETRES (million)					
1980-81	28,264	351	97	222	28,934
1981-82	26,669	367	104	244	27,384
1982-83	24,432	355	86	171	25,045
1983-84	22,646	366	85	226	23,324
1984-85	27,649	408	98	223	28,378
1985-86	28,517	368	116	201	29,202

(a) Includes transfers to and from Government railways.

TRAM, BUS, AND FERRY SERVICES

Trams

At 30 June 1986, tram services were in operation in Melbourne and in Adelaide. Regular tram services ceased to operate in Ballarat on 19 September 1971 and in Bendigo on 16 April 1972. However, services are operated in both cities, on an irregular basis, but generally during holiday periods, as a tourist attraction.

In many parts of Australia, private lines used for special purposes in connection with the timber, mining, sugar, or other industries are often called tramways, but they are more properly railways, and the traffic on them has nothing in common with that of the street tram used for the conveyance of passengers.

Buses

Services are operated by government or municipal authorities and private operators. Statistics are collected for government and municipal bus services which are located in all capital cities and Newcastle, New South Wales; Rockhampton, Queensland; Launceston and Burnie, Tasmania; and for country road services operated by the Victorian Railways, the State Rail Authority of New South Wales, the Western Australian Government Railways, and the Australian National Railways.

Ferries

Ferry passenger services are operated in the following States: New South Wales, at Sydney, Newcastle and various other waterways; Western Australia, on the Swan River at Perth; Tasmania, on the Mersey River at Devonport and on the Derwent River at Hobart; and Queensland, on the Brisbane River at Brisbane. Control is exercised by both government authorities and private operators.

Government and municipal tram and bus services

Because of the development in recent years of the various forms of public road transport under the control of single authorities and the gradual replacement of tram services by bus services, it is not possible to obtain separate statistics for all phases of the activities of each form of transport, particularly financial operations.

TRAM AND BUS SERVICES: GOVERNMENT AND MUNICIPAL, STATES AND TERRITORIES, 1985-86

	<i>N.S.W.</i>	<i>Vic.</i>	<i>Qld</i>	<i>S.A.</i>	<i>W.A.(a)</i>	<i>Tas.</i>	<i>N.T.</i>	<i>A.C.T.</i>	<i>Aust.</i>
Route-kilometres at 30 June									
Tram (kilometres)		329	..	11	..	..	..	..	340
Bus (kilometres)	1,234	n.a.	798	1,022	8,455	483	233	1,540	n.a.
Vehicle-kilometres									
Tram ('000)		24,000	..	778	..	..	..	..	24,778
Bus ('000)	66,314	51,000	25,339	38,899	(b)47,155	9,775	1,949	15,322	255,753
Rolling stock at 30 June									
Tram (number)		642	..	21	..	..	..	..	663
Bus (number)	1,708	1,265	593	745	906	272	38	391	5,918
Passenger journeys									
Tram ('000)		112,400	..	2,711	..	..	..	..	115,111
Bus ('000)	190,308	84,900	42,811	51,517	(b)50,584	14,717	2,144	23,300	460,281
Gross revenue (c)									
Tram and bus (\$'000)	145,078	n.a.	30,624	41,403	50,256	6,664	1,345	14,054	n.a.
Working expenses (d)									
Tram and bus (\$'000)	227,118	n.a.	57,394	102,164	80,460	19,880	4,316	30,090	n.a.
Net revenue									
Tram and bus (\$'000)	-82,040	n.a.	-26,770	-60,761	-30,204	-13,216	-2,971	-16,036	n.a.
Employees at 30 June									
Tram and bus (number).	6,134	n.a.	1,509	(e)1,549	2,247	567	105	810	n.a.

(a) Excludes operations of Eastern Goldfields Transport Board. (b) Scheduled services (including clipper) only. (c) Excludes government grants. (d) Includes provision of reserves for depreciation, etc., where possible. Minus sign (-) denotes deficit. (e) Bus and tram crew only.

TRAM AND BUS SERVICES: GOVERNMENT AND MUNICIPAL

	<i>1980-81</i>	<i>1981-82</i>	<i>1982-83</i>	<i>1983-84</i>	<i>1984-85(a)</i>	<i>1985-86(a)</i>
Route-kilometres at 30 June						
Tram (kilometres)		231	231	232	n.a.	340
Bus (kilometres)		11,930	13,445	13,553	n.a.	n.a.
Vehicle kilometres						
Tram ('000)		24,864	24,836	24,958	n.a.	24,747
Bus ('000)		193,324	209,104	212,423	n.a.	252,038
Rolling stock at 30 June						
Tram (number)		767	724	713	n.a.	683
Bus (number)		4,941	4,973	5,018	n.a.	5,942
Passenger journeys						
Tram ('000)		(b)100,474	(b)103,479	..	n.a.	112,071
Bus ('000)		(b)347,133	(b)343,216	(b)(c)325,649	n.a.	454,460

(a) Excludes operations of Eastern Goldfields Transport Board in Western Australia. (b) Excludes details of metropolitan tram and bus services in South Australia. (c) Excludes details of metropolitan tram and bus services in Victoria.

MOTOR VEHICLES

Tables in this section include vehicles owned by private individuals, local government authorities, State governments, and the Commonwealth Government (excluding those belonging to the defence services).

Survey of motor vehicle usage

A survey was conducted throughout Australia in late 1985 by the Australian Bureau of Statistics for the purpose of gathering information on the usage of motor vehicles. The owners of approximately 60,000 vehicles other than commercial buses were approached for information relating to the usage of their vehicles over the twelve months ended 30 September 1985. The framework from which the sample was drawn was obtained from the motor vehicle registration authorities in all States and Territories. The survey was based on respondents' recollections of their usage of the selected vehicles over their period of ownership during the survey year.

The main purpose of the survey was to determine the total distance travelled by vehicles, classified according to area and purpose of travel. Information was also obtained from the survey on: (i) tonne-kilometres; (ii) average load carried; (iii) vehicle usage (i.e. for hire and reward, ancillary or other); (iv) main type of operation; (v) fuel consumption; (vi) occupant-kilometres; and (vii) driver characteristics.

The following table shows, for Australia, total annual kilometres travelled for the twelve months ended 30 September 1985 classified by vehicle type and purpose of travel. The percentage standard errors (S.E.%) indicate the extent to which the estimates can vary by chance because only a sample and not the total vehicle population was enumerated. There are about two chances in three that a sample estimate will differ by less than one standard error from the figure that would have been obtained from a comparable complete enumeration, and about nineteen chances in twenty that the difference will be less than two standard errors. For example, if an estimate of 3,000 million kilometres has a standard error of 5 per cent (i.e. 150 million kilometres), then there would be approximately two chances in three that a comparable complete collection would give a figure within the range of 2,850 million kilometres to 3,150 million kilometres and about nineteen chances in twenty that the figure would be within the range of 2,700 million kilometres to 3,300 million kilometres.

**TOTAL ANNUAL KILOMETRES BY VEHICLE TYPE AND PURPOSE OF TRAVEL
AUSTRALIA, TWELVE MONTHS ENDED 30 SEPTEMBER 1985**

Type of vehicle	Laden business		Unladen business		Total business (a)		To and from work paid and unpaid		Private		Total	
	million kilo-metres	REL S.E. (%)	million kilo-metres	REL S.E. (%)	million kilo-metres	REL S.E. (%)	million kilo-metres	REL S.E. (%)	million kilo-metres	REL S.E. (%)	million kilo-metres	REL S.E. (%)
Cars and station wagons	..	..	..	..	22,985.5	2.5	25,035.6	1.7	58,552.4	1.1	106,573.5	0.8
Motor cycles	..	..	..	..	203.0	9.6	857.9	4.4	1,215.4	4.7	2,276.2	3.2
Utilities and panel vans	7,403.0	3.4	3,099.7	5.0	10,978.3	2.8	3,659.9	3.8	5,483.2	3.5	20,121.3	1.8
Rigid trucks	4,986.0	1.9	2,029.8	2.3	7,015.7	1.7	316.1	6.8	295.2	7.8	7,627.0	1.6
Articulated trucks	2,638.6	1.2	917.4	1.5	3,555.9	1.0	26.9	8.0	4.9	13.5	3,587.7	1.0
Other truck type vehicles	..	..	..	..	227.6	6.0	3.8	35.1	10.3	72.5	241.6	6.6
Total	15,027.6	1.8	6,046.8	2.7	4,4966.0	1.5	29,900.1	1.5	65,561.3	1.0	140,427.4	0.7

(a) Includes the total kilometres travelled for business purposes of cars, station wagons, motor cycles and utilities and panel vans predominantly used for private purposes. The dissection of business travel into laden/unladen was not sought for these vehicles.

Motor vehicles on register

Details of motor vehicles on the register are compiled by up-dating motor vehicles census data from information made available by the various motor vehicles registration authorities in the States and Territories. Censuses of motor vehicles have been conducted in respect of 31 December 1955 and 1962, and 30 September 1971, 1976, 1979, 1982 and 1985. At these census dates considerably greater information concerning the particulars shown in the tables following is available. Final detailed results of the 1985 census for each State and Territory and Australia have been published in a combined publication.

MOTOR VEHICLE CENSUS: 30 SEPTEMBER 1985 (FINAL)
(^{'000})

State or Territory	Motor cars and station wagons		Trucks			Other truck type vehicles	Buses	Motor cycles	Total (a)
	Utilities	Panel vans	Rigid	Articulated					
New South Wales	2,169.7	170.8	204.8	165.5	16.7	13.9	43.2	115.8	2,900.5
Victoria	1,887.5	134.9	55.7	181.0	12.4	12.6	13.3	78.8	2,376.3
Queensland	1,041.0	201.9	82.3	56.7	8.6	4.5	10.2	74.1	1,479.4
South Australia	657.0	50.9	36.3	48.0	5.1	6.8	3.6	41.0	848.7
Western Australia	631.0	64.3	68.9	67.6	4.9	7.7	6.2	37.0	887.6
Tasmania	200.4	25.6	14.3	16.1	1.5	2.8	1.7	6.4	268.7
Northern Territory	40.6	13.9	5.1	5.3	0.9	0.3	0.7	4.3	71.1
Australian Capital Territory	107.0	6.1	4.7	3.5	0.2	0.7	1.1	4.3	127.6
Australia	6,734.2	668.4	472.1	543.7	50.2	49.4	80.1	361.6	8,959.7

(a) Excludes tractors, plant and equipment, caravans and trailers.

MOTOR VEHICLES ON REGISTER, BY TYPE OF VEHICLE, AUSTRALIA
(^{'000})

30 June	Motor cars and station wagons	Utilities, trucks, panel vans, other truck type vehicles and buses	Total (excludes motor cycles)	Motor cycles
1981	6,021.1	1,544.8	7,565.9	351.8
1982	6,308.1	1,661.1	7,969.2	389.2
1983	6,469.6	1,718.3	8,187.8	402.0
1984	6,636.2	1,798.2	8,434.4	398.4
1985	6,842.5	1,886.6	8,729.1	389.2
1986	6,985.4	1,930.7	8,916.0	374.5

MOTOR VEHICLES (a) ON REGISTER PER 1,000 OF POPULATION, STATES AND TERRITORIES

30 June	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.	Aust.
1980	467.9	487.0	518.8	515.8	563.8	530.7	373.1	455.2	494.2
1981	480.0	499.6	539.1	522.3	569.4	544.1	408.6	464.4	507.0
1982	499.8	525.1	554.3	532.9	576.5	551.5	420.4	463.8	525.0
1983	503.7	539.5	565.2	541.1	566.8	562.9	433.9	471.7	532.4
1984	509.3	554.1	574.2	555.8	574.0	571.1	453.9	486.1	542.2
1985	520.7	571.1	573.7	572.0	589.4	588.0	467.4	488.8	553.9
1986	526.0	575.1	574.3	582.5	590.7	596.8	478.1	483.2	558.2

(a) Excludes motor cycles, tractors, plant and equipment, caravans and trailers.

Drivers' and riders' licences

At 30 June 1986, the numbers of licences in force to drive or ride motor vehicles were: New South Wales, 3,516,901; Victoria, 2,588,163; Queensland, 1,600,000 (est); South Australia, 838,007; Western Australia, 846,135; Tasmania, 253,777; Northern Territory, 118,238; Australian Capital Territory, 159,770.

Registrations of new motor vehicles

Particulars of registrations of new motor vehicles are shown by type of vehicle in preliminary monthly publications, and by type and make of vehicle in monthly and annual publications of motor vehicle registrations.

In these statistics 'registrations' means registrations processed by the motor vehicle registration authorities in the States and Territories during the period.

REGISTRATIONS OF NEW MOTOR VEHICLES, BY TYPE OF VEHICLE

State or Territory	Motor cars and station wagons		Trucks			Other truck type vehicles (a)	Buses	Total (excludes motor cycles)	Motor cycles
	Utilities	Panel vans	Rigid	Articulated					
1986-87—									
New South Wales	129,700	9,674	11,385	7,990	1,083	611	4,103	164,546	8,044
Victoria	107,862	5,086	1,142	12,022	840	469	852	128,273	5,294
Queensland	55,552	9,183	2,715	2,239	498	123	636	70,946	4,228
South Australia	29,788	2,438	1,491	1,755	318	197	231	36,218	1,999
Western Australia	33,642	3,251	2,507	3,572	174	132	562	43,840	2,305
Tasmania	9,206	1,209	438	687	136	103	94	11,873	526
Northern Territory	3,037	1,173	197	108	86	19	56	4,676	554
Australian Capital Territory	7,293	471	268	320	14	10	53	8,429	249
Australia	376,080	32,485	20,143	28,693	3,149	1,664	6,587	468,801	23,199
1985-86	476,488	46,499	33,138	39,033	4,029	2,159	10,868	612,214	35,906
1984-85	510,893	54,507	45,582	44,422	3,627	1,952	13,847	674,830	45,879
1983-84	461,018	46,140	(b)46,779	33,397	2,581	1,630	(b)12,169	603,714	46,684
1982-83	453,523	43,682	52,364	31,514	2,426	1,834	4,680	590,023	61,061
1981-82	471,255	52,035	48,009	40,062	3,665	2,218	4,998	622,242	71,691

(a) Non-freight carrying vehicles. (b) From August 1983 in N.S.W., the body type classification applied by the registration authority for small bus type vehicles changed from panel vans to buses.

Road traffic accidents

ROAD TRAFFIC ACCIDENTS INVOLVING CASUALTIES^(a) (ADMISSIONS TO HOSPITALS): NUMBER OF ACCIDENTS, PERSONS KILLED OR INJURED, 1985

State or Territory	Number of accidents			Per 100,000 of mean population			Per 10,000 motor vehicles registered (b)		
	Persons killed	Persons injured	Persons killed	Persons injured	Persons injured	Persons killed	Persons injured		
New South Wales	7,644	1,067	8,610	139.6	19.5	157.2	25.6	3.6	28.8
Victoria	7,221	683	8,642	175.2	16.6	209.7	29.6	2.8	35.5
Queensland	3,808	502	4,341	149.4	19.7	170.4	24.6	3.2	28.1
South Australia	2,690	269	3,199	197.4	19.7	234.7	32.9	3.3	39.2
Western Australia	2,487	243	2,947	176.7	17.3	209.3	28.7	2.8	34.0
Tasmania	664	78	795	150.2	17.6	179.9	24.9	2.9	29.8
Northern Territory	455	67	533	316.1	46.5	370.3	63.4	9.3	74.2
Australian Capital Territory	210	33	213	82.9	13.0	84.1	16.4	2.6	16.6
Australia	25,179	2,942	29,280	159.8	18.7	185.8	27.6	3.2	32.1

(a) Accidents reported to the police or other relevant authority which occurred in public thoroughfares and which resulted in death within thirty days or personal injury to the extent that the injured person was admitted to hospital. (b) Number of motor vehicles (excluding tractors, plant and equipment) on register at 30 June 1985.

ROAD TRAFFIC ACCIDENTS INVOLVING FATALITIES

Year	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.	Australia
Accidents involving fatalities—									
1981	1,130	677	510	196	217	97	63	24	2,914
1982	1,115	631	522	239	203	84	52	26	2,872
1983	877	610	437	235	191	63	45	27	2,485
1984	910	584	448	205	203	77	45	35	2,507
1985	954	605	452	240	219	69	59	30	2,628
1986p	910	601	421	257	207	78	63	30	2,567
Persons killed—									
1981	1,291	766	594	222	238	111	70	29	3,321
1982	1,253	709	602	270	236	96	60	26	3,252
1983	966	664	510	265	203	70	49	28	2,755
1984	1,037	657	505	232	220	83	50	37	2,821
1985	1,067	683	502	269	243	78	67	33	2,942
1986p	1,030	656	481	286	227	91	71	32	2,874

ROADS

A special article on the development of roads in Australia is on page 775.

Summary of roads used for general traffic

Proclaimed or declared roads

The table following is a summary of the roads proclaimed or declared under the Acts of the several States relative to the operations of the central road authorities, and shows the lengths of various classes proclaimed or declared as at 30 June 1986. The central road authority in each State assumes responsibility under the Act for the whole, or a proportion, of the cost of construction and maintenance of these roads, the extent varying from State to State and with the class and locality of the roads. Before proclamation of a main road, consideration is given, in general, to the following points: availability of funds; whether the road is, or will be, within one of several classes of main trunk routes; the value of the roads as connecting links between centres of population or business; whether the district is, or will be, sufficiently served by railways. Provision is also made in some States for the declaration of roads other than main roads. The absence of a particular class in any State does not necessarily imply that there are no roads within that State that might be so classified; the classes are restricted only to roads proclaimed or declared under the Acts. A further point to make is that, through various causes (e.g. insufficiency of funds, man-power or materials), construction or maintenance may not keep pace with gazettal of roads, and, therefore, the condition of a road may not match its status.

PROCLAIMED OR DECLARED ROADS: LENGTHS, STATES, 30 JUNE 1986

(kilometres)

<i>Class of road</i>	<i>N.S.W.</i>	<i>Vic.</i>	<i>Qld</i>	<i>S.A.</i>	<i>W.A.</i>	<i>Tas.</i>	<i>Total</i>
State Highways and Freeways	10,412	7,529	10,423	—	7,777	1,933	38,074
Trunk roads	7,085	—	219	12,527	—	—	19,831
Ordinary main roads	18,342	14,867	8,145	—	7,466	1,259	50,079
<i>Total main roads</i>	<i>35,839</i>	<i>22,396</i>	<i>18,787</i>	<i>12,527</i>	<i>15,243</i>	<i>3,193</i>	<i>107,985</i>
Secondary roads	(a)298	—	13,146	—	8,803	300	22,547
Development roads	3,256	—	8,737	—	—	53	12,046
Tourist roads	430	845	—	—	—	205	1,480
Other roads	2,516	(b)1,006	—	—	—	—	3,522
<i>Total other roads</i>	<i>6,500</i>	<i>1,851</i>	<i>21,883</i>	<i>—</i>	<i>8,803</i>	<i>557</i>	<i>39,594</i>
Total	42,339	24,247	40,670	12,527	24,046	3,750	147,579

(a) Metropolitan only. (b) Forest roads.

Total roads

The following table represents an attempt to classify all the roads open for general traffic in Australia, at the latest dates available, according to States and Territories and to certain broad surface groups. The figures in the table for the States are obtained from the Deputy Commonwealth Statistician in each State, and are derived mainly from local government sources.

ALL ROADS OPEN FOR GENERAL TRAFFIC LENGTHS, STATES AND TERRITORIES

30 JUNE 1986

(kilometres)

<i>Surface of roads</i>	<i>N.S.W. (a) (b)</i>	<i>Vic. (c)</i>	<i>Qld</i>	<i>S.A.</i>	<i>W.A. (d)</i>	<i>Tas.</i>	<i>N.T. (e)</i>	<i>A.C.T.</i>	<i>Total</i>
Bitumen or concrete	75,259	66,354	54,524	22,382	39,876	8,668	5,631	2,351	275,045
Gravel, crushed stone or other improved surface	63,999	47,041	43,021	—	37,272	8,296	5,672	170	205,471
Formed only	34,584	23,353	52,643	79,618	42,792	352	4,665	—	238,007
Cleared only	21,287	21,828	17,493	—	20,216	5,261	3,907	—	89,992
Total	195,129	158,576	167,681	102,000	140,156	22,577	19,875	2,521	808,515

(a) Excludes road designated but not trafficable. Excludes Lord Howe Island and the unincorporated area of the Western Division. (b) Figures as at 31 December 1985. (c) Excludes roads coming under the responsibility of the State Electricity Commission (38 km), Melbourne and Metropolitan Board of Works (32 km) and Forests Commission (39,656 km). (d) Excludes Forests Department roads. (e) Excludes roads in towns and Local Government Areas.

National Association of Australian State Road Authorities—NAASRA

The National Association of Australian State Road Authorities was established in 1934. The present member authorities are: Department of Main Roads, New South Wales; Road Construction Authority, Victoria; Main Roads Department, Queensland; Highways Department, South Australia; Main Roads Department, Western Australia; Department of Main Roads, Tasmania; Northern Territory Department of Transport and Works; Commonwealth Department of Transport and Communications.

The Association's objectives are to provide a central organisation where, by co-operative effort, a uniform approach to the improvement, planning and development of the Australian road system can be achieved. National standards for road and bridge construction and maintenance and improved administrative and financial control methods are developed by committees of experienced staff from the authorities, with secretarial services provided by a small staff located in Sydney.

This Secretariat arranges publication of the policies and standards which are widely used by road authorities, local government and universities; co-operates with the Standards Association of Australia on the preparation of national codes of practice; and acts as an Australian centre for contact with overseas road bodies and for the circulation of standards published by them.

The Association is a member of the Permanent International Association of Road Congress (PIARC) and of the Road Engineering Association of Asia and Australasia (REAAA).

Australian Road Research Board—ARRB

The Australian Road Research Board is a non-profit-making company founded in 1960 by NAASRA, and is located at Vermont in Victoria. It is financed by Federal and State Government Road Authorities whose permanent heads make up ARRB's Board of Directors. The Executive Director, a full-time employee and member of the Board, is responsible for administering the Director's policies.

The ARRB regularly undertakes and sponsors road and road transport research over a comprehensive range of subjects and disseminates results to appropriate organisations, engineers and scientists involved in the design, location, construction, upkeep and use of roads.

ARRB disseminates road research information through its major biennial conferences and regular symposia, seminars and workshops and through its publications which include the *ARRB Conference Proceedings*, a quarterly journal *Australian Road Research*, the *Source Book for Australian Roads*, symposium and workshop papers and various reports and technical manuals arising out of its many research projects. ARRB also maintains a unique library of road literature and operates a computer-based information service which abstracts and indexes road-related literature and research in progress. In 1987 the Information of Roads (INROADS) data base was made publically accessible on CSIRO's AUSTRALIS system. The INROADS data base lists all ARRB publications from 1960, significant Australian road-related literature from 1977, publications catalogued for the ARRB Library, including some retrospective conversion of a card catalogue from 1984, and an annual update of current research in progress. INROADS supersedes the ARRD and ROAD data bases.

ARRB acts as the Australian member of the Organisation for Economic Co-operation and Development's International Road Research Documentation (IRRD) system, contributing information on Australian literature and projects. IRRD information from all member countries is available to Australians through ARRB's computer search services. ARRB also maintains close contacts with road research organisations in other countries.

AIR TRANSPORT

The Commonwealth imposes safety and operational controls on the Australian aviation industry under the *Commonwealth Air Navigation Act 1920* and regulations made under the Act, which are administered by the Department of Transport and Communications. In accordance with the Act and regulations, the Department determines the rules of the air and general conditions of flight over Australian territory, classifies and licenses air services, approves timetables, negotiates international air transport agreements, and approves international fares and freight rates.

The Department determines airworthiness requirements for civil aircraft and issues certificates of airworthiness, and licenses aircraft operating crews and flying training schools. It is responsible for the operation of the Australian air traffic control and air navigation network, provides (through the Bureau of Meteorology) a national weather information service for aircraft, and co-ordinates search and rescue operations. It licenses all civil aerodromes and also operates Commonwealth-owned civil aerodromes and related facilities.

In accordance with the *Air Navigation (Charges) Act 1952*, administered by the Department of Transport and Communications, the Commonwealth currently imposes charges on aircraft operators for the use of the aerodromes, air route facilities, meteorological services, and search and rescue services it maintains and operates.

International activity

International organisations

Australia is one of the 157 (as at 30 June 1986) members of the International Civil Aviation Organisation (ICAO). Australia has continued its membership of the (governing) Council since ICAO was established in 1947. Australia is also represented on the 15 member Air Navigation Commission which is responsible for drawing up international standards and procedures for the safety, regularity and efficiency of air navigation. In addition, Australia participates in the Commonwealth Air Transport Council, the South Pacific Regional Civil Aviation Council and the Airport Operators Council International.

International agreements

Australia had air service agreements in force with twenty-seven countries at 31 July 1987. Under these agreements, which have full international treaty status, Australia is granted rights to operate services from Australia to and through the countries in question; these rights are exercised by Australia's international airline, Qantas. In return, the designated airlines of the other countries which are partners to these agreements are granted traffic rights in Australia. Australia also had air service arrangements, of less than treaty status, granting traffic rights with seven other countries at 31 July 1987.

International scheduled services

At 31 July 1987, thirty overseas international airlines were operating regular scheduled air services to Australia. The carriers (and contracting states) were: Air Caledonie International (France), Air India (India), Air Nauru (Nauru), Air New Zealand Ltd International (New Zealand), Air Niugini (Papua New Guinea), Air Pacific (Fiji), Alitalia (Italy), British Airways (U.K.), CAAC (Peoples Republic of China), CP Air (Canada), Cathay Pacific Airways (U.K.), Continental Airlines Inc. (U.S.A.), Flying Tiger Line Inc. (U.S.A.), Garuda Indonesian Airways (Indonesia), JAL (Japan), JAT (Yugoslavia), KLM-Royal Dutch Airlines (Netherlands), Lufthansa German Airlines (Federal Republic of Germany), Malaysian Airline System (Malaysia), Merpati Nusantara Airlines (Indonesia), Olympic Airways (Greece), Philippine Airlines (Philippines), Polynesian Airlines Ltd (Western Samoa), Royal Brunei Airlines (Brunei), Singapore Airlines Ltd (Singapore), South African Airways (South Africa), Thai Airways International (Thailand), United Airlines (U.S.A.) and Union de Transports Aeriens (France). Polynesian Airlines Ltd also operates services on behalf of Cook Islands International (Cook Islands) and Air Pacific operates services on behalf of Solair (Solomon Islands).

Qantas, Australia's international airline, operates a fleet of 25 Boeing 747 and 6 Boeing 767 jet aircraft. All shares in Qantas Airways Limited are owned by the Commonwealth Government.

International non-scheduled services

Australia's passenger and freight charter policies encourage in-bound tourism and primary produce export flights.

International traffic

The table following shows particulars of scheduled international airline traffic during 1985-86 moving into and out of an area which embraces Australia and Norfolk Island. These figures do not include traffic between Australia and Norfolk Island.

AIR TRANSPORT: SCHEDULED INTERNATIONAL AIRLINE TRAFFIC TO AND FROM AUSTRALIA(a), 1985-86

Type of traffic	Number of flights(b)(c)	Passengers	Freight tonnes	Mail tonnes
Traffic to Australia—				
Qantas Airways Limited	5,733	1,166,062	40,716	n.a.
Other airlines	7,240	1,605,781	70,517	n.a.
All airlines	12,973	2,771,843	111,233	n.a.
Traffic from Australia—				
Qantas Airways Limited	5,634	1,102,369	42,125	n.a.
Other airlines	7,153	1,526,782	81,618	n.a.
All airlines	12,787	2,629,151	123,743	n.a.

(a) Australia and Norfolk Island. (b) Includes Qantas flights using aircraft leased from other airlines. (c) Difference between in/out numbers arises because some outward flights are operated as non-scheduled, and thus not counted in above table.

Statistics covering the operations of Australia's regular overseas services are shown in the following table. These operations include all stages of Qantas flights linking Australia with overseas countries.

AIR TRANSPORT: OPERATIONS OF AUSTRALIA'S SCHEDULED OVERSEAS SERVICES

	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86
Hours flown number	73,679	77,910	82,409	83,551	89,952	100,653
Kilometres flown '000	58,188	61,052	64,898	65,670	71,046	79,050
Passengers—						
Embarkations number	1,883,477	2,020,107	2,101,788	2,189,669	2,449,596	2,671,486
Passenger-kilometres '000	14,876,509	14,818,491	14,477,756	15,247,801	16,858,595	18,233,088
Freight—						
Tonnes uplifted tonnes	53,753	66,036	75,375	84,844	90,357	91,961
Tonne-kilometres '000	418,849	479,996	485,549	563,268	637,590	691,352
Mail—						
Tonnes uplifted tonnes	3,919	4,344	4,219	4,410	4,744	4,869
Tonne-kilometres '000	36,581	39,244	40,058	40,324	43,231	45,370

The air cargo statistics set out in the following table have been compiled from information contained in import and export documents submitted by importers and exporters, or their agents to the Australian Customs Service as required by the *Customs Act 1901*.

AIR CARGO BY TRADE AREA, 1985-86

Trade area	Inward cargo		Outward cargo	
	Gross weight	Value	Gross weight	Value
	tonnes	\$'000	tonnes	\$'000
Europe	33,168	2,248,439	5,398	427,596
East Asia	7,305	246,354	15,846	488,172
Japan and North Asia	9,194	701,864	10,054	507,742
North America—E. Coast	13,634	1,285,210	3,173	206,819
North America—W. Coast	9,721	1,216,198	6,974	252,896
Central America and Caribbean	58	9,037	59	3,478
South America—E. Coast	639	52,735	26	4,309
South America—W. Coast	64	5,691	35	1,854
Africa—Mediterranean	1	26	27	534
West Africa	18	4,564	220	4,090
South and East Africa	554	19,023	386	14,542
Red Sea and Mediterranean Middle East	119	29,569	915	7,909
Middle East Gulf	26	18,960	15,114	47,480
West India	753	31,058	417	7,299
East India	1,302	33,795	142	5,899
South East Asia	3,889	350,531	30,182	270,599
New Zealand	23,856	416,355	22,930	472,345
Papua New Guinea and Solomon Islands	360	94,634	2,186	70,668
Pacific Islands and other countries	713	48,517	5,167	48,197
Trade area not specified	171	2,209	9,537	152,499
Total	105,549	6,814,774	128,787	2,994,930

Domestic activity

Both the Commonwealth and the State Governments may exercise controls over intrastate domestic aviation by virtue of their respective powers under the Constitution. The States of New South Wales, Queensland, Western Australia and Tasmania, and the Northern Territory, license air services within their borders, having regard to public interest and other considerations; in some cases approval of intrastate air fares is also required. Victoria and South Australia choose not to regulate air services and, within these States, Commonwealth requirements only must be satisfied to conduct air services. (The Commonwealth alone regulates interstate aviation and negotiates the provision of international air services with the governments of other countries.)

Trunk route services

The Commonwealth regulates domestic air transport on economic grounds in Australia through arrangements commonly known as the 'two-airline policy' which have existed in various forms for more than thirty years. Under the policy the operation of regular passenger air services over the main domestic or 'trunk' routes is restricted generally to the Commonwealth-owned Australian National Airlines Commission, trading as Australian Airlines (formerly Trans Australia Airlines) and the privately owned Ansett Airlines of Australia (a division of Ansett Transport Industries (Operations) Pty Ltd, a wholly owned subsidiary of Ansett Transport Industries Ltd). The premises underlying the policy have been that the Australian domestic trunk route network could support no more than two major operators and that any move towards a private or public monopoly was not in the public interest.

As the Commonwealth is generally constrained to licensing domestic air services on operational grounds only, it maintains the policy essentially by using the Customs (Prohibited Imports) Regulations to restrict other operators' access to aircraft which could be used to compete with Australian Airlines and Ansett over the trunk routes. The policy in its present form is based on legislation passed by Parliament in 1981—namely the *Airlines Agreement Act 1981*, the associated *Airlines Equipment Amendment Act 1981* and the *Independent Air Fares Committee Act 1981*.

The *Airlines Agreement Act 1981* approved the 1981 Airlines Agreement, the parties to which are the Commonwealth, Australian Airlines and Ansett. The Agreement provides that the Commonwealth or Ansett may give three years notice of termination.

On 7 October 1987 the Minister for Transport and Communications, Senator Gareth Evans Q.C., announced the Government's intention to withdraw from economic regulation of the domestic aviation industry and placed before the Parliament a motion that the Commonwealth give notice of termination of the Agreement.

At 30 June 1987 the Ansett fleet included 5 Boeing 767s, 12 Boeing 727s, 12 Boeing 737s and 6 Fokker F27 Friendships. At the same date, Australian Airlines operated a fleet of 11 Boeing 727s, 12 Boeing 737s, 3 Airbus A300s and 5 McDonnell-Douglas DC9s.

Regional services

In addition to their competitive trunk route services, both Ansett and Australian Airlines operate limited domestic regional services on non-competitive routes. There are also a number of smaller regional airlines so-called because in general they provide regular passenger air services in specific geographic regions.

However, in recent years East-West Airlines has considerably extended its network beyond its traditional services within New South Wales. In July 1987, East-West Airlines was purchased by Thomas Nationwide Transport Ltd and News Ltd which jointly own Ansett Transport Industries Ltd. Apart from East-West Airlines, the regional airlines are either owned by Australian Airlines (Air Queensland) or are divisions of Ansett Transport Industries (Operations) Pty Ltd (Ansett of Western Australia, Airlines of New South Wales and Airlines of Northern Australia).

The predominant aircraft types used by regional airlines are the Fokker F28 turbo-jet and the Fokker F27 turbo-prop. East-West Airlines and Air New South Wales use both types; Ansett of Western Australia uses the F28 and BAe 146 turbo-jets; Airlines of Northern Australia and Air Queensland use F27 and DC3 aircraft.

Air Queensland announced that it is to cease all operations at the end of April 1988.

Commuter services

Commuter operators are, in general, required to hold a supplementary airline licence which authorises regular passenger air services using aircraft with capacity to carry no more than 38 passengers or a 4,200 kg maximum payload. Like regional airlines they generally operate over routes other than trunk routes and often operate into centres not served by an airline. At 30 June 1987 there were 46 operators of commuter services in Australia.

The aircraft types currently used by commuter operators are predominantly those in the 6–10 seat category, such as the Piper PA31 and PA32 and Cessna 310, 402, and 404 series. Many also operate the larger DHC6 Twin Otter, Beechcraft Super King Air, Swearingen Metroliner and Embraer Bandeirante. British Aerospace Jetstream 31 and Shorts 330 and 360 are also used. During 1986 commuter operators carried some 1.1 million passengers.

General aviation

In addition to trunk route, regional and commuter services, there is a wide range of other activities undertaken by the aviation industry. Charter operations involve the use of aircraft in operations for the carriage of passengers and cargo for hire or reward which are not both scheduled and available to the public. More than 600 operators in Australia hold charter licences.

Aerial work and private operations do not involve the commercial transport of passengers and cargo for hire or reward. Aerial work involves the use of aircraft in operations such as aerial survey, aerial agriculture, advertising and flying training. Holders of charter licences generally hold aerial work licences as well. Private operations include the use of aircraft for the personal transportation of the owner and the carriage of persons or goods without a charge being made for the carriage. In certain circumstances some operations which would otherwise be classified as aerial work may be considered private. No air service licence is required to conduct private operations.

Cargo services

Cargo, i.e. freight and mail, is also carried on the regular public passenger services operated by Australian Airlines, Ansett, regional airlines and commuters, as well as on charter services. Also Australian Airlines and Ansett each has a dedicated B727 cargo aircraft involved in regular interstate services. The Interstate Parcel Express Company (Australia) Pty Ltd, trading as IPEC Aviation, operates cargo airline services using two Argosy aircraft and domestic cargo charter services using a DC9 aircraft, also over interstate routes.

Scheduled domestic airlines services

Statistics of all regular domestic airline services are set out in the following table.

**AIR TRANSPORT: OPERATIONS OF SCHEDULED DOMESTIC AIRLINE SERVICES
AUSTRALIA (a)**

		1981–82	1982–83	1983–84	1984–85	1985–86p	1986–87p
Hours flown	number	268,339	245,567	242,075	250,779	261,978	276,974
Kilometres flown	'000	136,769	127,952	126,087	n.a.	n.a.	n.a.
Passengers—							
Passenger uplifts	number	11,396,510	10,332,934	10,597,651	11,359,700	12,057,300	12,512,600
Passenger-kilometres	'000	10,155,379	9,327,206	9,684,589	10,413,381	11,277,031	12,042,318
Freight—							
Tonnes uplifted	tonnes	136,250	141,853	149,879	153,181	150,369	137,692
Tonne-kilometres	'000	117,936	124,796	137,819	139,597	138,595	129,546
Mail—							
Tonnes uplifted	tonnes	16,841	16,767	17,571	18,467	17,997	18,713
Tonne-kilometres	'000	16,515	17,167	17,621	18,603	18,128	19,068

(a) Includes flights of all domestic airlines, between airports located within Australia and includes flights by East-West Airlines and Airlines of New South Wales between Australia and Norfolk Island.

Airport activity—domestic passengers

The statistics set out in the next table have been compiled by aggregating all domestic airline passenger traffic loaded and unloaded at each airport. They include passengers on flights between Australia and Norfolk Island. At ports where through-passengers transfer between flights, such passengers are counted as embarking as well as disembarking passengers.

**SCHEDULED DOMESTIC AIRLINES PASSENGER UPLIFTS AND DISCHARGES AT
PRINCIPAL AUSTRALIAN AIRPORTS**

<i>Airport</i>	<i>1981-82</i>	<i>1982-83</i>	<i>1983-84</i>	<i>1984-85</i>	<i>1985-86</i>	<i>1986-87</i>
Sydney	5,917,874	5,338,944	5,501,492	5,900,743	6,334,313	6,683,652
Melbourne	5,038,634	4,500,234	4,550,568	4,851,880	5,127,843	5,314,559
Brisbane	2,758,922	2,518,841	2,554,622	2,684,608	2,800,387	2,979,136
Adelaide	1,852,906	1,635,544	1,684,281	1,762,845	1,825,412	1,711,638
Perth	1,017,173	995,987	1,049,567	1,127,184	1,230,846	1,323,613
Canberra	820,943	786,449	838,175	931,673	990,222	1,006,713
Coolangatta	648,384	553,886	567,623	630,474	731,103	852,648
Cairns	442,524	387,895	404,168	426,206	494,217	623,050
Hobart	475,127	433,910	448,549	481,612	493,794	477,283
Townsville	396,622	377,186	388,752	404,463	409,478	417,404
Launceston	376,536	356,261	352,494	390,867	361,795	353,089
Darwin	287,210	266,268	281,032	302,590	334,321	338,819

General aviation activity, which covers all flying other than scheduled airline operations has grown rapidly throughout Australia in recent years and is an important sector of the Australian aviation industry. Hours flown by general aviation during 1984-85 were estimated at 1.73 million.

Aerodromes

The number of aerodromes throughout Australia and its external territories at 30 June 1987 was 436. Sixty-nine were owned by the Commonwealth Government and 367 by local authorities and private interests. The number of licensed helipads throughout Australia and its Territories is 6. Capital expenditure on aerodrome and building construction was \$113.4 million in 1986-87. Maintenance expenditure on Commonwealth Government-owned aerodromes during 1986-87 was \$14.2 million. Expenditure on development and maintenance grants to licensed aerodromes participating in the Local Ownership Plan totalled \$10.2 million.

Airway facilities

A total of 511 navigational aids were in service at 30 June 1987. The total includes 250 non-directional beacons (NDB), 108 distance measuring equipment (DME), 21 international distance measuring equipment (DMEI), 80 VHF omni-directional ranges (VOR), 17 instrument landing systems (ILS), five twin locator approach systems and 30 ILS locators. In addition, there are 60 privately owned navigational aids which include one DME, two DMEIs, two VORs and 55 NDBs.

One hundred and ninety-six aerodromes are now equipped with night landing facilities. One hundred and twenty-six Australian-designed 'T' systems (T-VASIS) are operating. Seven long-range surveillance radars, two-short range and seven secondary surveillance radars are also in operation. There are 32 fully equipped Air Traffic Control Centres and 43 flight service units in operation.

Air transport registrations, licences, etc., in force in Australia

At 31 December 1986 there were 7,238 aircraft registered in Australia. At the same time 41,338 persons held aeroplane pilot licences, of which 23,289 were private pilots, 4,745 commercial pilots, 1,649 senior commercial pilots, 2,200 air transport pilots and 9,455 student pilots. In addition, 1,910 persons held helicopter pilot licences of which 231 were private pilots, 826 commercial pilots, 124 senior commercial pilots and 729 student pilots. There were also 15 gyroplane, 31 commercial balloon, 827 flight engineer and 13 navigator licences in force.

Accidents and casualties

AIR TRANSPORT: ACCIDENTS INVOLVING CASUALTIES (a), AUSTRALIA (b)

	1981	1982	1983	1984	1985	1986
Number	39	51	44	40	31	40
Persons killed	53	53	47	45	43	44
Persons seriously injured	33	35	29	25	27	31

(a) Accidents involving civil aircraft (including registered gliders) which resulted in death or serious injury. Excludes parachutists and casualties involving non-registered aircraft. (b) Excludes accidents outside Australia involving aircraft on the Australian register, includes all accidents to overseas registered aircraft that occur in Australia.

POSTAL, TELECOMMUNICATIONS AND RADIOCOMMUNICATIONS SERVICES

In this section, particulars for the Australian Capital Territory are included with those for New South Wales, and the South Australian figures include particulars for the Northern Territory, unless otherwise indicated.

Australian Postal Commission

The Australian Postal Commission was established under the *Postal Services Act 1975*. It commenced operations on 1 July 1975 and trades under the name Australia Post.

Under the Postal Services Act, the Australian Postal Commission is required to operate Australia's postal services in such a manner as will best meet the social, industrial and commercial needs of the Australian people. In performing its functions, the Commission is required to have regard for the special needs for postal services of Australian people who reside or carry out business outside the cities. It is also required to raise sufficient revenue to cover operating expenditure and to fund at least half of its capital expenditure.

Australia Post provides surface and airmail services within Australia and to and from other countries. Special services provided include express courier, electronic mail, priority paid mail, business reply post, cash-on-delivery, certified mail, freepost, messenger delivery, a security mail service and a number of reduced rate services.

Australia Post operates a money transfer service, sells postal products such as padded post bags, postal stationery and philatelic items, and acts as agent on behalf of Commonwealth, State and local Government departments and authorities and for private sector principals.

Australia Post is the authority for the issue of postage stamps throughout the Commonwealth of Australia and its external territories.

The following tables give details of Australia Post's financial results, services and operation.

AUSTRALIAN POSTAL COMMISSION: PROFIT AND LOSS

(\$'000)

Year ended 30 June—	1982	1983	1984	1985	1986	1987
Revenue—						
Mail services	767,843	870,719	971,676	1,080,539	1,186,422	1,370,930
Commission on agency services	86,935	90,113	90,449	94,547	87,291	83,328
Postal money order service	10,059	10,544	11,632	11,940	11,846	12,384
Other revenue	22,591	28,058	21,993	24,269	39,832	38,440
Total	887,428	999,434	1,095,750	1,211,295	1,325,391	1,505,082
Expenditure—						
Labour and related expenditure	n.a.	774,662	831,600	911,776	973,294	1,049,186
Carriage of mail by contractors	n.a.	83,665	92,984	103,551	109,418	121,183
Depreciation and interest	n.a.	15,056	15,299	17,159	22,294	27,744
Other expenditure	n.a.	117,257	131,716	154,301	189,530	252,079
Total	906,650	990,640	1,071,599	1,186,787	1,294,536	1,450,192

**AUSTRALIAN POSTAL COMMISSION: PROFIT AND LOSS STATEMENT
FOR THE YEAR ENDED 30 JUNE 1987**
(S'000)

Revenue—	
Mail services	1,370,930
Commission on agency services	83,328
Postal money order service	12,384
Other revenue	38,440
Total	1,505,082
Expenditure—	
Labour and related expenditure	1,049,186
Carriage of mail by contactors	121,183
Accommodation	64,994
Stores and supplies	71,865
Depreciation	20,542
Interest	7,202
Other operating expenditure	115,220
Total	1,450,192
Operating Profit	54,890
Appropriations—	
Accumulated profit brought forward	29,746
Operating profit for the year	54,890
Adjustments to provision	(23,000)
Accumulated profit carried forward	61,636

**AUSTRALIAN POSTAL COMMISSION: PERSONS ENGAGED IN PROVIDING POSTAL
SERVICES AT 30 JUNE 1986 AND 1987**

	N.S.W. (incl. H.Q. A.C.T.)		Vic.	Qld	S.A. (incl. N.T.)		W.A.	Tas.	Aust. 1987	Aust. 1986
Official staff (a)—										
Full-time Permanent	637	12,723	8,867	4,281	2,685	2,469	719	32,381	31,766	
Full time Temporary	19	1,715	760	299	132	208	32	3,165	3,136	
Part-time	—	1,229	613	337	350	351	93	2,973	2,872	
Other staff (b)	—	2,775	1,761	1,617	774	658	374	7,959	8,330	
Total	656	18,442	12,001	6,534	3,941	3,686	1,218	46,478	46,104	

(a) 'Official Staff' are those whose employment is governed by the *Postal Services Act 1975*. (b) Includes persons who are not employed under the *Postal Services Act*, but who are engaged on the basis of business transacted. Also included are persons or organisations who hold road mail service contracts with the Australian Postal Commission.

**AUSTRALIAN POSTAL COMMISSION: MAIL DELIVERY NETWORK AND POST OFFICES
AT 30 JUNE 1986 AND 1987**

	N.S.W. (incl. A.C.T.)		Vic.	Qld	S.A. (incl. N.T.)		W.A.	Tas.	Aust. 1987	Aust. 1986
Contract road services	1,298	729	812	277	244	182	3,542	4,239		
Households receiving mail	2,118,233	1,498,819	955,237	586,146	525,528	158,705	5,842,668	5,553,392		
Businesses receiving mail	218,426	145,187	104,666	55,569	52,977	15,610	592,435	545,489		
Post Offices—										
At 1 July 1986	501	337	213	146	154	41	1,392			
At 30 June 1987	500	338	216	145	152	41				
Agencies—										
At 1 July 1986	994	854	528	416	257	189	3,238			
At 30 June 1987	945	845	523	399	248	185				
Total post offices and agencies	1,445	1,183	739	544	400	226	4,537	4,630		

AUSTRALIAN POSTAL COMMISSION: TOTAL POSTAL ARTICLES HANDLED
(^{'000})

<i>Year ended 30 June</i>	<i>Posted for delivery within Australia</i>	<i>Posted for places abroad</i>	<i>Received from abroad</i>	<i>Total postal articles handled</i>
1982	2,606,124	105,154	165,276	2,876,554
1983	2,669,363	111,050	163,575	2,943,988
1984	2,764,113	106,585	164,362	3,035,060
1985	2,877,476	107,783	163,074	3,148,333
1986	2,970,353	115,688	166,444	3,252,485
1987	3,143,251	125,995	169,306	3,438,552

AUSTRALIAN POSTAL COMMISSION: ORDINARY POSTAL ARTICLES (a)
(^{'000})

<i>Year ended 30 June</i>	<i>Standard articles</i>			<i>Total articles</i>
	<i>Posted for delivery within Australia</i>	<i>Posted for places abroad</i>	<i>Received from abroad</i>	
1985	2,468,109	91,829	117,827	2,677,765
1986	2,543,624	101,025	121,022	2,765,671
1987	2,689,440	108,228	122,379	2,920,047

STATES—YEAR ENDED 30 JUNE 1987

New South Wales (incl. A.C.T.)	1,078,789	41,309	61,883	1,181,981
Victoria	722,741	35,369	36,235	794,345
Queensland	390,973	12,265	8,370	411,608
South Australia (incl. N.T.)	218,548	7,969	4,718	231,235
Western Australia	223,261	11,316	9,917	244,494
Tasmania	55,128	nil	1,256	56,384

(a) Includes Certified, Messenger Delivery and Priority Paid Mail.

Telecommunications services within Australia

The Australian Telecommunications Commission was established on 1 July 1975 under the provisions of the *Telecommunications Act 1975* and operates under the trading name Telecom Australia.

Functions

Under section 7 of the Telecommunications Act the Minister may, after consultation with the Commission, give to the Commission, in writing, directions with respect to the performance of its functions and the exercise of its powers, as appear necessary in the public interest. The functions of the Commission are to:

- plan, establish, maintain and operate telecommunications services within Australia;
- operate such other services as the Commission is authorised by the Telecommunications Act to operate;
- provide, at the request of the Commonwealth Government, technical assistance outside Australia in relation to the planning, establishment, maintenance and operation of telecommunications services in countries outside Australia;
- do anything incidental or conducive to the performance of any of the preceding functions.

The Commission is required to perform its functions in such a manner as will best meet the social, industrial and commercial needs of the Australian people for telecommunications services and make its services available throughout Australia for all people who reasonably require those services.

Subsidiary and associated companies

The Commission may also, with the approval of the Minister, form, or participate with other persons in the formation of, a company that would carry on a business relating to telecommunications. Pursuant to the powers conferred on it by legislative amendments contained in section 10A of the Telecommunications Act, Telecom has:

- formed a wholly-owned subsidiary company, Telecom Australia (International) Limited, to engage in international consulting and project management;
- formed a private company, QPSX Communications Pty Ltd, to develop a high-speed distributed packet switch network (Telecom owns a 60 per cent equity in the company);
- participated in the formation of a company, National Protocol Support Centre Ltd, which will provide a reference, support, testing and evaluation service to industry in relation to Open System Interconnection interface protocols.

Telecom holds a 25 per cent shareholding in AUSSAT Pty Ltd.

Statistics

The following table shows selected statistics relating to the latest three years of the Commission's operations.

AUSTRALIAN TELECOMMUNICATIONS COMMISSION: SUMMARY OF SELECTED STATISTICS

Year ended 30 June—	1985	1986	1987	
FINANCIAL				
Revenue	\$ million	4,764.9	5,471.7	6,047.5
Expenses	"	4,379.7	5,007.7	5,604.2
Operating profit	"	385.2	464.0	443.3
Rate of return	%	11.1	10.8	10.6
Internal funding	%	65	71	71
Addition to fixed assets	\$ million	1,570.1	1,980.9	2,403.1
Net value of fixed assets	"	10,154.9	11,276.6	12,759.4
TRAFFIC (million)				
Telephone calls				
Local	6,500.0	7,195.2	7,623.1	
Trunk	1,026.1	1,172.1	1,327.0	
To overseas	27.1	34.6	47.8	
Total	7,553.2	8,401.9	8,997.9	
Telex calls				
National	49.4	51.3	45.8	
To overseas	14.3	15.1	15.4	
Total	63.7	66.4	61.2	
Telegrams				
National	3.4	2.9	2.4	
To overseas	0.7	0.6	0.3	
Total	4.1	3.5	2.7	
Calls to recorded information services	107.2	120.0	129.7	
NETWORK AND OPERATIONS				
Telephone				
Demand for new services	615,628	616,908	610,267	
Connection of new services	590,417	614,018	617,806	
Services in operation	6,186,835	6,501,468	6,816,301	
Telex				
Services in operation	44,851	46,423	43,029	
Data services				
Datel service—data modems				
Modems in operation	94,672	102,367	105,825	
Digital data service—network terminating units	11,959	22,753	35,145	
AUSTPAC service—number of outstations	—	2,104	4,041	
STAFF				
Average full-time staff	91,387	94,420	93,857	
Total payroll	\$ million	2,006.9	2,186.1	2,300.5

Australia's National Satellite System—AUSSAT

AUSSAT Pty Ltd

AUSSAT Pty Ltd was established by the Federal Government in November 1981 as a commercial company to own, operate and manage Australia's National Satellite System.

AUSSAT'S Memorandum and Articles of Association and the *Satellite Communications Act 1984* require the company to:

- provide a telecommunications system for Australia by using space satellites and make available the facilities for use in telecommunications systems in neighbouring regions;
- provide service on a non-discriminatory basis and to set fair and equitable charges;
- operate as a commercial taxpaying enterprise paying reasonable dividends to the shareholders.

The company currently has a paid up equity capital of \$100 million. Seventy-five per cent of its shareholding is held by the Australian Government with the remaining 25 per cent being held by Telecom Australia.

AUSSAT has a board of nine directors and employs a staff of some 250 people, the majority of whom are highly qualified engineers, technicians and scientists.

The Australian National Satellite System

AUSSAT's first generation satellite system comprises three Hughes Aircraft Company HS 376 spin stabilised satellites. Geostationary orbit locations are: AUSSAT 1—160°E longitude, AUSSAT 2—156°E longitude with AUSSAT 3 at 164°E longitude, some 36,000 kilometres above the earth, directly over the equator.

Each satellite has a minimum design life of seven years. The first two satellites, launched by the Space Shuttle in August and November 1985 respectively, are expected to achieve a seven and a half-year life. It is expected that AUSSAT 3, launched in September 1987 by the European ARIANE rocket, will achieve an on-orbit life of some ten years.

Each satellite carries four high powered (30 Watt) transponders and eleven standard power (12 Watt) transponders, providing a total of 12 x 30 Watt transponders and 33 x 12 Watt transponders on the three satellite first generation system. The satellites operate in the 12-14 GHz KU Band, on a dual polarised basis to provide for re-use of band width.

The three dish antenna system used on the Australian satellites is a unique and distinguishing feature. The antenna array enables each satellite to provide national beam coverage of the entire Australian continent and its offshore regions and four spot beams covering:

- North East (Queensland)
- Central Australia (Northern Territory and South Australia)
- West (Western Australia)
- South East (New South Wales, Victoria and Tasmania)

The satellites also have the capability of providing a switched beam to cover Papua New Guinea, and AUSSAT 3 has a switched beam capability covering the south-west Pacific region and New Zealand.

AUSSAT also operates two telemetry, tracking command and monitoring ground stations. The main centre is located in the Sydney suburb of Belrose, and it is from this station that final positioning and maintenance of the satellites in the geostationary orbit is monitored and controlled. A backup to the Belrose Satellite Control Centre is located in the Perth suburb of Lockridge.

Ground segment

AUSSAT owns and operates a network of eight Major City Earth Stations (MCES) located in Melbourne, Hobart, Adelaide, Perth, Darwin, Brisbane, Sydney and Canberra.

These facilities are designed to provide 'gateway' access to the satellites for AUSSAT customers whose requirements for services do not warrant the purchase of their own satellite earth stations. Microwave or land line connection from each station to customer premises is available.

Applications

The first AUSSAT satellite was commissioned for service on 1 October 1985 with the second satellite coming on-line on 1 January 1986.

Since commencing operation, the satellite system has proven to be an outstanding success with demand for capacity being far greater than originally projected. More than 80 per cent of available capacity on the first two satellites has been contracted and is now in service.

The design of the satellite communications payload and beam configuration provides multi-purpose capabilities for the system. It allows for the provision of broadcast services for television and radio, as well as program distribution and interchange and for a full range of telecommunication services such as voice, video, telex and data.

Summary of current AUSSAT applications

Broadcasting direct-to-home

The single largest application at the present time is the provision of broadcasting services for television and radio directly into homes in remote outback regions of Australia. This service, known as the Homestead and Community Broadcasting Satellite Service (HACBSS) is being provided, initially, by the Australian Broadcasting Corporation (ABC). The HACBSS service provided by the ABC comprises television programming, two AM radio services and a stereo FM radio service.

With the launch and commissioning of AUSSAT 3, the service provided by the ABC will be fully supplemented by a similar commercial service known as the Regional Commercial Television Service.

Major network television

Australia's three major television networks are also large users. Each network has leased a standard power (12 watt) transponder and is using the satellite system for program distribution, news gathering and itinerant special program events, such as sporting fixtures.

Aviation

The Department of Transport and Communications has contracted for a total of four standard power transponders which will be used to establish a fully duplicated network of reliable voice and data links between 46 manned air traffic control facilities and 55 unmanned remote VHF air-to-ground facilities throughout Australia.

Commercial applications

Apart from the applications detailed above, AUSSAT has contracted with a number of government agencies and commercial organisations for the provision of a wide variety of services. Uses range from the provision of private network voice, video and data services to exciting applications in entertainment distribution, remote and long distance education, emergency services, health and medical services, including the use of slow scan television for diagnostic purposes.

The next generation

AUSSAT has completed the design of its second generation satellite system planned for launch in 1991-92.

The system, for which tenders were called, will comprise two much larger satellites providing increased capacity and higher power. Tenders closed at the end of 1987 and the contract will be let by mid-1988.

Apart from ensuring continuity of established services the second generation satellites will carry L Band transponders to enable the establishment of a domestic mobile satellite service. This service will be operational by 1992 and could potentially be the first such domestic service in the world.

Overseas telecommunications services

The Overseas Telecommunications Commission Australia (OTC) was formed by an Act of Parliament in 1946. OTC's principal responsibility is to provide, at the lowest possible rates, all of Australia's communications links with other countries and ships at sea. Services provided include telephone, text, data, graphics and maritime communications.

These services, for the business, social, public and private use of all Australians, are provided through OTC's investment in international cable, satellite and radio networks. OTC is a government-owned business enterprise and, as such, operates under the auspices of the Department of Transport and Communications.

OTC achieved a record turnover of \$541 million in 1986-87, an increase of 14 per cent over the previous 12 months. The international telephone service provided around 73 per cent of revenue—an increase of 17 per cent, telex around 9 per cent, and leased services around 5 per cent—an increase of 15 per cent. With a staff of 2,077, profits exceeding \$125 million and assets of more than \$885 million, OTC continues to display the highest productivity of Australian public sector enterprises.

More detailed statistics are contained in OTC's Annual Report.

Communications networks

OTC has developed a sophisticated international telecommunications network using modern digital technology to provide direct connections to almost 200 countries, with onward connections to nearly 300.

All of Australia's worldwide communications are directed via OTC's three international gateways at Paddington and Broadway in Sydney and Scoresby in Melbourne, to the international satellite and submarine cable networks.

Through OTC's shareholding in INTELSAT, Australia is part-owner and sixth-largest user of the global communications satellite system, including operational and spare satellites in orbit above the Atlantic, Indian and Pacific Ocean regions.

OTC's earth stations are strategically placed to access communications satellites above the Indian and Pacific Oceans. There are two OTC satellite earth stations located at Perth, Western Australia, Ceduna, South Australia and Moree, New South Wales; one at Healesville near Melbourne; and one at Oxford Falls in Sydney.

More operations will transfer to Sydney in late 1988. This proximity to a major population centre will allow OTC to provide the best possible quality of service for international communications users.

OTC is the world's third-largest owner of submarine communications systems. Before the end of the century, it is estimated that OTC will need to provide more than 50 times its current international communications capacity. To meet this demand, OTC will invest more than \$2 billion over the next ten years in the world's largest optical fibre cable network spanning the Pacific Ocean.

Wherever submarine cables come ashore, a cable station is located, linking international communications through OTC's gateways to Australia's national communications network. OTC-owned cable stations and junction points are located at Cairns, Perth, Sydney and Norfolk Island.

OTC is also responsible for all communications between Australia and ships at sea, and operates a network of maritime communications stations strategically located around Australia's coastline. OTC is a foundation member of the international maritime satellite organisation, INMARSAT, which provides high-quality voice, text and data communications for suitably equipped vessels.

Services

OTC provides voice, data, video and text communications services that link Australians to the world. These services include OTC International Direct Dial, allowing Australians to dial direct almost 200 countries worldwide; OTC Telex, which allows users to contact 1.6 million subscribers in more than 200 countries; and OTC Data Access, a service that provides access to international databases and computer-based information sharing. Other services include international facsimile, electronic mail, private networks and videoconferencing.

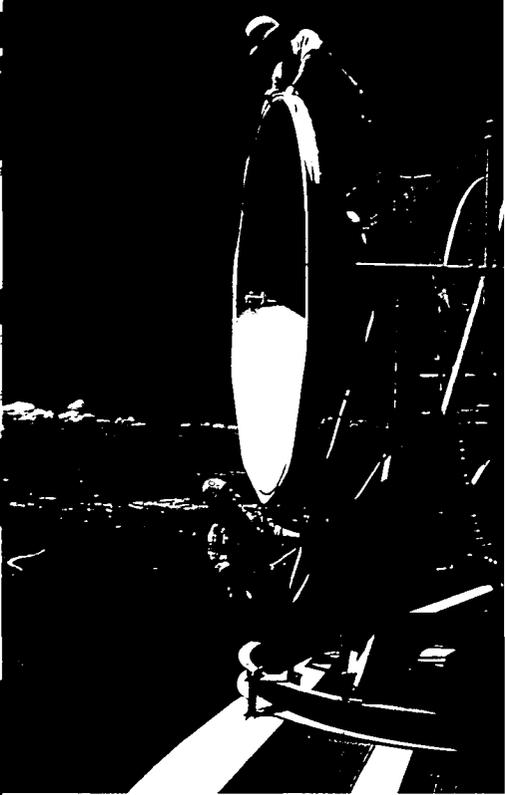
New services are constantly being developed. Teletex, for example, is a text messaging service offering high-speed transmission of fully formatted documents. It will allow computers to fully interface, and facilitate transfer of text between word-processing packages.

Radiocommunication stations

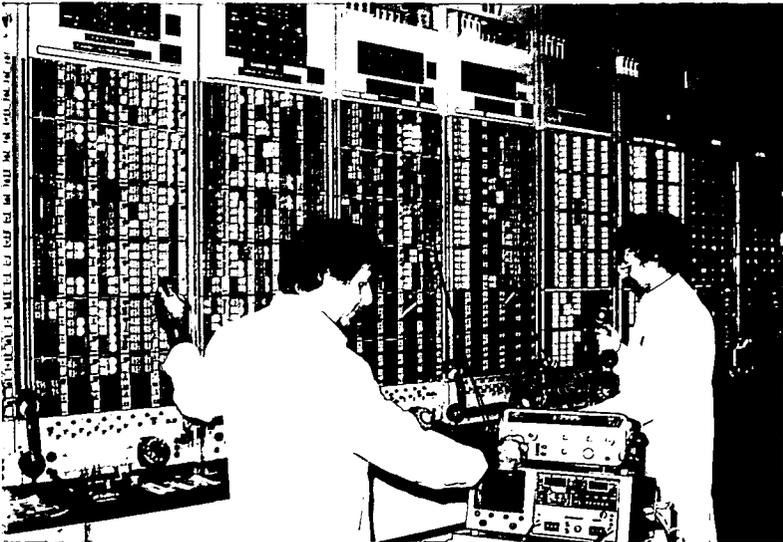
At 30 June 1987 there were 620,721 civil radiocommunication stations authorised for operation in Australia and its Territories. Of these, 291,799 were associated with land mobile services, 15,563 were fixed services, 56,074 were for marine services, 205,823 were citizens band (CB) stations and 16,751 were amateur stations. Particulars of broadcasting stations are shown on page 771.



Australian Broadcasting Corporation (ABC) news helicopter.



Linesman and microwave dish on Black Mountain Telecommunications Tower, Canberra.



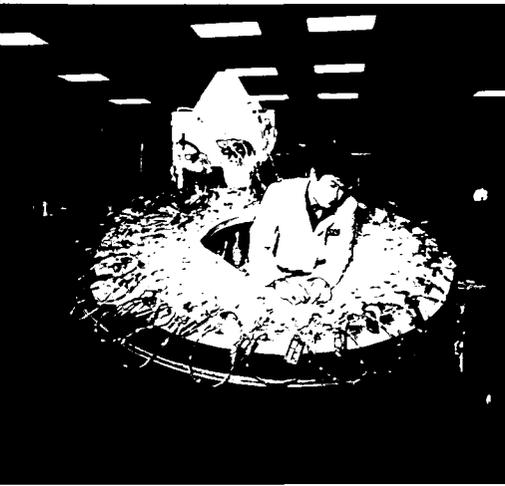
International telephone switchboard at the Overseas Telecommunications Commission (OTC), Sydney.

Photographs—Promotion Australia

Sports commentator at Canterbury Race-track.



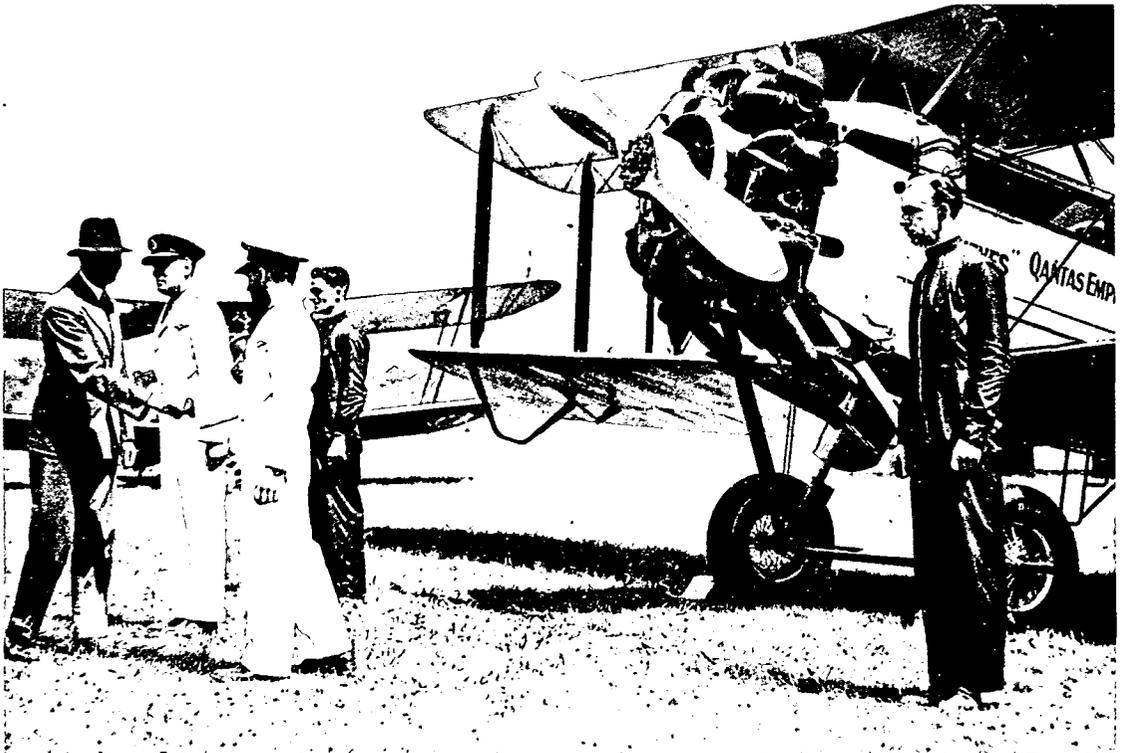
Wiring harness used in AUSSAT.





A rare photograph of Lawrence Hargrave (1850-1915) with some of his box kites at Stanwell Park, south of Sydney, Australia. Hargrave was one of the world's early experimenters in aviation.

Promotion Australia



H.R.H. the Duke of Gloucester at the Inauguration of the first air mail between Australia and Great Britain, 10 December 1934.

QANTAS

Changing coaches between Bellingen
and Grafton.

National Library of Australia



Railway station and yard at Palmerston, later renamed Darwin, Northern Territory, about 1890.

Promotion Australia

The telegraph receiving
room at the General Post
Office, Sydney, N.S.W.,
early in the century.

Promotion Australia





Melbourne tram painted by Mirka Mora.



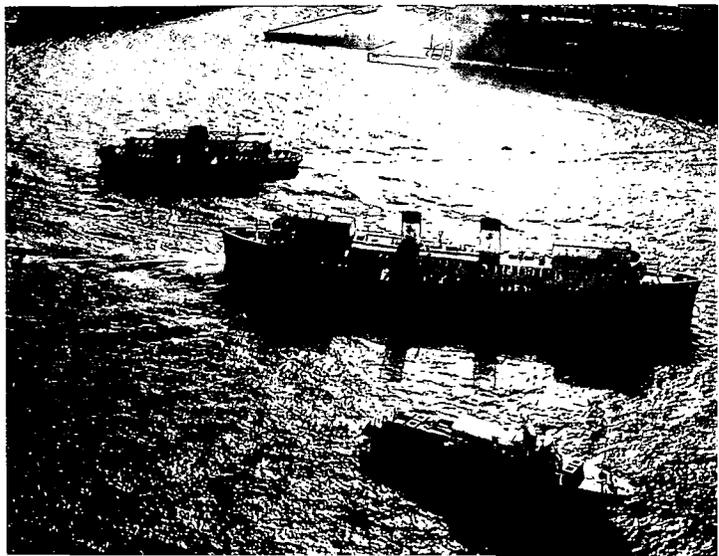
An early Australian caravan.



Puffin Billy tourist train in the Dandenong Ranges, Victoria.

Photographs—Promotion Australia

Ferries and hovercraft on Sydney Harbour.



A warning sign on the Birdsville Track.

RAA WARNING RAA
 EXTREME HEAT, SAND-DRIFT & OTHER HAZARDS
 BEYOND THIS POINT REQUIRE SPECIAL PRECAUTIONS

- ① CALL AT BIRDSVILLE POLICE STATION
 FOR ADVICE BEFORE DEPARTURE
- ② ENSURE THAT EXTRA RATIONS, WATER & FUEL CARRIED IS
 ADEQUATE TO ALLOW FOR DELAYS. THERE ARE NO REFUELLING
 FACILITIES FOR APPROX OVER 300 MILES ON THE BIRDSVILLE TRACK.
- ③ IN THE EVENT OF MISHAP
 DO NOT LEAVE YOUR VEHICLE



BROADCASTING AND TELEVISION

Radio and television broadcasting falls within the jurisdiction of the Commonwealth Government and, pursuant to the *Broadcasting Act 1942*, is one of the responsibilities of the Minister for Transport and Communications. Federal bodies which are involved include the Australian Telecommunications Commission, the Australian Broadcasting Corporation (ABC), the Special Broadcasting Service, the Australian Broadcasting Tribunal, the Department of Transport and Communications, the Overseas Telecommunications Commission and AUSSAT Pty Ltd.

Basically, the Australian broadcasting system comprises the following types of stations:

- national radio and television stations broadcasting programs produced by the Australian Broadcasting Corporation;
- commercial radio and land television stations operated by companies under licence;
- public radio stations operated by corporations under licence on a non-profit basis;
- stations operated under the auspices of the Special Broadcasting Service.

As from 1 January 1977, the Minister for Transport and Communications assumed responsibility for broadcasting planning, including all matters relating to the technical operation of stations, and for the investigation of interference to the transmission and reception of programs.

The commercial radio and television service

Commercial radio and television stations are operated by companies under licences granted by the Australian Broadcasting Tribunal and with technical operating conditions determined by the Minister for Transport and Communications. The stations obtain income from broadcasting advertisements. At 30 June 1987 there were 139 commercial radio stations in operation in Australia. Call signs for radio stations are prefixed by numerals indicating each State of Australia (2—New South Wales, 3—Victoria, 4—Queensland, 5—South Australia, 6—Western Australia, 7—Tasmania, 8—Northern Territory). In addition there were fifty commercial television stations and 159 commercial television translator stations in operation in Australia. A television translator station is a station of low power designed to receive the signals of another station and re-transmit them; it does not originate programs. There are nine limited coverage repeater stations in Australia operated by mining companies which transmit programs recorded on magnetic tape.

The public broadcasting service

The Broadcasting Act also makes provision for the granting of licences for the operation of public radio and television stations. At 30 June 1987, 67 public radio stations were broadcasting programs ranging from fine music to ethnic languages and programs produced by and directed towards specific communities. A number of public radio stations are associated with tertiary educational institutions. There are no public television services in operation.

The Special Broadcasting Service

The Special Broadcasting Service (SBS) was established by the Commonwealth Government on 1 January 1978 to provide multilingual radio services and, if authorised by regulations, to provide multilingual television services. A regulation authorising the provision of multilingual television services was gazetted in August 1978. The service is also empowered by the *Broadcasting Act 1942* to provide broadcasting and television services for such special purposes as are prescribed by the government.

In carrying out its functions, the SBS provides multilingual radio services to the Melbourne metropolitan area and Geelong through radio station 3EA which broadcasts in 55 languages for 126 hours per week; the Sydney metropolitan area through radio station 2EA which broadcasts in 59 languages for 126 hours per week; the provincial centres of Newcastle and Wollongong in N.S.W. through 2EA translator services; plus on relay to a small number of public broadcasting stations throughout Australia.

It also provides Australia's sole national UHF-only television network. Since inception in October 1980, SBS-TV has grown from servicing Melbourne and Sydney only, to providing a television transmission in all capital cities (except Darwin) plus several major regional centres.

Transmitting solely on Ultra High Frequency (UHF), SBS-TV is seen in Sydney, Melbourne/Geelong, Canberra, Adelaide, Brisbane, Perth and Hobart on UHF 28; Adelaide's foothills on UHF 43; North Wollongong on UHF 44; Newcastle on UHF 45; Cooma (N.S.W.), Goulburn (N.S.W.), Tuggeranong (A.C.T.), Warburton (Vic), Marysville (Vic), Queanbeyan (N.S.W.) and Sydney's eastern suburbs on UHF 58; Wollongong on UHF 59; and the Gold Coast on UHF 61. SBS-TV operates to many of these centres via AUSSAT.

Broadcasting services

The Australian Broadcasting Tribunal

The Australian Broadcasting Tribunal came into being on 1 January 1977. It is an independent statutory authority established by the *Broadcasting Act 1942* to regulate some aspects of commercial and public radio and commercial television in Australia. The Tribunal is empowered to grant, renew, suspend or revoke licences, to determine program and advertising standards applicable to licensed stations, to authorise changes to the ownership and control of licences, and to collect and make available information about broadcasting in Australia. In particular, the Tribunal is required to conduct public inquiries into the granting of licences following the invitation of applications by the Minister. The Tribunal may also conduct inquiries into the renewal of licences, the setting of standards of broadcasting practices, alleged breaches of licence conditions and other matters.

The National Broadcasting Service

In sound broadcasting, the programs of the National Broadcasting Service are provided by the Australian Broadcasting Corporation through transmitters operated by Telecom Australia on behalf of the ABC and the Department of Transport and Communications.

Technical facilities

At 30 June 1987 the National Broadcasting Service comprised 217 transmitting stations, of which 108 were medium frequency, 103 frequency modulation and 6 high frequency (excluding Radio Australia).

The medium-frequency transmitters operate in the broadcast band 526.5 to 1,606.5 kilohertz. The high-frequency stations, using frequencies within the band of three to thirty megahertz, provide services to listeners in sparsely populated parts of Australia such as the north-west of Western Australia, the Northern Territory, and northern and central Queensland.

Many of the programs provided by country stations are relayed from the capital cities using high-quality program transmission lines. A number of program channels are utilised to link national broadcasting stations in the capital cities of Australia. When necessary, this system is extended to connect both the national and commercial broadcasting stations.

At 30 June 1987, 83 of the ABC's medium-frequency stations were situated outside the six State capital cities.

Program facilities

The programs of the ABC cover a wide range of activities. The proportions of broadcasting time allocated on Radio 1 stations to the various types of program during 1985-86 were as follows: entertainment, 51.2 per cent; news, 9.3 per cent; sporting, 15.6 per cent; spoken word, 10.0 per cent; parliament, 11.4 per cent; religious, 1.2 per cent; rural, 0.6 per cent; and presentation, 0.5 per cent. By contrast, the ABC's radio 2 station's programming was: classical music, 41.1 per cent; light music, 0.8 per cent; entertainment, 5.4 per cent; drama and features, 6.3 per cent; education, 5.4 per cent; spoken word, 24.7 per cent; religious, 3.2 per cent; news, 8.1 per cent; rural, 3.4 per cent; and presentation, 1.2 per cent. Radio 3 (regional) stations feature a higher proportion of news and rural programs. Further particulars of the operations of the ABC in respect of music, drama and features, youth education, talks, rural broadcasts, news, and other activities are shown in the Corporation's Annual Report.

Overseas Broadcasting Service

There are six high-frequency stations at Shepparton, Victoria, three at Darwin, Northern Territory and three at Carnarvon, Western Australia which provide the overseas service known as Radio Australia. As in the case of the National Broadcasting Service, these stations are maintained and operated by Telecom Australia, and their programs are arranged by

Radio Australia. The programs, which, as well as entertainment, give news and information about Australia presented objectively, are directed to most parts of the world but with special emphasis on Asia and the Pacific. They include sixty news bulletins a day. The overseas audience has been quite substantial in recent years, as evidenced by a large number of letters from listeners abroad (169,476 in 1985-86 and 178,231 in 1986-87), Radio Australia broadcasts in nine languages—English, Indonesian, Japanese, Tok Pisin, Thai, French, Standard Chinese, Cantonese and Vietnamese.

BROADCASTING STATIONS, 30 JUNE 1987

Type of station	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.	Aust.
National—									
Medium frequency (AM)	26	9	22	10	24	6	6	5	108
High frequency (HF)	—	—	2	—	1	—	3	—	6
Frequency modulation (FM)	11	8	36	3	37	2	5	1	103
Overseas—									
Short wave (Radio Australia)	—	6	—	—	3	—	3	—	12
Commercial—									
Medium frequency (AM)	47	22	37	10	21	9	9	3	158
Frequency modulation (FM)	2	2	2	1	1	—	1	—	9
Public broadcasting—									
Medium frequency (AM)	1	—	1	1	1	—	—	1	(a)5
Frequency modulation (FM)	30	10	6	6	2	5	6	1	66

(a) Includes broadcasting stations 2EA and 3EA operated by the Special Broadcasting Service.

Television services

The National Television Service

The National Television Service is provided by the ABC through transmitters operated by Telecom Australia on behalf of the ABC and the Department of Transport and Communications. The first national station (ABN Sydney) commenced regular transmission on 5 November 1956.

The television programs provided by the ABC cover a wide range of activities. The proportions of television time allocated among the ABC's various departments during 1986-87 were as follows: drama, 11.9 per cent; children, 25.2 per cent; current affairs, 9.5 per cent; sporting, 13.2 per cent; news, 3.6 per cent; light entertainment, 1.4 per cent; education, 13.7 per cent; popular and video music, 7.8 per cent; religious, 1.2 per cent; arts, 4.3 per cent; and presentation, 4.4 per cent.

During 1986-87, nine new television translator services went into operation—two in New South Wales, two in Victoria, one in Queensland, two in South Australia and two in Tasmania.

Colour television

Colour television (PAL) was introduced in Australia late in 1974 and services became fully effective in March 1975.

TELEVISION TRANSMITTER STATIONS, 30 JUNE 1987

Type of station and location	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.	Total
National—									
Metropolitan television	4	6	2	4	2	2	1	4	25
Country television	64	25	109	21	64	21	20	—	324
Total, National.	68	31	111	25	66	23	21	4	349
Commercial—									
Metropolitan television	9	16	3	6	2	2	1	2	41
Country television	56	25	45	5	24	18	3	—	176
Total, Commercial.	65	41	48	11	26	20	4	2	217

THE IMPACT OF TECHNOLOGY ON COMMUNICATIONS

(This special article has been contributed by the Department of Transport and Communications—written by Ethne McLeod)

Most parts of Australia are at least 19,000 kilometres from Western Europe, the source of most of her people, equipment, institutions and ideas. Its coastline stretches over 19,000 kilometres and encloses almost as much land as the U.S.A. Communication, therefore, was seen as the lifeblood of a distant colony, alleviating the sense of exile and excommunication, and ultimately has had a crucial influence on Australia's development.

In the first days of colony, letters bound Australia to Britain, carrying social, economic, political and scientific information. No post office existed in Sydney for the first twenty-one years of the colony's life, and mail was handled through ad hoc private arrangements which were subject to widespread abuses. In 1821, New South Wales passed legislation to regulate the postage of mail, in 1828 the office of Postmaster was created for Parramatta, Campbelltown, Liverpool, Penrith, Windsor, Bathurst and Newcastle, thus reflecting the spread of settlement in the colony. The real pacesetter, however, was Tasmania, which in 1828 appointed a Committee of Inquiry into postal reform and, four years later, established a postal service as a government department with the other colonies quickly following suit.

By 1850 New South Wales, Victoria, Queensland, Western Australia, South Australia and Tasmania were extremely urbanised with most of the population living in cities, towns or villages. The gold rushes of the 1850s placed great strains on mail services resulting from the influx of people. Within each colony, the creation of post offices followed the movement of the population. These post offices were staffed, usually on a part-time basis, by men and women drawn from all walks of life and all sectors of the community.

In the mid-19th century a semaphore system was the fastest known means of communication, although this optical telegraph had several drawbacks. It was labour-intensive, totally ineffective at night, and rain, fog, mist and snow dimmed its power. The 1850s, however, saw the advent of electric telegraphy which transformed the business of communication in Australia by adding the crucial element of speed. In 1853 Samuel McGowan brought morse to Australia and the 1860s saw the spread of the telegraph throughout Australia.

By 1869 a distinct pattern had emerged in Australia with telegraph lines concentrated around capital cities and market towns, goldfields and denser pastoral and agricultural settlements. Smaller country towns were channeled into arteries that bridged capital cities. All lines were government-owned and administered in each colony by a department of electric telegraph which was joined to other State responsibilities and departments.

The effect of the new technology was seen in communication itself. For example, newspapers carried information transmitted by telegraph. The telegraph also presented intelligence from neighbouring colonies, news of movements of shipping, the price of goods, and reports from Parliament. The business community rapidly became the pivotal point for the demand for telegraph services as city and country-town offices became commissioning points for orders and centres of market and banking intelligence. The telegraph can also be seen as an important element of central government in the large colonies as a medium for issuing instructions and orders and announcing appointments.

South Australia actively sought to attract support for a link to the telegraph line which stretched overland from England to India. Sturt's journey through the Northern Territory provided the route and in 1872 the continent was spanned by the line which led to the development of Alice Springs and Darwin as repeater stations and provided further bases for exploration of the continent. In 1872, the telegraph cable from Europe and Asia was ultimately linked to the southern cities.

Overseas cable had an immense impact on the Australian colonies. Through fast communication, it generated economic development in the colonies and was a pervasive agent of social change. The overseas cable connection spurred foreign investment in the 1880s and was central to the growth of the business community. By the end of the century, the colonies dovetailed more closely with Britain economically, while at the same time trade connections

with Asia were enlarged. The telegraph became a tool of business and commerce and the foundation of a new information society in Australia.

Development of telephones paralleled the growth of the telegraph system. Telephones were a technology that played a prominent and enhancing role in the lives of women, who immediately entered the workforce of telephony. This trend began with the move of employing postmistresses in country towns and extended gradually to telegraphy. The pattern set in the United States of America was transferred, although with some cultural resistance, to Australia, continuing the trend of opening avenues of employment for women established through the mechanisation of factories. The progress made by women in telegraphy and telephony—both skilled operations requiring training and examinations and endowed with status traditionally beyond the reach of women—marked a striking departure in colonial industrial practice and a notable union between women and new communications technologies.

In 1901 the Constitution empowered the Commonwealth Government to take over, control and administer Posts and Telegraph Departments of each State of the new Commonwealth and 1 March 1901 saw the establishment of the Postmaster-General's Department (PMG) from the former separate and distinctive colonial departments thus creating a national monopoly.

The development of the new Marconi Radio System saw the Department seek absolute control of the new communications system and in 1905 a short Wireless Telegraphy Act, giving the Department control, was passed.

Telecommunications growth was interrupted by World War I although technological advance was stimulated. The outbreak of War caused the rapid growth of wireless stations around the Australian coastline and, by the end of World War I, technological developments saw new prospects for telegraphy and telephony emerging overseas. The 1920s saw the implementation of automatic exchanges and the then Secretary of the Postmaster-General's Department, Mr H. P. Brown, instigated many strategic planning decisions that modernised Australia's telecommunications systems; for example, the systematic extension of automatic exchanges and the development of long-line interstate trunk services.

In March 1922 agreements for wireless telephony to commence were signed and Hughes became the first Australian Prime Minister to make a political broadcast with a speech made at Bendigo and transmitted to an outside audience.

In 1923 it was decided that broadcasting stations would be permitted to forward programs on definite wavelengths to people with 'sealed sets' locked on to one wavelength. Broadcasting began officially on 23 November 1923. However, people wished to listen to any service and the advent of crystal radios helped beat the monopoly of 'sealed sets'. Revised regulations were issued under the Wireless Telegraphy Act in July 1924. A dual system of Class A stations (funded by listeners' license fees) and Class B (other) stations was developed and formed the basis for Australian wireless and television broadcasting. A system also developed whereby any person holding a license could operate any type of receiving equipment for an annual fee. In mid-1928 the concept of a national broadcasting service developed. July 1932 saw the advent of the Australian Broadcasting Commission (ABC) whereby a Government-backed broadcasting system integrated the technical functions of the PMG with the evolution of the ABC.

Australia's overseas telephone system came into being despite economic problems, and technological progress continued. Gradually Australia-wide telephone links were developed and 1934 saw the development of the first overseas airmail service. Telephones helped the development of the Royal Flying Doctor Service which was further stimulated by the growth of the pedal wireless.

World War II has been called the telecommunications war with radar, telephony and telegraph all playing an important role. Increasingly, defence needs shaped telecommunications usage and the War opened up a new creativity in PMG's telecommunications technology from a dependence on carrier technology to Australian designed systems.

From the post-war years, and especially during the 1950s, telecommunications services offered many new developments—automatic telephony and telegraphy, television, electronic computers, microwave radio, rocketry and transistors.

Increasingly, telecommunications equipment was manufactured locally and progressive automation continued.

The Overseas Telecommunications Commission (OTC) was established and Parliament was broadcast for the first time in 1946. In 1953 legislative authority was given to the establishment of both national and commercial television stations. The first commercial television broadcast was from TCN 9 in Sydney on 16 September 1956. The 1956 Olympic Games in Melbourne gave impetus to all forms of telecommunications in Australia.

Television reached all Australian capital cities except Darwin by 1962 and spread outwards to the countryside. Planning commenced for a dual national and commercial system with all the attendant installation of equipment and towers. Radio engineering and research continued as a major area of PMG work, and the ABC began broadcasting on shortwave bands as well as overseas through Radio Australia.

In April 1965 INTELSAT I provided satellite telecommunications services between North America, Britain and Europe. INTELSAT II, launched in October 1966, linked in Australia. The OTC earth station at Carnarvon in Western Australia was linked into the American space program and in 1968 OTC opened a new earth station at Moree that provided a link for integrated data, telephone, telegram, telex and television circuits which effectively linked Australia to the rest of the world.

In 1964 PMG had entered the transmission business using telephone lines to transmit computerised information between stock exchanges and some business houses. In 1969 PMG's 'Datel Service' became the first common user data network using transmission over an ordinary switched telephone network or over privately leased lines. Eventually, a Royal Commission into the Post Office in April 1974 recommended the creation of an independent body solely responsible for telecommunications and, on 1 July 1975, the Australian Telecommunications Commission (Telecom) came into operation.

From the 1960s on, however, PMG had, like other authorities overseas, turned toward the possibility of enlarging and diversifying land-based telecommunications systems through domestic satellite technology. By the late 1960s pilot studies on NASA equipment had demonstrated the feasibility of a geostationary satellite linked with an Australian network, which in addition offered the possibility of taking telephone connections to remote and inhospitable regions.

In 1972 a Special Task Force was established to investigate the possibilities of satellite usage. The Telecom National Satellite Communications System Study was released in November 1977 and suggested that in terms of technical feasibility the proposal should go ahead, though not on economic grounds. In August 1977, as a result of a private report, a political case was mounted on the grounds that television services to areas not currently served could not be provided through the existing communications network, which was neither satisfactory, nor capable of providing such a service to the Australian people. Also in November 1977, a Commonwealth Government Task Force proposed the introduction of a domestic satellite system. The then Minister for Communications, the Hon. A. A. Staley and the Prime Minister, the Rt. Hon. Malcolm Fraser, actively supported the Task Force Report.

In 1981 the Government formed a company (AUSSAT) to own and operate Australia's National Satellite System; shares in the company are jointly held by the Commonwealth Government and Telecom. In 1985 AUSSAT had two satellites launched and they are now fully operational. The domestic satellite system will ultimately complement, diversify and add resilience to existing ground-based communications systems. Significantly it will enable communications throughout the country—from the largest cities to the most isolated areas.

ROADS: THE BEGINNING AND NOW

(This special article has been contributed by the Department of Transport and Communications)

When the first settlers arrived in Australia two hundred years ago, they set in motion an approach to road construction which has culminated in the biggest civil engineering project in the country's history—the National Highway system, 16,000 kilometres of highway that has cost the nation \$5,100 million.

Until the 1840s, most of Australia's towns were on the coast and relied upon the sea for transport. Consequently, road transport was undeveloped. Before that, bullock tracks developed into roads, but they were primitive and badly maintained.

In New South Wales, Governor Macquarie developed a trunk road system which extended as the settlement spread. By 1850, New South Wales had three trunk systems that extended inland—from Sydney to the Yass Plains, from Sydney to Bathurst, and from Morpeth to the upper reaches of the Hunter River. However, road building was slow due to shortage of materials, deterioration caused by climatic conditions, and administrative and financial problems.

As roads improved, coach services were introduced, the major one being Cobb and Co. which operated for almost 70 years.

Even with the advent of the first petrol cars at the turn of the century, travel by rail was still the preferred mode of transport. But as cars improved, it became apparent that road transport would become more popular.

The task of building and maintaining roads became too much for local governments and the more important roads were placed under State government control in the 1920s. Commonwealth assistance was first provided to the States for road making in 1923. By the 1930s, road transport was competing strongly with the railways.

World War II saw a reassessment of roads. Before the War, emphasis had been on well made roads in the main centres of population, but now the emphasis shifted to sparsely populated areas for defence purposes.

The post-war period saw the need for a modern, efficient road system to establish, build and sustain economic growth. The seed had been planted and now, more than thirty years later, the National Highway is all but completed.

Commenced in 1974, the National Highway system links each adjacent State capital, Adelaide with Darwin, and Cairns with Brisbane, as well as linking Hobart to Burnie in Tasmania.

In 1974 as much as 3,900 kilometres of the National Highway was unsealed and deficient, and the length of divided carriageway was less than 300 kilometres. Periodic flooding in outback areas often resulted in road closures, causing long delays to traffic. Now, with the majority of the highway network sealed, the situation has been improved significantly.

All funding for the construction and maintenance of the National Highway system is met by the Federal Government, with State and local road authorities acting as design, construction and maintenance agencies. In addition, the Federal Government provides substantial funding to the States and local government authorities for arterial and local roads. Federal funding for roads comes from a predetermined share of fuel excise taxes.

Following the expiry of the 1981 Roads Grant Act on 30 June 1985, the Australian Land Transport Program (ALTP) began in July 1985, and this five-year program continues to assist the States and Northern Territory in the construction and maintenance of roads.

In 1982 the Australian Bicentennial Road Development (ABRD) Program was introduced to achieve a substantial upgrading of the Australian road network by 1988.

In 1985–86, \$559.3 million was provided for National Roads. Of this, \$377.3 million was for construction and maintenance projects under ALTP, and \$182 million was for construction projects under the ABRD program.

The busiest interstate route is the Hume Highway section of the National Highway, 816 kilometres linking Sydney and Melbourne, of which over 40 per cent is dual carriageway. It carries more than 1,000 heavy commercial vehicles daily in addition to other traffic. Canberra, the national capital, is linked to the Hume Highway by the Barton and Federal Highways.

Melbourne and Adelaide are linked by 720 kilometres of the Western and Dukes Highways, and the South East Highway sections of the National Highway.

Adelaide and Darwin are joined through central Australia by the Stuart Highway section of the National Highway over a distance of 3,014 kilometres. Until 1979, the 925 kilometre South Australian section was little more than a dirt track.

From Adelaide, the Adelaide-Port Augusta Road, the Eyre Highway, Coolgardie, Esperance and the Great Eastern Highway sections of the National Highway stretch 2,675 kilometres along the southern edge of the Nullabor Plain to Perth.

Between Perth and Darwin, the National Highway comprises the Great Northern, Duncan and Victoria Highways covering 4,000 kilometres.

The Barkly Highways section of the National Highway connects Tennant Creek in the Northern Territory to Mt Isa in Queensland, and on the same route, the Flinders, Landsborough and Warrego Highways connect Mt Isa to Brisbane over more than 2,400 kilometres.

In Northern Queensland, Cairns is linked to Brisbane by the Bruce Highway section of the National Highway over 1,690 kilometres. The Cunningham and New England Highway, and the Newcastle-Sydney Freeway (over 1,000 kilometres) provide a link between Brisbane and the Southern States.

In Tasmania, the National Highway links Hobart and Launceston by the Midland Highway over 187 kilometres, and Launceston and Burnie by the Bass Highway over 137 kilometres.

Of the 804,700 kilometres of roads open for general traffic in Australia, 266,600 kilometres, or 33 per cent, are sealed, while the remainder are either gravel or earth pavements.

Victoria, the second smallest State, has the largest percentage of sealed roads with 41 per cent. Tasmania, the smallest State, and New South Wales each has 38 per cent. Queensland has 31 per cent, Western Australia 28 per cent, South Australia 22 per cent, Australian Capital Territory 96 per cent, and the Northern Territory 26 per cent.

Established in just 200 years, Australia's large road network of over 800,000 kilometres services a population of 16 million who drive nine million cars and motorcycles and over half a million trucks.

THE NATIONAL HIGHWAY – CONDITION AT JUNE 1987



Department of Transport and Communications

PREPARED BY ROADS DIVISION

BIBLIOGRAPHY**ABS Publications**

- Monthly Summary of Statistics, Australia* (1304.0)
Digest of Current Economics Statistics, Australia (1305.0)
Commonwealth Government Finance (5502.0)
Transport Establishments: Summary of Operations by Industry Class, Australia and States, 1983-84 (9103.0)
Transport Establishments: Details of Operations by Industry Class, Australia, 1983-84 (9104.0)
Transport Establishments: Selected Items of Data Classified by Industry and Size Group, 1983-84 (9105.0)
Road Freight Activity of Private Enterprises by Industry Division, Australia and States, 1983-84 (9107.0)
Shipping and Air Cargo Commodity Statistics, Australia (9206.0)
Survey of Motor Vehicle Use, twelve months ended 30 September 1985 (9208.0)
Shipping and Cargo, Australia (9211.0)
Rail Transport, Australia (9213.0)
Registration of New Motor Vehicles, Australia (9301.0)
Motor Vehicle Registrations, Australia (9303.0)
Motor Vehicle Registrations, Australia (9304.0)
Road Traffic Accidents Involving Fatalities, Australia (9401.0)
Road Traffic Accidents Involving Casualties (Admission to hospitals), Australia (9405.0)

Other Publications

Information additional to that contained in ABS publications is available in the annual reports and other statements of the Department of Transport and Communications (comprising, since July 1987, the former Departments of Transport, Aviation and Communications), the various harbour boards and trusts, the several government railway authorities, the Australian Postal Commission, the Australian Telecommunications Commission, and the Australian Broadcasting Corporation.