ASCO – AUSTRALIAN STANDARD CLASSIFICATION OF OCCUPATIONS

(Information Paper revised April 1991 and January 1994)

This publication provides an introduction to the current Australian Standard Classification of Occupations (First Edition). The publication provides an overview of the ASCO structure, the ASCO Coding System, and a guide to interpreting ASCO statistics. The relationship of ASCO with other occupation classifications is discussed, specifically the Classification and Classified List of Occupations (CCLO) and the International Standard Classification of Occupations (ISCO-88). A range of ASCO publications and products is described.

1 The Development of ASCO

The development of ASCO as the Australian standard for use in the field of occupational classification was undertaken jointly by the Australian Bureau of Statistics (ABS) and the (now) Department of Employment, Education and Training (DEET). The project began in 1978 and ASCO was introduced progressively into ABS collections from May 1986, replacing the previously used CCLO.

ASCO is now used in all ABS censuses and surveys where occupation data are collected, including the Census of Population and Housing in both 1986 and 1991, the Monthly Population Survey and the annual Survey of Employee Earnings and Hours.

From 1990 ASCO has been introduced into ABS collections based on administrative by-product statistics such as births, deaths and divorces. ASCO is also used to code occupation responses on visa applications and passenger cards to produce occupation statistics on overseas arrivals and departures.

Major government reporting systems using ASCO include the Commonwealth Employment Service (CES) and Comcare. ASCO is specified for the reporting of workplace accidents under the revised Regulations of the *Occupational Health and Safety (Commonwealth Employment) Act 1991*. Many other organisations, in both the public and private sectors, use ASCO to sort and organise occupation-related information for such purposes as policy development and review, human resource management and labour market and social research.

2 Review of ASCO First Edition

It was originally intended that the first Edition of ASCO would continue in use at least for the ten years 1986 to 1995. However, widespread industry and award restructuring, technological change and competency-based approaches to career entry and progression have already brought about significant occupational changes in the Australian labour market. Continuing developments in labour force organisation, education and training, and task content of jobs can be expected.

In order to maintain the relevance of ASCO as the national standard, the ABS and DEET are undertaking a review of the classification. This will encompass both structure and definitional content, and is to be completed in time for the second edition of ASCO to be used in the 1996 Census. A program of wide-spread consultations with users is an integral component of the Review. Information regarding new occupations, changes in occupation titles or problems experienced with the current classification structure is welcomed and should be addressed to the ASCO contact officer (see below).

3 The Structure of the Classification

ASCO was designed to provide a skill-based classification of occupations which covers all jobs in the Australian economy.

The classification structure of ASCO relates to the set of tasks that workers in an occupation are required to perform. These sets of tasks are classified in terms of two criteria - *skill level* and *skill specialisation*.

Skill level is defined as the range and complexity of the set of tasks involved. The greater the range and the complexity of the set of tasks the greater the skill level of the occupation. It is measured operationally as the amount of formal education, on-the-job training and previous experience usually necessary before an individual can perform the set of tasks satisfactorily.

INQUIRIES

- *for more information about the contents of this publication*, contact Wendy Piper on Canberra (06) 252 5757 or any ABS State office.
- *for information about other ABS statistics and services* please refer to the back page of this publication.

Skill specialisation is defined in terms of four variables: field of knowledge required, tools and equipment used, materials worked on, and goods or services produced.

The structure of ASCO has four levels: major group, minor group, unit group and occupation. A profile of the ASCO structure and a listing of the major and minor groups are shown in Appendices 1 and 2, respectively.

4 Interpreting ASCO Statistics

Each entry in the ASCO statistical classification consists of a *principal title*, a *group definition* and the occupation code. A *group definition* consists of a lead statement specifying the scope of the group, a skill level statement, a set of primary tasks and a list of related occupations in other groups.

4.1 Interpreting ASCO Titles

All principal titles in the classification have been carefully chosen to describe the content of the major, minor, unit group or occupation as precisely as possible. However, the appropriateness of the titles has been constrained by the need to keep the titles as brief as possible to facilitate their use as headings in statistical tables. Limitations of language have meant that many words used in principal titles are used in a more restricted sense than those same words used in everyday speech. This applies particularly to words such as *manager, professional, para-professional, clerk, tradespersons* and *labourer*, which are used in major group titles. The titles are only indicative of the content of the groups, and do not of themselves provide an adequate basis for determining where a particular job should be classified.

4.2 Interpreting ASCO Occupation Definitions

ASCO is primarily a statistical classification designed to aggregate and organise data collected about individual persons or jobs. The classification definitions are indicative only, that is, they are based on the skill level and specialisation usually necessary to perform satisfactorily the tasks of the occupation or of most occupations in the group. The definitions should not be applied as prescriptive; an occupation code may be appropriately assigned even if the individual person or job does not match every specific definition detail.

5 A Structured Coding System

Most of the principal applications of ASCO require a tool for the coding of information about a particular job to the classification in an accurate, consistent and efficient manner. Accordingly, the development of the classification was accompanied by the development of a well-defined structured coding system, which enables occupation responses to be coded to the unit group or occupation level of the classification with a high degree of accuracy and consistency.

As the result of an extensive program of feasibility testing, it was found that, in order to allocate responses from statistical collections reliably to any level of the ASCO structure, data on occupation *tasks* as well as the occupation *title* were needed. The coding system is designed to utilise, in a structured way, the responses from up to four distinct questions: occupation title, main tasks performed, kind of industry description and employer's name. Primary importance is given to the occupation title but extensive use is made of main tasks performed in the job. Restricted use can also be made of information given in response to questions on industry and employer's name (where collected).

The structured coding system may be implemented as a clerical procedure or through computer-assisted coding (CAC). There is no functional difference between the two forms of the coding system; that is, they are based on the same coding strategy and principles and are designed to yield the same results.

The rule-based approach to coding has enabled significant parts of the coding procedure to be automated by computer program, thereby reducing the number and complexity of the procedures to be followed by coders and consequently increasing coding efficiency and accuracy. The computer-assisted coding system combines the coder's ability to interpret occupation title and task responses with the fast searching and matching abilities of a microcomputer. It was initially designed to facilitate the coding of occupation responses to ASCO in the 1986 Census of Population and Housing. The system was then rewritten for release as the ASCO Expert Coding System, details of which are given in the ASCO products listed below.

6 ASCO and Other Occupation Classifications

6.1 Relationship between ASCO and CCLO

The Classification and Classified List of Occupations (CCLO) was used to code occupation data in Censuses of Population and Housing between 1961 and 1981, in household and employer based surveys until 1986, and in administrative by-product statistics up to 1990.

CCLO was modelled on the first edition (1958) of the International Standard Classification of Occupations (ISCO). The Australian Classification contained 11 major Groups, 73 minor Groups and 389 Occupation Codes. The major criteria at occupation level were the functions involved and training required for performance of the job. Other work characteristics considered were type of

material worked in, use of specialised equipment or type of production process.

The deficiencies of the CCLO and the separate occupation classification used by the CES were identified in a number of official reports between 1970 and 1980. The problems included lack of balance and inappropriate aggregations, occupational categories combining jobs with widely different skill levels and occupation definitions frequently based in industry-specific terms.

Conceptually ASCO and CCLO are based on very different classification principles and it was not considered feasible to develop a simple code-for-code link between the two classifications. In addition CCLO was itself periodically revised between 1961 and 1981.

To provide at least a statistical representation of the relationship between ASCO and CCLO, the ABS dual coded a 5% sample of responses from the 1986 Census of Population and Housing. A Census Information Paper (Cat. No 2182.0) was published, which provided data on comparability of statistics produced using ASCO with those using CCLO, based on the 5% dual coded sample.

A series of occupation frequency estimates was prepared for the quarterly data sets from the Labour Force Survey. ASCO estimates based on the original CCLO frequencies are available for the period May 1983 to February 1986; CCLO estimates are available for August 1986 to August 1989, following the introduction of ASCO for survey processing. The data are not published, but are available in electronic format, on enquiry from the ASCO contact officer.

6.2 International Comparability

The International Standard Classification of Occupations (ISCO) is a publication of the International Labour Office in Geneva. ISCO was first issued in 1958 and revised versions have appeared in 1968 and 1988. The main aim of ISCO is to provide a base for international comparisons of occupational statistics between member countries. The most recent edition, ISCO-88, was developed using a similar conceptual basis to that of ASCO.

When it was first published in 1986, ASCO was significantly different from most other occupation classifications used by national and international statistical agencies. A major difference from the current international practice lay in the use of skill level and skill specialisation as criteria to structure the occupational classification. ISCO-88 also uses these criteria in the conceptual framework for the classification. Four broad skill levels are used, defined in terms of the educational categories and levels which appear in the International

Standard Classification of Education (ISCED), published by UNESCO.

It consists of 10 major groups, 28 sub-major groups, 116 minor groups and 390 unit groups. The occupation level is not defined in ISCO-88, as it is expected that individual countries will develop this level of detail to suit national requirements.

The 10 major groups in ISCO-88 are similar to the 8 ASCO major groups. The most significant difference at major group level is that ISCO-88 has identified skilled Agricultural and Fishery Workers as a separate major group (Major Group 6), whereas ASCO includes most occupations in that group (Farmers) as a minor group in Major Group 1, Managers and Administrators. ISCO-88 also includes a separate Major Group O, for the Armed Forces. In ASCO jobs held by members of the Armed Forces are classified together with their civilian equivalents where these exist and to a number of specific unit groups otherwise. ISCO-88 has a broader definition of Major Group 3, Technicians and Associate Professionals, than that used in the equivalent ASCO Major Group 3, Para-Professionals. In addition, ISCO-88 includes some of the more skilled occupations found in ASCO Major Group 5 in its Major Group 3.

Unlike ASCO, ISCO-88 has an intermediate level of aggregation comprising 28 Sub-Major Groups representing a bridge between its Major and Minor Groups. At the Minor Group level, ISCO-88 has more than twice as many categories as ASCO.

At the unit group level, the differences between ASCO and ISCO-88 are quite marked as ISCO-88 has retained some measure of comparability with ISCO-68.

7 ASCO Products

7.1 Editions of ASCO

The ASCO publications described in this paper are labelled as First Edition. An earlier document, the *ASCO Working Draft*, was published as part of the user consultation process during the development of ASCO. Two very different classification structures, referred to as Structures A and B, were presented in this publication. The Working Draft structures were superseded with the publication of ASCO First Edition.

A conversion list was produced in 1987 by DEET, to assist users of Working Draft Structures in converting to the First Edition. It consists of an occupation title based index with multiple codes on each entry. Titles are listed in alphabetical order as opposed to code order. The publication was available from AGPS bookshops (AGPS Catalogue No. 87 1991 7). A machine readable version of

this conversion list, sorted in alphabetical order, is available from the ABS.

As already mentioned it is planned that a second edition of ASCO will be produced in time for use in the proposed 1996 Census of Population and Housing. Until that time ASCO First Edition will remain the standard classification.

7.2   ASCO First Edition Major Publications

The following ABS publications and products are available. The leading number is the ABS catalogue number which should be used when ordering or making inquiries.

1222.0 ASCO Statistical Classification (1986)

This publication is intended for users who wish to understand the structure and content of the classification as an aid in interpreting ABS statistics. It is also a necessary resource document for use in resolving coding queries when processing occupation data. It is in three parts:

- Part One – *The Conceptual Basis of ASCO* – describes the ASCO structure, outlines the history of the development of the classification and explains the underlying concepts.

- Part Two – *Structure and Group Definitions* – is the main part of the publication. Its purpose is to enable users to understand the structure of ASCO and thereby to interpret ABS statistics.

  Its first two sections comprise a summary of the ASCO classification criteria and a profile of the ASCO structure. The third section comprises the group definitions. These define and describe the 8 major groups, 52 minor groups and 282 unit groups in the classification. At the level of the unit group, detailed information is provided on the skill level required and tasks performed. A list of the occupation titles within each unit group is also provided, including alternative and specialisation titles.

- Part Three – *Keyword Index of Structure Titles* – provides a pathway into the ASCO structure. Its purpose is to enable statistical users to locate all principal, alternative and specialisation titles (and their associated ASCO codes) under a particular keyword.

1223.0 ASCO Occupation Definitions (1990)

This publication comprises the definitions of the ASCO criteria, coding conventions, listings of the ASCO Structure, definitions of the 1079 occupations at the finest level of the classification and the Keyword Index of Structure Titles. A companion volume to the *Statistical*

Classification, it is intended for those who require detailed occupational information. It is a necessary reference document for occupation level coding as defined in the *ASCO Manual Coding System: Occupation Level* (1227.0).

1225.0 ASCO Manual Coding System: Unit Group Level (Revised 1992)

This is the principal document for use in coding manually to the unit group level of ASCO. It is presented in five parts:

- The *Implementation Guide* provides all the information necessary to implement the manual coding system in a statistical collection.

- The (Manual) *Training Guide* is to train coders in the recommended coding procedures. The material is divided into lessons, which are presented in increasing order of difficulty. The lessons include examples and exercises with answers.

- The *Coders' Guide* provides coders who have already been trained in ASCO coding with a quick reference document on coding procedures.

- The *Query Resolution Guide* provides guidance on how to resolve those cases which cannot be coded using the standard procedures (queries).

- The *Coding Index: Alphabetical Order* and the *Coding Index: Numerical Order* are hard copy versions of the index used in the Expert Coding System.

This document is compatible with the *ASCO Expert Coding System: Unit Group Level (1224.0)*.

1227.0 ASCO Manual Coding System: Occupation Level (1993)

This publication specifies the procedures and provides the indexes for the manual coding of occupation data to the 1079 categories at the most detailed level of ASCO. It is intended for users who wish to assign 6-digit ASCO codes on the basis of relatively detailed information such as is available from human resource management systems, job vacancy specifications or responses in special purpose statistical collections.

1228.0 ASCO Keyword Index of Unit Group Tasks (1990)

1229.0 ASCO Keyword Index to Occupation Definitions (1992)

These publications are useful primarily for locating possible ASCO codes where title information is not

available or inadequate, or in resolving coding queries. They are designed to be used in conjunction with the clerical or computer-assisted ASCO structured coding systems.

7.3 Classification Structure, Definitions and Indexes on Floppy Disks

Some of the above publications or parts thereof are available as floppy disk products in 5¼" by 360K, 5¼" by 1.2M, 3½" by 720K and 3½" by 1.44M IBM standard formats. Further information and order forms may be obtained from the ASCO contact officer.

7.4 Computer-Assisted Structured Coding Systems.

1224.0 ASCO Expert Coding System: Unit Group Level (1990)

This product enables users to code accurately and efficiently to the unit group level of ASCO. Codes can be recorded on disk together with any other information (eg. record number) which may be required. The details of any responses which result in a query being raised by coders can also be recorded on disk.

The system runs on IBM compatible microcomputers operating under MS-DOS 2.11 or later versions. It requires 640K RAM and may be run from floppy disk although a hard disk will enhance performance. An install program is provided for configuring the program to the machine requirements of the user.

It includes the following printed documents:

> *Users' Manual*
> *Coders' Manual*
> *Coding Index: Alphabetical Order*
> *Coding Index: Numerical Order*

The *Users' Manual* provides all the information necessary to set up and run a coding operation using *ASCO Expert*.

The *Coders' Manual* is in two parts:

- Part One – *Training Guide* – is intended to teach coders to use ASCO Expert and takes coders step by step through the coding procedures. The guide is organised into lessons with examples and exercises with answers.

- Part Two – *Reference Guide* – provides a quick reference for coders who are already familiar with the use of *ASCO Expert*.

The *Coding Index: Alphabetical Order* is a hard copy version of the index used by the Expert Coding System presented in alphabetical order of occupation title. It is provided to assist in query resolution.

The *Coding Index: Numerical Order* is primarily provided to assist in resolving queries. It lists the entries of the coding index in numerical order so that all entries referring to the same unit group are listed together.

1226.0 ASCO Expert Coding System: Occupation Level (1991)

This product provides a computer-based system similar to the unit group level system, but assigns 6-digit codes where data is of sufficient quality to enable coding at the most detailed level of ASCO, the occupation level.

8 ASCO Services

8.1 ASCO Consultancy/Coding

The ABS offers a consultancy service to organisations which are considering adopting ASCO as the basis of human resource management systems or using ASCO in their own statistical collections. These services are charged at an ABS standard rate.

8.2 Ordering ASCO Products

Further details of ASCO publications and products may be found in the ABS *Catalogue of Publications and Products.* Publications are available through ABS Bookshops. A complete listing of products on floppy disk may be found in the *ABS Catalogue.* Enquiries regarding these products should be directed to the ASCO contact officer on (06) 252-5757. Order forms are also available from the contact officer, or through ABS Bookshops.
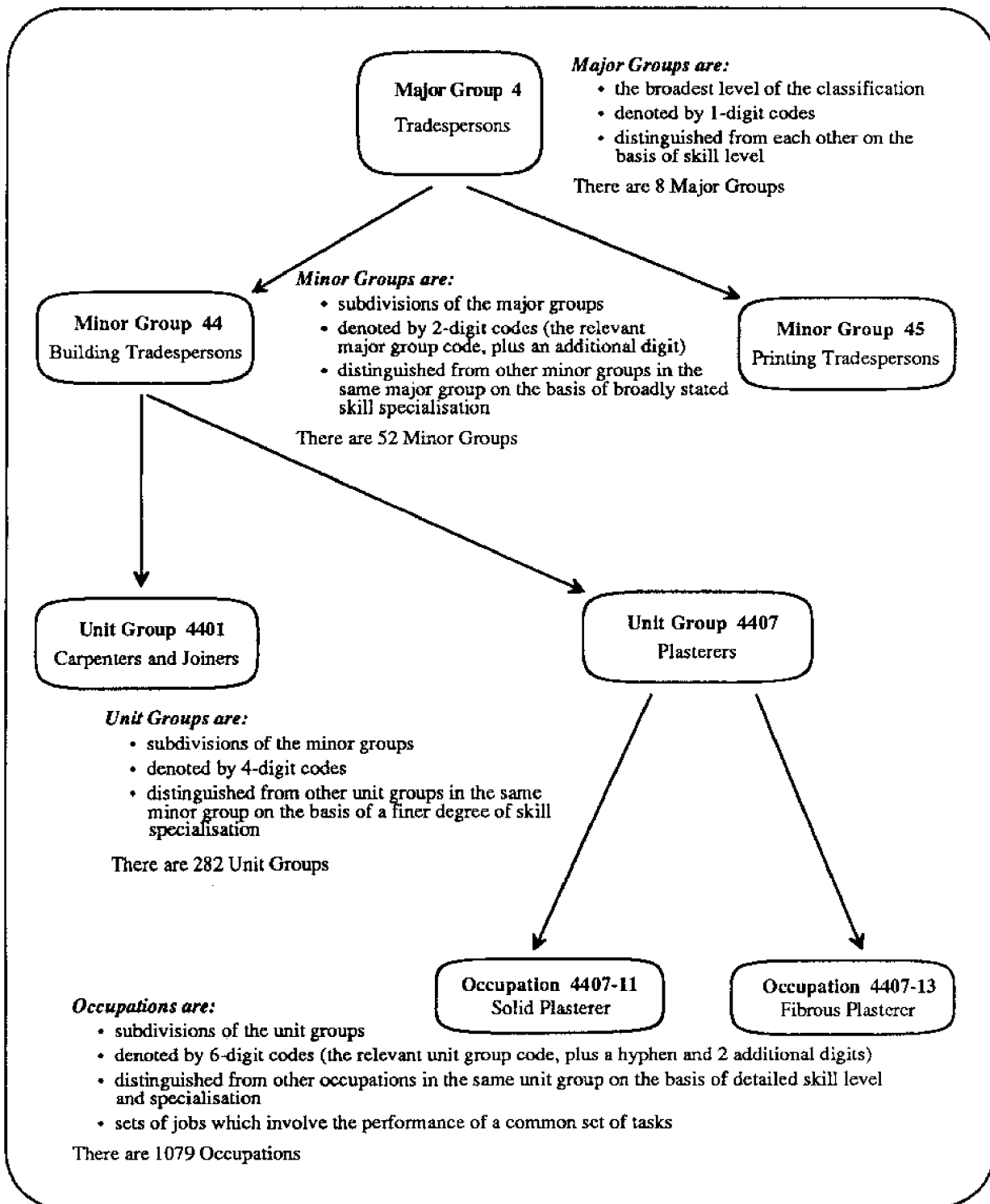
The computer-assisted coding system, *ASCO Expert,* is available on a lease basis only. Further information and lease forms can be obtained from the ASCO contact officer.

Profile of the ASCO Structure

The structure of ASCO has four levels:

- major group
- minor group
- unit group
- occupation

The following is an illustration of the ASCO structure

Major Group 4

Tradespersons

Major Groups are:

- the broadest level of the classification
- denoted by 1-digit codes
- distinguished from each other on the basis of skill level

There are 8 Major Groups

Minor Group 44

Building Tradespersons

Minor Groups are:

- subdivisions of the major groups
- denoted by 2-digit codes (the relevant major group code, plus an additional digit)
- distinguished from other minor groups in the same major group on the basis of broadly stated skill specialisation

There are 52 Minor Groups

Minor Group 45

Printing Tradespersons

Unit Group 4401

Carpenters and Joiners

Unit Group 4407

Plasterers

Unit Groups are:

- subdivisions of the minor groups
- denoted by 4-digit codes
- distinguished from other unit groups in the same minor group on the basis of a finer degree of skill specialisation

There are 282 Unit Groups

Occupation 4407-11
Solid Plasterer

Occupation 4407-13
Fibrous Plasterer

Occupations are:

- subdivisions of the unit groups
- denoted by 6-digit codes (the relevant unit group code, plus a hyphen and 2 additional digits)
- distinguished from other occupations in the same unit group on the basis of detailed skill level and specialisation
- sets of jobs which involve the performance of a common set of tasks

There are 1079 Occupations

APPENDIX 2

The ASCO Structure: Major and Minor Groups

1 MANAGERS AND ADMINISTRATORS

11 Legislators and Government Appointed Officials

12 General Managers

13 Specialist Managers

14 Farmers and Farm Managers

15 Managing Supervisors (Sales and Service)

16 Managing Supervisors (Other Business)

2 PROFESSIONALS

21 Natural Scientists

22 Building Professionals and Engineers

23 Health Diagnosis and Treatment Practitioners

24 School Teachers

25 Other Teachers and Instructors

26 Social Professionals

27 Business Professionals

28 Artists and Related Professionals

29 Miscellaneous Professionals

3 PARA-PROFESSIONALS

31 Medical and Science Technical Officers and Technicians

32 Engineering and Building Associates and Technicians

33 Air and Sea Transport Technical Workers

34 Registered Nurses

35 Police

39 Miscellaneous Para-Professionals

4 TRADESPERSONS

41 Metal Fitting and Machining Tradespersons

42 Other Metal Tradespersons

43 Electrical and Electronics Tradespersons

44 Building Tradespersons

45 Printing Tradespersons

46 Vehicle Tradespersons

47 Food Tradespersons

48 Amenity Horticultural Tradespersons

49 Miscellaneous Tradespersons

5 CLERKS

51 Stenographers and Typists

52 Data Processing and Business Machine Operators

53 Numerical Clerks

54 Filing, Sorting and Copying Clerks

55 Material Recording and Despatching Clerks

56 Receptionists, Telephonists and Messengers

59 Miscellaneous Clerks

6 SALESPERSONS AND PERSONAL SERVICE WORKERS

61 Investment, Insurance and Real Estate Salespersons

62 Sales Representatives

63 Sales Assistants

64 Tellers, Cashiers and Ticket Salespersons

65 Miscellaneous Salespersons

66 Personal Service Workers

7 PLANT AND MACHINE OPERATORS, AND DRIVERS

71 Road and Rail Transport Drivers

72 Mobile Plant Operators (except Transport)

73 Stationary Plant Operators

74 Machine Operators

8 LABOURERS AND RELATED WORKERS

81 Trades Assistants and Factory Hands

82 Agricultural Labourers and Related Workers

83 Cleaners

84 Construction and Mining Labourers

89 Miscellaneous Labourers and Related Workers

Australian Bureau of Statistics

For more information ...

The ABS publishes a wide range of statistics and other information on Australia's economic and social conditions. Details of what is available in various publications and other products can be found in the *ABS Catalogue of Publications and Products* available at all ABS Offices (see below for contact details).

Information Consultancy Service

Information tailored to special needs of clients can be obtained from the Information Consultancy Service available at ABS Offices (see Information Inquiries below for contact details).

National *Dial-a-Statistic* Line

0055 86 400

(Steadycom P/L: premium rate 25c/21.4 secs.)

This number gives 24-hour access, 365 days a year for a range of statistics.

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