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GONE WITH THE WINDS

Inquiry into Meteorological Services

Report from the House of Representatives

Standing Committee on Expenditure

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FOREWORD

This report represents the culmination of six months intensive effort by the members of an Expenditure Committee Sub-committee, the Committee's Secretariat and the specialist advisers. The Committee thanks the 88 individuals and organisations that made submissions to this Inquiry, those who attended the public meetings throughout Australia, and officers of the Bureau of Meteorology and the Department of Aviation for their co-operation and assistance.

As Chairman, I would like to thank my fellow Committee members. In the short period available to complete the Inquiry, the Committee travelled to many remote areas and provincial centres in Australia. The members of the Committee experienced at first hand the harsh realities of cyclone threats.

The Committee Secretariat completed the detailed work for this Inquiry under extreme pressure and I would like to thank the Secretary, Mrs Sue Harlow, who managed to weld together a project team capable of completing the task in such a short period of time. Her enthusiasm and undoubted management capabilities paved the way for a successful report. I would also like to thank the two specialist advisers seconded to the Committee for this Inquiry, Ms Bettye Dixon from the Bureau of Meteorology and Mr Brian Whiteley from the Department of Aviation. Without their expertise, a high quality and timely report would not have been possible.

Stephen Martin
(Sub-committee Chairman)

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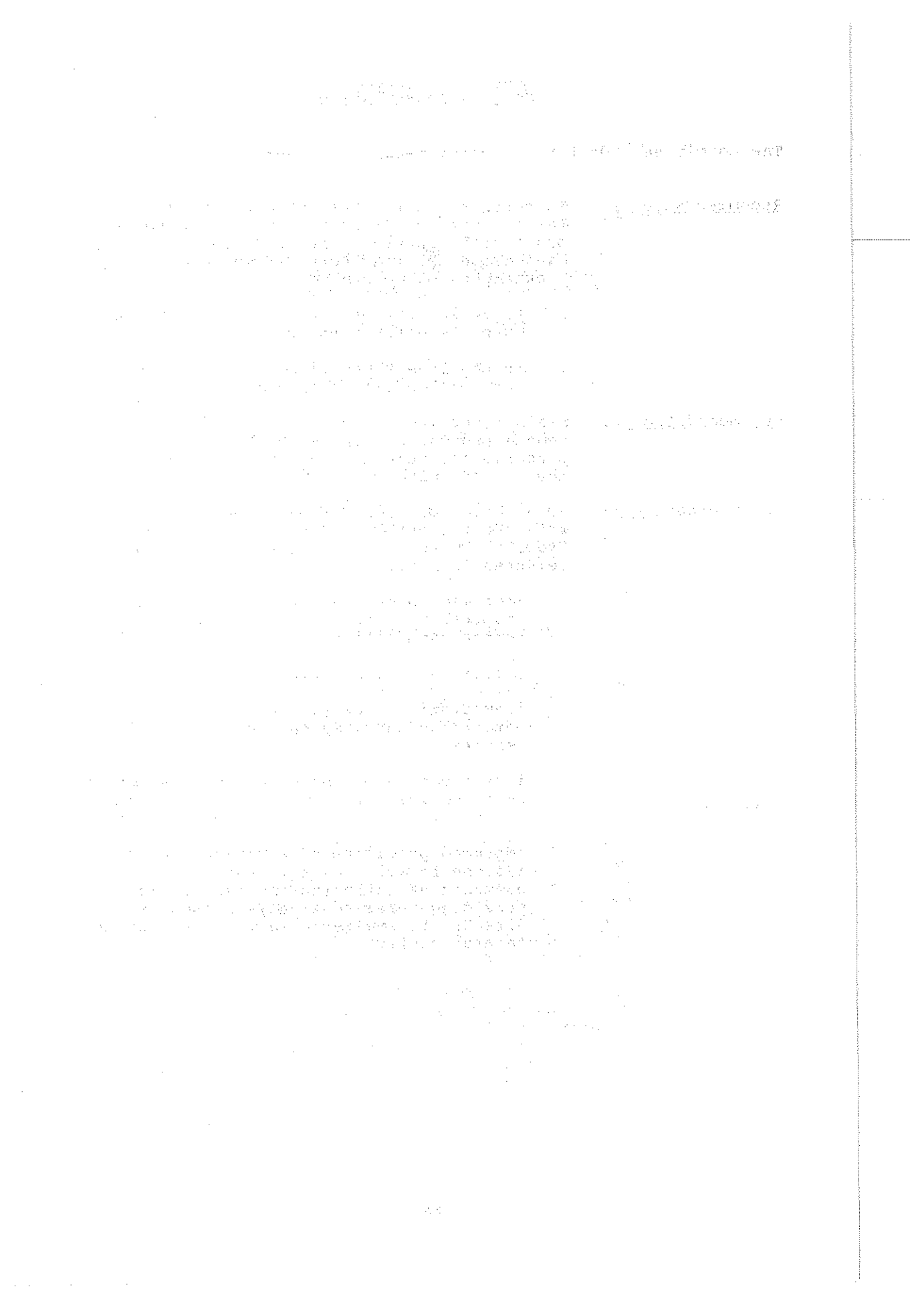

LIST OF RECOMMENDATIONS

The Committee made the following recommendations:

Recommendation 1: To satisfy a demonstrated public need, Weather Service Offices in the major remote provincial centres of Alice Springs, Cairns, Launceston, Mt Isa, Port Hedland and Rockhampton be maintained:

- to avoid further centralisation of the Bureau's operational organisation; and
- to continue to provide public weather services to the local community.

Recommendation 2: Weather Service Offices located in major remote provincial centres be funded from consolidated revenue; funding commencing in the 1987/88 financial year.

Recommendation 3: As a matter of urgency the Bureau be provided with special purpose funding to upgrade the Tropical Cyclone Warning Service. Essential features include:

- improved communications links between the Tropical Cyclone Warning Centres and remote communities in northern Australia including the use of all-weather satellite communications;
- 'remoting' of the weather watch radar network to the Tropical Cyclone Warning Centres;
- investigation by the Bureau of the use of RAAF and coastal surveillance aircraft for tropical cyclone reconnaissance; and
- improved provision of accurate tropical cyclone location data to local communities including the feasibility of providing quasi-continuous radar scans directly to emergency services and/or the general public.

Recommendation 4: Weather Service Offices located at Essendon, Hobart and Canberra, adjacent to Regional Forecasting Centres and not required for public weather purposes, be closed. Closures to be completed by December 1987.

Recommendation 5: Subject to the arrangement of suitable alternative methods for the provision of aerodrome and synoptic weather reports, the Tamworth Weather Service Office be closed by June 1988.

Recommendation 6: Government endorse the Bureau of Meteorology's accelerated re-equipment plan. The plan will enable a long overdue upgrade of the Bureau's basic infrastructure. It includes:

- accelerated implementation of the Automatic Regional Operations System, AROS, with the potential for increased efficiency and a reduction in staff numbers attributable to the Department of Aviation;

- replacement of the Laverton and Gladstone radars and an associated relocation of the Laverton Observing Office to Melbourne Airport and the Gladstone office to Rockhampton. The relocations will enable further reductions in staff numbers attributable to the Department of Aviation and the release of qualified observer staff to strengthen the Bureau's basic observation network; and

- upgrading of the Tropical Cyclone Warning Service.

Recommendation 7: Notwithstanding the long term demarcation dispute between Technical Officers (Meteorology) and Meteorologists, Technical Officers (Meteorology) be given responsibility for the issue of short period forecasts.

Recommendation 8: The Bureau be provided with special purpose funds to enable the development of a television or videotex type briefing service initially for general aviation with the possible extension to public weather services. Funds are required for:

- the purchase of additional equipment;
- the employment of consultants, as required, to develop additional computer software; and
- the promotion of the service with a view to obtaining future commercial sponsorship.

Recommendation 9: In accord with Recommendations 1 to 6, the Bureau of Meteorology be given an additional time period of approximately 18 months in which to implement the cost saving measures required by the Department of Aviation, and, consistent with its own needs, to strengthen its basic operating infrastructure and reduce centralisation.

Recommendation 10: The current 1985/86 shortfall of $1M in Bureau of Meteorology revenue be met from consolidated revenue in the form of an additional capital grant in the 1986/87 Budget allocation.

Recommendation 11: As a matter of urgency, the Department of Aviation and Bureau of Meteorology Working Arrangements and, in particular the Financial Arrangements be renegotiated and a formal binding agreement signed prior to the 1987/88 Budget process. Considerations should include:

- an investigation of the most appropriate charging policy;
- an accurate and timely estimate of costs attributable to the Department of Aviation;
- an agreed method of calculation of Forward Estimates;
- a more equitable method of cost sharing for equipment upgrade and introduction of new technology in the Bureau of Meteorology; and
- the establishment of a trust fund or similar mechanism to allow carry over of funds.

Recommendation 12: The Bureau of Meteorology reassess the need for a Director's Office to be located in Canberra. In the event that Bureau management decide to retain the Director's Office in Melbourne, the representation in Canberra should be upgraded to Senior Executive Service level to enable more successful liaison and negotiations with other Commonwealth Government departments and agencies.

CHAPTER ONE

INTRODUCTION

1.1 The initial impetus for the Inquiry arose from a joint request to the Expenditure Committee from the Ministers for Science and Aviation. The letter of request is reproduced in Appendix I and the conduct of the inquiry outlined in Appendix II. The Ministers indicated concern at the withdrawal of public weather services from a number of communities following cancellation by the Department of Aviation of requirements for aviation services at these locations. Public protest had resulted.

1.2 Following the initial request from the Ministers, the Committee adopted the following terms of reference -

To review:

- the extent to which airport Weather Service Offices and Observing Offices have been providing non-aviation services;
- whether these non-aviation services should continue to be provided;
- the method of providing and funding these services if they are required; and
- the extent to which the costs of such services should be recovered and from whom.

The Committee then advertised the inquiry widely and wrote to those it knew to be interested in the review.

1.3 During the inquiry, it became clear to the Committee that the issues went beyond the terms of reference it had set itself in two major respects:

(i) general and some domestic aviation operators argued that the terms of reference should be widened to include aviation matters as these were not as completely resolved as the Committee had been led to believe; and

(ii) facilities and resources available to the Bureau of Meteorology had been reduced to such an extent that the Bureau's ability to provide the standard of forecasts required by any section of the community must be seriously questioned.

1.4 Both issues were of such importance that the Committee agreed they should be addressed in this Report and the terms of reference were changed to reflect this decision. The revised terms of reference became -

To review:

- the extent to which airport Weather Service Offices and Observing Offices have been providing non-aviation services;
- whether these non-aviation services should continue to be provided;
- the method of providing and funding these services if they are required;
- the extent to which the costs of meteorological services should be recovered and from whom; and
- arising from the needs identified by the Committee during its inquiry, to examine the level and deployment of resources available to the Bureau of Meteorology.

CHAPTER TWO

BACKGROUND

2.1 It is necessary both to understand the respective roles played by the Department of Aviation (DofA) and the Bureau of Meteorology (BofM) in the provision of meteorological services to the aviation industry and to obtain an historical perspective on developments leading to the need for this inquiry.

Department of Aviation and the Bureau of Meteorology Working Arrangements

2.2 The Secretary to the DofA has the legal responsibility under the Air Navigation Regulations Section 98 (1), to determine the meteorological services which are necessary 'to ensure the safe, economic and regular operation of aircraft' in Australia.[1]

2.3 The Meteorology Act 1955 paragraph 6(2)(b), states that 'The Bureau shall perform its functions under the Act in the public interest generally and in particular - for the purposes... of civil aviation'.[2] In addition, paragraph 8 of the Act provides that 'the Director of the Bureau may, subject to any directions of the Minister, make charges for forecasts, information, advice ... supplied in pursuance of the Act.'[3]

2.4 In practice the DofA specifies the requirements for meteorological services and the BofM provides the major part of these services and subsequently charges the Department. 'These costs are, in turn, incorporated by the Department in air navigation charges which are levied on the aviation industry'.[4] Meteorological charges are formalised in an agreement between the Bureau and the Department entitled 'Working Arrangements for the Provision of Meteorological Services and Facilities for Civil Aviation'.[5]

2.5 The Bureau has been providing meteorological services for civil aviation for the past 40 years. During this period both the funding arrangements and the charging philosophy have been altered. In the years 1952 to 1979 the Department of Aviation (or its predecessors - the Department of Transport and the Department of Civil Aviation) contributed fixed percentages of total Bureau expenditure on both salaries and also general expenses.

2.6 The 1976 Report of the Committee of Inquiry into the Bureau of Meteorology, the Howson Report, recommended that:

> 'The provision of any additional service e.g. to civil aviation and the armed forces, should be subject to a charge aimed at recovering the marginal cost of providing the extra service and associated overheads....'.[6]

2.7 Section 7 of the 1979 Working Arrangements sets out the agreed charging principles and a charging formula. The charging principles are summarised in Appendix VI. It should be noted that whilst the Howson Report refers to marginal costs the Working Arrangements use the slightly different terminology, directly attributable costs '...officers directly involved in the provision of the service'[7].

Cost Recovery in the Department of Aviation

2.8 Successive Australian Governments have endeavoured to recover from the aviation industry the cost of the services provided directly in support of civil aviation. The amounts involved are considerable, for example, of the Department of Aviation's budget for 1984-85, $471.5M was assessed as being attributable (recoverable) costs. Revenue for the same period was $282.9M comprising air navigation charges of $134.7M, aviation fuel tax of $81.4M, and rents, concessions etc. of $66.8M.

Overall this represents a cost recovery rate of some 60 per cent. The balance of $188.6M was paid from consolidated revenue.

2.9 In an attempt to increase departmental efficiency, the Secretary to the Department of Aviation, in November 1983, announced a target of an average 2 per cent per annum reduction in real costs for the three years commencing July 1984.[8]

The Bosch Report and Meteorological Services

2.10 The Bosch Committee was appointed by the Minister for Aviation early in 1984 to inquire into all matters relating to aviation cost recovery. It reported to the Minister in November 1984. Among the Inquiry's recommendations dealing with opportunities for reducing costs was Recommendation (R59) which states:

> 'The Department should include (in its planning) as a specific objective the increase of at least 9 per cent in productivity over a ten year period. This would be in addition to the 2 per cent per annum reduction in real attributable costs over three years to which the Department is already committed'.[9]

2.11 On 14 August 1985, following wide consultation, the Minister for Aviation, the Hon Peter Morris, M.P., announced that the Government had agreed to the adoption of the Bosch strategy.[10]

2.12 The Bosch Report made six recommendations concerning meteorological services as follows:

- Meteorological costs should continue to be attributed to the industry.(R19)

- Formal consultative arrangements should be established between the Department of Aviation, operators and the Bureau of Meteorology to ensure that the meteorology services supplied to the industry are provided at the required standard, that costs are kept within reasonable bounds, and that the development of the Bureau's investment program takes into account the concerns of the aviation industry.(R20)

- The basis for charges levied against the aviation industry for meteorological services should continue to be the incremental cost associated with providing the services.(R21)

- The Bureau of Meteorology should complete as soon as possible the study into development of a comprehensive costing system which would enable the identification of incremental costs.(R22)

- The Bureau of Meteorology should identify each of the services provided and the fees charged for them in its accounts to the Department of Aviation.(R23)

- The Bureau of Meteorology should negotiate with operators supplying meteorological data to agree on the costs involved and whether they warrant development of a system for paying for the data.(R24)

2.13 In addition the Report also briefly addressed the current provisions for charging for meteorological services and stated:

> 'The intention of the charging principles is to charge the increment cost of providing aviation meteorological services. Not all the principles are strictly in accord with this intent'.[11]

Cost Reductions - the Basis of the Decision to Close Weather Service Offices.

2.14 As noted above the Secretary to the Department of Aviation had taken the initiative to anticipate the Bosch findings through measures designed to improve the cost effectiveness of his Department. This decision has been subsumed by the subsequent decision of the Government to accept the Bosch Report strategy and to proceed with its implementation.

2.15 As part of the Department's effort to implement the Secretary's decision, DofA decided to extend the containment of costs to include the provision of meteorological services to aviation.

2.16 Because of the nature of the Working Arrangements, it proved difficult for the Bureau to determine how a general 'across the board' expenditure cut could be implemented. Following protracted DofA and Bureau discussions, the Bureau issued a Staff Notice on the 23 July 1985 foreshadowing the possible closure of ten (originally nine) Weather Service Offices (WSOs) over a three year period.[12]

2.17 The proposed closures resulted in public protest from a range of community interests including the general public, farmers, fishermen, industry, port authorities and the media as well as the aviation industry and in particular, general aviation. Most of the communities affected were remote from the major capital cities.

2.18 It is important to note that the existing Working Arrangements provide under Principle 3 for the

> 'Cost of shared services or facilities to be allocated on a proportional basis, taking account of the relative usage of the services or facilities.'[13]

Under these arrangements therefore, it is little wonder that the Department of Aviation is seeking a review of the charges. There is ample evidence to support the claim that there is a significant component of non-aviation weather services provided by the provincial WSOs which are currently totally billed to the Department of Aviation.

2.19 The Bureau has stated that the DofA did not formally advise the Bureau that it did not wish to meet the full costs of aviation meteorological services in 1984/85 until January 1985. Accordingly a shortfall of approximately $1M in the Bureau's 1985/86 estimated revenue from charges for aviation services exists.

2.20 The Bureau issued a Staff Notice concerning the proposed WSO closures on 23 July 1985. Since this Staff Notice a number of DofA and Bureau meetings have been held, some of which have included staff associations and aviation industry representatives. As the proposed closures had a significant impact on the provision of non-aviation services, on 28 November 1985, the Ministers for Science and Aviation jointly referred the issue to this Committee.

CHAPTER 3

EFFECTS OF THE PROPOSALS

The Direct Effect on Weather Service Offices

3.1 The Bureau currently operates 28 Weather Service Offices Australia wide. The direct effect of the proposals is the closure of ten of these Offices. Details of current status and proposed changes are included in Tables 3.1 and 3.2. Timetables for the implementation of the closures are presented in Appendix VIII.

3.2 The locations are Alice Springs, Cairns, Canberra, Hobart, Launceston, Mt Isa, Port Hedland, Rockhampton, Tamworth and also Essendon where services are provided from the Melbourne Airport WSO on a shift rotation basis.

3.3 Weather Service Offices form part of the three-tiered operational organisation of the Bureau.[14] The three tiers comprise:

- the National Meteorological Centre (NMC) in Melbourne and the Regional Meteorological Centre (RMC) in Darwin providing broadscale forecast and guidance material for the whole Australian area of responsibility;

- the eight Regional Forecasting Centres (RFCs), one of which is located in each State or Territory Regional Office with responsibility for weather services in their individual areas of responsibility. In addition Townsville is an RFC for aviation purposes. The RFCs act as warning centres with official Tropical Cyclone Warning Centres being located in Perth, Brisbane and Darwin. In addition they are 'parent offices' for the WSOs and Observing Offices in their regions; and

Table 3.1 Current Status Staffing Levels and Cost of Staff Attributed to DofA (April 1986) at Locations where Closures are Proposed

Location	Current Status	Current staff numbers		Staff and salary Costs Currently Attributed to DofA [$000, including overheads]		Comment
		(a) TO(Met)	Observers	TO(Met)	Observers	
Alice Springs	WSO/OO[b]	3	8	3[176]	1 [52]	
Cairns	WSO/OO	3	4	3[176]	1 [49]	Tropical Cyclone Watch
Canberra	WSO/OO	6	4	3[183]	1 [49]	Joint Civil/Defence
Essendon	WSO	1	0	1 [60]	0	Shift rotation from Melbourne
Hobart	WSO/OO	3	9	3[183]	1 [52]	
Launceston	WSO/OO	4	6	4[268]	1 [49]	
Mt Isa	WSO/OO	2	5	2[116]	1 [52]	
Port Hedland	WSO/OO	4	5	4[238]	1 [52]	Tropical Cyclone Watch
Rockhampton	WSO	2	3	2[120]	3[147]	WSO includes 3 observers.
Tamworth	WSO	2	0	2[120]	0	
Total		30	44	27[1640]	10[502]	

(a) TO (Met) - Technical Officers (Meteorology)

(b) WSO/OO - Colocated Weather Service Office, WSO and official Observing Office, OO

Source: Based on Bureau of Meteorology Background Paper p.59.

Table 3.2: Revised Status, Staff Numbers and Estimated Savings following Proposed Closures

Location	Revised Status	Revised Staff Numbers		DofA Estimated Savings $000 [Staff Numbers]	WSO Nominated to Provide Future Telephone Briefings (Via 008 Service)
		TO(Met)	Observers		
Alice Springs	OO(a)	0	8	176 [3]	Darwin
Cairns	OO	0	4	176 [3]	Townsville
Canberra Defence WSO only	WSO/ OO	3	4	183 [3]	Bankstown
Essendon	-	0	0	60 [1]	Moorabbin
Hobart	OO	0	9	213 [3]	Melbourne/ Moorabbin
Launceston	OO	0	6	268 [4]	Melbourne/ Moorabbin
Mt Isa	OO	0	5	116 [2]	Townsville
Port Hedland	OO	0	5	238 [4]	Perth/ Jandakot
Rockhampton	-	0	0	267 [5]	Archerfield
Tamworth	-	0	0	120 [2]	Bankstown
Total		3	41	1,817[30]	

(a) OO - Official Observing Office

Source: Based on Bureau of Meteorology Background Paper p.59.

- Field Offices including 28 major Weather Service Offices and 50 official Observing Offices. The WSOs are located at Civil (17), Defence (8) and Joint User (3) airports.[15]

3.4 The Observing Offices form part of the Bureau's basic surface and upper air observing network. As part of their duties, most provide routine (hourly) and special (half-hourly) Aerodrome Weather Reports (AWRs), or observations, specifically for aviation and many are colocated with WSOs. The offices are staffed by Bureau trained observers who are represented by the Professional Radio and Electronics Institute of Australasia (PREIA).

3.5 The Weather Service Offices are staffed by Technical Officers (Meteorology), in general recruited from the observer ranks, who are members of the Association of Draughting, Supervisory and Technical Employees (ADSTE).

3.6 The Bureau of Meteorology states that the WSOs were originally established to provide services for aviation.[16] Their functions, as defined by the Bureau, can be formally summarised as follows:[17]

- maintaining meteorological watch for the locality of the office and providing input and feedback to RFC terminal forecasts and amendments for the local airport;

- preparing trend type forecasts for the local airport (where applicable);[18]

- deriving forecasts for particular air routes from area forecasts received from the National Meteorological Centre or a parent RFC;

- compiling and presenting flight documentation to aircrew;

- distribution and interpretation of relevant public weather forecasts and warnings originated by the parent RFC; and

- acting as a point of liaison for local organisations.

3.7 From the DofA viewpoint, the major function of the WSOs as defined in the Working Arrangements, is the provision of face to face and/or telephone briefing to aircrew and Departmental operations personnel to enable clarification and elaboration of forecasts, warnings and the current meteorological situation. Other functions include the distribution of flight documentation, the provision of trend type forecasts and a terminal area thunderstorm service where appropriate. In addition there is a stated requirement for the provision of Aerodrome Weather Reports.

3.8 It is obvious that one of the underlying reasons for this inquiry has been the different interpretation of the functions of the ten WSOs concerned. On the one hand the Department has seen the offices as primarily providing a briefing service; the Bureau on the other hand has, in practice, implemented a far broader definition extending to the distribution and interpretation of public weather forecasts and a much wider weather watch function.

3.9 In the course of this inquiry the Committee visited all ten WSOs proposed for closure. At three locations - Hobart, Canberra Civil and Essendon the volume of public weather services provided was obviously low and the functions were primarily for aviation. Statistics presented in Tables 3.3 and 3.4 clearly illustrate this fact.

Table 3.3 Services Provided by Bureau Field Offices in 1984

OFFICE	AVIATION SERVICES FOR CIVIL & MILITARY (Excluding Aerodrome Weather Reports)			PUBLIC SERVICE
	Total Aviation Services (Documentation, Briefing, Trend Forecasts, Warnings, other)	Pilot Briefings		
		Tel.	Face to Face	
Capital City Airports				
WSOs Adelaide	82,885	5,275	27,042	-
Brisbane	127,892	22,909	42,437	-
Canberra	26,118	3,755	10,773	-
Darwin	65,809	3,758	15,242	-
Hobart	10,994	2,440	3,567	-
Melbourne	169,905	42,914	43,816	-
Essendon	32,706	2,510	15,065	-
Perth	74,928	4,940	22,707	-
Sydney	191,122	6,810	71,846	-
Other Airport WSOs*				
Alice Springs	28,394	2,898	4,454	4,419
Amberley (RAAF)	12,959	1,530	1,950	-
Bankstown	53,284	12,055	17,767	595
Cairns	34,285	3,518	15,093	30,719
Edinburgh (RAAF)	9,473	1,046	2,042	-
East Sale (RAAF)	11,315	1,140	1,192	5,436
Launceston	9,491	2,358	2,268	12,872
Laverton (RAAF)	3,051	119	732	-
Moorabbin	57,415	18,306	17,617	1,072
Mt Isa	16,659	2,459	6,046	2,545
Oakey (Army)	14,038	4,283	587	-
Pearce (RAAF)	9,306	630	1,234	611
Parafield	21,776	5,239	4,685	-
Port Hedland	16,280	25	6,131	2,755
Richmond (RAAF)	13,642	197	3,451	3,458
Rockhampton	22,962	8,506	6,123	16,273
Tamworth	9,601	1,657	3,483	1,170
Townsville	135,959	14,680	14,101	13,621
Williamtown (RAAF)	32,706	2,510	15,065	16,318
* Archerfield not included.	Opened January 1985			
Observing Offices				
Albany	-	-	-	11,410
Coffs Harbour	-	-	-	12,159
Esperance	-	-	-	7,154
Kalgoorlie	-	-	-	2,373
Mackay	-	-	-	5,148
Mildura	-	-	-	9,371
Norfolk Is	-	-	-	2,275
Oodnadatta	-	-	-	1,331
Wagga Wagga	-	-	-	2,064

Source: Bureau of Meteorology Background Paper, p. 46

Table 3.4 Summary of Services Provided at Selected WSOs Proposed for Closure

WSO Location	Total Number of Services Provided	Aviation Services		Public Weather Services	
		Number	Per Cent %	Number	Per Cent %
Smaller Capital City Airports					
Canberra	26,118	26,118	100		
Hobart	10,994	10,994	100		
Provincial Cities					
Alice Springs	32,813	28,394	87	4,419	13
Cairns	65,004	34,285	53	30,719	47
Launceston	22,363	9,491	42	12,872	58
Mt Isa	19,204	16,659	87	2,545	13
Port Hedland	19,035	16,280	86	2,755	14
Rockhampton	39,235	22,962	59	16,273	41
Tamworth	10,771	9,601	89	1,170	11

Source: Derived from Bureau of Meteorology, Background Paper, p46

3.10 At the remaining seven locations of Alice Springs, Cairns, Launceston, Mt Isa, Port Hedland, Rockhampton and Tamworth however, Tables 3.3 and 3.4 show varying but significant volumes of public weather services are provided to a range of users including farmers, industry, the media, port authorities and emergency services.

3.11 The Committee noted the high degree of confusion both at the public meetings and in correspondence, regarding the source of forecasts. The majority of users were unaware that all official regional forecasts originated from capital city Regional Forecasting Centres and would be unaffected by the closure of the WSOs.

3.12 Users of both aviation and public weather services stressed to the Committee the importance of the local knowledge of the Technical Officers. Communities had obviously come to both expect and rely on detailed 'interpretation' of the more generalised RFC products. There seemed to be a very fine distinction between the provision of a forecast and forecast interpretation. Whilst the Technical Officers were certainly not originating the broad scale forecasts, they were, in the Committee's opinion, providing valuable short period forecasts for their particular area based on an often extensive experience of local weather conditions. In addition, many farmers required three and four day outlooks which were not generally available through the media. The value of this service was noted at a number of meetings.

3.13 As mentioned previously, there is a DofA requirement for the provision of Aerodrome Weather Reports (AWRs) by the WSOs. In Table 3.1 the number of colocated WSOs and official Observing Offices is listed. At these sites AWRs are made by the observer as part of his duties. The cost of one observer only is attributed to the Department. The Bureau argues that the charge reflects the incremental effort involved in the provision of a 24

hour seven days a week observation program. Following the closure of the WSO component, these locations will revert to official Observing Offices and the observing function will continue unaltered.

3.14 An anomaly exists at Tamworth where the Technical Officers also undertake the observation program. There is currently no alternative method for the provision of AWRs.

3.15 A more significant anomaly exists at the Rockhampton WSO. For historical reasons, mainly related to the early need for a coastal site for tropical cyclone surveillance, the official Bureau Observing Office is located at Gladstone. Currently a staff of three observers is attached to the Rockhampton WSO to provide AWRs for aviation purposes only. The costs of all three (and previous to October 1985 four) observers are attributed to the DofA. The proposals include both the closure of the WSO at Rockhampton and the removal of the three remaining observers. The effects of the resultant decrease in the observation program are discussed later.

3.16 The Committee understands a similar situation exists at the Melbourne WSO where five observers are billed to the Department for the provision of AWRs. The official Observing Office is located at Laverton.

3.17 Thus of the 48 observing staff currently attributed to aviation Australia wide[19], 8 observers or 17 per cent are employed at only two locations. This represents a significant percentage of the total charge for aviation services and in the current economic climate of cost recovery, the Department understandably wishes to reduce these costs.

3.18 The Committee notes that the Bureau's Capital Re-equipment Program allows for the relocation of the Laverton Observing Office to Melbourne and the Gladstone Office to Rockhampton.[20]

3.19 The DofA attitude to the proposed closures is as follows:

> 'There are no proposals under consideration for the reduction in forecasts and other meteorological information, for aviation users. However, there is scope to achieve cost reductions through changes in the means by which meteorological services are provided at some aerodromes'.[21]

3.20 Prior to the majority of flights, pilots require pre-flight briefing which includes both aeronautical and meteorological information. Currently briefing is done in three ways. At 21 larger aerodromes, including all locations proposed for closure, both DofA and Bureau briefing officers are available. At a further 33 smaller aerodromes there are only Departmental briefing staff who pass to the aircrew meteorological documentation originating from the relevant RFCs. When further elaboration is required, the Department provides a telephone link to the nearest major regional WSO. There is no direct charge for this service. At the remaining 400 aerodromes all briefing is done by telephone at the cost of a local call.

3.21 In line with the Department's concept that the major function of WSOs is the provision of face to face briefing, it has proposed that, in order to reduce costs, ten WSOs be closed and meteorological briefing be available only at high volume aerodromes located in the major capital cities (ie excluding Hobart and Canberra) and Townsville. At all other locations meteorological documentation will be provided by Departmental briefing staff either directly or by telephone. The Department plans to extend its telephone services to enable further elaboration of forecasts by staff within the major WSOs as required.

3.22 During its inspections, the Committee observed that, whilst most Bureau equipment was of considerable antiquity, the offices were equipped with facsimile receivers which enabled the display of some pictorial data including satellite photographs and charts. Similar equipment was not available to DofA personnel and the Committee understands the Bureau owned receivers would be removed following closure.

3.23 The general impression gained from the inspections was one of dedicated officers performing very labour intensive functions in generally run down offices, unaided by advances in technology. One written submission to the Committee[22] drew attention to the advantages of a videotex type aviation meteorological briefing service currently available in Canada; whilst the Committee itself viewed an example of a commercial television briefing service routinely presented by meteorologists in the United States. There is obviously scope for the modernisation and improvement of the services provided and in particular the provision of pictorial data in place of, or in addition to, the very unsatisfactory presentation of forecast texts currently available. Widespread criticism of the Area Forecast presentation is discussed later.

3.24 From the point of view of the general public in the seven provincial cities affected, there is currently no alternative method of providing local forecasts. Public protest prompted this inquiry and is reflected in the original terms of reference.

3.25 The Bureau's current attitude is that the most cost effective method of operation of the provincial WSOs has been as a multi-functional office including the provision of aviation briefing, public weather and the performance of an extended weather watch role. The Committee has formed the opinion that the Bureau's reliance on the WSOs has increased with time as its basic infrastructure has been eroded and deficiencies in the over

centralised operational organisation have become increasingly apparent. The terms of reference were broadened to allow, amongst other things, an estimate to be made of the value to the Bureau of the role played by the WSOs.

The Effect on Aviation of WSO Closures

3.26 On 15 October 1985, the Department of Aviation consulted with the representative body of the aviation industry, the Aviation Industry Advisory Council (AVIAC) which broadly affirmed its support for the proposed changes. With this in mind the Committee had anticipated that aviation matters would not figure largely in its deliberations. Whilst it certainly transpired that most public concern lay in the provision and dissemination of 'public weather' there was nevertheless a strongly stated element of aviation concern which is summarised in the following paragraphs.

3.27 Aircraft operators in the remote areas believed that their interests were not necessarily being taken properly into account by AVIAC which seemed to them to represent the 'capital city trunk route' interests. These operators felt that local conditions required local 'on the spot' attention, in particular where topography had special effects. For example the Mornington Island 'Morning Glory' phenomenon was mentioned at the Mt Isa public meeting.

3.28 There was also strongly stated discontent with the effects of inaccurate and/or conservative weather forecasting, particularly Terminal Area Forecasts (TAFs). The effects of inaccurate forecasts are either a perceived threat to safety when adverse weather is experienced but not forecast or financial penalties which result when either holding or alternate fuel is required to be carried unnecessarily. This requirement may result in payloads including passengers, freight and air ambulance patients being off-loaded needlessly.

3.29 Apart from the inaccuracies themselves, comments were made concerning the unnecessarily long delays in the amendment of inaccurate forecasts. It was suggested to the Committee that part of the blame for forecast inaccuracies and untimely amendment was the remoteness of the Regional Forecasting Centres and the apparent insensitivity of the RFC forecasting staff to the actual weather being experienced.

3.30 Finally there was widespread criticism of the Area Forecasts (ARFORS) which, it was often alleged, were unintelligible to the average pilot.

3.31 The Committee took considerable pains to ascertain the impact that withdrawal of meteorological 'face to face' briefing would have on aviation. Whilst reaction across the country varied, it seemed that the needs of the more experienced pilots could be met by the provision of terminal and area forecast documentation alone.

3.32 However the likely absence of satellite photographs following the closure of the WSOs was seen as a retrograde step particularly in locations where the WSO was expected to provide unofficial forecasts, for example North Queensland in the wet season. Less experienced pilots seemed to favour retention of a meteorological officer to provide an 'interpretive service' although it was not clear how much the desired interpretation related simply to 'decoding' ARFORs. One pilot possibly voiced the general view when he said, in answer to a question from the Committee; 'Availability (of forecasts) is not the problem, it's the accuracy'.[23]

3.33 Special notice was taken of the situation at Rockhampton where it is proposed to close the WSO and withdraw four observing staff. In anticipation of the withdrawal, one observer has already been transferred to the new observing station at Gove. This has left a gap in the observing network at

Rockhampton during the night which becomes critical under circumstances where the forecast weather is below the criterion that requires an observer to be on duty if the aerodrome is to be used as an alternate.[24]

3.34 The operator most affected has been the Queensland Ambulance Transport Brigade (QATB) which frequently operates casualty evacuation flights at night. The Committee understands that the Minister for Aviation has made arrangements to guarantee observer services for the QATB when these are required. At the time of the Committee's visit to Rockhampton these arrangements appeared to be working well.

3.35 However another problem had emerged. In the absence of routine overnight observations, forecasts provided by forecasting staff located at the Brisbane Regional Forecasting Centre had become increasingly conservative. It was alleged that the effect of this was the frequent needless carriage of additional fuel which in some cases could mean the difference between the carriage or not of a patient. These particular difficulties were confined to Rockhampton. Ambulance services in other areas did not appear to have the same problem; possibly because of operating different aircraft.

3.36 The Committee also noted an apparent inconsistency at Rockhampton in DofA regulations whereby the aerodrome could be simultaneously suitable as a destination but not as an alternate unless an observer was on duty.

3.37 Because of the criticism levelled at the accuracy of aviation forecasts and the alleged slowness in updating them, the Committee attempted to ascertain the nature and extent of the problem.

3.38 On the question of financial penalties, the absence of statistics made it difficult to estimate what impact incorrect forecasting has on the economics of aviation. The major airlines however offered helpful assistance in this regard.

3.39 Qantas estimated on a flight from Singapore to Sydney, the carriage of an additional 60 minutes holding fuel costs approximately $1000 on the Boeing 747 and $350 on the Boeing 767. (Fuel prices throughout as at April 1986). On domestic routes, both Ansett and TAA estimated the carriage of an additional 60 minutes holding over a typical stage length, to cost between $160 and $180 for the Boeing 727 aircraft and $100 for the Boeing 737. Fuel to the alternate will vary on the distance but assuming this to be 300 nautical miles, the cost will be approximately $220.

3.40 The airlines also noted that situations could occur where a flight was fully loaded to performance or structural limits, that an imposition of additional fuel could involve a direct payload penalty requiring the offloading of cargo or passengers. This could amount to 40 passengers in the case where an additional 60 minutes fuel is required to be taken on board. Direct losses would thus be considerably higher.

3.41 The worst case would appear to be when an aircraft, en route, is required to divert to take on additional fuel because of the issue of an adverse forecast for the destination. Costs in this case could vary from approximately $500 (fuel costs only) for the cheapest en route stop, up to a loss of one sector's revenue for more distant diversions.

3.42 Without statistics of the incidence of inaccurate forecasts it is not possible to extrapolate the figures to give a national cost. Certainly there is a potential for savings since Ansett and TAA together fly well over 100,000 route sectors per

annum. The Committee was therefore left with the view that available evidence points to improved forecasting having a salutary effect on airline revenues.

3.43 In several instances it was alleged to the Committee that DofA intended to replace the Bureau's Technical Officers with its own personnel, particularly with regard to the forthcoming merger of the Flight Service and Air Traffic Control functions. The Department stated that DofA staff would simply 'hand out' copies of forecast documentation received via teleprinter from the Regional Forecasting Centres.

3.44 At only one centre, Tamworth, was there any apparent problem with this proposal. As noted previously, Tamworth is not an official Bureau observing station and observations are taken by the Technical Officer attached to the WSO. Traffic volumes require only one DofA briefing officer and one Bureau Technical Officer on duty at any time. Closure of the WSO would result in the sole briefing officer being required to distribute flight documentation and take meteorological observations in addition to performing his current pre-flight briefing duties.

The Effect on the Provision of Public Weather Forecasts

3.45 The Bureau of Meteorology has argued that the basis for the establishment of the WSOs and their most important function is the provision of aviation meteorological services. However in the course of the inquiry, the Committee has established that at a number of offices, particularly in provincial centres, significant time is being directed towards non-aviation functions. In fact at three of the WSOs proposed for closure and for which the DofA pays, over 40 per cent of the services provided (as distinct from time spent) are non-aviation in nature. Details of these services are summarised in Tables 3.3 and 3.4.

3.46 The Technical Officers (TOs), particularly those stationed at provincial WSOs, have obviously provided a long-standing service to their local community by interpreting the broader scale regional forecasts issued by the parent Regional Forecasting Centres. Whilst officially restricted from originating forecasts, in reality the TOs have to some extent exceeded their official duties by supplying forecasts to satisfy community demands. In more remote areas, these officers are clearly personally identified as the Bureau's official representatives.

3.47 The public misconception regarding the source of weather forecasts is understandable. In general, the perceived quality of the forecast and its usefulness declines as the distance between the forecaster and the forecast area increases. Particularly in the more remote areas of Australia, the Committee noted the strong views of the public at places such as Mt Isa, Port Hedland and Alice Springs that forecasts from Brisbane, Perth and Darwin respectively, some thousand kilometres removed, are of limited usefulness without a Bureau presence at their location. Local knowledge was considered invaluable to the provision of accurate forecasts.

3.48 During its inspection tours of cyclone prone areas of northern Australia, the Committee experienced at first hand some of the problems faced by local communities when under threat. It fully appreciated the strongly stated need for a reliable tropical cyclone warning service. There was vocal public protest concerning delays in the reception of warnings and the difficulties in obtaining accurate uptodate information on cyclone location. The reliability of communications links was criticised at a number of locations.

3.49 At the Cairns WSO, the Committee observed the antiquated and unreliable state of the weather watch radar; a vital link in the Bureau's cyclone surveillance system. It was

told that the Technical Officers stationed in these areas play an important liaison role between the Bureau, the local emergency services and the general public.

3.50 In fact, the general public was firmly against the withdrawal of Technical Officers from provincial WSOs because it was considered this would only exacerbate the current problems that forecasters are too remote from the forecast areas and the broadscale forecasts provided do not satisfy a number of specific community needs.

Staff Effects

3.51 Table 3.1 shows a total of 27 Technical Officers (Meteorology) would be directly affected by the proposed closure of the ten WSOs. This represents some 13 per cent of the total establishment figures[25] but some 15 per cent of the actual Technical Officer numbers[26] (the apparent discrepancy reflects a number of vacant positions, mainly training and relief).

3.52 Three major staff categories are employed in the Bureau's operational organisation; professional Meteorologists and sub-professional Technical Officers (Meteorology) and Observers. Meteorologists are university educated with a major in Physics and/or Mathematics and undergo a nine month training course. They are responsible for originating forecasts and warnings. Technical Officers are, in general, recruited from the observer ranks. Training requires 2.5 years observer experience followed by a 38 week formal course conducted jointly by the Bureau of Meteorology and the Royal Melbourne Institute of Technology. Under the terms of settlement to a longstanding professional/technical demarcation dispute, Technical Officers are restricted from originating forecasts. They are instead officially responsible for the derivation of forecasts using guidance material supplied by meteorologists in the parent RFC, the provision of briefing and, more recently, short period trend

type forecasts. Approximately 65 per cent are employed in WSOs with the remainder filling an interpretative role within the Regional and Head Offices.

3.53 Closure of the WSOs would have a significant impact not only on the career structure of the TOs but also on the career opportunities of Observers. In the short term, Observers would take over the Officer-in-Charge positions when the WSOs reverted to Observing Offices, but in the long term, recruitment into the technical ranks would diminish.

3.54 The Committee understands DofA policy is for the establishment of a centralised briefing service based on three Flight Information Regions[27] and with emphasis on the high volume major capital city aerodromes. In line with this policy their submission foreshadows the establishment of a new Bureau briefing office at Jandakot as being 'the most cost effective way of meeting the requirement.'[28] Further strengthening of other major WSOs at Moorabbin, Archerfield, Bankstown and Parafield is indicated in the time-table for implementation of the proposals shown in Appendix VIII. Over the period 1986/89 therefore, an additional seven to eight Technical Officers will be required.

3.55 Implementation of the full proposal involves the closure of ten WSOs, the opening of Jandakot and the strengthening of a number of secondary aerodrome WSOs. A net reduction by 20 in the number of Technical Officers (Meteorology) required for the provision of meteorological briefing results.

3.56 The Committee understands redeployment of the 20 displaced officers will provide difficulties for Bureau management who wish to avoid possible industrial problems associated with redeployment within RFCs.[29] The strongly voiced resistance of Technical Officers to revert to the observer grades is understandable. The additional expenses involved in redeployment programs and the relocation of staff stationed in remote areas is also noted.

3.57 Brief mention should be made of the training programs and qualifications of the Bureau observers and DofA flight service and air traffic control staff. BofM observers undergo a full year training which qualifies them to undertake a full surface and upper air observational program with some equipment maintenance skills and a basic understanding of the science of meteorology. Currently DofA flight service and air traffic control staff undergo separate training courses, each of which includes a meteorological content amounting to approximately 70 hours. The emphasis in flight service training is on the taking of surface observations for aerodrome weather reports, whereas the air traffic controllers course provides a basic understanding of relevant meteorological theory, for example thunderstorm structure. The training program to be adopted following the amalgamation of the two functions is, as yet, unresolved. None of the above staffing categories is qualified to provide an interpretative meteorological briefing service and this fact is reflected in the alternative briefing arrangement proposals.

The Effect on the Bureau of Meteorology

3.58 The Bureau's three tiered (NMC/RFC/WSO) highly centralised operational organisation structure was developed in the late 1960s in an attempt to improve the efficiency and cost effectiveness of the service.[30] The policy was to concentrate expertise and facilities in a relatively small number of forecasting and warning centres. Basic to this policy was the planned extensive use of the new technologies and sophisticated equipment emerging at the time.

3.59 In the early 1970s and in the period leading up to the Howson Committee of Inquiry, the Bureau suffered a significant reduction in the level of funding available for capital equipment. The RFCs were established but without the supporting technology. One of the original plans was to develop an 'automatic' regional office. The current AROS (Automatic

Regional Operations System) which is fully operational at the Victorian RFC, is an example. The Committee inspected this facility and understands the system's potential to eliminate a number of the more labour intensive tasks undertaken in RFCs and WSOs. Lack of funds has delayed the planned extension of AROS to all other RFCs.

3.60 In the 15 or so years since the establishment of the centralised RFC/WSO structure, a number of problems have emerged. One of the major ones is the loss of direct contact with customers be they aviation or the general public. The one remaining area in which Bureau staff make direct contact with the customer is in the WSO. The Bureau claims a valuable source of feedback will be lost if this point of contact is removed.[31]

3.61 In line with the terms of resolution of the professional/technical demarcation dispute mentioned previously, the RFCs are staffed by meteorologists who originate the forecasts and the WSOs by briefing officers who interpret them. The Committee heard evidence which indicated that Technical Officers at WSOs in major capital cities and also in provincial centres, play an important liaison role between the user, in this case the Departmental air traffic controllers and the RFCs particularly when forecasts require amendment.[32] A more timely response results. The point was also made that TOs have direct experience in the way forecasts are used and understand the implicit aviation needs. This point was recognised by the decision to allow TOs to make 3 hour trend type forecasts at the major capital city aerodromes.

3.62 The Committee received evidence from a number of sources[33] regarding the generally run down condition of the Bureau's basic operating infrastructure which includes the observations networks, communications and data processing systems. The Committee itself became aware of this fact during its inspection visits. The generally rundown condition of many

of the Field Offices and the antiquated state of much of the equipment, particularly in tropical cyclone threatened areas was obvious. Large gaps were noted in the observation network on the early morning weather charts.

3.63 One of the major functions performed by the WSOs is an extended weather watch role. The TOs are trained to interpret the local weather conditions and provide input to forecasters in the RFCs. It is acknowledged that closure of the WSOs would further erode the basic operating infrastructure.

3.64 The proposal before the Committee would result in the closure of all six WSOs located in the more remote inland areas of Australia. The offices comprise Alice Springs, Cairns, Mt Isa, Port Hedland, Rockhampton and to a lesser extent Launceston (the significance of this location increases when it is recognised that Hobart is also proposed for closure). Following the closures, there would be no major Bureau presence in the more remote inland areas of Australia. Thus the operational organisation would be further centralised and, perhaps more importantly, confined to the coastal fringes of Australia which experience a different range of weather conditions compared to inland locations.

3.65 The Committee repeatedly heard the claim that the TOs knowledge of the local weather conditions increased the value of the services offered. The Committee attempted to gauge the validity of these claims. In evidence, the Director of the Bureau, Dr Zillman, stated:

> '....optimum weather services can only be provided by people on the spot who know the local peculiarities and most importantly are focusing their attention on a minute by minute, hour by hour basis on developments in that particular area.'[34]

The Direct Cost Effects

3.66 The Bureau of Meteorology has provided the Committee with estimates of cost savings associated with the proposed closures of the ten WSOs including the withdrawal of three observers at Rockhampton. Details are presented in Table 3.2.

3.67 The direct effect is a reduction by 27 Technical Officers and three Observers attributable to the Department of Aviation with associated savings for DofA progressively increasing to a maximum of $1.817M by June 1989.

3.68 In line with the DofA centralisation policy, over the same period it is proposed to open the Jandakot office and strengthen another three to four existing WSOs. An increase by seven TOs is implied. Consequently direct savings to the Department will be reduced to approximately $1.4M.

3.69 A breakdown of savings on an annual basis is not available. As implied in Appendix VIII, the proposed timetable of closures has undergone a number of changes with time.

CHAPTER FOUR

CONCLUSIONS AND RECOMMENDATIONS

The Framework for Analysis

4.1 The proposal to close the WSOs undoubtedly stems from DofA budgetary concerns. Pressures to contain costs reflect the current macroeconomic climate and Governmental and Department of Finance policies as well as the DofA's commitment to implement the Bosch Report strategy and to raise the level of cost recovery from the aviation industry.

4.2 Before possible 'savings' can be estimated, it is necessary to define the term 'savings' carefully and identify the associated benefits and/or penalties for each of the major parties involved - DofA, BofM, the aviation industry, the general public and the Commonwealth. It must also be acknowledged that short term saving measures may result in increased costs in the long term. Severe deterioration of basic support systems or the delayed introduction of new technologies may, in the long term, incur major financial penalties.

4.3 If the level of cost was the only concern then on efficiency grounds minimum cost solutions must be preferred, regardless of benefits which may accrue under other options. However in this case, the Committee endorses the view that a short term cost-cutting option does not provide an effective method of meeting community needs. To maximise the welfare of the Australian community requires the option for which the benefits exceed the costs by the greatest amount, even though some benefits to the community may be intangible or extremely difficult to measure and equity considerations are important.

4.4 In the course of the Committee's inquiry it became clear that significant problems existed regarding the deployment of Bureau resources and that the public needs for weather services were not being met. Put succinctly, there seems little point in pursuing a least-cost solution when the effectiveness of the Bureau was already questioned by the general public.

4.5 With this framework in mind the Committee has identified the magnitude of the financial changes and impacts of the initial proposals and then considered options which may achieve similar cost reductions for the Department of Aviation and the aviation industry. The Committee finally proposes another option which it believes will achieve the financial savings desired by the aviation industry, with the added bonus that the identified needs of the Bureau and its customers may be met more effectively.

The Initial Proposals

4.6 Implementation of the initial proposals would result in a net saving of $1.4M to costs attributable to the DofA and a corresponding reduction in revenue paid to the BofM.

4.7 Closure of the WSOs particularly in the seven provincial centres, would result in the cessation of the local public weather services currently available. The Committee was convinced of the value to the local community of the services in a number of locations including Rockhampton, Cairns and Launceston. In addition, in areas of northern Australia threatened by tropical cyclones, the WSOs in Port Hedland, Cairns and Rockhampton provided an essential liaison role between the local community and the remote Tropical Cyclone Warning Centres in Perth and Brisbane.

4.8 In the light of the generally rundown condition of the Bureau's basic infrastructure, the Committee's opinion was that any further deterioration must be avoided. Removal of the extended weather watch function performed by the WSOs would obviously have this result. The effect would be of a less significant nature at WSOs adjacent to the major Regional Forecasting Centres such as at Essendon, Canberra and Hobart. However at the more remote centres such as Alice Springs, Mt Isa, Cairns, Port Hedland and Rockhampton, the Committee formed the opinion that the Bureau had come to rely on the input from the WSOs as the basic infrastructure was eroded. It was also aware that forecasts become more conservative as a result and the costs to the aviation industry increase accordingly, albeit at an unknown rate.

4.9 Following the very widespread community view that local knowledge is invaluable for the provision of an accurate forecast with more timely amendments and, in view of evidence provided to the Committee that Bureau staff had identified significant problems associated with the current centralised structure, in the Committee concluded that, removal of the TOs would result in a reduction in forecast accuracy and an increase in over-conservative forecasting both for the general public and the aviation industry as a whole. The value of accurate forecasts is a significant but not quantifiable factor.

4.10 In summary, the proposal for closure of the ten WSOs whilst it would provide the DofA with cost savings, would also result in a further deterioration of the Bureau's infrastructure, a reduction in forecast accuracy and the withdrawal of a number of valuable public weather services to local communities. While the Committee has not been able to quantify these costs, they are considered substantial.

4.11 The Committee then sought alternative less severe options which would provide the Department with the savings it required but reduced the impact on the Bureau's services and basic infrastructure.

The Preferred Alternative Option

4.12 During the course of the inquiry, the Committee identified a number of basic needs expressed by the various groups or organisations directly affected. These are summarised in Table 4.1.

4.13 The Committee sought an option which would satisfy the identified needs in the most cost effective way.

Committee Findings and Recommendations

Finding 1: The Committee found that WSOs in the major remote provincial centres of Cairns, Launceston, Rockhampton and Port Hedland were providing a valuable public weather service to the local community which should be maintained and paid for from consolidated revenue in the public interest.

Finding 2: In cyclone prone areas of northern Australia, the local community needs for an upgraded tropical cyclone service were recognised. WSOs in Cairns, Rockhampton and Port Hedland performed a valuable liaison service between the local community and the remote Tropical Cyclone Warning Centres and again should be retained in the public interest.

Table 4.1

Group or Organisation	Needs
General Public	. Retention of local public weather services
	. Upgrade of the Tropical Cyclone Warning Service in Northern Australia
Department of Aviation	. Reduction of direct costs
	. Increased efficiency
Bureau of Meteorology	. Upgrade of the basic operating infrastructure
	. Strengthening of the operations structure
Aviation Industry	. Increased forecast accuracy
	. Timely amendment of forecasts
General Aviation (non-commercial)	. Provision of an aviation meteorological service in the public interest.
Department of Aviation/ Bureau of Meteorology	. Resolution of the 1985/86 Bureau revenue shortfall
	. Renegotiation of the Working Arrangements

Finding 3: The Bureau of Meteorology should, as a matter of urgency, be provided with funds from consolidated revenue to upgrade the Tropical Cyclone Warning Service which is currently seriously rundown. The Committee considers the rundown condition of the service poses a tangible threat to life which cannot be measured in monetary terms.

Finding 4: In order to maintain Bureau services at their current level, the basic infrastructure must not be allowed to deteriorate further. WSOs in the remote centres such as Alice Springs and Mt Isa should be retained to provide a weather watch function. The cost of the basic infrastructure is borne by consolidated revenue.

The Committee therefore makes the following recommendations to satisfy public needs:

Recommendation 1:. To satisfy a demonstrated public need, Weather Service Offices in the major remote provincial centres of Alice Springs, Cairns, Launceston, Mt Isa, Port Hedland and Rockhampton be maintained:

- to avoid further centralisation of the Bureau's operational organisation; and
- to continue to provide public weather services to the local community.

Recommendation 2: Weather Service Offices located in major remote provincial centres be funded from consolidated revenue; funding commencing in the 1987/88 financial year.

Recommendation 3: As a matter of urgency the Bureau be provided with special purpose funding to upgrade the Tropical Cyclone Warning Service. Essential features include:

- improved communications links between the Tropical Cyclone Warning Centres and remote communities in northern Australia including the use of all-weather satellite communications;

- 'remoting' of the weather watch radar network to the Tropical Cyclone Warning Centres;

- investigation by the Bureau of the use of RAAF and coastal surveillance aircraft for tropical cyclone reconnaissance; and

- improved provision of accurate tropical cyclone location data to local communities including the feasibility of providing quasi-continuous radar scans directly to emergency services and/or the general public.

Finding 5: WSOs located at Essendon, Hobart and Canberra which are not required for public weather purposes or to provide an extended weather watch service should be closed.

The Committee therefore recommends:

Recommendation 4: Weather Service Offices located at Essendon, Hobart and Canberra, adjacent to Regional Forecasting Centres and not required for public weather purposes, be closed. Closures to be completed by December 1987.

Recommendation 5: Subject to the arrangement of suitable alternative methods for the provision of aerodrome and synoptic weather reports, the Tamworth Weather Service Office be closed by June 1988.

Finding 6: The Department of Aviation has a stated need for cost reductions which the Committee acknowledges. Recommendations 1 to 5 inclusive achieve the cost savings required by the Department without a reduction in weather

services or the basic Bureau infrastructure. These recommendations also acknowledge that WSOs have been providing 'shared services' which have previously been totally billed to the Department.

Finding 7: The Bureau of Meteorology basic operating infrastructure is in urgent need of upgrade. Upgrade and rationalisation of facilities such as the radar sites at Gladstone and Laverton would provide further savings for the DofA.

Finding 8: The Bureau's operational organisation is currently over centralised. Whilst the Committee considered insufficient time was available to it to make specific recommendations, one obvious problem it could address was the lack of the supporting new technology essential to the operation of a successful centralised service; in particular the limited use of the Automatic Regional Operations System (AROS). In addition, the Committee recognised that accelerated implementation of AROS would provide extra staff savings and thus savings in attributable costs to the Department of Aviation.

Recommendation 6 thus provides for an upgrade in the Bureau's systems and, in addition, implicit cost savings to the Department.

Recommendation 6: Government endorse the Bureau of Meteorology's accelerated re-equipment plan. The plan will enable a long overdue upgrade of the Bureau's basic infrastructure. It includes:

- accelerated implementation of the Automatic Regional Operations System, AROS, with the potential for increased efficiency and a reduction in staff numbers attributable to the Department of Aviation;

- replacement of the Laverton and Gladstone radars and an associated relocation of the Laverton Observing Office to Melbourne Airport and the Gladstone office to Rockhampton. The relocations will enable further reductions in staff numbers attributable to the Department of Aviation and the release of qualified observer staff to strengthen the Bureau's basic observation network; and

- upgrading of the Tropical Cyclone Warning Service.

Finding 9: In view of the proven value of the service provided by TOs in remote WSOs, the Committee considers the TOs at these locations should be given the responsibility for the provision of short period, say 6-12 hour forecasts for their local area under guidance from the parent RFC and, in particular, the first six hours of the Terminal Area Forecast (TAF).

Recommendation 7: Notwithstanding the long term demarcation dispute between Technical Officers (Meteorology) and Meteorologists, Technical Officers (Meteorology) be given responsibility for the issue of short period forecasts.

Finding 10: In line with the stated Department of Aviation policy for a centralised briefing service, the need for face to face briefing at remote WSOs will diminish as a telephone briefing service becomes available. The Committee however notes the value of an 'interpretative' briefing service and the universal criticism of the Area Forecast (ARFOR) presentation. The lack of a direct aviation meteorological service outside the capital cities and in inland areas remote from the 'coastal fringe' is, the Committee feels, of importance to the general (non-commercial) aviation sector of the industry. In the Committee's view, the Government, via the Bureau, should investigate ways to provide a general aviation meteorological service in the same way as it provides a marine service to the general boating community in the public interest. The Committee

is aware that the technology already exists to provide such a service and also recognises the potential for future partial cost recovery.

Recommendation 8: The Bureau be provided with special purpose funds to enable the development of a television or videotex type briefing service initially for general aviation with the possible extension to public weather services. Funds are required for:

- the purchase of additional equipment;
- the employment of consultants, as required, to develop additional computer software; and
- the promotion of the service with a view to obtaining future commercial sponsorship.

Finding 11: The Department of Aviation and the Bureau of Meteorology must, as a matter of urgency, renegotiate the current Working Arrangements. The new arrangements should be presented as a formal contract which must be agreed to and in place prior to the Government assuming responsibility for the full funding of the remote provincial Weather Service Offices. Whilst the Committee recommends that the Bureau's capital re-equipment program should not be further jeopardised to make up any shortfall in revenue in 1985/86, it believes the Bureau can implement savings measures to ensure a shortfall does not occur in the 1986/87 financial year.

Recommendation 9: In accord with Recommendations 1 to 6, the Bureau of Meteorology be given an additional time period of approximately 18 months in which to implement the cost saving measures required by the Department of Aviation, and, consistent with its own needs, to strengthen its basic operating infrastructure and reduce centralisation.

Recommendation 10: The current 1985/86 shortfall of $1M in Bureau of Meteorology revenue be met from consolidated revenue in the form of an additional capital grant in the 1986/87 Budget allocation.

Recommendation 11: As a matter of urgency, the Department of Aviation and Bureau of Meteorology Working Arrangements and, in particular the Financial Arrangements, be renegotiated and a formal binding agreement signed prior to the 1987/88 Budget process. Considerations should include:

- an investigation of the most appropriate charging policy;
- an accurate and timely estimate of costs attributable to the Department of Aviation;
- an agreed method of calculation of Forward Estimates;
- a more equitable method of cost sharing for equipment upgrade and introduction of new technology in the Bureau of Meteorology; and
- the establishment of a trust fund or similar mechanism to allow carry over of funds.

Finding 12: The Committee would be remiss if it did not comment on the relationship of the Bureau of Meteorology located in Melbourne with Government departments in Canberra; and in particular the Department of Science. It is quite clear that the Bureau of Meteorology's senior management have not placed sufficient emphasis on this management responsibility. The Committee notes that the 1976 Howson Report recommended that:

> 'The Director's Office should be located in Canberra with a proportion of administrative and policy experienced staff to provide greater objectivity and wider perspective to Bureau planning and handling of public and ministerial matters.'[35]

The Bureau in its own submission has pointed to the serious situation regarding the shortage of capital funds. Indeed the Committee has recommended that the Bureau receive special purpose funds in order to at least partially redress the situation. This situation points to inadequate Bureau participation in the Budget process.

A further factor to consider is that the relationship between the Department of Aviation and the Bureau had been allowed to deteriorate to the point where this inquiry became necessary.

Therefore, in the Committee's opinion, an upgrade of the Bureau of Meteorology representation in Canberra would assist the Bureau in its day to day contacts with other Commonwealth departments and agencies; specifically the Departments of Science, Finance and Aviation.

Recommendation 12: The Bureau of Meteorology reassess the need for a Director's Office to be located in Canberra. In the event that Bureau management decide to retain the Director's Office in Melbourne, the representation in Canberra should be upgraded to Senior Executive Service level to enable more successful liaison and negotiations with other Commonwealth Government departments and agencies.

Finding 13: Finally the Committee has reached the conclusion that the Department of Aviation's stated centralisation policies are in conflict with the Bureau of Meteorology's need to avoid further over centralisation of its operational organisation. This conflict in large part explains the need for this inquiry. As a corollary, the Committee further notes that for the Department of Aviation's policy to be successfully implemented, the Government must provide the levels of investment necessary to modernise the airways system. The lack of supporting technology in the Bureau's centralised system is recognised as making a significant contribution to the current problems the Bureau is experiencing.

MAY 1986

John Mountford, M.P.
Chairman

ENDNOTES

1. Appendix IV, p.52.
2. Appendix V, p.54.
3. Ibid, p.54.
4. Submission No. 26, p.151.
5. Bureau of Meteorology Background Paper, Attachment 4, pp. 8-10.
6. Report of the Committee of Inquiry into the Bureau of Meteorology, the Howson Report, p.27.
7. Report of the Independent Inquiry into Aviation Cost Recovery, the Bosch Report, p.352.
8. Department of Aviation, Annual Report 1984-85, p.11.
9. Bosch Report, p.167.
10. Aviation Infrastructure Cost Recovery Implementation Plan 1986/87, p.1.
11. Bosch Report, p.84.
12. Bureau of Meteorology, Background Paper, Attachment 5.
13. Bosch Report, p.352.
14. Submission No. 25, p.73.
15. Appendix VII. p.57.
16. Bureau of Meteorology, Background Paper, p.8.
17. Submission No. 25, p.77.
18. In practice trend type forecasts are not provided by any of the WSOs proposed for closure.
19. Bureau of Meteorology, Background Paper, p.60.
20. Bureau of Meteorology, Capital Re-equipment Program, Annex 8, p.4.
21. Submission No. 26, p.150.
22. Submission No. 72, p.392.
23. Evidence, Public Meeting Alice Springs, 27 February 1986.

24. An alternate is an aerodrome which does not itself need an alternate. In other words forecast weather and all other operational requirements including runways, navigation aids etc are such that the aerodrome is itself completely suitable as a destination for the type for aircraft wishing to use it.

25. Appendix IX, p.59.

26. Evidence, p.49.

27. Aviation Infrastructure Cost Recovery Implementation Plan 1986/87, p.23.

28. Submission No. 26, p.163.

29. Evidence, p.51.

30. Evidence, p.19.

31. Submission No. 25, p.57.

32. Evidence, pp.200-202.

33. Submission 25, Submission 79.

34. Evidence, p.52.

35. Howson Report, p.5.

APPENDIX I

LETTER OF REFERENCE FROM THE MINISTERS

MINISTER FOR SCIENCE
PARLIAMENT HOUSE
CANBERRA A.C.T. 2600

Mr Leo McLeay MP
Member for Grayndler
Chairman
House of Representatives
Standing Committee on Expenditure
Parliament House
CANBERRA ACT 2600

Dear Mr McLeay

Following the Bosch Committee of Inquiry into Aviation Cost Recovery, the Department of Aviation has advised that it will be cancelling its requirement for weather services supplied by the Bureau of Meteorology at a number of airports.

Over the years an extensive aviation weather service network has been established by BoM in response to DoA requirements. The information provided by this network is additional to that required for adequate maintenance of the national weather observation and forecasting function by the Bureau.

This notwithstanding, airport weather service offices do provide a very visible community weather service. Depending on location, a significant percentage of the observer's efforts can be devoted to providing regional weather information for purposes other than general aviation, e.g agricultural, marine, sporting purposes. It is, of course, totally inappropriate that the cost of providing this wider community service should be a charge against DoA or the aviation industry.

BoM already provides a weather forecasting service at least in the capital cities and the larger provincial centres for the cost of a local telephone call. This service is based on an extensive national meteorological observation network and the Bureau's obligations under the Convention of the World Meteorological Organization.

However, there is a very real feeling in rural Australia that weather forecasts disseminated by BoM capital city offices do not adequately represent localized weather. The present move to reduce Bureau sourced aviation weather services is perceived by many living in provincial Australia as contributing to significant further diminution of an already less than adequate regional meteorological forecasting service.

We therefore seek your co-operation in referring to the House of Representatives Standing Committee on Expenditure the question of the extent to which the Bureau of Meteorology should seek to meet the community expectations for timely regional weather observations and forecasts, how such an extended service should be funded, the extent to which costs should be recovered and from whom.

We look forward to receiving the Committee's recommendations.

Yours sincerely

Barry O Jones

Peter Morris

APPENDIX II

CONDUCT OF THE INQUIRY

On 28 November 1985, the Ministers for Science and Aviation requested the House of Representatives Standing Committee on Expenditure to inquire into the provision of non-aviation weather services supplied by the Bureau of Meteorology at a number of airports.

The Committee agreed to undertake the inquiry as a matter of priority and submissions were sought through newspaper advertisements which appeared on Saturday 14 December 1985.

In the period 28 January to 1 April 1986, members of the Sub-committee inspected the ten Weather Service Offices proposed for closure, a number of Department of Aviation flight service and briefing offices, aerodrome control towers, the Bureau of Meteorology National Meteorological Centre, the Victorian and Tasmanian Regional Forecasting Centres and other Weather Service Offices such as Mascot and Tullamarine.

In addition, the members had discussions with a number of major users of the weather services including Mount Isa Mines, Mt Newman Mining Co, Hamersley Iron, the Launceston and Port Hedland Port Authorities and the Queensland Ambulance Transport Brigade.

Public meetings were held in most communities directly affected by the proposed closures. The meeting timetable was as follows:

Rockhampton	28 January
Mt Isa	29 January
Cairns	31 January
Launceston	5 February
Alice Springs	27 February
Karratha	27 February
Port Hedland	28 February
Tamworth	24 March

Public hearings were also conducted in Hobart on 4 February and in Canberra on 18-19 March. A list of those who appeared at the hearings is contained in Appendix III.

In all a total of 88 submissions were received from both the general public and a number of organisations representing a diverse range of interests - industry, agriculturalists, local government, the media, mining and port authorities, staff associations and aviation. A number of petitions were presented on behalf of pilots protesting at the proposed closures.

The terms of reference for the inquiry were officially amended at the Expenditure Committee meeting on 12 March, to reflect the Sub-committee's perceived need to address unresolved aviation matters and the Bureau's level and deployment of resources.

APPENDIX III

PUBLIC HEARINGS
LIST OF WITNESSES

Hobart - Tuesday 4 February 1986

Mr I L Searle, Senior Engineering Assistant, Hydro-Electric Commission, Hobart, Tasmania.

Canberra - Tuesday 18 March 1986

Dr J W Zillman, Director of Meteorology, Bureau of Meteorology, Department of Science, Melbourne, Victoria.

Mr R B Crowder, Deputy Director (Services), Bureau of Meteorology, Department of Science, Melbourne, Victoria.

Mr J R Dear, Superintendent Aviation and Defence Services Program Office, Bureau of Meteorology, Department of Science, Melbourne, Victoria.

Canberra - Wednesday 19 March 1986

Mr A F Rainbird, Deputy Secretary, Department of Aviation, Canberra, Australian Capital Territory.

Mr J E Richardson, Acting Assistant Secretary, Air Traffic Services Branch, Department of Aviation, Canberra, Australian Capital Territory.

Mr J P Coleman, Principal Advisor, Airways Division, Department of Aviation, Canberra, Australian Capital Territory.

Mr I G Giles, ACT delegate, Association of Draughting, Supervisory and Technical Employees, Melbourne, Victoria.

Mr S P Symonds, NSW delegate, Association of Draughting, Supervisory and Technical Employees, Melbourne, Victoria.

Mr G Moynihan, ACT Steward, Professional Officers Association, Melbourne, Victoria.

Mr S E Oliver, Convenor, Steering Committee Meteorologist Group, Professional Officers Association, Melbourne, Victoria.

Ms S D Bertone, Federal Industrial Officer, Professional Officers Association, Melbourne, Victoria.

Mr R P Maggs, Federal Treasurer, Civil Air Operations Officers Association of Australia, Melbourne, Victoria.

Mr P C Newman, Executive Secretary, Civil Air Operations Officers Association of Australia, Melbourne, Victoria.

Mr A R Wilkinson, Secretary-General, Royal Federation of Aero Clubs of Australia, Canberra, Australian Capital Territory.

EXTRACT FROM THE AIR NAVIGATION REGULATIONS

AIR NAVIGATION REGULATIONS

In force under the *Air Navigation Act 1920*

Reprinted as at 30 September 1983

Division 3—Meteorological Services

Provision of meteorological information

98. (1) The Secretary shall make arrangements with the Director of Meteorology for the provision of meteorological information in such form and in such manner and at such places as the Secretary considers necessary to ensure the safe, economic and regular operation of aircraft and to give effect to the Convention.

(2) To the extent (if any) to which the Director of Meteorology is unable to furnish the meteorological information considered necessary by the Secretary for the purpose specified in the last preceding sub-regulation, the Secretary may make such other arrangements as are necessary for that purpose.

EXTRACT FROM THE METEOROLOGY ACT 1955

METEOROLOGY.

No. 6 of 1955.

An Act relating to the Commonwealth Bureau of Meteorology.

[Assented to 23rd May, 1955.]

[Date of commencement, 20th June, 1955.]

BE it enacted by the Queen's Most Excellent Majesty, the Senate, and the House of Representatives of the Commonwealth of Australia, as follows :—

Short title.

1. This Act may be cited as the *Meteorology Act* 1955.

Repeal.

2. The *Meteorology Act* 1906 is repealed.

Definitions.

3. In this Act, unless the contrary intention appears—

" the Bureau " means the Commonwealth Bureau of Meteorology established by this Act ;

" the Director " means the Director of Meteorology.

Extension to Territories.

4. This Act extends to all the Territories of the Commonwealth.

The Commonwealth Bureau of Meteorology.

5.—(1.) For the purposes of this Act, there shall be a Commonwealth Bureau of Meteorology and a Director of Meteorology.

(2.) The Bureau shall be under the charge of the Director, who shall, subject to the directions of the Minister, have the general administration of this Act.

6. (1.) The functions of the Bureau are—

(*a*) the taking and recording of meteorological observations and other observations required for the purposes of meteorology;

(*b*) the forecasting of weather and of the state of the atmosphere;

(*c*) the issue of warnings of gales, storms and other weather conditions likely to endanger life or property, including weather conditions likely to give rise to floods or bush fires;

(*d*) the supply of meteorological information;

(*e*) the publication of meteorological reports and bulletins;

(*f*) the promotion of the use of meteorological information;

(*g*) the promotion of the advancement of meteorological science, by means of meteorological research and investigation or otherwise;

(*h*) the furnishing of advice on meteorological matters; and

(*i*) co-operation with the authority administering the meteorological service of any other country in relation to any of the matters specified in the preceding paragraphs of this sub-section.

(2.) The Bureau shall perform its functions under this Act in the public interest generally and in particular—

(*a*) for the purposes of the Defence Force;

(*b*) for the purposes of navigation and shipping and of civil aviation; and

(*c*) for the purpose of assisting persons and authorities engaged in primary production, industry, trade and commerce.

Powers of the Director.

7.—(1.) The Director has such powers as are necessary to enable the Bureau to perform its functions under the last preceding section, and, in particular, may—

(*a*) establish meteorological offices and observing stations;

(*b*) arrange with any Department, authority or person to take and record meteorological observations and transmit meteorological reports and information;

(*c*) arrange means of communication for the transmission and reception of meteorological reports and information; and

(*d*) arrange for the training of persons in meteorology.

(2.) The Departments and authorities with which, and the persons with whom, arrangements may be made under the last preceding sub-section include Departments and authorities of a State or Territory of the Commonwealth and persons in the service of such a State or Territory or of such a Department or authority.

Fees.

8. The Director may, subject to any direction of the Minister, make charges for forecasts, information, advice, [illegible] and other [illegible] in pursuance of this Act.

Regulations.

9. The Governor-General may make regulations not inconsistent with this Act, prescribing all matters which by this Act are required or permitted to be prescribed, or which are necessary or convenient to be prescribed for carrying out or giving effect to this Act.

APPENDIX VI

AGREED CHARGING PRINCIPLES BETWEEN THE DEPARTMENT OF AVIATION AND THE BUREAU OF METEOROLOGY

Source: Bosch Report, Appendix K, pp.352-353

In the following, the Secretary to the Department of Aviation is referred to as the Secretary and the Director of Meteorology is referred to as the Director.

Principle 1

The costs of providing meteorological services for civil aviation shall include:

(a) salaries and allowances paid to officers directly involved in providing the service;

(b) administrative overheads of staff directly attributable to provision of the service;

(c) other costs directly attributable to the service including communications, materials, observations, computing and interest and amortisation of capital equipment; and

(d) accommodation provided by the Bureau of Meteorology to officers directly involved in providing the service.

Principle 2

The costs of research and investigations undertaken by the Bureau in accordance with the provision of Section 6 and approved by the Secretary shall be calculated on the basis of the charging policy and borne by the Secretary. A statement of the costs shall be provided to the Secretary.

Principle 3

Costs of shared services or facilities shall be allocated on a proportional basis taking account of the relative usage of the services or facilities.

Principle 4

The cost of providing accommodation and associated services for meteorological offices established at aerodromes in accordance with these arrangements shall be borne by the Secretary.

Principle 5

Except where agreement to the contrary is expressly stated, the Secretary may charge the Director for the provison of such ancillary services and facilities that are not required to provide meteorological services for civil aviation. If more convenient

administratively, the Director may make allowance for the cost of such services and facilities in determining the annual charge.

Principle 6

The cost of providing, installing and maintaining meteorological instruments and apparatus at aerodromes shall be borne by the owner, except that costs shall be included in the charge levied for Bureau services in cases where Bureau meteorological instruments and apparatus are required to provide services for civil aviation.

Principle 7

Operational meteorological information shall be handled without charge on the aeronautical telecommunications service.

The cost of providing meteorological services to civil aviation will be calculated using the charging formula:

Charge = $2.05 (A + B) + 0.33A + C - 0.12D$

A is the salaries of shift workers involved in providing the service to civil aviation;

B is the salaries of non shift workers involved in providing the service to civil aviation;

C is the other direct costs;

D is the salaries of staff for whom the Secretary provides accommodation.

Notes:

1 The component $2.05 (A + B)$ is attributable salaries plus an overhead loading of 105 per cent which covers relevant administrative expenses and includes accommodation. The $0.12D$ component provides an appropriate allowance to cover those cases where accommodation is provided by the Secretary.

2 The component $0.33A$ is a loading on shiftworkers' salaries to cover penalty payments.

3 The costs of salaries shall be determined by applying the top increment of salary for staff allocated to the provision of meteorological services for civil aviation.

LOCATION OF WEATHER SERVICE OFFICES

Source : Submission No. 25, pp 61,62

Major Capital City Airports

Adelaide
Brisbane
Darwin
Melbourne (including Essendon)
Perth
Sydney

Smaller Capital City Airports

Canberra (Joint Civil/Defence)
Hobart

Capital City Secondary Airports

Archerfield
Bankstown
Moorabbin
Parafield

Other Major Airports

Townsville (Joint Civil/Defence; RFC for aviation purposes)

Defence Service	Provincial Cities
East Sale	Alice Springs
Pearce	Cairns
Oakey	Launceston
Edinburgh	Mt Isa
Laverton	Port Hedland
Richmond	Rockhampton
Williamtown	Tamworth
Amberley	

TIMETABLES OF PROPOSED CLOSURES OF WEATHER SERVICE OFFICES

Timetable 1. BUREAU AND DEPARTMENT OF AVIATION MID-1985 PROGRAM

Source: Submission No. 25, p 133

1985/86 FINANCIAL YEAR	DATE
Reduce Observer Staff at Rockhampton by 3	by April 1986
Close Launceston WSO	by April 1986
Close Tamworth WSO	by April 1986
1986-87 FINANCIAL YEAR	
Close Mt Isa WSO	by July 1986
Close Port Hedland WSO	by July 1986
Increase Moorabbin WSO	by July 1986
1987/88 FINANCIAL YEAR	
Close Canberra WSO	by July 1987
Close Alice Springs WSO	by October 1987
Close Cairns WSO	by April 1988
Open Jandakot WSO	by July 1987
Strengthen Archerfield WSO	by July 1987
Strengthen Bankstown WSO	by July 1987
Strengthen Moorabbin WSO	by July 1987
1988/89 FINANCIAL YEAR	
Close Hobart WSO	by January 1989
Close Rockhampton WSO	by April 1989
Strengthen Parafield WSO	by July 1988

Timetable 2: AVIATION CONSULTATIVE COUNCIL MEETING - 31 JANUARY 1986

The initial program would be for withdrawal of face to face meteorological briefing at Tamworth, Canberra and Essendon in 1986 and Port Hedland and Alice Springs in 1987.

APPENDIX IX

BUREAU OF METEOROLOGY TECHNICAL OFFICERS (METEOROLOGY)

Note: Establishment as at 1 January 1986

			TOTAL
Bureau of Meteorology Head Office			44
Research Centre		10	
Research and Systems Division		18	
Facilities Branch (1)			
Scientific and Technical Services (1)			
Training (16)			
Services Division		16	
Queensland Region			37
Brisbane	15		
Townsville	3		
Amberley	4		
Cairns	3		
Mt Isa	2		
Rockhampton	2		
Oakey	2		
Archerfield	2		
Relief	4		
Northern Territory			14
Darwin	9		
Alice Springs	3		
Relief	2		

South Australian Region		20
Adelaide	13	
Edinburgh	3	
Parafield	2	
Relief	2	
West Australian Region		24
Perth	15	
Port Hedland	5	
pearce	2	
Relief	2	
Australian Capital Territory		9
Canberra	8	
Relief	1	
New South Wales Region		27
Sydney	14	
Richmond	3	
Williamtown	3	
Bankstown	2	
Tamworth	2	
Relief	3	
Victorian Region		21
Melbourne	14	
East Sale	2	
Laverton	1	
Moorabbin	2	
Relief	2	

Tasmanian Region		11
Hobart	6	
Launceston	4	
Relief	1	
TOTAL		207

APPENDIX X

INDEX OF SUBMISSIONS

Submission No.	Name	Date	Page
8	Mr A.H. Purves Sevrup Fisheries Pty Ltd P.O. Box 726E BRIDPORT TAS. 7254	10.1.86	23
9	Mr P.G. Smith Director SP Aviation Pty Ltd Air Ambulance General Aviation Building Pardoe Airport EAST DEVONPORT TAS. 7310	8.1.86	24
10	Mr J. Oliver 20 Sassafras Street THE GAP QLD. 4061	14.1.86	26
11	Mr S.C. Ferguson "Liangara" SOUTH SPRINGFIELD SA 7254	13.1.86	28
12	Dr E.L. Fleming, F.R.C.S. 11th Floor, AMP Building Hobart Place CANBERRA CITY A.C.T. 2601	14.1.86	30
13	Mr P.D. Phelan Special Projects Manager Air Queensland P.O. Box 1381 CAIRNS QLD. 4870	15.1.86	32
14	Mr G.T. Houen General Manager The Queensland Graingrowers Association P.O. Box 360 TOOWOOMBA QLD. 4350	15.1.86	34
15	Mr C.F. Nieuwhof State Manager Boral BMG Resources Limited P.O. Box 36 LAUNCESTON TAS. 7250	7.1.86	35
16	Mr A. Macqueen Senior Research Scientist CSIRO Division of Entomology P.O. Box 545 NORTH ROCKHAMPTON QLD. 4701	14.1.86	37
17	Mr G.K. Malcolm Acting Shire Clerk Atherton Shire Council P.O. Box 573 ATHERTON QLD. 4883	20.1.86	39

Submission No.	Name	Date	Page
18	Mr A.W. Lambert Shire Clerk Belyando Shire Council P.O. Box 229 CLERMONT QLD. 4721	20.1.86	40
19	Mr A.R. Wilkinson Secretary-General The Royal Federation of Aero Clubs of Australia P.O. Box 120 FYSHWICK A.C.T. 2609	20.1.86	41
20	Mr L.S. Rogers Shire Clerk Shire of Port Hedland P.O. Box 41 PORT HEDLAND W.A. 6721	22.1.86	47
21	Mr E.L. McEachan Acting Shire Clerk Johnstone Shire Council P.O. Box 887 INNISFAIL QLD. 4860	21.1.86	49
22	Mr E. Fischer Acting Secretary Australian Volunteer Coast Guard Association P.O. Box 197 MOSSMAN QLD. 4873	21.1.86	50
23	Mr R.V. Morritt Manager Line Operations East-West Airlines Sydney Kingsford-Smith Airport MASCOT N.S.W. 2020	20.1.86	51
24	Mr R.J. Brennan Secretary Queensland Ambulance Transport Brigade Biloela Area P.O. Box 59 BILOELA QLD. 4715	23.1.86	52
25	Dr J Zillman Bureau of Meteorology		53
26	H B O'Keefe First Assistant Secretary Airways Division Department of Aviation P O Box 367 CANBERRA CITY ACT 2601	24.1.86	147

Submission No.	Name	Date	Page
27	Mr K J McPherson Superintendent/Secretary Queensland Ambulance Transport Brigade Rockhampton Committee P.O. Box 362 ROCKHAMPTON QLD. 4700	undated	159
28	Mr J.R. Webber Mayor Rockhampton City Council City Hall Bolsover Street ROCKHAMPTON QLD. 4700	Jan. 1986	167
29	Hon R C Katter, M.P. Member for Kennedy P O Box 1177 MAREEBA QLD 4880	undated	173
30	Mr N A Watson Water Resources Division Department of Mines & Energy GPO Box 2901 DARWIN NT 5794	22.1.86	175
31	Mr H Murray Allamanda Court Lammermoor Beach YEPPOON QLD 4703	23.1.86	176
32	Mr T R Boyd Area Superintendent/Secretary Queensland Ambulance Transport Brigade Gladstone Centre 120 Glenlyon Street GLADSTONE QLD 4680	23.1.86	177
33	Mr I Gilmour Meteorological Observer Weather Service Office Cairns Airport CAIRNS QLD 4870	23.1.86	179
34	Mr L M Lloyd Bureau of Meteorology Department of Science	15.1.86	182
35	Mr J G Pethick 8 Padget Place MORPHETT VALE SA 5162	20.1.86	184
36	Mr I C McCarthy P O Box 80 SORELL TAS 7172	24.1.86	187

Submission No.	Name	Date	Page
46	Mr G L P Fleming Shire Clerk Barraba Shire Council P O Box 165 BARRABA NSW 2347	29.1.86	247
47	Mr R L Southern Chairman Austweather Pty Ltd 3 Ord Street WEST PERTH WA 6005	30.1.86	254
48	Mr J. Michell Hon. Secretary Lake Keepit Soaring Club Co-operative Ltd KEEPIT DAM N.S.W. 2340	undated	266
49	Mr M J Kirke President Port Hedland Four Wheel Drive Club Inc. P O Box 43 PORT HEDLAND WA 6721	31.1.86	268
50	Ms P Buchanan, M.L.A. State Member for Pilbara P O Box 848 KARRATHA WA 6714	.1.86	270
51	Mr L F Ohis 26 Nicholls Street MACLEOD VIC 3000	31.1.86	277
52	Lt Col A D M Glendenning, R.L. P O Box 605 PORT HEDLAND WA 6721	29.1.86	281
53	Mr J D Holmes 36 Fitchett Street GARRAN ACT 2605	6.2.86	283
54	The Hon. W.G. Keighley Golden Vale SUTTON FOREST N.S.W. 2577	22.1.86	286
55	Mr C.B. Quartermaine "Merluna Station" PMB CAIRNS QLD. 4870	5.2.86	289
56	Mr C.A. Woodland Manager Radio 4RO P.O. Box 159 ROCKHAMPTON QLD. 4700	7.2.86	291

Submission No.	Name	Date	Page
57	Mr K.J. McPherson Superintendent/Secretary Queensland Ambulance Transport Brigade Rockhampton Committee P.O. Box 362 ROCKHAMPTON QLD. 4700	6.2.86	293
58	Mr A. Wilson Canberra Gliding Club Inc. P.O. Box 1130 CANBERRA CITY A.C.T. 2600	2.2.86	301
59	Mr B.J. Westin Manager West Wing Aviation P.O. Box 1388 MT. ISA QLD. 4825	4.2.86	302
60	Mr R.E. Young General Consultant International Air Transport Association P.O. Box 160 1216 Cointrin GENEVA SWITZERLAND	9.2.86	306
61	Messrs J. Wallace & W. Fischer Chief Pilot/Managing Director Hedland Aviation P.O. Box 97 PORT HEDLAND W.A. 6721	undated	318
62	Mr C.E. Chatwood Acting Town Clerk Tamworth City Council P.O. Box 555 TAMWORTH N.S.W. 2340	10.2.86	320
63	LCDR J.H. Eglen 1 Stone Place GARRAN A.C.T. 2605	11.2.86	322
64	Federal President Association of Draughting Supervisory & Technical Employees 2nd Floor, ACTU House 393-397 Swanston Street MELBOURNE VIC. 3000	Feb. 1986	325
65	Mr A. Sellars Staff Officer Australian Volunteer Coast Guard Association P.O. Box 475 TULLY QLD. 4854	10.2.86	369

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66	Mr A.E. Oliver Secretary Queensland Canegrowers Prosperpine District Cane Growers Executive P.O. Box 374 PROSPERPINE QLD. 4800	11.2.86	371
67	Mr I. Groves Vice-Commodore Keppel Bay Sailing Club P.O. Box 32 YEPPOON QLD. 4703	10.2.86	372
68	Ms Alison Evans Secretary Tamworth and District Chamber of Commerce P.O. Box 119 TAMWORTH N.S.W. 2340	7.2.86	373
69	Mr K.G. Titmus Vice President (North) Tasmanian Yachting Association C/- The Royal Yacht Club of Tasmania Marieville Esplanade SANDY BAY TAS. 7005	12.2.86	374
70	Mr J.R. Cattell Acting Director of Mapping Lands Department G.P.O. Box 44A HOBART TAS. 7001	12.2.86	376
71	Mr Allan Roebuck Operations Manager Radio 4AY.891 P.O. Box 1080 TOWNSVILLE QLD. 4810	14.2.86	378
72	Mr T.A. Jarrett Commercial Manager SIR (Australasia) Pty Ltd P.O. Box 1526 NORTH SYDNEY N.S.W. 2060	10.2.86	391
73	Mr R.M. O'Connell Industrial Officer Professional Radio & Electronics Institute of Australasia G.P.O. Box 7028 SYDNEY N.S.W. 2001	13.2.86	399

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74	Mr Brian Eade, MLA Member for Stuart P.O. Box 62 ALICE SPRINGS N.T. 5750	17.2.86	407
75	Mr I N Whyte Forest Manager APPM Forest Products P O Box 1025 LAUNCESTON TAS 7250	11.2.86	409
76	Senator B Kilgariff 6th Floor Hooker Building 47 Mitchell Street DARWIN NT 5794	25.2.86	411
77	Mr M J O'Reilly Shire Clerk Moree Plains Shire Council P O Box 420 MOREE NSW 2400	21.2.86	414
78	Mr D C Mills Chairman Furneaux Outer Islands Association P O Box 42 EPPING FOREST TAS 7257	14.2.86	416
79	Mr Alex Moss Executive Director Professional Orricers' Assoc. 4th Floor 136 Albert Road SOUTH MELBOURNE VIC 3205	25.2.86	418
80	Mr D B McLeod Secretary Northern Tasmanian Fisheries Association 34 Mary Street LAUNCESTON TAS 7250	27.2.86	422
81	Mr M Perron Ag Chief Minister Northern Territory Government DARWIN NT 5790	26.2.86	426
82	Mr R G Foster Manager - Research and Development Division Mount Isa Mines Ltd MOUNT ISA QLD 4835	27.2.86	429

APPENDIX XI

LIST OF EXHIBITS

EXHIBIT NO.	DESCRIPTION
1.	Exhibit - Melbourne 6/2/86 - A Pilot's Guide to IVRS. US Department of Transportation.
2.	Exhibit - Melbourne 6/2/86 - Syllabus for Flight Service Officers. Flight Service School Central Training College, Melbourne.
3.	Exhibit - Leigh Creek South 27/2/86 - Aviation Weather Services. Circular (06/86) General Aviation Association (Aust).
4.	Exhibit - Alice Springs Airport 27/2/86 - Letter to Department Meteorology - Hans Werner Grosse (West Germany).
5.	Exhibit - Alice Springs Airport - 27/2/86. Closure of Weather Office. Alice Springs - Department of Aviation.
6.	Exhibit - Alice Springs Airport 27/2/86 - Alice Springs Meteorological Office. Staff Reduction - Standing Committee on Expenditure.
7.	Exhibit - Alice Springs 27/2/86 - Letter, Re Submission by Alice Springs Town Council to Committee on Expenditure Inquiry into Meteorological Services.
8.	Exhibit - Newman Port Operations 28/2/86. Publication Cyclonic Procedures. Mt Newman Mining Company. Nelson Point.
9.	Exhibit - Port Hedland 28/2/86 - Meteorological Services in the Pilbara. Bureau of Meteorology Research Centre - L. Jenkins.
10.	Exhibit - Port Hedland 28/2/86. Terminal Area Forecasts (TAFORS) for the Western Australian as issued by Port Hedland Meteorological Office. (Undated)
11.	Confidential Exhibit
12.	Exhibit - Canberra 14/3/86 - Bureau Quarterly Aviation Statistics for Canberra Airport.
13.	Exhibit - Canberra 14/3/86 - Administrative Message Department of Aviation.
14.	Exhibit - Canberra Expenditure Committee Meteorological Inquiry 18/3/86 - Bureau Capital Program.
15.	Exhibit - Canberra Expenditure Committee, Meteorological Inquiry 18/3/86 - Aerodrome Forecasts and Briefings Bureau of Meteorology.

16. Exhibit - Canberra 18/3/86 - Letter Department of Aviation - A.F. Rainbird

17. Exhibit - Canberra. 19/3/86 - Extract from Bureau of Meteorology Forward Program 1985-90.

18. Exhibit - Tamworth 25/3/86 - Newspaper article: Accolades all Round for Tamworth Airport. Northern Daily Leader 25/3/86.

19. Exhibit - Canberra 30/4/86 - Bureau of Meteorology Capital Re-Equipment Program, January 1986.