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HOUSING AND CONSTRUCTION

HOUSING

Adequate, affordable housing has been identified as a priority of Australian Governments with the establishment of a National Housing Strategy in June, 1990.

Since Federation, Australian Governments have encouraged home ownership through their policies. A high level of home ownership is seen as promoting a stable, healthy and productive society. In addition, a strong housing construction industry provides substantial employment both within the industry and in associated sectors of the economy, such as banking, real estate and manufacturing.

This chapter outlines the principal sources of data concerning housing and construction in Australia.

Census Dwellings

The 1991 Census of Population and Housing is to be conducted on the night of 6 August.

At each Census there have been a number of questions relating to dwellings. For the 1986 Census, dwellings were classified into basic groups. An *occupied private dwelling* is defined as any habitation occupied by a household, that is, a group of people living together as a domestic unit or a person living alone, and can comprise the whole or only part of a structure. An *unoccupied private dwelling* is any habitable structure built specifically for private living purposes which is unoccupied at the time of the census. *Occupied caravans etc. in caravan parks* are treated as separated households, occupied boats in marinas are included in this dwellings classification. *Non-private dwellings* are defined as dwellings with accommodation which is not included in the previous classifications. These dwellings are classified according to their function and include schools, hotels, hospitals, gaols, nursing homes and other communal dwellings.

Extensive information on dwellings obtained from censuses is available in detailed tables issued for each individual census. 1986 Census publications are listed in the *ABS Catalogue of Publications and Products* (1101.0). The most relevant series of publications from the 1986 Census is *Census 86—Summary Characteristics of Persons and Dwellings* (2479.0–2487.0). More detailed dwellings information is available on microfiche. Tables are listed in the *Catalogue of 1986 Census Tables* (2175.0).

DWELLINGS, BY STATE: CENSUS YEARS

State or Territory	Census 30 June 1981		Census 30 June 1986		
	Occupied(a)	Unoccupied	Occupied(a)(b)	Caravans, etc.(c)	Unoccupied
New South Wales	1,669,594	153,251	1,817,392	21,916	174,467
Victoria	1,243,451	124,522	1,351,118	9,475	143,264
Queensland	703,964	83,366	838,122	27,310	94,714
South Australia	433,841	42,407	474,456	3,162	48,546
Western Australia	405,997	42,100	458,762	10,749	53,851
Tasmania	136,269	17,765	149,484	658	19,470
Northern Territory	29,563	2,368	39,779	3,456	3,639
Australian Capital Territory	68,740	3,963	79,363	368	5,588
Australia	4,691,419	469,742	5,208,476	77,094	543,539

(a) Includes non-private dwellings. (b) Excludes caravans, etc. in caravan parks. (c) Includes occupied caravans, tents, cabins, etc., in caravan parks and occupied boats in marinas.

Commonwealth and State Government Housing Assistance

A range of assistance programs has been developed to target assistance to households in the owner-occupied, public housing and private rental housing sectors. The Government provides funds for public housing, supported accommodation services, crises accommodation, mortgage and rent relief and home purchase assistance to individuals and families.

The bulk of Commonwealth financial assistance for housing has been provided through the First Home Owners Scheme (FHOS) and the Commonwealth-State Housing Agreement (CSHA).

First Home Owners Scheme

The First Home Owners Scheme was introduced on 1 October 1983. For details of FHOS see *Year Book* No. 73. After assessing changing patterns in home purchase assistance and wide regional variations in home prices the Commonwealth Government abolished the scheme in the 1990 Budget. In its place the Commonwealth now provides funding to State and Territory Governments for assisting lower income people to buy their homes. Assistance to eligible and approved persons will continue to be paid after 22 August, 1990. The scheme's operations for 1989-90 are set out in the following table.

FIRST HOME OWNERS SCHEME: OPERATIONS

State	Number of applications		Amount of benefit approval (\$'000)	Amount of benefit paid (\$'000)
	Received	Approved		
	1989-90			
New South Wales	7,512	7,076	25,177	34,410
Victoria	5,692	5,180	17,487	26,232
Queensland	5,082	4,683	16,463	22,030
South Australia	3,537	3,127	11,113	12,914
Western Australia	3,235	2,775	9,731	14,684
Tasmania	999	951	3,115	4,111
Northern Territory	80	72	224	430
Australian Capital Territory(a)	1,169	1,146	4,021	4,904
Australia	27,306	25,010	87,351	119,715
	1 OCTOBER 1983 TO 30 JUNE 1990			
Australia	410,336	358,641	1,529,857	1,389,339

(a) ACT data include a large area of southern New South Wales handled by the FHOS office in Canberra.

1989 Commonwealth–State Housing Agreement—CSHA

A new Commonwealth State Housing Agreement (CSHA), covering all States, the Northern Territory and for the first time the Australian Capital Territory, commenced operation on 1 July 1990. The Agreement will run for a 10 year period and be reviewed every three years.

From 1989–90 onwards, all Commonwealth funds will be provided in the form of grants rather than as a combination of grants and concessional Loan Council borrowings. In 1989–90, and in each of the years 1990–91 to 1992–93, the Commonwealth will provide a guaranteed minimum level of funding of \$1,028.176 million to the States and Territories. Of this amount, in 1990–91, \$792.931 million will be provided as untied grants and the remaining \$235.245 million will be allocated to specific purpose programs (\$49.273 million to rental assistance for pensioners, \$91 million for rental assistance for Aborigines, \$30.914 million for the Mortgage and Rent Relief Scheme, \$39.655 million for the Crisis Accommodation Program and \$24.403 million to the Local Government and Community Housing Program).

In addition to the change to the composition of Commonwealth funding, the distribution of those funds which were previously available through the Loan Council will also change. The distribution of all funds will move to a per capita basis over the four years to 1992–93 to better reflect need.

A further change to funding arrangements which is designed to ensure that no additional debt is created in the system is the requirement for States to match half the level of Commonwealth untied grant funds with their own grant funds. This requirement will be phased in over the first four years of the new Agreement. The other half of States' matching obligation is to be met through the provision of home purchase assistance loans. Of the specific purpose programs, only funding provided under the Mortgage and Rent Relief Scheme is required to be matched.

The Agreement also includes a joint Commonwealth–State planning process to ensure that priorities for all groups such as youth, people with disabilities, Aborigines and the aged are met under public housing arrangements. A key component of this planning process is consultation with the community. Key issues which will be addressed in this process include national consistency in eligibility criteria and rent principles, a strengthening of the CSHA's position with respect to the security of tenure of public tenants, increased choice of assistance, and establishment of appeal mechanisms.

Under the new arrangements all Commonwealth and State grant funds are paid into the Rental Capital Account. Funds in the Rental Capital Account are to be mainly directed to the provision of additional dwellings although a limited proportion (up to 25 per cent) may be used for non-capital purposes, such as leasing.

Eligibility for rental housing will continue to be determined by the States, with priority given to those in most need. States are required to fix rents having regard primarily to the costs of providing that housing and to the capacity of tenants to pay. Rents charged are to be not less than cost rents or market rents.

The new home purchase assistance provisions are directed towards ensuring that scarce CSHA funds are used in the most effective and efficient manner to help low and moderate income earners achieve home ownership. Only very limited new CSHA funds can now be used to gear revolving funds in their home purchase assistance accounts with private sector funds to increase the volume of funds available for lending.

Under the Agreement, home purchase loans are to be related to market conditions and repayments linked to income. In addition, States are required to tailor loans to ensure that they are accessible to existing tenants and that, where appropriate, shared ownership and rental purchase schemes are offered to maximise the choice of assistance.

Subsidy assistance is to be restricted to those who require it and for the period of their need and recovered except in cases of individual hardship. While the States remain responsible for determining detailed eligibility conditions, the Commonwealth is required to formally approve those schemes which the States intend to be counted for matching purposes.

COMMONWEALTH-STATE HOUSING AGREEMENT: OUTCOMES FOR 1988-89

	<i>NSW</i>	<i>Vic.</i>	<i>Qld</i>	<i>SA</i>	<i>WA</i>	<i>Tas.</i>	<i>NT</i>	<i>Total</i>
Rental Housing Assistance—								
Commenced	2,619	2,941	2,818	1,453	1,174	344	209	11,558
Completed	2,945	1,751	1,775	1,405	847	416	346	9,485
Purchased	845	620	390	528	490	132	7	3,012
Reductions								
sold	1,553	110	43	1,012	343	583	36	3,680
destroyed	59	50	7	—	103	8	5	232
Total stock at 30 June	113,339	59,285	34,073	62,339	33,189	13,292	10,464	325,981
Households accommodated	11,009	8,881	6,355	9,019	6,773	2,125	3,003	47,165
Home Purchase Assistance								
Loans approved for—								
Construction	726	1,318	1,375	458	707	34	1	4,619
Purchase	3,334	288	3,527	1,701	—	859	96	9,805
Not specified	5,259	2,496	—	351	1093	—	273	9,472
Total	9,319	4,102	4,902	2,510	1,800	893	370	23,896

**COMMONWEALTH-STATE HOUSING AGREEMENT: DISTRIBUTION OF 1990-91
FEDERAL FUNDS 1989-90 FIGURES IN BRACKETS(a)(b)
(\$ million)**

<i>State</i>	<i>Untied</i>	<i>Rental Assistance for Pensioners</i>	<i>Rental Assistance for Aborigines</i>	<i>Mortgage and Rent Relief</i>
New South Wales	252.918 (244.8735)	18.520 (18.520)	17.777 (17.777)	10.599 (10.646)
Victoria	193.991 (190.7760)	10.882 (10.882)	3.638 (3.638)	7.938 (7.961)
Queensland	108.368 (92.5915)	9.644 (9.644)	25.227 (25.227)	5.206 (5.142)
South Australia	74.715 (82.0595)	3.849 (3.849)	8.342 (8.342)	2.618 (2.630)
Western Australia	69.202 (66.2660)	4.153 (4.153)	15.862 (15.862)	2.927 (2.898)
Tasmania	37.383 (44.9825)	1.179 (1.179)	0.696 (0.696)	0.829 (0.836)
Northern Territory	40.673 (55.7010)	0.523 (0.523)	19.458 (19.458)	0.287 (0.291)
Australian Capital Territory	15.681 (15.6810)	0.523 (0.523)	0.000 0.000	0.510 (0.510)
Total	792.931 (792.9310)	49.273 (49.273)	91.000 (91.000)	30.914 (30.914)

<i>State</i>	<i>Crisis Accommodation Program</i>	<i>Local Government and Community Housing Program</i>	<i>Total</i>
New South Wales	13.595 (13.656)	8.366 (8.404)	321.775 (313.8765)
Victoria	10.182 (10.212)	6.266 (6.284)	232.897 (229.7530)
Queensland	6.678 (6.598)	4.109 (4.060)	159.23 (143.2635)
South Australia	3.358 (3.372)	2.067 (2.075)	94.949 (102.3265)
Western Australia	3.754 (3.717)	2.310 (2.288)	98.208 (95.1840)
Tasmania	1.064 (1.072)	0.655 (0.660)	41.806 (49.4255)
Northern Territory	0.369 (0.373)	0.227 (0.229)	61.537 (76.5750)
Australian Capital Territory	0.655 (0.655)	0.403 (0.403)	17.772 (17.7720)
Total	39.655 (39.655)	24.403 (24.403)	1,028.176 (1,028.1760)

(a) For comparison purposes, the 1989-90 figures do not include one off programs to the States of \$15 million for Mortgage relief and \$10 million for Crisis Accommodation Burdekin initiatives. (b) The allocation to States vary slightly from the indicative figures provided to the states during CSHA re-negotiations because of population changes.

NOTE: The Mortgage and Rent Relief Scheme allocations for 1990-91 shown represent the full funds for the year although only \$10.819 million will be available initially.

Specific purpose programs

In addition to untied assistance used for the provision of home purchase assistance and general public rental housing, the CSHA provides funds for a number of specific purpose programs:

- (a) *Rental Assistance for Pensioners*—provides rental housing assistance to pensioners and beneficiaries including age or invalid pensioners, widows and supporting parents.
- (b) *Rental Assistance for Aboriginals*—since 1979–80 the Commonwealth Government has provided separately identified funding to the States for rental housing assistance for Aboriginals through the CSHA. Between 1980 and 30 June 1989, 6,751 new dwellings have been provided in the six States and the Northern Territory under this program. This includes the upgrading of existing dwellings.
- (c) *Mortgage and Rent Relief Scheme*—provides assistance to households experiencing severe short term hardship in meeting private mortgage or rental payments. Rental assistance can also be used for bond money, relocation costs and housing advisory services.
- (d) *Crisis Accommodation Program (CAP)*—provides capital funds for accommodation for people who are homeless and in crisis. It operates in close conjunction with the Supported Accommodation Assistance Program (SAAP) which provides recurrent funding to approved organisations providing transitional supported accommodation services and related support services to people who are homeless and in crisis.
- (e) *Local Government and Community Housing Program*—provides assistance to achieve the following objectives:
 - encourage local government bodies and community groups to provide rental housing;
 - facilitate greater tenant management of rental housing;
 - respond to specific housing needs previously overlooked;
 - attract local government and non-government funds and other resources into the program; and
 - involve local government and community groups in the identification of housing needs and the formulation of local housing policies.

Housing Loans Insurance Corporation

The Housing Loans Insurance Corporation is a government business enterprise which insures lenders (such as building societies, banks, etc.) against loss on housing and building loans.

From November 1965, when the Corporation commenced operations, until the end of June 1990, 934,000 loans to the value of \$32,129 million had been insured.

Commonwealth–State Housing Agreement (Service Personnel)—CSHA(SP)

The disposal of surplus service personnel dwellings is the responsibility of the Minister for Defence Science and Personnel. The Minister announced on 11 May 1989 that the Commonwealth would re-negotiate the CSHA(SP) with the States. New legislation is expected to be passed by Parliament late in 1990.

These new arrangements will enable a large number of ex CSHA(SP) houses to be transferred to public housing stock administered by State housing authorities.

Defence Service Homes (DSH) Scheme

The DSH Scheme provides financial compensation to recognise men and women who have served in the country's defence forces, particularly those who may have been disadvantaged through their service in achieving home ownership. People who have served overseas in

wartime, and those who have completed qualifying periods of peacetime service, are eligible.

There are two housing related benefits:

- a subsidy on first mortgage housing related loans made by Westpac, up to a maximum of \$25,000. The subsidy is equal to the difference between the market interest rate and the DSH fixed concessional rate of 6.85 per cent. There are some ancillary benefits to people with DSH loans, such as assistance with essential home repairs and assistance to widows, which are needs-based; and
- a cooperative insurance scheme open to DSH borrowers, providing low cost building cover (not contents).

DSH SUBSIDY 1989-90

Applications received	No.	9,922
Interest subsidy by Commonwealth	\$m	165.3
Number of loan accounts	No.	129,580
Loans granted by Westpac	\$m	9,123
Loan expenditure by Westpac	\$m	186.5
Principal outstanding to Westpac	\$m	1,487.5

DSH INSURANCE 1989-90

Gross Premium Income	\$m	14.7
Total sum insured	\$m	16,199
Average sum insured	\$	93,289
Number of homes insured	No.	173,639
Claims incurred	No.	27,332
Claims incurred	\$m	13,493

State housing authorities

The following paragraphs describe briefly the organisation of the various State housing authorities and their activities in the fields of home construction and provision of homes on a rental basis.

New South Wales—Department of Housing

The Housing Act 1985 established both the Department of Housing and an associated statutory authority, the New South Wales Land and Housing Corporation. The Department's stated purpose is to 'maximise housing opportunities for the people of NSW' and it has consequently adopted the following goals:

- to increase home ownership in NSW;
- to increase land availability;
- to provide appropriate public housing to those who are unable to satisfy their need in the private sector;
- to support and encourage the private rental sector; and
- to improve the efficiency and effectiveness of housing administration.

The operations of four major functional areas achieve these goals.

Land, Housing and Marketing Services

Main activities: provision of home loans through 'Homefund Low Start Affordable Loans' and 'Homefund Low Start Loans' (which replace all previous loan programs); the Mortgage Assistance Scheme; home purchase programs for Department tenants and applicants; 'land' and 'land and house' sales (retailed through Landcom) and manage the Department's home purchase policy.

Financial and Management Services

Main activities: provision of support to management and the organisation as a whole in the fields of corporate services; finance; computer and legal services; research and information and management audits.

Production Services

Main activities: provision of sufficient land and housing to supply public rental and community housing programs and Landcom marketing needs; purchase existing dwellings to meet special needs and design, construction and renovation of buildings.

Housing Services

Main activities: (in Public Rental Housing) allocate housing on a 'wait-turn' basis; provide rental rebates; maintain and improve dwellings; provide accommodation under various 'Community Housing Programs'; provide tenant and community support; provide neighbourhood facilities and home and community care. (NOTE: funds for public rental and community housing are provided under the terms of the Commonwealth-State Housing Agreement; general housing funds are matched by the NSW Government on a dollar for dollar basis while other funds are grants in full by the Commonwealth for specific purpose programs.)

Main activities: (in Private Rental Services) assist households in financial difficulty through the Rental Assistance Scheme; encourage private investment through the Rental Property Trust; undertake research into rental conditions; provide referral services and administer the Fair Rents and Strata Titles Board and the Residential Tenancies Tribunal.

DEPARTMENT OF HOUSING OPERATIONS 1988-89

Public housing stock (at 30 June 1989)	113,339	(+2.5%)
Dwellings purchased or completed during 1988-89	3,790	(-5.7%)
Number of households assisted—		
receiving home loans from Homefund	9,319	(+93.3%)
receiving mortgage assistance	476	(-12.0%)
sold land by Landcom (including land and house packages and land wholesaling)	6,009	(+59.9%)
allocated public rental accommodation	11,009	(+1.9%)
by community programs to find public rental accommodation	2,458	(+0.1%)
receiving rental assistance for private accommodation	20,011	(-6.3%)
allocated private rental accommodation acquired through the Rental Property Trust	593	(+69.4%)

Victoria—Ministry of Housing and Construction

The Ministry of Housing and Construction provides a range of housing programs for Victorians and a building design and construction service for the Victorian Government.

The Ministry's key objectives in relation to housing are:

- to facilitate the continuing access of all Victorians to affordable, adequate and appropriate housing; and
- to deliver housing assistance programs in an effective, efficient and equitable manner.

This involves not only the provision of public rental accommodation, but assistance to private tenants and potential home owners. Public rental accommodation is funded from a combination of Commonwealth-State Housing Agreement, State and Ministry funds. During 1989-90, the Ministry acquired over 2,450 units, taking Victoria's public rental stock to approximately 62,000 units. About 65 per cent of the Ministry's rental stock is located in the metropolitan area.

Over 46,500 tenants or 75 per cent of public housing clients are on reduced rents (rebates). The Ministry also assists tenants in the private rental market through the Bond and Relocation Scheme which provides funds to individuals and households for security deposits (bonds) and removal expenses. During the 1989-90 financial year, 7,957

households received assistance under this scheme averaging \$416 per household. In addition, the Ministry cooperates with community groups to provide emergency housing and programs to assist the homeless.

Since merging with the former Public Works Department in 1988–89 the Ministry is responsible for the design and construction of many public building projects. The key objectives in this area are:

- to provide policy advice and architectural, engineering, design and supervision services to agencies in relation to their building programs; and
- to maintain a direct construction capability and provide construction policy advice to Government.

The Ministry is involved in a diverse range of construction projects including the provision of schools, TAFE colleges, police stations and court houses as well as many special projects such as the Monash Medical Centre. Architectural, engineering, design, consultancy or supervision services are usually provided for these different projects. Advice on building matters is given to Government after consultation with the relevant professional associations and national bodies. The Ministry advises Government on the level of adherence to approved construction policies, building and construction standards and practices, and on guidelines for project delivery by client agencies.

Queensland—Department of Housing and Local Government

Housing assistance in Queensland is provided by the Department of Housing and Local Government.

The Queensland Department of Housing and Local Government was formed in December 1989 by merging the Queensland Housing Commission and the Local Government Department.

The Department assists people in need to achieve adequate and secure housing at a price they can afford to pay. This is done by providing public rental housing, home ownership assistance and other forms of specific purpose housing assistance.

Public rental housing consists of attached and detached houses, apartments, duplexes, cluster housing, and pensioner units, built to a standard comparable with the private sector. All people 18 and over resident in Queensland are eligible to apply for public housing. Housing is provided to applicants on a wait-turn basis with the rent being based on the household income.

During 1989–90, the Department increased its public housing stock, through construction and purchase, by 3,364 dwellings. This brings to 38,844 the total number of rental dwellings available which includes 32,770 dwellings available for public housing. The remaining dwellings are employer tenancy, and defence dwellings constructed by the Department.

The Department operates loan schemes for low to moderate income earners to purchase existing housing or construct new housing on suitable building sites. In 1989–90, there were 9,384 loans advanced for this purchase making a total of 72,739 since the inception of the Commonwealth–State Housing Agreements in 1944–45. The Department also has power to make advances, secured by mortgage, to firms for housing employees. The Department is able to sell houses under contract of sale conditions; 31 such sales were completed in 1989–90.

In all, the Department was responsible for assisting 12,748 households of low to moderate incomes through construction and purchase for public housing and by providing home loans.

Other assistance provided by the Department includes:

- funding for people to buy houses and form housing cooperatives;
- headleasing of housing to local community organisations who manage tenancies on behalf of the Department;
- rent assistance for families in the private rental market;
- bond assistance for people establishing tenancies in the private rental market;
- short term mortgage relief to home purchasers experiencing financial hardship;
- re-financing existing mortgages of mortgagors where appropriate; and
- financial relief for home purchasers facing increased repayments resulting from high interest costs.

South Australia—South Australian Housing Trust

The primary role of the Trust is to provide housing for those in need, and within their capacity to pay, and to do so in ways which contribute as far as possible to the social well-being and economic development of the State. The Trust aims to provide housing which is appropriate for the householders' needs, is of an acceptable and modern standard and is integrated within the surrounding environment.

The Trust also provides assistance to tenants renting privately through:

- the administration of the Rent Relief Scheme;
- its management responsibility for the Emergency Housing Office; and
- exercising its responsibilities under the Housing Improvements Act.

It also assists home owners in financial crisis through the Mortgage Relief Scheme, Interest Rate Protection Scheme and the Homesure Mortgage Assistance Scheme.

The Trust has a separate responsibility to Government to act as the State's industrial property authority, to provide industrial premises for approved additions to or extensions of industrial facilities within the State.

A total of approximately 113,863 dwellings have been built, purchased or leased by the Trust since 1936.

Western Australia—State Housing Commission of Western Australia

The State Housing Commission, trading as Homeswest, constructs a variety of dwelling types for its rental and purchase programs. In addition, it constructs housing for other government departments and constructs and maintains houses for the Government Employees' Housing Authority, the Aboriginal Housing Board and community groups.

Homeswest is a major land developer in Western Australia and has the role of providing reasonably priced land to the first home buyer. As part of its development role, Homeswest is promoting better use of land, e.g. through flexible lot sizes and consolidation of underutilised urban sites. It also enters into joint ventures with the private sector in land development, finance and housing construction.

At 30 June 1990, the Commission had provided under all schemes since 30 June 1944, a total of 83,874 units of accommodation throughout the State (including 12,046 units completed under the *Defence Services Homes Act 1918*). During the twelve months ended 30 June 1990, 1,968 units of accommodation were provided.

Building societies are a major source of housing finance in Western Australia. At 30 June 1990, it was estimated that the assets of permanent and terminating societies were about \$2.2 billion. Currently there are five permanent building societies (three active and two inactive) and 89 terminating building societies operating.

Tasmania—Department of Community Services

Housing and Family Services is responsible for administering the portion of the *Homes Act 1935* relating to the acquisition and development of land for housing purposes, and the erection of homes for rental and sale to those deemed in need of assistance.

There were 291 dwellings completed during 1989–90. The total number of dwellings constructed to 30 June 1990 was 25,044 of which 9,603 have either been sold or demolished.

There were 1,779 properties purchased, making a total dwelling stock of 17,020. Of these, 13,900 are detached or semi-detached, 2,665 are elderly persons' units, 424 are multi-unit flats, and 31 are movable units.

Dwellings are allotted on a rental or purchase basis. Rental is now assessed at a proportion of household income. Tenants are able to buy their home if they wish.

Housing Schemes in Australian Territories

Northern Territory

The Northern Territory Housing Commission was established in 1959 and currently operates under authority of the *Housing Act 1982*. For administration purposes only, the Commission was amalgamated with other bodies to form the Department of Lands and Housing on 19 March 1987. However, the Commission still retains its autonomy under a single Commissioner.

Australian Capital Territory

The ACT Housing Trust provides a range of public rental housing types to residents of the Australian Capital Territory on low and moderate incomes. Continued expansions of the public rental stock during 1989–90 resulted in a total rental stock of 12,141 dwellings at 30 June 1990.

In addition to the above, the Housing Trust provides home purchase assistance to low and moderate income earners through the Commissioner for Housing Loans Scheme. During 1989–90, \$13.6 million was made available through loans bringing the total number of mortgages administered by the Trust to 6,363, with another 4,667 being managed on behalf of the Commonwealth of Australia.

Rental and home purchase assistance are both provided on a means tested basis. Since 1987 the Trust's policies and programs have been aligned with the principles of the Commonwealth–State Housing Agreement.

Summary of rental activities of government authorities

GOVERNMENT HOUSING AUTHORITIES: REVENUE FROM RENTALS (\$'000)

Year	NSW	Vic.(a)	Qld	SA	WA(b)	Tas.	NT(b)	ACT	Aust.
1987–88	298,648	135,744	r87,653	140,219	r66,010	49,629	33,068	31,475	r842,446
1988–89	331,292	142,170	r97,874	161,910	71,217	44,536	33,779	34,582	r917,360
1989–90	398,000	153,330	108,970	168,766	75,619	40,373	35,302	37,579	1,017,939

(a) Prior to 1983–84 figures relate to Housing Commission, prior to 1988–89 figures relate to Ministry of Housing and thereafter the Ministry of Housing and Construction. (b) Figures relate to Housing Commission only.

GOVERNMENT HOUSING AUTHORITIES: NUMBER OF TENANTS PAYING RENT

Year	NSW	Vic.(a)	Qld	SA(b)	WA(c)	Tas.(d)	NT(d)	ACT(d)	Aust.
1987–88	109,958	60,300	r33,327	60,655	31,433	13,305	r9,316	11,326	r329,620
1988–89	112,518	58,846	35,525	62,339	r32,017	13,292	9,400	11,380	335,317
1989–90	116,082	59,068	38,844	63,818	33,273	13,394	9,529	11,423	345,431

(a) Prior to 1983–84 figures relate to Housing Commission, prior to 1988–89 figures relate to Ministry of Housing and thereafter the Ministry of Housing and Construction. (b) Figures relate to dwelling stock, not tenants. (c) Figures relate to Housing Commission only. (d) Number of occupied dwellings at 30 June.

Advances to Home Purchasers

Many prospective home purchasers wish to borrow for the purpose of constructing or purchasing their own homes. Usually the loan is covered by way of mortgage of the home to be constructed or bought. Such loans are provided from a number of private sources and from agencies owned or guaranteed by the Commonwealth Government or State Governments. The information in this section concerns the direct loans made to home purchasers. Loans to institutions which in turn lend money to home purchasers and loans to contract builders, etc., are excluded as far as possible. The loans may be for the construction of new dwellings, the purchase of existing dwellings, for additions, renovations, etc., as first or subsequent mortgages, overdrafts and so on.

State and Territory authorities and agencies

New South Wales—Department of Housing

All of the Department's home lending programs now operate under a scheme launched in 1989 called 'Homefund', which provides for two types of loans.

Homefund Low Start Loans

These loans, previously known as Premier Low Start Loans, are targeted at moderate income earners who cannot obtain sufficient funds from conventional lenders to buy a home. The interest rate is fixed and repayments commence between 27 per cent and 30 per cent of income, increasing by six per cent until the loan is paid off. During 1988-89, \$292 million was advanced under this program and the average income of eligible applicants was \$32,000.

Homefund Low Start Affordable Loans

These are subsidised loans available to low to moderate income earners. Repayments are income-g geared and interest subsidies are provided if repayments are not sufficient to cover the interest on the loan. The amount which can be borrowed depends on income and loans of up to 95 per cent of property value are available. During 1988-89, \$216.7 million was lent under this program and the average income of borrowers was \$20,000.

The Department is also running some programs aimed at expanding home purchase opportunities for its tenants. Homefund Low Start Affordable Loans are provided to purchase their current rental properties or a home on the private market. Another program, the State Partnership Scheme, allows tenants or public housing applicants to purchase up to a 50 per cent share in a home with a Homefund loan.

Victoria—Ministry of Housing and Construction

The Ministry of Housing and Construction approved a total of 3,665 home purchase loans during 1989-90. These were provided through a range of different schemes: Home Opportunity Loans Scheme (HOLS)—2,984 loans; HOLS Priority Loans—300 loans; Shared Home Ownership (SHO)—217 loans; SHO Priority—40 loans; Capital Indexed Loans—105 loans; and Indexed Repayment Loans—19 loans.

The Home Opportunity Loans Scheme is the Ministry's major lending program. This scheme is designed to help more Victorians achieve home ownership by utilising a fully indexed mortgage instrument based on a real rate of interest (currently 3.9 per cent or 6.9 per cent depending on the applicant's income). Repayments are geared to 25-27 per cent of the applicant's income. This scheme replaces the Capital Indexed Loans scheme which was the main lending program from 1986 to 1988-89.

The Ministry also provides a shared home ownership scheme designed to facilitate entry into home ownership for households unable to afford other government or private sector schemes. Under SHO clients purchase a share of a property through a HOLS loan and pay rent to the Ministry who purchases the remaining share of the property. Payments to

the Ministry consist of loan payments and rent payments on the Ministry share, totalling 25 per cent of eligible income, adjusted annually by changes in the Consumer Price Index.

The Indexed Repayment Loans scheme is a joint venture between the ministry and three leading banks. It was first launched in 1986 and is currently being wound down.

Queensland—Department of Housing and Local Government

The Department operated three loan schemes to assist non-home owners to purchase or construct a dwelling they intended to reside in. These schemes operated throughout 1989–90 but will be replaced during 1990–91 with the Home Ownership Made Easier products. The three schemes were:

Interest Subsidy Scheme

This Scheme assists low income earners by subsidising interest charges and providing an affordable monthly payment at 25 per cent of gross income, adjusted whenever income changes. Most borrowers under this Scheme would not have the capacity to obtain finance from other lenders. The scheme is subject to a means test.

Second Loan Scheme

This scheme may be available to borrowers eligible for an Interest Subsidy Loan and who are also eligible for the Commonwealth First Home Owners Scheme. This loan assists to bridge the deposit gap, and utilises the First Home Owners Scheme (FHOS) subsidy payout.

Flexible Term Loan

This loan is intended as an alternative source of finance for borrowers not eligible for the Interest Subsidy Scheme or for those with sufficient income or savings to not need the protection of an Interest Subsidy Loan. 'Slow' and 'Quick' start options are offered with several term options also available. The scheme is subject to a maximum joint income limit.

South Australia—South Australia Housing Trust

Until August 1989, the Trust administered the Rental Purchase Scheme in conjunction with the State Bank. In 1989–90, a total of 97 Rental Purchase sales took place. In September 1989, the State Government's *Homestart* scheme superseded the Rental Purchase scheme.

In September 1986, the Trust initiated the Home Trust Shared Ownership Scheme, now called the Progressive Purchase Plan whereby tenants can purchase their home in affordable stages commencing with a 25 per cent share. During 1989–90, 147 sales were made under the scheme.

Western Australia—State Housing Commission of Western Australia

The Commission administers four schemes to assist applicants achieve home ownership. These schemes are known as First Mortgage, Flexible Deposit, Shared Equity and Senior Citizens Loan Schemes. The maximum interest rate is maintained in relationship with the pre-April 1986 Commonwealth Bank interest mortgage rate and the repayment of the loan is on an income geared basis with an applicant not being expected to pay more than 25 per cent of assessed family income in repayments. The maximum repayment period is 30 years.

Under the schemes, the applicants are able to select an established home or build a new home of their choice. The maximum income limits vary with the location. A family with one child can have a maximum weekly income of \$467.00 in the metropolitan area, \$604.00 in remote areas and \$659.00 in the Kimberley region. These limits increase by \$24 for each additional child after the first, and \$35 for each additional child beyond the third.

Under the First Mortgage, Flexi Deposit and Shared Equity Schemes, the maximum value of house and land in the metropolitan area is \$84,000 if buying an established home or if building a new home. In non-metropolitan areas, the maximum value varies from \$66,000 in country areas to \$103,500 in the Kimberley region and \$130,000 in Broome. Minimum deposit required is usually five per cent of valuation, although with the Flexi Deposit Scheme as little as \$500 can be paid as the deposit on a home.

The Shared Equity Scheme was designed to help people on very low incomes into home ownership. Homeswest purchases the home on behalf of the applicant and funds the applicant to an equity share of not less than 60 per cent of the home value. Normally five per cent of the loan sought is required for the deposit but this can be reduced to as little as \$500. All maintenance, insurance and rates are shared in accordance with the applicants' equity share.

Assistance through Terminating Building Societies is available to eligible applicants from the Loans Priority List under first mortgage conditions. Funds are not available for second mortgages. The interest rate on advances is 13.5 per cent and the maximum term is for 30 years. In the metropolitan area, the maximum income limit is \$467.00 per week plus an extra \$24 per week for each dependent child, and \$35 for each additional child beyond the third. The value of house and land cannot exceed \$84,000 and a 5 to 10 per cent deposit is required. In other areas around the State, maximum income limits vary between \$467.00 in country areas and \$659.00 in the Kimberley region and the maximum value of house and land varies from \$66,000 in country areas to \$103,500 in the Kimberley region to \$130,000 in Broome.

Tasmania—Tasmanian Development Authority

The Authority is responsible for the administration of funds made under the Home Purchase Assistance section of the *Housing Assistance Act 1984*. The State has also provided State loan funds for lending under the Homes Act.

The primary principle of the Housing Assistance Act is to ensure that every person in Australia has access to adequate and appropriate housing at a price within his or her capacity to pay.

The Authority has a Deferred Interest Subsidy Scheme, whereby low income earners can borrow sufficient amounts to enable them to purchase a reasonable dwelling. The current rate of interest is 13.5 per cent with monthly repayments based on 25 per cent of joint gross monthly income. When the repayment is not sufficient to meet the interest charged on the loan, the balance is deferred and repaid in the later years of the loan. There is no interest charged on the deferred proportion of the loan.

The Authority has a Home Ownership Building Industry Scheme (HOBIS) whereby private builders are requested to tender for the construction of homes throughout the State for low to moderate income earners who could not otherwise afford to purchase a new home.

Total lending to both builders and first home buyers exceeds \$69 million since the introduction of HOBIS in 1987 and more than 600 brick veneer homes have been built and sold.

TASMANIAN DEVELOPMENT AUTHORITY, ADVANCES FOR HOUSING(a)

Particulars	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
Advances approved—						
Number	537	815	624	704	712	714
Value (\$'000)	17,437	28,390	24,790	29,423	33,237	33,995
Advances outstanding at 30 June (\$'000)	90,338	106,000	114,606	126,263	154,231	172,443

(a) Excludes advances to cooperative housing societies.

Northern Territory—Interest Subsidy Scheme

The Northern Territory Interest Subsidy Scheme was introduced on 1 December 1988. The previous loan scheme, the Northern Territory Home Purchase Assistance Scheme closed to new applications on that date.

The Subsidy Scheme provides a non-recoverable subsidy on a private sector loan to people in the \$300 to \$600 gross weekly earnings bracket.

There are eight levels of subsidy at which participants, depending on income, will commence under the scheme. The initial subsidy will be maintained for three years, at which time it will decrease to the next level, and annually thereafter.

The maximum subsidy is based on a \$55,000 loan and will be reduced proportionately on loans of lesser amounts. Eligibility criteria for the scheme are as follows:

- value of house-land package to be \$100,000 or less;
- applicants purchasing their first home in the Northern Territory who do not own another dwelling elsewhere in Australia; and
- intend to reside in the dwelling.

Northern Territory—Home Establishment Grant

The Home Establishment Grant of \$1,000 is available to persons buying or building their first home in the Northern Territory. The value of house and land must not exceed \$100,000. The purpose of the grant is to assist home buyers defray those expenses incurred in purchasing their homes, for example loan establishment costs, legal fees, stamp duty and so on.

Northern Territory—Sales Scheme

A scheme exists to allow eligible tenants of the Northern Territory Housing Commission to purchase dwellings under the General Public Sales Scheme. Sales are on a cash basis only to approved tenants.

Australian Capital Territory

The Commissioner for Housing operates an income-g geared loan scheme to assist people who are generally unable to afford finance in the private market. Loans to a maximum of \$70,000 over a maximum term of 30 years are available to purchase or erect dwellings in the Australian Capital Territory. The exact amount of loan granted and term of the loan are determined by the applicant's level of income and assets and the value of the property to be purchased. To qualify for a loan an applicant must:

- be a permanent resident of Australia and have lived or worked in the Australian Capital Territory for at least six months prior to loan approval;
- not have any interest whatsoever in real property located in the Australian Capital Territory or Queanbeyan other than the dwelling or the land upon which it is proposed to erect the dwelling; and
- not previously have received government financial assistance in the form of a loan for the purchase or construction of a dwelling in the Australian Capital Territory or Queanbeyan.

Interest rates vary but must not exceed the Commonwealth Savings Bank new home loans rate. The interest rate for new loans at 30 June 1989 was 13.5 per cent. Instalment repayments are geared to the applicant committing 25 per cent of income to total mortgage payments and instalment subsidies are repaid over the term of the loan or upon discharge. At 30 June 1989, 6,818 properties were under mortgage to the Commissioner for Housing. The Commissioner also administers 5,028 Commonwealth of Australia mortgages.

Housing finance for owner occupation

The following tables present statistics of secured housing finance commitments made by significant lenders to individuals for the construction or purchase of dwellings for owner

occupation. For more comprehensive statistics and detailed information on the scope and coverage of these statistics refer to the monthly publication *Housing Finance for Owner Occupation, Australia* (5609.0).

HOUSING FINANCE FOR OWNER OCCUPATION
(\$million)

<i>Finance commitments for—</i>					
	<i>Construction or purchase dwellings</i>	<i>Alterations and additions</i>	<i>Cancellations of commitments</i>	<i>Commitments advanced</i>	<i>Commitments not advanced</i>
1987-88	20,109.6	707.3	617.6	18,059.6	4,597.9
1988-89	22,787.8	998.4	851.3	23,533.1	3,865.6
1989-90	18,689.5	904.7	751.3	19,102.7	3,499.9

**HOUSING FINANCE FOR OWNER OCCUPATION: NUMBER OF DWELLING UNITS AND
VALUE OF COMMITMENTS TO INDIVIDUALS BY TYPE OF LENDER**

	<i>Banks</i>	<i>Permanent building societies</i>	<i>Other lenders (a)</i>	<i>Total</i>
CONSTRUCTION OF DWELLINGS				
			—number—	
1987-88	52,425	8,823	4,380	65,628
1988-89	63,567	7,264	4,589	75,420
1989-90	52,091	3,576	5,252	60,919
			—\$million—	
1987-88	2,556.7	482.9	179.7	3,219.3
1988-89	3,335.1	443.4	246.8	4,025.3
1989-90	2,862.0	245.2	311.2	3,418.4
PURCHASE OF NEWLY ERECTED DWELLINGS				
			—number—	
1987-88	14,346	3,056	1,778	19,180
1988-89	14,213	1,941	3,195	19,349
1989-90	8,148	1,309	4,861	14,318
			—\$million—	
1987-88	801.1	181.5	75.6	1,058.2
1988-89	922.3	134.9	180.2	1,237.4
1989-90	589.8	108.0	387.5	1,085.3
PURCHASE OF ESTABLISHED DWELLINGS				
			—number—	
1987-88	219,789	51,630	15,511	286,930
1988-89	204,559	36,619	23,721	264,899
1989-90	150,276	21,179	29,536	200,991
			—\$million—	
1987-88	12,246.4	2,876.5	709.2	15,832.1
1988-89	13,730.5	2,346.1	1,448.4	17,525.0
1989-90	10,607.2	1,525.7	2,052.7	14,185.6
TOTAL				
			—number—	
1987-88	286,560	63,509	21,669	371,738
1988-89	282,339	45,824	31,505	359,668
1989-90	210,515	26,064	39,649	276,228
			—\$million—	
1987-88	15,604.2	3,540.9	964.5	20,109.6
1988-89	17,987.9	2,924.4	1,875.5	22,787.8
1989-90	14,059.1	1,878.9	2,751.4	18,689.4

(a) Includes cooperative housing societies, finance companies, governments, credit cooperatives and insurance companies.

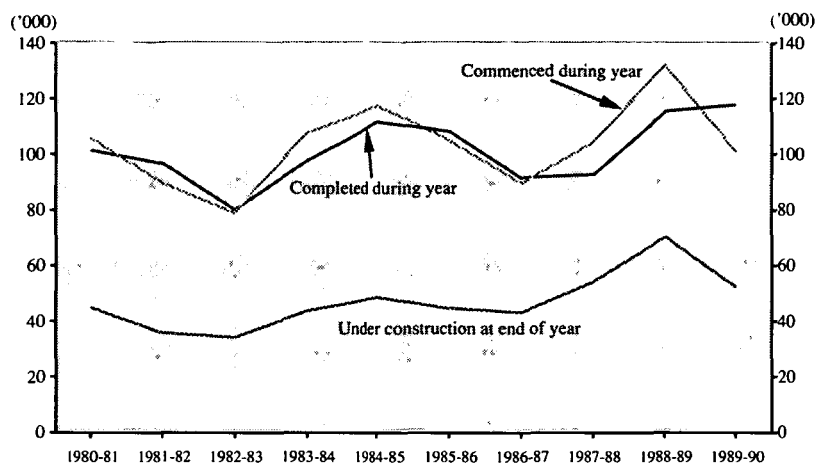
CONSTRUCTION

Building

Building activity is a significant indicator of the level of economic activity. In addition, the level of building activity and the types of buildings being constructed affect the Australian physical and social environment. Building approvals statistics give an indication of the potential future level of investment of private individuals, companies and government agencies in approved building construction. Building activity statistics show the level of actual building construction activity in terms of the level of commencements and completions, building jobs under construction and the value of work done and yet to be done on building jobs.

Number of new houses

NUMBER OF NEW HOUSES, AUSTRALIA



Note: Break in series from 1980-81 and 1981-82. (See explanation on pages 715-16 in Year Book No.71)

The following table provides a summary of the number of new houses approved, commenced, under construction and completed by type of ownership in each State and Territory for the year 1989-90.

NUMBER OF NEW HOUSES, 1989-90 (^{'000})									
	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Private Sector—									
Approved	25.1	26.3	22.4	7.2	11.3	2.5	0.5	1.2	96.6
Commenced p	25.7	26.5	22.4	6.7	10.8	2.4	0.5	1.4	96.4
Under construction(a) p	17.8	15.3	6.3	2.9	5.0	2.0	0.3	0.7	50.3
Completed p	28.4	30.7	25.5	6.9	17.0	2.5	0.5	1.5	113.0
Public Sector—									
Approved	0.4	1.3	1.2	0.4	0.5	0.1	0.1	0.1	4.1
Commenced p	0.6	1.1	1.3	0.4	0.5	0.1	0.1	0.1	4.3
Under construction(a) p	0.3	0.6	0.3	0.3	0.2	—	0.1	0.1	1.8
Completed p	0.7	1.0	1.5	0.5	0.7	0.2	0.1	0.1	4.7
Total—									
Approved	25.5	27.6	23.6	7.7	11.8	2.7	0.6	1.3	100.8
Commenced p	26.3	27.6	23.8	7.2	11.3	2.6	0.6	1.5	100.7
Under construction(a) p	18.1	15.9	6.6	3.2	5.2	2.0	0.4	0.8	52.1
Completed p	29.1	31.7	27.1	7.4	17.7	2.6	0.6	1.6	117.7

(a) At end of period.

Number of new houses approved by material of outer walls

The use of certain materials for outer walls is dictated by such factors as cost, durability, appearance and climatic conditions. Changes in the materials used over time indicate changes in the characteristics of the housing stock.

The following table shows the number of new houses approved in each State and Territory during the year 1989-90 classified according to the material of their outer walls.

NUMBER OF NEW HOUSES APPROVED BY MATERIAL OF OUTER WALLS
AS A PROPORTION OF TOTAL STATE, 1989-90
(per cent)

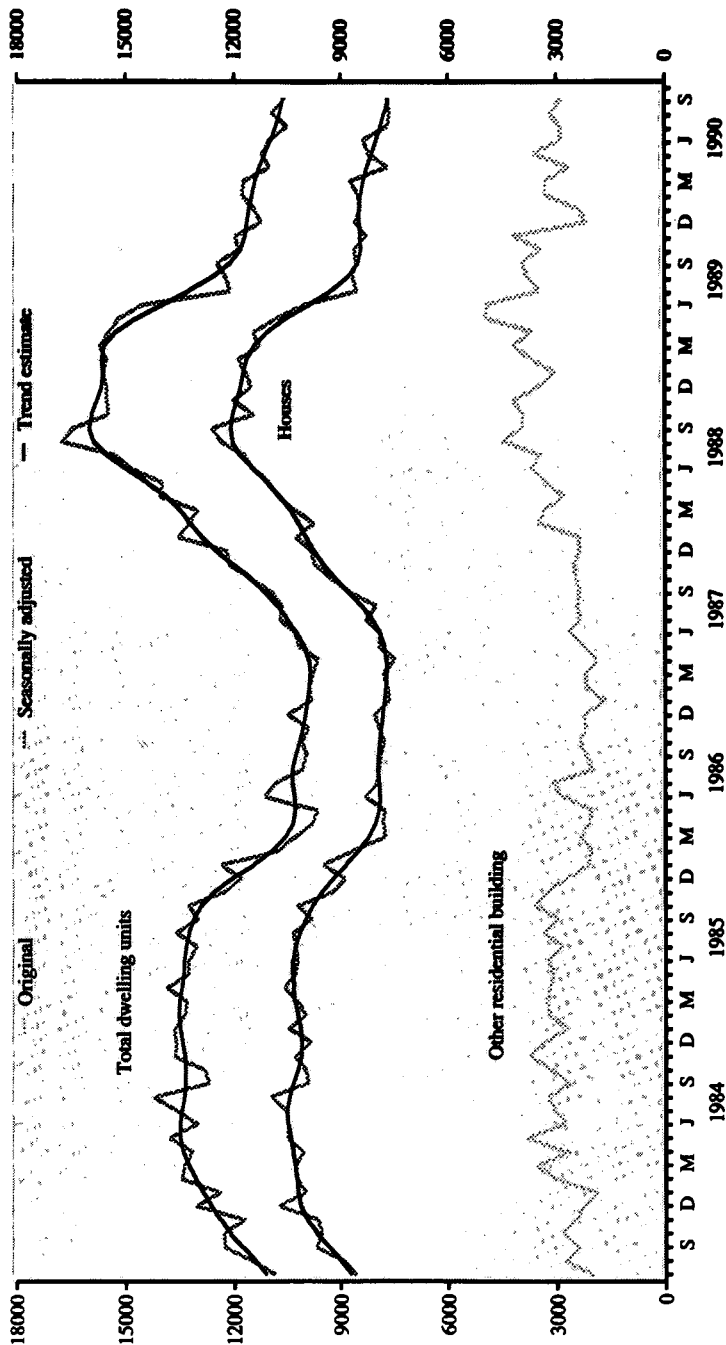
Material of outer wall	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Double brick(a)	14.9	1.4	7.0	4.4	81.3	5.2	64.8	1.1	16.2
Brick veneer	69.5	63.3	75.3	73.2	5.6	73.0	11.7	91.8	62.0
Timber	6.9	6.7	8.7	1.1	3.7	14.4	2.1	0.2	6.5
Fibre cement	7.3	1.9	6.9	6.1	7.2	3.1	1.1	—	5.4
Other	1.3	1.2	2.1	0.2	2.2	4.2	19.8	0.9	1.7
Not stated	—	25.5	—	15.0	—	—	0.5	6.0	8.2

(a) Includes houses constructed with outer walls of stone or concrete.

Number of dwelling units in new other residential building

The level of other residential building construction is highly variable and does not follow the regular pattern experienced in house construction. This can be explained partly by the generally larger size of other residential building construction jobs and also by the extent of speculative building of private flats, home units and similar other residential building projects.

**NUMBER OF DWELLING UNITS APPROVED IN NEW RESIDENTIAL BUILDINGS
AUSTRALIA**



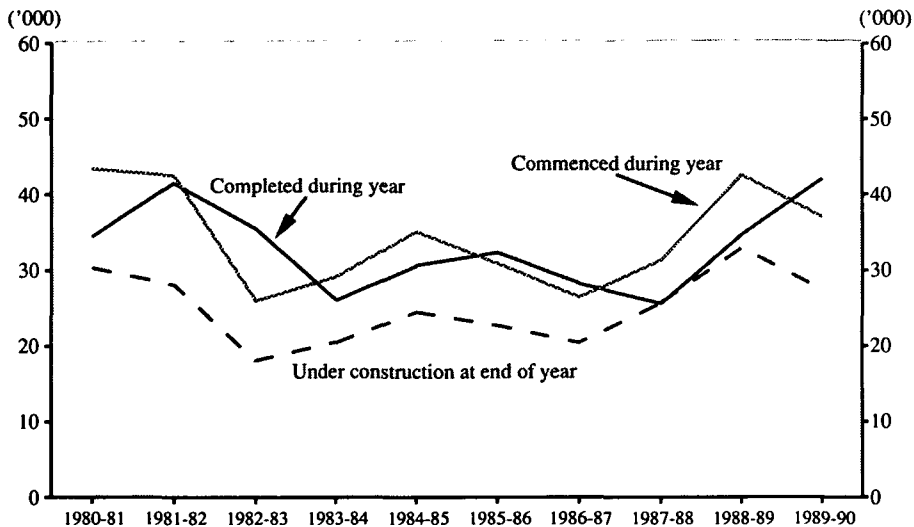
The following table shows the number of new dwelling units in other residential building approved, commenced, under construction and completed by type of ownership in each State and Territory for the year 1989-90.

NUMBER OF DWELLING UNITS IN NEW OTHER RESIDENTIAL BUILDING 1989-90
(^{'000})

	<i>NSW</i>	<i>Vic.</i>	<i>Qld</i>	<i>SA</i>	<i>WA</i>	<i>Tas.</i>	<i>NT</i>	<i>ACT</i>	<i>Aust.</i>
Private Sector—									
Approved	12.5	1.9	8.8	2.9	4.5	0.8	0.2	1.0	32.4
Commenced p	11.1	1.8	7.9	2.7	4.6	0.7	0.2	0.9	29.9
Under construction(a) p	10.2	1.8	4.9	1.5	2.3	0.5	0.1	0.7	21.9
Completed p	11.7	2.1	10.3	2.3	6.3	0.7	0.2	0.7	34.3
Public Sector—									
Approved	2.2	0.6	1.8	1.1	0.9	0.1	0.1	0.1	6.8
Commenced p	2.3	0.6	1.8	1.1	1.0	0.1	0.1	—	7.1
Under construction(a) p	2.4	0.6	0.9	0.7	0.6	—	0.1	—	5.3
Completed p	2.9	0.6	2.0	0.9	0.9	0.2	0.1	0.1	7.8
Total —									
Approved	14.7	2.5	10.5	4.0	5.4	0.9	0.3	1.1	39.2
Commenced p	13.5	2.4	9.7	3.8	5.6	0.8	0.3	0.9	37.0
Under construction(a) p	12.6	2.4	5.8	2.2	2.8	0.5	0.2	0.7	27.3
Completed p	14.6	2.6	12.4	3.2	7.2	0.9	0.4	0.8	42.1

(a) At end of period.

NUMBER OF DWELLING UNITS IN NEW OTHER RESIDENTIAL BUILDINGS,
AUSTRALIA



Note: Break in series from 1980-81 and 1981-82. (See explanation on pages 715-16 in Year Book No.71)

Value of buildings

The table below shows the value of all buildings approved, commenced, under construction, completed, work done and work yet to be done in Australia for the year 1989-90, according to the class of buildings. The classification of non-residential building by type of building is according to the function a building is intended to serve, as specified on building authorisations.

VALUE BY CLASS OF BUILDING, AUSTRALIA 1989-90
(\$ million)

<i>Class of building</i>	<i>Approved</i>	<i>Commenced</i> <i>p</i>	<i>Under</i> <i>construc-</i> <i>tion(a) p</i>	<i>Completed</i> <i>p</i>	<i>Work</i> <i>done</i> <i>(b) p</i>	<i>Work yet</i> <i>to be done</i> <i>(a) p</i>
New residential buildings—						
New houses	8,435.9	8,650.8	5,128.5	9,888.9	9,642.5	2,311.2
New other residential buildings	2,722.9	2,625.5	2,518.5	2,899.4	2,995.4	1,208.7
<i>Total new residential building</i>	<i>11,158.7</i>	<i>11,276.4</i>	<i>7,646.9</i>	<i>12,788.3</i>	<i>12,637.9</i>	<i>3,519.8</i>
<i>Alterations and additions to</i> <i>residential buildings(c)</i>	<i>1,901.8</i>	<i>1,957.8</i>	<i>1,142.0</i>	<i>2,022.0</i>	<i>2,110.7</i>	<i>439.7</i>
Non-residential building—						
Hotels, etc.	929.6	1,139.9	2,296.3	1,337.3	1,328.4	1,298.1
Shops	1,917.6	1,994.3	1,893.5	1,910.3	2,050.3	942.3
Factories	1,475.8	1,503.6	1,094.8	1,591.0	1,642.2	492.5
Offices	4,253.3	3,776.4	9,308.1	4,251.0	5,397.8	4,240.8
Other business premises	1,591.7	1,630.6	1,422.0	1,780.0	1,734.4	685.5
Educational	1,070.0	1,172.4	1,088.6	1,135.5	1,091.1	585.5
Religious	73.6	80.3	59.9	87.2	86.8	27.9
Health	607.2	626.3	1,149.1	650.8	717.5	466.8
Entertainment and recreational	545.5	656.9	676.7	674.9	706.0	310.9
Miscellaneous	692.4	715.7	1,625.8	769.2	672.6	422.5
<i>Total non-residential building(d)</i>	<i>13,156.7</i>	<i>13,296.3</i>	<i>20,614.9</i>	<i>14,187.3</i>	<i>15,427.2</i>	<i>9,472.7</i>
Total building	26,217.3	26,530.5	29,403.8	28,997.5	30,175.8	13,432.2

(a) At end of period. (b) During period. (c) Valued at \$10,000 or more. (d) Valued at \$30,000 or more.

Constant prices

Estimates of the value of work done at average 1984-85 prices are presented in the following table. Constant price estimates measure changes in value after the direct effects of price changes have been eliminated.

VALUE OF BUILDING WORK DONE AT AVERAGE 1984-85 PRICES, AUSTRALIA
(\$ million)

<i>Year</i>	<i>New residential building</i>			<i>Alterations and</i> <i>additions to</i> <i>residential</i> <i>buildings</i>	<i>Non-</i> <i>residential</i> <i>building</i>	<i>Total</i> <i>building</i>
	<i>Houses</i>	<i>Other</i> <i>residential</i> <i>buildings</i>	<i>Total</i>			
1984-85	5,665.3	1,400.2	7,065.5	842.7	6,107.6	14,015.8
1985-86	5,552.9	1,307.0	6,859.9	953.4	7,425.5	15,238.8
1986-87	4,808.2	1,116.2	5,924.4	951.9	8,045.3	14,921.6
1987-88 r	5,314.9	1,170.2	6,485.1	1,071.2	9,223.6	16,779.9
1988-89 r	6,696.9	1,784.2	8,481.1	1,228.2	9,620.1	19,329.4
1989-90 p	6,036.8	1,969.9	8,006.7	1,308.9	10,171.2	19,486.8

Engineering Construction Survey

This section contains estimates of engineering construction activity in Australia by both public and private sector organisations.

These estimates together with results from the ABS Building Activity Survey provide a complete picture of building and construction activity in Australia.

Scope and coverage of the surveys

The Engineering Construction Survey (ECS) aims to measure the value of all engineering construction work undertaken in Australia. The cost of land and the value of building

construction is excluded from the survey's scope. Where projects include elements of both building and engineering construction, for example, electricity generation and heavy industrial plant, every effort is taken to exclude the building component from these statistics.

Excluded from the survey are the following:

- Repair and maintenance activity;
- The value of any transfers of existing assets;
- The value of installed machinery and equipment not integral to the structure; and
- The expenses for relocation of utility services.

A contract for the installation of machinery and equipment which is an integral part of a construction project, is included in the statistics even though, in some cases, the activity in installing such machinery and equipment is classified to the manufacturing industry in the *Australian Standard Industrial Classification*, Volume 1 (1201.0).

The following tables show the value of engineering construction (ECS) activity by the private sector for the sector of ownership and by the public sector for the year 1989-90.

VALUE OF ENGINEERING CONSTRUCTION ACTIVITY BY THE PRIVATE SECTOR 1989-90
(*\$million*)

	<i>Commenced</i>	<i>Work done(a)</i>	<i>Work yet to be done(b)</i>
FOR THE PRIVATE SECTOR			
Roads, highways and subdivisions	839.7	1,094.9	412.9
Bridges	12.5	14.3	6.8
Railways	13.3	15.2	4.7
Harbours	36.4	59.8	25.2
Water storage and supply	72.6	71.5	4.1
Sewerage and drainage	52.9	53.7	4.0
Electricity generation, transmission and distribution	86.4	73.1	36.9
Pipelines	72.8	81.7	12.5
Recreation	327.7	319.9	39.7
Telecommunications	7.1	6.4	2.5
Heavy industry	1,187.1	1,260.8	496.7
Other	35.9	34.9	3.7
Total	2,744.3	3,086.1	1,049.7
FOR THE PUBLIC SECTOR			
Roads, highways and subdivisions	806.4	836.5	243.1
Bridges	96.8	130.0	58.9
Railways	94.3	49.4	66.2
Harbours	46.6	37.8	23.4
Water storage and supply	146.1	128.8	93.3
Sewerage and drainage	150.5	192.0	76.2
Electricity generation, transmission and distribution	888.3	366.4	906.5
Pipelines	37.3	82.9	3.4
Recreation	66.2	62.0	9.8
Telecommunications	40.7	10.5	33.2
Heavy industry	17.5	106.6	51.3
Other	19.6	17.4	9.0
Total	2,410.3	2,020.3	1,574.2
TOTAL			
Roads, highways and subdivisions	1,646.0	1,931.4	656.0
Bridges	109.4	144.3	65.7
Railways	107.5	64.6	70.9
Harbours	83.0	97.6	48.6
Water storage and supply	218.7	200.3	97.5
Sewerage and drainage	203.4	245.7	80.2
Electricity generation, transmission and distribution	974.7	439.5	934.4
Pipelines	110.1	164.6	15.9
Recreation	393.9	381.9	49.5
Telecommunications	47.8	16.9	35.7
Heavy industry	1,204.6	1,367.4	548.0
Other	55.5	52.3	12.7
Total	5,154.6	5,106.4	2,623.9

(a) During period. (b) At end of period.

VALUE OF ENGINEERING CONSTRUCTION ACTIVITY BY THE PUBLIC SECTOR 1989-90
(\$ million)

	<i>Commenced</i>	<i>Work done(a)</i>	<i>Work yet to be done(b)</i>
Roads, highways and subdivisions	1,411.1	1,390.0	299.2
Bridges	63.7	58.2	22.7
Railways	247.6	278.0	61.0
Harbours	40.4	30.3	28.1
Water storage and supply	395.3	379.0	478.9
Sewerage and drainage	446.1	353.5	334.2
Electricity generation, transmission and distribution	986.2	981.0	229.0
Pipelines	62.4	54.8	11.3
Recreation	77.7	69.9	15.5
Telecommunications	2,078.8	2,096.7	291.4
Heavy industry	71.2	73.1	—
Other	14.8	12.6	0.6
Total	5,895.1	5,777.3	1,771.8

(a) During period. (b) At end of period.

Construction Industry Survey

The Construction Industry Survey is a sample survey of private sector construction establishments and of public sector enterprises engaged in construction and repair and maintenance activities. The most recent survey was conducted in respect of 1989-90. For further details see *Year Book* No. 70.

The private sector collection was conducted as a component of the Bureau's integrated economic statistics program. This program has been developed so that data from each industry sector conform to the same basic conceptual standards, thereby allowing comparative analysis across different industry sectors. The results of this survey are therefore comparable with economic censuses undertaken annually for the mining, and electricity and gas industries and periodically for the transport, manufacturing, wholesale, retail and selected service industries.

Building Research Activity

The recently formed CSIRO Division of Building, Construction and Engineering continues as the main government funded building research body in Australia.

Staffed by some 200 researchers and technologists of international standing, their laboratories in Melbourne and Sydney contain the most extensive range of modern testing equipment in Australia. Close links are also maintained with leading overseas researchers and their specialist laboratories.

The work of the Division covers residential, non-residential, and engineering construction including all aspects of design, maintenance, construction, and planning. In addition to its research activities, it provides major support of national regulatory and standardisation processes, appraisal and testing of products, and a wide range of consulting services.

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Housing, Australia (1320.0)
Housing Costs of Income Units, Australia, Preliminary Results (4117.0)
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Building Activity, Australia: Dwelling Unit Commencements, Preliminary (8750.0)
Building Activity, Australia (8752.0)
Engineering Construction Survey, Australia (8762.0)
Construction Industry Survey: Private Sector Construction Establishments, Details of Operation, States and Territories, 1984-85 (8772.0-8772.8)
Public Sector Construction Activity Survey, 1984-85 (8775.0)
Construction Activity at Constant Prices, Australia (8782.0)

Details for particular States are available from publications issued regularly by the Deputy Commonwealth Statistician in each State.

Booklets of unpublished tables are available on request from the Income and Housing sub-section of the ABS:

- Housing Costs and Occupancy*
- Housing Finance of Purchasers*
- Housing History and Intentions*
- Dwelling Characteristics of Households*
- Housing Costs* (for each State and Territory)

Other Publications

The annual reports of the Commonwealth and State Government Housing Authorities show further details of government activities in the field of housing.

PRESERVATION OF ROCK IMAGERY

(This special article has been contributed by Dr Graeme K. Ward, Australian Institute of Aboriginal and Torres Strait Islander Studies)

Introduction

Aboriginal Australia has a long history of artistic endeavour; pictures on rock, found throughout the continent, date from many millennia ago and continue into the present to be an integral and significant part of Aboriginal culture. In recent years, increasing numbers of tourists have sought to visit the extensive areas of rock imagery made accessible in Kakadu National Park and elsewhere; agencies with statutory responsibility for site management and Aboriginal communities both are expressing fear for the integrity of these sites. There is a need for conservation and management of such sites, both to preserve the fragile fabric of the imagery and its substrate from environment forces and to protect the places from visitors.

Australian Aboriginal Rock Pictures

Rock pictures are widespread throughout Australia, being found from the far north—with notable concentrations in the Kimberley, Victoria River, Arnhem Land and Cape York Peninsula—through the Pilbara, Flinders Ranges, and Sydney Sandstone, to the Grampians in western Victoria and the ice-age caves of south-western Tasmania. Some consider the rock imagery of parts of Australia more than equal to that of Europe and elsewhere in terms of its extent, concentration and artistic significance. It appears (dating is ever subject to revision) as old if not older than that of Europe. Engraved walls excavated from beneath archaeological deposits in the Cape York area have been dated to more than 13,000 years ago (Rosenfeld *et al.* 1981). Pigments used in pictographs made on sandstone shelters in the far north of Australia have yielded a date of about twenty thousand years ago (Loy *et al.* 1990). 'Rock varnish' in petroglyphs in South Australia has been dated to greater than thirty thousand years ago (Nobbs and Dorn 1988). Red and yellow ochres, perhaps used in rock painting, have been recovered from contexts dated to 60,000 ago (Roberts *et al.* 1990).

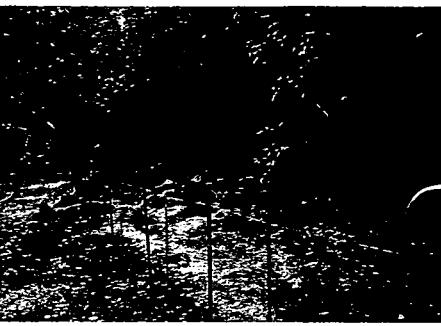
It is useful to distinguish between rock engravings (petroglyphs), and paintings and drawings (pictographs). Petroglyphs are made by removing rock from the substrata—by pecking, hammering or abrading—leaving a negative impression (Figure 1). Pictographs are made by adding pigments to a rock surface; drawings are made onto walls using dry pigments, and paintings are made using wet pigments (Figures 2–8). Both are made by using brushes, fingers and palms or stencilling techniques.

The motifs represented in Australian rock pictures are very varied—appropriately enough given the tens of thousands of sites and range of environments in which they exist (McCarthy 1967). In what has been described as some of the stylistically earliest engravings found at Koonalda Cave in South Australia, simple, probably non-representational motifs predominate. Single or multiple parallel meandering lines appear to have been made by running fingers across the soft limestone and single shallow scratches made by incising with a sharp stone (Wright 1971). Elsewhere, petroglyphs form geometric figures; distinctive representations of bird and animal tracks; various fauna; items of cultural material (including tools, weapons and ritual objects); mythical figures such as the Rainbow-Serpent and even human faces. These might be singular motifs or groups forming scenes of hunting parties or dancers.

Pictographs embrace a similar range of subject matter but probably tend more to be representational than geometric motifs with the addition in many areas of hand stencils



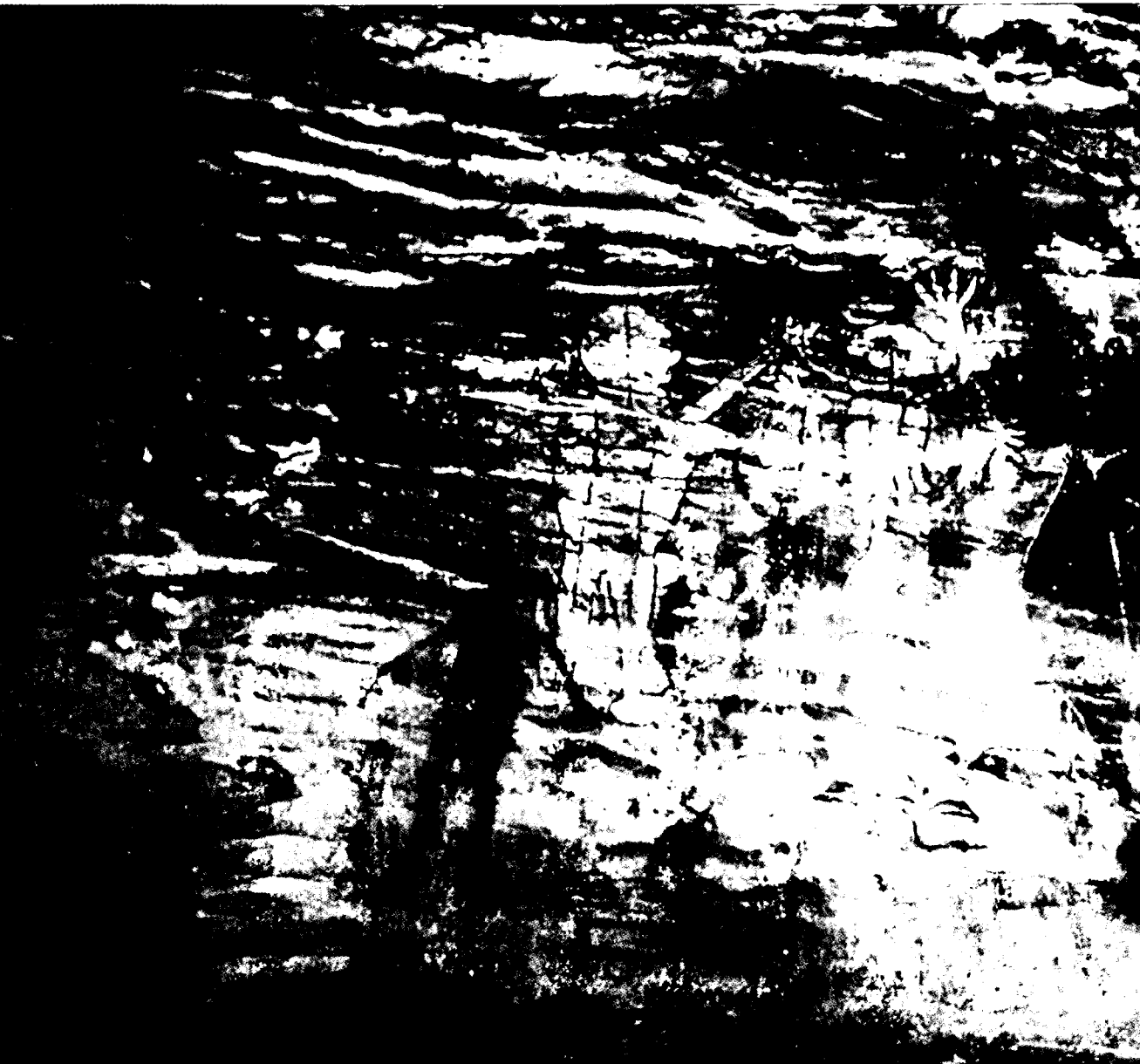
Painted site near Ingaladdi Waterfalls, showing effects of water-wash, exfoliation of rock wall, and growth of *Filices* species. Photo courtesy of IMAATSI (Fig. 4)



Fencing protecting small pictograph site at Kunawala, near Mt Hogath. Photo courtesy of AIATSIS. (Fig. 5).

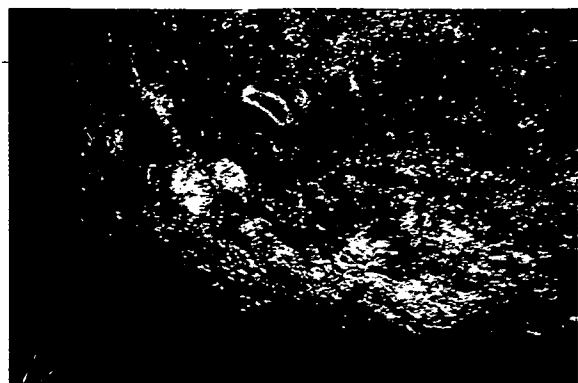


Recently constructed elevated walkway at Split Rock. Photo courtesy of AIATSIS. (Fig. 7).



Visitation-produced dust obscuring painting on lower part of wall at Split Rock, near Laura. Photo courtesy of AIATSIS. (Fig. 3).

Recent vandalism (graffiti) of a painting site near Cape Cleveland. Photo courtesy of Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS), Canberra. (Fig. 2)



Recently constructed elevated walkway at Split Rock. Photo courtesy of AIATSIS. (Fig. 7).



Splitting and dislodging of boulder bearing petroglyphs, Spear Hill area, Pilbara Region. Photo by H.P. McNickle. (Fig. 1).



MABUYU

THE MATERIAL CULTURE PORTRAYED IN ROCK ART - THE CROSS, WEAPONS AND OTHER TECHNOLOGY OF BOW AND SPEAR FLORES - SOMETIMES GIVES US A CLUE TO THE PLACE OF PARTICULAR PAINTINGS IN THE LONG HISTORY OF ABORIGINAL MAN AND HIS ART IN THIS REGION.

THIS REPRESENTATION OF MABUYU THE LIGHTNING MAN IS PORTRAYED WITH A GOOSE WING FAN, STING BAG, SPEARS AND SPEAR THROWER.

THE MOST VITAL CLUE TO THE RELATIVE AGE OF THIS PAINTING IS THE PRESENCE OF A GOOSE WING FAN, WHICH THE MISTER CLASPS TO HIS BEND WITH HIS STOMACH. THESE FANS, WHICH ARE STILL IN USE, COULD OBVIOUSLY NOT HAVE BEEN A COMMON OBJECT WITHOUT THE PRESENCE OF THE MAGPIE GOOSE (*ANAS PLEBEIA*) WHICH WOULD NOT HAVE BEEN IN THIS REGION PRIOR TO THE ESTABLISHMENT OF THE GREAT FLOODPLAIN SYSTEM.

THE AGE OF THE FLUOROPHOSPHORIC BEING INVESTIGATED. THERE ARE CONFIDENT PREDICTIONS THAT THIS WILL PROVE TO BE RELATIVELY YOUNG - PERHAPS AS LOW AS 1000 YEARS. THIS DATING WILL REPRESENT AN APPROXIMATE MAXIMUM AGE FOR THE PAINTING. THE PAINTING COULD ALSO BE RELATIVELY NEWER AS ALL OF THE ITEMS PORTRAYED ARE STILL MADE AND/OR USED BY ABORIGINAL PEOPLE THROUGHOUT AUSTRALIA.

NATIONAL PARKS AND WILDLIFE REGULATIONS
ARCHAEOLOGICAL SITE

DO NOT DEFACE OR DAMAGE THIS SITE. DO NOT REMOVE ANY ARCHAEOLOGICAL ARTIFACT FROM THIS SITE.
PENALTY \$1000



KANENGGU
(spear thrower)
DJUNGGU
(woven string bag)

BELARR
(hook spears)
MEVILGAINU
(goose wing fan)

An informative sign in Kakadu National Park. Photo courtesy of AIATSIS. (Fig. 6).

NPWS Ranger, Peter Sullivan, carrying out conservation work at Nourlangie Gallery, Kakadu National Park. Photo by I. Haskovec, ANPWS, Darwin. (Fig. 8).



and impressions, and a considerable array of anthropomorphic figures. Extensive and elaborate friezes of paintings with a variety of subject matter and much superimposition of motifs have been recorded throughout Australia. Pictographs also include items reflecting contact with other communities—Macassans in the north, large sailing ships and pearlers and luggers in various coastal areas, men on horseback and with cattle, dogs and guns in areas further inland. Several distinctive styles of rock painting have been defined, especially in the north, with the Bradshaw and Wandjina (in the Kimberleys), Mimi (stick figure) and X-ray (in Arnhem Land) being well-known.

It is not surprising that such a wealth of artistic endeavour has received considerable attention from researchers and tourists. Among the former, McCarthy (1967) has provided a useful overview. Many systematic and regional studies have been made and several of the more recent and accessible are included in the reading list. Examples of tourist interest can be seen in almost any travel brochure dealing with Australia's north. A recent survey of overseas visitors to Australia by the Australia Council, through the Bureau of Tourism Research, reported that: half of the overseas visitors were interested in seeing and learning about Aboriginal art, thirty per cent purchase an Aboriginal art or related item, and one-fifth went to a museum or gallery especially to see Aboriginal art. While questions specifically concerning rock pictures were not included, these data tend to support observations of increasing interest in visitation to Australian sites. Records made at Kakadu National Park show that, in 1987, at least 150,000 people (including nearly 86 per cent of all private visitors to the Park) visited one or more of the painted galleries at Ubirr, Nourlangie and elsewhere.

The need for protection

Concerted tourism uncontrolled tends to destroy the focus of its interest. That expanding type, 'heritage tourism', one interest of which is rock pictures, has the potential to damage irretrievably many sites, and there is increasing recognition of the need to develop and implement measures to protect the resource base. Heritage tourism has other negative facets.

Firstly, some Aboriginal communities do not want large numbers, or any, visitors to places which are culturally important to them; others want a share of the heritage tourism cake, and the problem for the community becomes one of balancing various facets of its interests, including conserving the sites themselves.

Secondly, there is a tendency to treat petroglyphs and pictographs as 'gallery art' comparable with the Western notion of 'fine art'. There is Aboriginal, and ethnographic, objection to this veneration of 'rock art' as 'art as object', valued for its antiquity and authenticity, a perception which tends to remove the imagery from its cultural context. This is particularly objectionable when that context currently is of significance to the originating community or its cultural descendants. A preferable view is that of 'art as process' in which the context within which the imagery is produced and used is more significant than the object itself, and one of the problems of conservation of rock imagery is maintaining in modern circumstances this perception of its context. Related to this is the controversy over 'retouch' or 'repainting' of imagery, a practice which is well-attested as commonplace in traditional Aboriginal cultures but opposed by some who stress the static, 'heritage' value of 'rock art'.

Thirdly, and most obviously, there is the continuing threat to the physical fabric of petroglyphs and pictographs. This derives from a wide range of sources, from surface and sub-surface water, frost, mineral salts, soil cover and vegetation, airborne dust, microflora, native and feral animals, vandals and other visitors (Figures 1-4). At some sites, the physical deterioration of the imagery since it was originally executed or last repainted, is plainly recorded in reports and photographs. The deterioration of images might be a direct function of the materials used. Engravings are easily made into the soft surfaces of the sandstone of the Sydney-Hawkesbury region and of southern Queensland; equally readily, these rocks deteriorate when exposed to weathering forces or are walked upon or brushed

against; the vulnerability of such surfaces also encourages graffitists. The materials used to create the vibrant painted images found throughout Australia—oxides of iron and manganese, charcoal and clay—were mixed with water, and perhaps, fats, blood and other materials into a paste or solution to be blown from the mouth, applied by finger or brush of twig or feather, are not necessarily the mixtures most resilient (although some might combine chemically with the surface to which they have been applied) to exposure and changeable weather conditions, or brushing against by sweeping branches, cattle flanks or curious fingers. After prolonged weathering many pigments remain only as chemical 'stains'.

The need to develop conservation measures for petroglyphs and pictographs became increasingly apparent in Australia during the last few decades. As part of a federally-funded national program beginning in 1973 and administered by the Australian Institute of Aboriginal Studies (AIAS), a conservator was employed at the Western Australian Museum to develop and implement conservation strategies, this work by John Clarke also provided the basis of conservation projects elsewhere in Australia and prompted increasing awareness of the extent of the threat to rock imagery. During the mid and late 1970s meetings in Hobart, Perth and Sydney identified various problems and discussed possible solutions. Specialist studies of problems of the conservation and management of painting sites in Kakadu National Park were published (Gillespie 1981) emphasising the magnitude of the conservation problem throughout Australia. Another meeting, held at Kakadu National Park in 1983 involving many Aboriginal people, considered problems of visitor access and control at Aboriginal sites (Sullivan 1984). An initiative of the four Australian Academies prompted two studies: Professor Fay Gale and her students investigated the behaviour of tourists at painted sites in Kakadu National Park (Gale and Jacobs 1987); Dr Andrée Rosenfeld synthesised existing knowledge of the causes of deterioration and means of preservation of petroglyphs and pictographs (Rosenfeld 1985). These reports served as points of departure in two of the major areas being developed, that of physical conservation and that of visitor management.

The Australian Institute of Aboriginal Studies' Rock Art Protection Program

A reviewer had recommended that AIAS undertake a study of rock art conservation and this proposal was supported by the then Minister for Aboriginal Affairs, the Hon. Clyde Holding. The Minister asked AIAS to administer a program for the 'protection of Aboriginal rock art' (Ward and Sullivan 1989). Funds for this purpose were provided from the Commonwealth Government's 1987 Budget and in subsequent years. The level of interest in, and need for, the program was reflected in the number of applications and level of funding sought. In the initial year, thirty applications for funding were received totalling nearly half a million dollars, despite the fact that only \$150,000 was available; comparable levels were sought in subsequent years (Ward 1989).

The Institute took a broad view of the term 'protection' and allocated funding to applications in four categories: survey and recording, including inventory and evaluation; physical protection measures and visitor control studies; research into physical conservation techniques; and public awareness/training programs. Examples of projects are considered below.

A conservation manual for use by site managers

The Institute has supported formal training of site conservators at the then Canberra College of Advanced Education, and several graduates of the successful CCAE/Getty Conservation Institute course are now working in various fields within Australia. At the same time, there clearly was a need for a manual which described various simple but useful techniques that site managers could apply to endangered imagery or sites as a whole. With funding from the Rock Art Protection Program (RAPP), David Lambert, a geologically-trained conservator working with the New South Wales National Parks and

Wildlife Service at Gosford, took six months leave to prepare and write the manual. He visited sites throughout Australia to extend his experience of conservation problems peculiar to different regions and to discuss the particular concerns of site managers in each State and Territory. The understanding that he gained of problems faced by conservators and his direct experience in working with a wide variety of painting and engraving sites is evident in his report to the Institute which, avoiding duplication of Rosenfeld's discussions, concentrates on methods of treating particular problems in the field. He deals with, in turn: methods of minimising frost and water damage; of treating salt decay, including the use of a 'sacrificial render'; the safe removal of soil cover and vegetation affecting surfaces; the removal and control of microflora (algae, lichen, fungi and bacteria); and the treatment of damage by animals, insects, birds, macropods, domestic stock and feral animals, including the removal of wasp's and bird's mudnests and the repair of any damage. There is an extensive section on the management of sites to reduce the impact of visitors with reference to case studies on the use of walkways at Mootwingee (Western NSW), Carnarvon Gorge (south-central Queensland), Ubirr (Kakadu National Park) and Bulgandry (near Gosford, NSW). This is followed by practical advice on the removal of graffiti (and reducing its incidence), and the highlighting of engravings for public display. The last chapter deals with specialised techniques for the conservation of paintings (including the identification of pigments and the use of consolidants) and the reduction of weathering of engravings. One of the appendices deals with simple analytical techniques which will not be available to fieldworkers although knowledge of it and other more complex procedures dealt with by Lambert will help the site manager know when to involve a trained conservator.

The last appendix contains the Australian International Council on Monuments and Sites (ICOMOS) Charter ('The Burra Charter') which Lambert suggests serves as the guide for conservation action at any site. The volume contains a useful index. It was published in 1989 by the AIAS in its report series (Lambert 1989).

Physical protection of visited sites

Much of the support provided by the program has gone to State and Territory heritage protection agencies and to land managers to assist with the physical protection of petroglyph and pictograph sites which are the subject of visitation by tourists.

The Western Australian Museum has received funding from the Rock Art Protection Program for a project designed in consultation with the Ngarla and Coastal Njama Aboriginal Corporation and which involved the members in the construction of fencing and other protective measures of an important site at Port Headland. The Northern Australian Museum of Arts and Science successfully sought funding on behalf of Aboriginal traditional owners for major fencing projects in the top end of the Northern Territory (Figure 5). The Conservation Commission of the Northern Territory received funds for projects designed to record sites in newly established national parks, and to establish, in consultation with the Aboriginal custodians in each area, which places might be visited and thus needed management with walkways and other visitor facilities. The South Australian Aboriginal Heritage Branch used funding from the program to build visitor control facilities at Akaroo in Wilpena Pound. The Queensland National Parks and Wildlife Service has developed protection projects at sites such as Nara Inlet on Hook Island, Kenniff Cave in the South-Central Highlands, and at Balancing Rock in Donna National Park near Chillagoe; the Quinkan Reserve Trust has received funding for site conservation measures designed to prevent visitor-induced dust from coating the painted rockface at the popular site of Split Rock near Laura. The New South Wales National Parks and Wildlife Service obtained funds for several projects not only designed to provide physical protection of sites but also to enhance visitor appreciation of the rock pictures at them by using the results of research to develop informative signage and brochures (Figure 6). The Victoria Archaeological Survey used program funds to remove graffiti from sites in the Grampians National Park which also has been the focus of research into the effect of substrate salts upon painted walls; as well, the RAPP is funding research there which

seeks to develop methods to remove salts deposited over paintings. The Tasmanian Department of Parks, Wildlife and Heritage used RAPP funds to implement the extensive protection measures necessary to preserve the famous Mount Cameron West engraving site.

The situation at Nara Inlet was unusual in that the site is relatively inaccessible by land but is well-known due to its location in the most popular recreational boat anchorage in the Whitsunday Islands. The project aimed to limit damage to the paintings there by controlling access to the site by placement of a boardwalk and, by providing informative signs, enhancing appreciation of the cultural context of those paintings. The Royal Australian Corps of Transport assisted with the difficult business of getting material to the shelter.

The same conditions in a shelter which provide for the preservation of paintings often contribute a permanently dry floor deposit; if the substrate is suitably fine-grained, there will be a fine dust layer at the foot of the painted surface and this is readily disturbed by animals and tourists. Moreover, dust might become bonded to the rock surface in the presence of airborne salts, and largely obscure the pictographs (Figure 3). A visitor boardwalk has been built at the Split Rock site near Laura on the Cape York Peninsula. Additionally, extensive mulching and suitable native plants were added to the immediate environs of the shelter to prevent fine dust from being disturbed from the dry floor deposit and settling on the painted surface (Figure 7). Comparison of recent photographs of the site with those made several years ago demonstrate the extent to which the imagery has been dulled by dust. The consultant engaged to oversee the protection works at Split Rock had been trained in rock art conservation at the Canberra College of Advanced Education (now the University of Canberra); he had sampled the dust layer for analysis and identification so as to advise upon the possibility of its removal. Not all airborne materials can be removed from painted surfaces without damaging the imagery.

The case for conservation at Split Rock was of particular importance; the site is well-known to travellers along the Cape York Peninsula Development Road and is seen by thousands of visitors each year. Some basic protective measures were in place but these were inadequate and did not deal with the problem of dust. The Laura area contains thousands of pictograph sites with extensive and spectacular imagery but Split Rock is the only one readily accessible from the road and perhaps the only example to be seen by most visiting the area. Its dust-affected and worsening condition presented an unfortunate example to the visitor giving a poor impression of some of the best pictographs in the world. Unfortunately this impression has been easily gained by less sympathetic visitors to Aboriginal Australia in general.

Silica skins: their potential for protection and dating

Researchers recording pictographs have noticed a clear or slightly milky film covering images or parts of images at many sites, especially those in the north of Australia. This film was identified as being composed of silica; it was observed to be deposited by ground water from siliceous rocks. It was considered to be detrimental to the imagery, particularly when it was thick enough to be opaque or became discoloured, and silicone drip-lines were installed to direct water flow away from paintings. However some argued that this phenomenon had the potential to preserve paintings by sealing them and thus protecting them from various sources of damage.

The program provided a grant to a geochemically-trained conservator, Alan Watchman, who conducted a series of studies while a Visiting Fellow at the Australian National University. Watchman reported (1989, 1990) that silica skins:

- were formed by complex interactions among rainwater and groundwater, rock substrata, micro-organisms and climate;
- formed on different rock types in various climates; and

- were physically and chemically complex and might contain several minerals and organic materials in dynamic relationships.

Pigment applied to a rock face could be incorporated into the silica skin by microbiological activity and thus be strongly bonded to the underlying rock and preserved. He recommended that silica skins should be encouraged rather than prevented from forming on painted surfaces, as they assisted in maintaining the rock surface. Diversion of water from painted surfaces may adversely affect their natural preservation. The replication of naturally produced silica skins was not possible because of the complexity of the bio-geological processes involved at the rock surface. There was going to be no 'spray-can' solution to the problem of the preservation of rock paintings!

Watchman found that the micro-organisms encapsulated within the silica skins could provide organic matter which, when converted to carbon dioxide, could be used to date the formation of that layer by analysis of radiocarbon using Accelerator Mass Spectrometry (AMS). Moreover, the potential exists for dating silica skin layers by other cosmogenic methods, and study of some stable isotopes could help characterise the environment and climate at the time when paintings were sealed by the silica skins. Thus, the possibilities had been enhanced for understanding much more about the context of the painters and their paintings.

Related work conducted at the Australian National University and techniques developed in Arizona have provided further opportunities to view the prehistoric painters and engravers of Australia. From a series of studies at the Australian National University of ancient residues on stone tools came a successful attempt to identify the organic materials used to bind the ochres and other pigments used in pictographs. Human blood was used for this purpose in both the south-west of Tasmania and in the Daly River area of the Northern Territory. Extracts of blood protein were used to estimate, using AMS analysis of carbon these provided, the ten and twenty millennia dates for these respective pictograph sites (Loy *et al.* 1990).

Dating the organic component of an added pigment or a sealing siliceous film is all very well but what about the possibility of dating the negative impressions on rock which are engravings? A new technique called 'cation-ratio analysis', developed to date rock screens in the deserts of Arizona, have been applied to rock engravings in the Olary region of South Australia (Nobbs and Dorn 1988). Cation-ratio dating depends upon the micro-chemistry of rock varnish, a thin coating of minerals that develops upon rock surfaces particularly in arid regions. The ratio of potassium plus calcium ions to chemically stable titanium ions in the varnish has been shown to change over time. The correlation of this cation-ratio with AMS radiocarbon ages has allowed rock varnish to be used as a dating tool. Application of the technique in the Olary region has produced estimates of dates of between 1,400 and 31,700 years ago for a variety of motifs.

Apart from its own intrinsic interest, the application of such techniques is central to the conservation of rock pictures in that many studies of deterioration occurring at rock faces require such fundamental information in order to provide for complete understanding of those physical processes. The dating of sites was an essential part of this: were these engravings or paintings the results of the last few hundred years or were they several thousand years old? How long had there been for the interplay of forces which had led to the preservation or partial destruction of the pictures? The technological revolution during the 1980s in the dating of paintings and engravings had provided the methods to obtain a good idea of the scale of time involved, and this is fundamental to the development of sound strategies for the protection of sites. Moreover, it is clear that the considerable antiquity of a place or a set of cultural attributes such as rock imagery increases the status of that place or attribute in the eyes of the public and that this appreciation is more likely to enhance the conservation of rock pictures.

Aboriginal interests

This talk of high technology in the service of rock pictures should not take us too far from another fundamental reality of their preservation, the interest of the Aboriginal peoples whose cultural ancestors were responsible for its production and continued preservation in the past and who continue today to produce and maintain rock images. Aboriginal communities wish to control access to and use of places containing rock pictures, especially where sites are of ritual significance. In many places this control has been formalised, as at Kakadu National Park (Figure 8). Two recent studies emphasise the importance of recognition of Aboriginal interests.

Maintenance of culture, and the national heritage

It is well documented that diverse motifs in various parts of Australia have been repainted many times. A Western Australia study reported sixteen layers of paint at one site; Watchman found layers of pigment separated by layers of silica. Repainting was done to maintain the cultural integrity of sites. At the AURA Congress in Darwin in September 1988, David Mowaljarlai, a traditional man from the Mowanjum Community of Derby in Western Australia, presented a paper which stressed the importance and significance of a range of sites in terms of Aboriginal cosmology, and his community members' strongly felt commitment to the land from which they came and which sustains them. This statement subsequently was published in the British journal *Antiquity* (Mowaljarlai *et al.* 1989; also Mowaljarlai and Peck 1988). Mowaljarlai went on to outline the course of a project to repaint sites in the Kimberley area as part of a plan to revive and maintain traditional values even in the context of a rapidly changing social environment. The project had been opposed by non-Aboriginal landholders and persons concerned to protect the integrity of 'rock art' as 'national heritage'. A study conducted by the Department of Aboriginal Sites of the Western Australian Museum which has statutory responsibility under the Western Australian *Aboriginal Heritage Act 1972-1980* for such sites, concluded that there was little substance to the complaints being made and that no action was warranted under the Act. Similar opposing positions were taken in discussions at the conference.

Such incidents highlight the fact that sites with rock imagery can have multiple values and that those values may be very different to different community groups. This poses problems for cultural heritage managers and conservators who then are faced with the problem of which conservation alternative to emphasise. Some guidance is provided by the Burra Charter which stresses that the significance or value of a site dictates conservation practice. In the case of the Kimberley repainting, the Western Australian Museum assessment determined that the primary significance of the sites resided in their importance to the Aboriginal community as part of a long tradition.

There is an interesting conflict between two sorts of preservation here. The national heritage argument sees the value of the paintings being destroyed or at least significantly lessened as 'art' as a result of their repainting; that the paintings would continue to fade or otherwise deteriorate over time does not seem to be a major concern. The Aboriginal heritage argument stresses the value of the place—only incidentally the paintings—in terms of the process of maintaining cultural links with the country; that the 'presence' of the paintings and their longevity is enhanced at the same time appears only incidental.

Managing the dreaming

The second example of Aboriginal interest in the protection of rock imagery is also a final example of a project funded by the RAPP, one which has implications for a program of action to preserve Australian rock paintings and engravings. A project carried out by Darell Lewis and Deborah Rose in the Victoria River area of the Northern Territory considered in detail the significance to the local community of sites which they had recorded there.

They distinguished two main categories of imagery, the first identified by Aboriginal people as originating with them is concerned mainly with sorcery, while the second comprises images not recognised as being made by humans to represent Dreaming Beings but rather, it is said, such images are made by Dreaming Beings and are Dreaming Beings; they are the "... shape of the Dreaming, the living presence, in past, present and future time of the origins of the cosmos" (Lewis and Rose 1988:50); the cultural meaning of the paintings depends upon a knowledge which is beyond the depictions themselves. The researchers set these ideas in the context of the Aboriginal concept of 'country', the relationships between people and country, and those among people themselves, all of which relate to the processes of maintaining Aboriginal cultural integrity. This is especially so in relation to non-Aborigines and the non-Aboriginal pressures impacting upon the country and its people, one aspect of which is the protection from outsiders of access to sacred knowledge.

All of this is related directly by the researchers to the preservation of the paintings. Referring to the emphasis in the Burra Charter on conservation as "... all the processes of looking after a *place* so as to retain its *cultural significance*" (1979/1988:1.4) the researchers argue that physical intervention by non-Aborigines could seriously undermine the Aboriginal cultural significance of a place. Their solution—derived from discussions with the Aboriginal community—emphasises the concerns of the traditional custodians, recognising their community status and traditional responsibility. Lewis and Rose detail a series of steps designed to give local Aboriginal communities direct and practical responsibility for the protection and maintenance of their own sites; certainly they recommend (1988:70) that "... no physical intervention ... be undertaken with respect to 'art' in the area except at the express and voluntary request of the Aboriginal custodians".

Such is the practice today of responsible conservators and site managers; the RAPP requires Aboriginal interests to be assessed and used as a guide in the drawing up of the proposal for conservation funding and the implementation of protective works. The results have been manifest in a variety of ways, from emphasis upon priority being given to surveys of sites and assessment of their cultural significance in areas of Aboriginal concern with actual or proposed land use, to the improvement of signage with relevant cultural text at visitation sites. The continued demand for funding for a variety of such projects indicates that the interest in and concern for the preservation of rock pictures in Australia is growing as the imagery becomes better known and is increasingly the focus of visitation both by Australians and overseas tourists. The challenge is to ensure that protective measures are relevant to the interests of all the community.

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