



Government of Western Australia  
Department of Training  
and Workforce Development

# STATE PRIORITY OCCUPATION LIST

August 2019

Scope,  
methodology  
and sources



Building the workforce to meet the economic and community needs of Western Australia

## Table of contents

Introduction.....	1
Criteria for occupation consideration .....	1
Occupational priority index .....	2
Industry consultation .....	6
2019 draft SPOL and questionnaire.....	6
Questionnaire outcomes .....	7
Occupational analysis .....	8
Unmet demand .....	8
Non-market factors .....	10
Principal occupations .....	11
Business rules for the prioritisation of the final list.....	11
State priority 1.....	13
State priority 2.....	13
State priority 3.....	13
Identified occupations .....	13
Not identified as a priority .....	13
APPENDIX 1: Example of OPI calculations.....	15
APPENDIX 2: Additional information on statistical issues .....	16
APPENDIX 3: SPOL 2019 questionnaire .....	17
APPENDIX 4: A note on standard deviations.....	18
APPENDIX 5: Statistical supply and demand elements (PLDOS and FLDOS) .....	19
APPENDIX 6: Examples of other major data sources .....	23
APPENDIX 7: Secondary SPOL indicators .....	25
High demand.....	25
Adequate supply .....	26
Oversupply.....	26
Sub-occupation issues.....	26
Skills gap .....	27
Vertical mismatch.....	28
Horizontal mismatch .....	28
Over education or under education.....	29

Over qualification or under qualification .....	29
Skills obsolescence.....	30
Government policy.....	30
Experience .....	30
Watch list .....	31

This paper is produced by the State Workforce Planning branch of Western Australia's Department of Training and Workforce Development.

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## Introduction

This information paper details the process undertaken to create the 2019 *State priority occupation list* (SPOL2019). It is intended as a supplement to the *State priority occupation list – Summary* paper. Please refer to that paper for SPOL2019 results and introductory explanatory information.

Both the summary paper, plus detailed occupational profiles for 799 occupations are available from the Department of Training and Workforce Development's (the Department) website at [dtwd.wa.gov.au/workforce-development](http://dtwd.wa.gov.au/workforce-development).

The Department's Economic and Labour Market Analysis (ELMA) team has the responsibility of managing the methodology and generating the SPOL on an annual basis.

## Criteria for occupation consideration

The following criteria are applied to determine whether an occupation should be considered for the SPOL.

- **Valid data**

There must be an adequate level of quality information in order to assess and validate the needs of occupations. In practice, this means that the occupation must have a valid Australian and New Zealand Standard Classification of Occupations (ANZSCO) code from the Australian Bureau of Statistics (ABS) at the six digit level.

The total ANZSCO structure incorporates over 1,350 occupations. However around 600 of these are removed because they do not relate to real occupations. They are for statistical purposes 'catch-all' codes (designated 'not further defined' (NFD)) where census or survey respondents do not adequately describe their 'real' occupation<sup>1</sup>.

- **High levels of skill**

The occupation must have specialised skills that require extended learning and preparation time. Occupations that do not require post-school qualifications prior to entry, such as construction labourers, process workers and kitchen hands, are therefore not considered for SPOL.

- **Clear and open pathways**

The occupation should have clear education and/or training pathways, with qualifications that can be obtained within Australia, and where the skills learnt can be matched to the requirements of the occupation. Examples such as judges or members of parliament are not considered for SPOL.

The occupation must also operate in an open labour market. That is, there is a regular recruitment process to fill vacancies and there are multiple employers available. Examples such as defence force personnel, police officers and air traffic controllers

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<sup>1</sup> Example: A person identifying as a 'Manager' would be coded to ANZSCO 100000, rather than a more specific occupation such as Chief Executive Officer, as it is not clear what type of manager they were.

that operate in a highly regulated market, with tightly controlled recruitment practices and specialist training, are not considered for SPOL.

- **Occupational impact**

An occupation will be considered if any disruption in its supply would result in significant impacts more broadly across the industry or the State's economy. These impacts may manifest themselves in higher unemployment and/or slower growth due to supply bottlenecks. For the most part, these tend to be highly skilled occupations, with long training or education lead times, but can also include occupations such as childcare workers which are considered economically important as they help facilitate extra supply across many occupations.

Applying all of these criteria across the ANZSCO classification system leaves a total of 799 occupations to be considered for SPOL each year<sup>2</sup>.

### Occupational priority index

A key input to the SPOL is the Occupational Priority Index (OPI), which represents the output of the Department's statistical analysis of the occupational Western Australian labour market. The OPI actually refers to two distinct indices with separate data sources and inputs.

- i **A 'Market OPI'** – Includes direct, market based factors relating to each occupation, such as:
  - employment size;
  - future labour demand or supply (FLDOS);
  - past labour demand or supply (PLDOS);
  - average weekly wages; and
  - upcoming job openings.
  
- ii **A 'Structural OPI'** – Includes more long term, structural factors relating to each occupation, such as:
  - exposure of workforce to likely retirement;
  - change in the median age;
  - lead time to enter;
  - industry portability; and
  - proportion of workers with qualifications.

The mean and standard deviation is calculated for each of these elements. The advantage of using standard deviations is that it allows a valid comparison across all indicators, each of which represent different datasets and would not otherwise be comparable<sup>3</sup>.

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<sup>2</sup> The list of eligible occupations is reviewed each year, to determine any changes in skill or training requirements of individual occupations. An additional 45 occupations were added to the eligibility list in 2019, primarily due to updated VET enrolment information from private RTO delivery in Western Australia via the total VET activity dataset.

<sup>3</sup> Further information on the use of standard deviations can be found at Appendix 4.

The z-score<sup>4</sup> for each element is weighted and summed to determine the final score for each index. Tables 1 and 2 illustrate the weightings and a brief outline of each element for each index.

Table 1: Market OPI weightings

Indicator	Weighting
Employment size	10.0%
FLDOS	20.0%
PLDOS	30.0%
Average weekly wage	10.0%
Job openings	30.0%
<b>Total</b>	<b>100.0%</b>

The five primary, State-based statistical measures used to determine the market OPI are as follows.

- **Employment size** – Based on the 2016 ABS Census.
- **Future labour demand or supply (FLDOS) and past labour demand or supply (PLDOS)** – Both based on a number of data sources (see Appendix 5) and provide an indication as to whether current labour supply is broadly meeting demand.
- **Average weekly wage** – Based on employee earnings and hours data for full time adult employees (ABS catalogue number 6306.0).
- **Job openings** – based on Monash University’s Centre for the Economics of Education and Training (CEET) data, these are forecasts of emerging vacancies (whether filled or not) for each occupational group.

Table 2: Structural OPI weightings

Indicator	Weighting
Retirement exposure indicator	10.0%
Change in median age	15.0%
Lead time	30.0%
Industry portability	15.0%
Occupation qualification usage	30.0%
<b>Total</b>	<b>100.0%</b>

The five primary, State-based statistical measures used to determine the structural OPI are mostly based on the ABS Census (except for lead time) and can be described as follows.

- **Retirement exposure indicator** – Highlights occupations with a significant proportion of their existing workforce close to, or above, retirement age.
- **Change in median age** – Measures the growth in median age for each occupation between 2011 and 2016.
- **Lead time** – Based on the ABS ANZSCO standard definition of lead times for each 6 digit occupation.

<sup>4</sup> A z-score (or, a ‘standard score’) indicates how many standard deviations an element is from the mean.

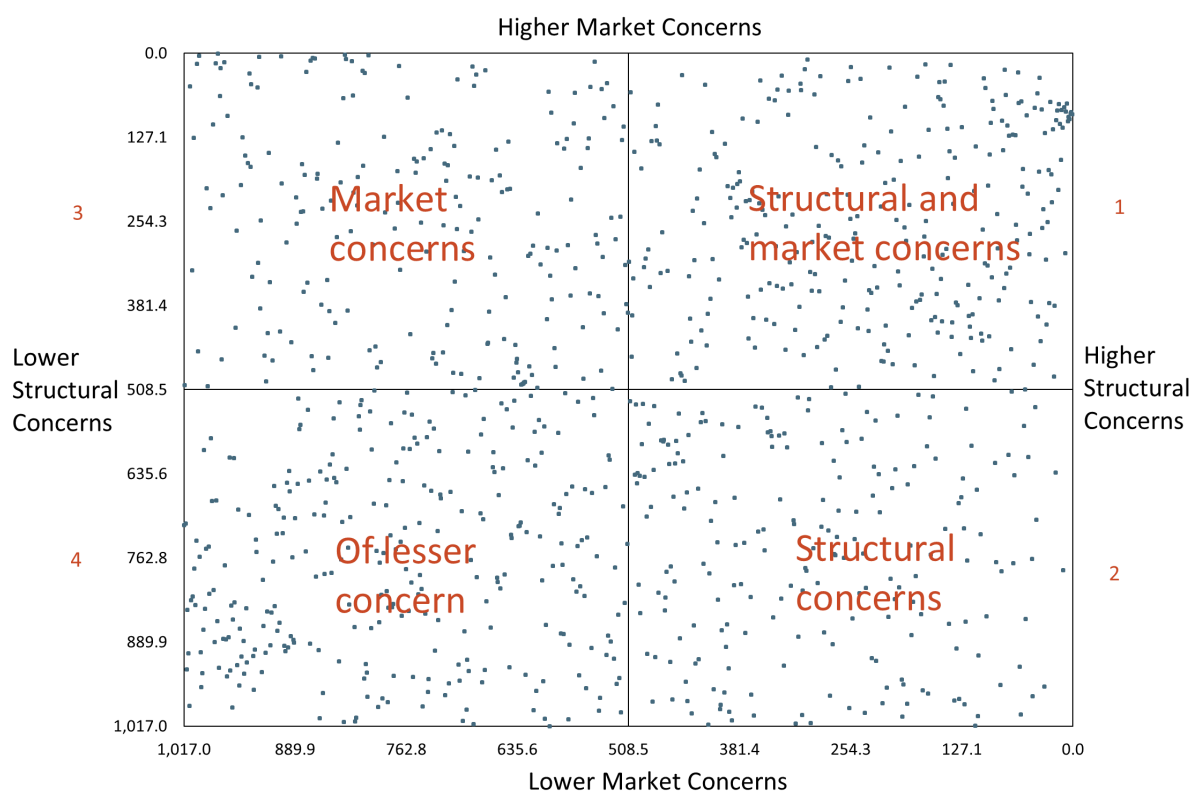
- **Occupation to industry** – Measures the spread of employment of each occupation across major industry groups as defined by the Australia and New Zealand Standard Industrial Classification (ANZSIC).
- **Occupation qualification usage** – Measures the proportion of an occupation’s workforce with formal qualifications.

An occupation’s final scores will determine its rank against all other occupations for each OPI. The two ranking values can then be mapped on a scatterplot diagram to provide a two-dimensional view of each occupation’s position relative to all other occupations.

An example of the OPI scores is provided in Appendix 1.

Each blue dot in Figure 1 represents one of 1,017 ANZSCO occupations<sup>5</sup> in Western Australia that are awarded an OPI rank.

Figure 1: Occupational priority index quadrants



The horizontal (x) axis denotes a relative ranking on the structural OPI. The vertical (y) axis represents a relative ranking for the market OPI.

Occupations appearing towards the upper end on the vertical axis are ranked higher on the market OPI and could be said to be experiencing market-driven concerns to a relatively greater degree. This could be because, relative to other occupations, the

<sup>5</sup> Please note this number includes all ANZSCO occupations in Western Australia (excluding NFDs). While only 754 are considered eligible for SPOL consideration according to the *Criteria for occupation consideration* outlined earlier, the statistical analysis and OPI ranking is carried out for all occupations.

occupation employs a large number of people, has issues with supply relative to demand, high wage rates and/or a large number of future job openings.

Occupations appearing towards the right side of the scatterplot are ranked higher on the structural OPI. They will be occupations where, relative to other occupations, there are longer education or training lead times, a greater proportion of older workers who are likely to retire, workers operate in many industries, and/or it has strong education or training pathways.

The scatterplot diagram can then be divided into quarters along the 50th percentile along each axis, or at the ranking value of 508.5 of 1,017 occupations. Each quadrant provides a quick visual indicator of which elements may underlie any issues relating to a specific occupation. Quadrant 1 denotes there are both structural and market issues at play. Quadrant 2 denotes predominantly structural issues, quadrant 3 market issues and so on.

The cluster of dots in the top right corner of quadrant 1 represents most of the high-end medical occupations, which tend to be highly skilled with long lead times, high wages and ongoing employment demand. Other highly skilled jobs with less tight labour markets, such as school teachers and nurses, tend to occur in quadrant 2; whereas many high employing but lesser skilled occupations such as sales assistants occur at the upper end of quadrant 3. Occupations in quadrant 4 are still important contributors to the economy, but are not experiencing structural or market issues to the same extent as others.

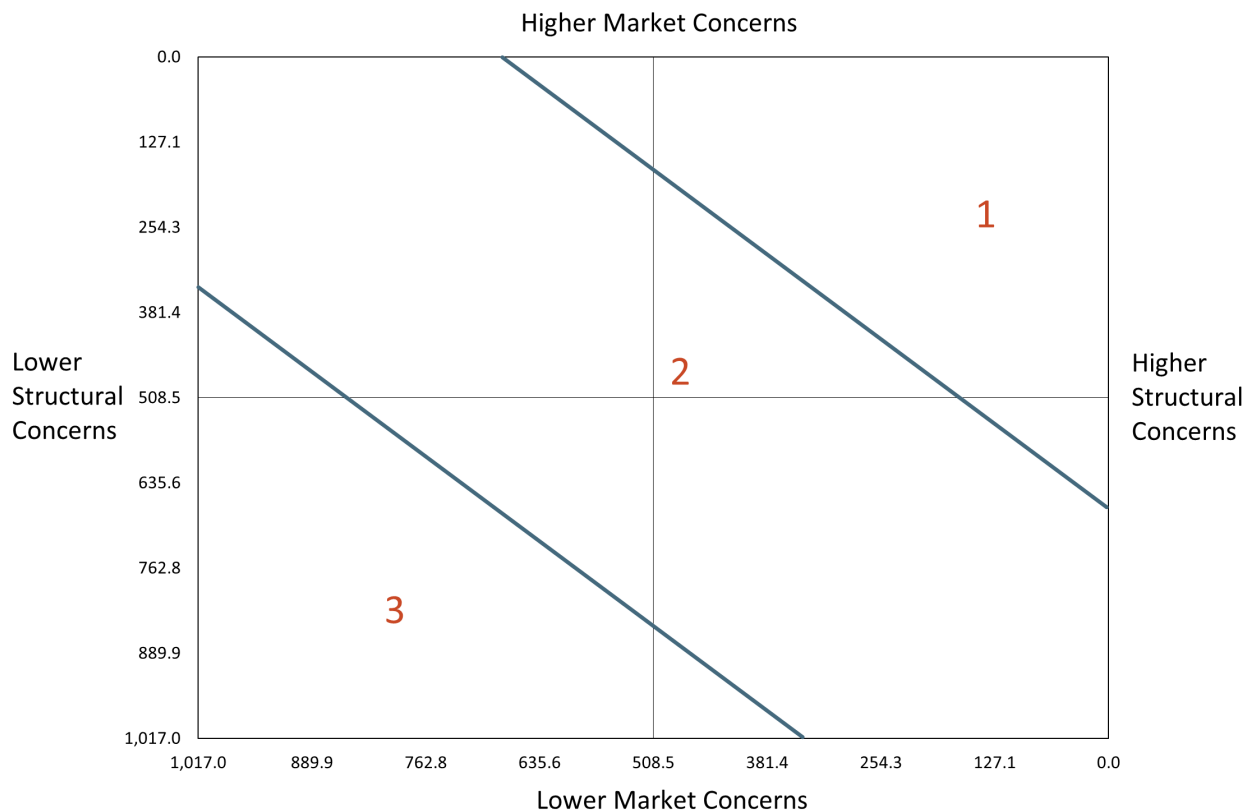
If we assume an equal weighting for the two OPI measures, the scatterplot diagram can be further divided into three equal sections by summing the axis coordinates ( $a=x+y$ ) and plotting a line along the values where:

- $a = 339$ , and
- $a = 678$ .

Since 339 equates to one third of the 1,017 ranked occupations and 678 equates to two thirds, this will create three equal sections, or tertians, containing 339 occupations each. This is illustrated in Figure 2.



Figure 2: Occupational priority index tertiants



An occupation’s position on the scatterplot will therefore help to determine its final ranking, depending on the availability of additional qualitative evidence, as described in the industry consultation section.

### Industry consultation

In 2019, Western Australia’s industry training advisory arrangements<sup>6</sup> included nine contracted training councils. Collectively, these organisations cover all 19 industries in the State<sup>7</sup>.

Further details regarding the other industry training advisory bodies can be found at [stb.wa.gov.au/links](http://stb.wa.gov.au/links).

### 2019 draft SPOL and questionnaire

The Department prepared a draft SPOL in early 2019, determining a priority rating and verdict text for all eligible occupations. This process was primarily informed through the outcomes of the OPI process and any on hand economic, policy or labour market intelligence that the Department had on hand such as through bespoke workforce projects or other public reporting that had occurred.

Training councils were provided access to a standardised, online questionnaire requesting industry information regarding occupations that were rated as a State Priority on 12 March 2019. The questionnaire included three questions and is provided in Appendix 3.

<sup>6</sup> As laid out under section 21(1)(b) of the *Vocational Education and Training Act 1996*.

<sup>7</sup> As defined according to ANZSIC.

The advisory bodies were also provided with the data behind the OPI process<sup>8</sup>, to provide some guidance with regards to the how occupations were rated on the draft SPOL.

Collectively, participants were asked to respond to an initial list of 255 occupations flagged as priorities. Training councils were only required to respond to occupations that were within their traditional industry remit with some occupations crossing over multiple organisations.

Responses could be received via three options for each occupation:

- endorsement of the draft rating with no further written response;
- endorsement of the draft rating with the option of providing additional information, for example to alert Government to pending concerns; or
- disagreement with the draft rating with a written response outlining the issues affecting the occupations and strategies to overcome them.

Separately, training councils were also invited to provide responses relating to any of the remaining 544 occupations eligible for SPOL consideration, if they so wished and where sufficient evidence was available. Advice on the labour market was to be made for a broad range of issues relating to the supply of workers, positive and negative shifts in demand and non-market driven issues.

In completing the questionnaire, where claims were made regarding specific occupations, respondents were advised to provide sufficient supporting evidence, including relevant citations of sources. If such evidence was not available, the occupation could not be considered for inclusion as a priority on the SPOL.

The Department on 15 March 2019 hosted a face-to-face group workshop on the SPOL 2018 to discuss methodology changes, the new information and communication technologies (ICT) infrastructure, the updated SPOL questionnaire and any occupation related issues. Seven of the nine training councils attended. An additional session was held for a single training council. One training council declined the opportunity for a face-to-face workshop.

During the questionnaire period, staff from the Department were available to answer any queries either by phone or via email. All queries were responded to within two business days.

### **Questionnaire outcomes**

Training councils were given until 18 April 2019 to complete the questionnaire and submit their responses to the Department via the new web portal infrastructure. All training councils submitted material for the SPOL2019 process prior to the 18 April 2019 deadline. In all, 311 submissions relating to 277 distinct occupations were received. Of these, 280 were in response to occupations placed by the Department on the initial draft SPOL, of which eight sought a change in the draft rating. Training councils raised 31 additional

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<sup>8</sup> Data from some third-party sources could not be provided due to contractual obligations relating to intellectual property.

submissions pertaining to 30 occupations that were not rated as a priority on the draft SPOL. From this second group, eight were raised to alert the Government to issues rather than seek an adjustment to the priority rating. There was a 96% agreement rate between the Department and training councils in terms of submissions received in relation to the draft SPOL.

The Department undertook an occupational analysis (detailed hereafter) of responses received. This process led to six occupations having their draft SPOL rating increased or added onto the priority list, while one occupation had its rating decreased to a lower rating of priority. Many occupations that received written submissions with industry commentary had their issues reflected through secondary indicators.

Definitions and hypothetical examples of these indicators can be found in Appendix 7.

The penultimate draft of the SPOL including occupational ratings and verdicts were provided to training councils on 21 May 2019. This included an offer of a face-to-face meeting with Department staff to go through the results and provide additional feedback. One training council took up this offer and Department staff met with the organisation at their offices on 24 May 2019.

## Occupational analysis

Department staff undertook a comprehensive analysis of questionnaire responses, including a review of the statistical OPI data. In addition, a raft of supplementary information sources were also analysed as part of this process, such as the Commonwealth Government Department of Employment, Skills, Small and Family Business survey data<sup>9</sup>, Internet Vacancy Index (IVI) data, major projects research data, Western Australian Treasury forecasts, and many other sources.

While evidence provided from these sources is generally not suitable for OPI calculations<sup>10</sup>, they are very useful for providing additional supporting data, as well as validating any anecdotal evidence provided from industry sources via the questionnaire process<sup>11</sup>.

Occupations are assessed against the following criteria.

### Unmet demand

The Department defines an occupation as experiencing unmet demand:

*“... where the evidence shows that employers are currently unable to fill or have considerable difficulty filling vacancies due to skills or qualifications related issues across Western Australia.”*

Unmet demand is sometimes referred to as a ‘skills shortage.’ Evidence should be available to show widespread shortages of suitably skilled workers to fill vacant positions across an entire occupation at the State level. Isolated cases of employers unable to

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<sup>9</sup> Survey of Employers Recently Advertised (SERA) and Survey of Employers Recruitment Experience (SERE).

<sup>10</sup> The OPI requires a consistent dataset across all ANZSCOs to avoid distortions in the data.

<sup>11</sup> A list of these data sources is included in Appendix 6.

source workers may simply be related to employer specific selection criteria, salary and conditions. In itself, such evidence is not compelling enough to define an occupation as experiencing unmet demand at a Statewide and occupational level, and further evidence is required.

**Example<sup>12</sup>**

A submission is received citing examples of vacancies not being filled for a particular occupation because there are fewer suitably qualified and experienced applicants. A statistical analysis of graduate outcomes data also shows an overall decrease in the number of people qualifying with relevant qualifications relating to that occupation in recent years. In this case, the statistical evidence indicates the issue is more widespread than a single employer, and that the occupation is experiencing unmet demand.

Shortages may exist within a specific specialisation, but not across an entire occupation. Because the SPOL analysis and outcomes are limited to the detailed six digit ANZSCO level, these instances will be noted but will not result in the occupation being classified as experiencing unmet demand.

**Example**

A submission claims there is a shortage of science teachers. Supporting qualitative evidence is provided, however no statistical evidence is available as the claim refers to a single specialisation within the broader teaching occupation (ANZSCO 241411 – Secondary School Teacher). Furthermore, there is no suggestion that shortages exist outside of the science specialisation. In this instance, while the specific issues for science teachers would be flagged for follow-up, the overall occupation could not be considered as experiencing unmet demand.

Similarly, an occupation is not considered as experiencing unmet demand if evidence shows that any shortages are confined to a remote or regional locality.

**Example**

A shortage of enrolled nurses is reported in the Kimberley region. Evidence received supports the claims, with employers in remote areas struggling to source any applicants for advertised vacancies and experiencing high staff turnover. However there is no evidence to suggest other regions, or Perth, are experiencing any such issues. In fact, Perth employers report an abundance of suitably qualified and experienced applicants. In this case, the regional issues would be flagged for follow-up, however the occupation would not be considered as experiencing unmet demand as available evidence suggests an abundance of workers in the State.<sup>13</sup>

Following the detailed occupational analysis conducted by the Department, there were 39 occupations flagged as experiencing unmet demand.

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<sup>12</sup> Please note all examples provided are hypothetical only.

<sup>13</sup> A regional labour market review of each of the State's nine regions is currently being undertaken by the Department, with results to be released in 2019. How the outcomes from this process will feed into the existing SPOL framework is being investigated.

## Non-market factors

The Department defines an occupation as experiencing non-market factors:

*“... where the evidence shows a significant change in some external influence (outside regular market driven forces) is impacting upon formal training or migration requirements.”*

Non-market factors refer to any set of influences, not related to immediate demand or supply in the regular labour market, which impact upon the training or migration requirements for that occupation. The existence of non-market factors usually infers change at a legislative or regulatory level which will require additional training places for new, but particularly *existing* workers, in the occupation. By definition, they are short term in impact.

### Example

New legislation comes into effect that requires all baristas to hold a Certificate III in Hospitality. This is a brand new requirement. The relevant qualification is readily available and complies with the Australian Qualifications Framework. In this instance, the occupation would be flagged as experiencing non-market factors.

The impact must also be deemed significant enough to warrant a Government response. Changes to informal on the job training or short, unaccredited courses are not deemed significant enough to consider an occupation as experiencing non-market factors.

### Example

New regulations are reported stipulating that within three years, all shearers must complete an industry approved course relating to animal husbandry. Investigations however show that the new requirements relate to a one day, online course usually undertaken in the workplace. In this instance, the disruption is not material enough to consider the occupation as experiencing non-market factors.

### Example

A suite of new generation medical imaging machines has entered the market, and businesses are switching to the improved technology to increase productivity. Radiographers will be required to learn how to operate the new equipment. However training will occur on the job, with the assistance of the equipment manufacturer, and will not require qualified staff to undertake further formal training. The impact on formal training and education pathways is minimal and therefore the occupation is not considered as experiencing any non-market factors.

Identification of non-market factors may also be relevant where there is credible evidence of an impending disruption to the occupational demand and supply balance in the near future. This may be a key material investment commitment which is soon to commence and therefore requires priority consideration in the current SPOL, despite not currently satisfying the criteria to be considered as unmet demand.

It should be noted that non-market factors tend to be an exception rather than the rule, and are only applied where issues are material and long understood, and appropriate formal training strategies are developed.

When considered along with additional research undertaken by the Department, 25 occupations were found to be experiencing non-market related factors influencing their requirements for formal training.

### **Principal occupations**

The Department defines an occupation as a principal occupation:

*‘... where specialised skills are learned in formal education and training prior to labour market entry, and the impact of market failure is significant.’*

Principal occupations<sup>14</sup> are considered important to the structure of the Western Australian economy. They may support employment in many other occupations, and/or are linked to the provision of key services in the community.

They are generally highly skilled occupations where considerable negative economic and/or social impacts are likely to be experienced should they experience a shortage of any significance. It is therefore important to maintain a consistent source of supply for these occupations, regardless of any shorter term market fluctuations.

#### **Example**

A major hospital in Perth is short of three anaesthetists. Consequently, surgery schedules have been disrupted and the ability for surgeons, nurses and other allied health and hospital support staff to undertake their duties has been compromised (not to mention the impact on patients). Despite the relatively small number, the flow on affects are quite severe with potential further impacts across the wider economy. It is therefore considered important to maintain supply and anaesthetists are considered a principal occupation.

An occupation will *not* be considered principal due to:

- seasonal or distinct employment patterns and conditions;
- semi-skilled or unskilled workforce needs (ABS Skill Level 4 or 5);
- the result of ongoing staffing attraction and retention issues; or
- difficulty in filling positions.

At the end of the SPOL 2019 process, 236 occupations were deemed principal occupations in Western Australia.

### **Business rules for the prioritisation of the final list**

An occupation listed on the SPOL may be assigned to one of five priority (and non-priority) ratings.

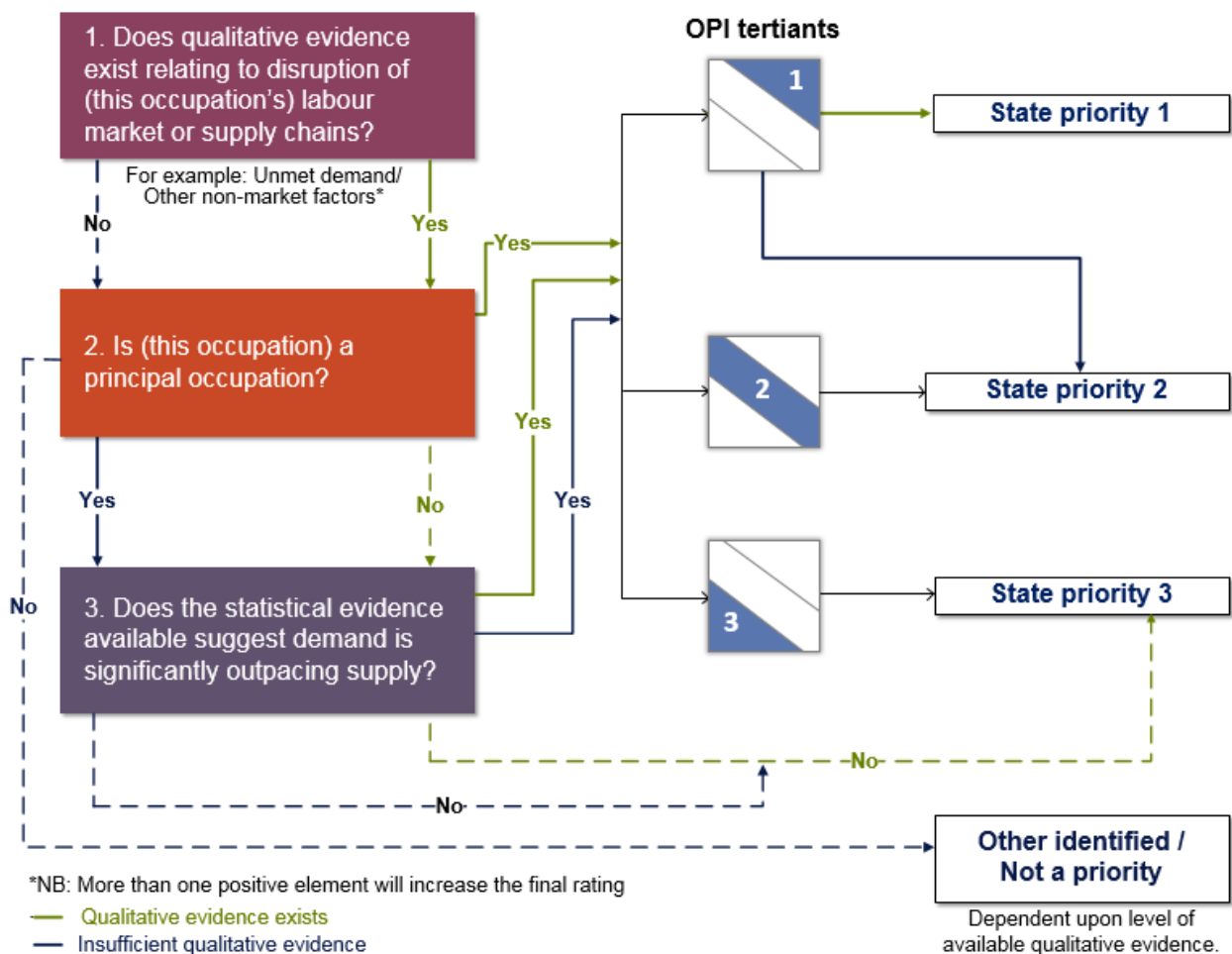
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<sup>14</sup> Prior to SPOL2018, these occupations were referred to as ‘critical occupations’. Confusion over the nomenclature with respect to SPOL priority ratings saw the terminology changed this year.

- **State priority 1** – The highest priority occupations where structural and market-driven issues are impacting at the State level.
- **State priority 2** – The second highest level of priority where structural and/or market-driven issues are impacting at the State level.
- **State priority 3** – The third tier of priority and representing either occupations of pending concern and/or where supply is essential for the State’s economy.
- **Identified occupations** – Refers to occupations where there is inconsistent or conflicting evidence relating to structural or market driven issues. These occupations are not priorities but are closely monitored by the Department.
- **Not identified as a priority** – Refers to occupations with no evidence for inclusion on the priority list.

The terminology gives an indication of each occupation’s relative priority, and provides a transparent reasoning underpinning it. Each tier has a specific set of business rules that include references to statistical information about each occupation, as well as the nature of qualitative advice provided by advisory bodies. The interplay of these three business rules with available statistical data in determining the final priority rating is illustrated in Figure 3.

Figure 3: SPOL2019 business rules for determining priority ratings



The green arrows represent the decision pathway where qualitative evidence is available. The dark blue arrows represent where there is insufficient qualitative evidence.

The following is a summary of the business rules used in determining the relative priority for each occupation on the SPOL.

### **State priority 1**

An occupation is deemed to be within the State priority 1 tier if the following criteria are met:

- there is sufficient qualitative evidence that the occupation is experiencing;
  - *unmet demand*; **and/or**
  - *other non-market factors*; **and**
- it has an OPI rating in the top tertiant; **or**
- it has an OPI rating in the second tertiant and is a principal occupation.

There are 39 occupations in the SPOL2019 which are deemed State priority 1.

### **State priority 2**

An occupation is deemed to be within the State priority 2 tier if the following criteria are met:

- it has an OPI rating in the top two tertiants and is a principal occupation; **or**
- it has an OPI rating in the second tertiant with qualitative evidence of unmet demand or non-market factors.

There are 144 occupations in the SPOL2019 which are deemed State priority 2.

### **State priority 3**

An occupation is deemed to be State priority 3 if the following criteria are met:

- it has an OPI rating in tertiant 3 and is a principal occupation; **or**
- there is no compelling evidence that the occupation is experiencing an undersupply of skilled workers and is a principal occupation; **or**
- it has an OPI rating in tertiant 3 with qualitative evidence of unmet demand or non-market factors.

There are 79 occupations in the SPOL2019 which are deemed State priority 3.

### **Identified occupations**

Refers to occupations where there is inconsistent or conflicting evidence relating to structural or market driven issues. Generally, they will refer to occupations that are not principal occupations, where anecdotal evidence of issues has been raised but is not supported by statistical evidence.

These occupations are not priorities but are closely monitored by the Department. There are 20 occupations in the SPOL2019 which are deemed other identified occupations.

### **Not identified as a priority**

This refers to occupations that are eligible for SPOL consideration but are not principal occupations and are not raised as a priority by any stakeholders. These occupations are still important for the functioning of the economy, but no major issues have been identified that require an increased education, training or migration response.



It is important to note that this category will also include occupations operating largely in equilibrium. That is, there are no issues because the supply pipeline and demand are relatively equally matched. For this reason it should not be assumed that occupations with this rating automatically require a reduction in supply, as this may lead to future disequilibrium and potential future skills shortages.

There are 517 occupations in the SPOL2019 which are not identified as a priority.

## APPENDIX 1 Example of OPI calculations

Occupation	Employment	FLDOS	AWE	AWE Growth	PLDOS	Job Openings	Market Total	Change in Median Age to SDF	Occupation to Industry	Occupation to Qual Usage	Lead Time	Retirement Exposure Indicator	Structural Total	Final Tertiant	Final Quadrant
253313 Clinical Haematologist	-0.035	0.071	0.432	0.000	0.103	0.135	0.706	0.000	2.756	0.000	0.000	0.733	3.489	1	1
253322 Renal Medicine Specialist	-0.034	0.000	-0.034	0.071	0.432	0.000	0.434	0.000	2.756	0.000	0.000	0.591	3.346	1	1
253323 Rheumatologist	-0.035	0.000	-0.035	0.071	0.432	0.000	0.434	0.000	2.756	0.000	0.000	0.248	3.004	1	1
253513 Neurosurgeon	-0.034	0.000	-0.034	0.066	0.432	0.000	0.429	0.000	2.756	0.000	0.000	0.362	3.118	1	1
253516 Paediatric Surgeon	-0.035	0.000	-0.035	0.068	0.432	0.000	0.431	0.000	2.756	0.000	0.000	-0.037	2.719	1	1
253515 Otorhinolaryngologist	-0.034	0.000	-0.034	0.065	0.432	0.000	0.428	0.000	2.756	0.000	0.000	0.305	3.061	1	1
253411 Psychiatrist	-0.022	0.000	-0.022	0.079	0.432	0.000	0.466	0.000	2.756	0.000	0.000	0.049	2.804	1	1
253324 Thoracic Medicine Specialist	-0.034	0.000	-0.034	0.071	0.432	0.000	0.435	0.000	2.756	0.000	0.000	-0.037	2.719	1	1
272313 Organisational Psychologist	-0.034	0.000	-0.034	0.053	-0.032	0.000	-0.046	-0.073	-0.851	0.000	0.000	0.106	-0.818	1	1
253913 Obstetrician and Gynaecologist	-0.029	0.000	-0.029	0.076	0.432	0.000	0.449	0.000	2.756	0.000	0.000	0.106	2.861	1	1
639212 Wool Buyer	-0.033	0.000	-0.033	0.069	-0.052	0.000	-0.050	0.000	0.000	0.000	0.000	0.648	0.648	1	2
253511 Surgeon (General)	-0.033	0.000	-0.033	0.057	0.432	0.000	0.423	0.000	2.756	0.000	0.000	0.106	2.861	1	1
253315 Endocrinologist	-0.035	0.000	-0.035	0.071	0.432	0.000	0.433	0.000	2.756	0.000	0.000	-0.037	2.719	1	1
111399 Legislators, nec	-0.034	0.000	-0.034	0.067	0.175	0.000	0.173	2.784	1.576	0.000	0.000	0.419	4.779	1	1
253518 Urologist	-0.034	0.000	-0.034	0.062	0.432	0.000	0.426	0.000	2.756	0.000	0.000	0.248	3.004	1	1

## APPENDIX 2

### Additional information on statistical issues

#### **SPOL ratings – Manual adjustments**

There are some known issues with labour market data which require manual adjustments or specific data treatments to ensure integrity in the application of SPOL ratings. The best example of this occurs in the case of carpenters. In Western Australia, the official trade is called ‘carpenter and joiner’, which is also an official ANZSCO category (311211)<sup>15</sup>. However, it is commonly referred to simply as ‘carpenter’ by those in the occupation and the general public.

This is reflected in official labour market data, which indicates significant levels of employment under the ‘carpenters’ classification in WA and very little employment under the official trade ‘carpenters and joiners’ even though the former does not officially exist in WA. For this reason, all three occupations are grouped at the broader four digit level for SPOL purposes.

Similar rules are applied for pressure welders and welders (first class), childcare centre workers and managers, and electricians (general) and electricians (special class). Additional evidence and employment pathways are considered in making these adjustments.

In general, the need to undertake such direct adjustments was minimal for SPOL 2019.

#### **Migration program policy changes**

In April 2017, the Commonwealth Government announced numerous changes to skilled migration programs. Included in these changes was the replacement of the *Consolidated skilled occupation list* and the *Skilled occupation list* with the *Short term skilled occupation list* (STSOL), and the *Medium and long-term strategic skills list* (MLTSSL). This resulted in the removal of around 200 occupations from the skilled migration lists. Additional caveats were also placed on a further 59 occupations.

Impacts of these changes affected the SPOL process for the first time in 2019 through the OPI process. Migration visa grants, awarded prior to the changes continue to be counted even where they are no longer valid under the new skill migration policy settings. These visa grants will continue to be closely monitored by the Department to better understand ramifications for migration supply into occupations in the State.

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<sup>15</sup> ‘Carpenter’ and ‘joiner’ have their own ANZSCO codes and exist as separate trades in other states.

## APPENDIX 3

### SPOL 2019 questionnaire

#### 1 Do you agree with the draft rating for this occupation?

- a Yes
- b No

- If “Yes”, the following questions are optional. Please click ‘Save and Exit’ to exit questionnaire, or ‘Continue’ to go to the next question.
- If “No” please click ‘Continue’ to proceed to the next question.

#### 2 Please detail your reasoning for your response to the previous question, with a particular focus on issues experienced by employers in your industry sector(s).

- a Consultations have identified issues affecting this occupation.
  - b Consultations have confirmed there are no issues affecting this occupation.
  - c The rating is broadly correct. I wish to provide some further (optional) information.
- Any references to ‘unmet demand’, ‘high demand’ and/or ‘skills shortages’, must be quantified within the context of available labour market data.
  - The breadth and extent of any issues should be described where relevant. For example, what specialties within the occupation and/or geographic-specific boundaries, are affected?
  - Issues such as unemployment and/or retrenchments should also be reported where relevant.
  - Any references to legislation, regulations, licensing and/or ‘technological’ changes should detail what change has occurred and what substantive impacts are expected that would require either changes to curriculum or an increase in training effort.
  - Provide guidance in your response as to how the training council position was reached, including citations for any evidence quoted.

#### 3 What strategies do you propose to address the issues you raise in the previous question?

- a An increase in training effort is required.
  - b Some other strategy, such as a change to existing curriculum or an industry-led project is required.
- Any references to increased training effort must be quantified within the context of available labour market demand and supply data.
  - Where applicable, provide details about current or proposed industry-led activities to address the stated issues, particularly where they relate to attraction and retention, geographic isolation or industry experience.
  - Where applicable, provide details of any curriculum issues raised in consultations, including whether current post-school education and training is meeting the expectations of employers.
  - Outline whether any preferred pathways have been identified. For example, highlight courses employers prefer new workers to have completed, or if there is a preference for employment-based versus institutional training, or higher education versus VET.

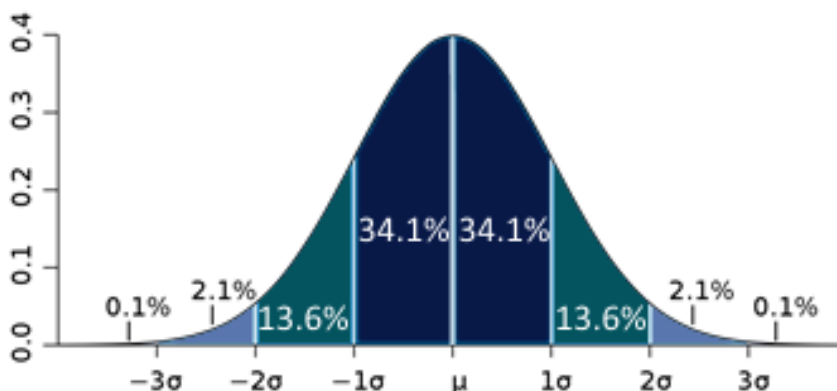
## APPENDIX 4

### A note on standard deviations

Standard deviation is the most commonly used measure of the spread of values in a distribution, and refers to the extent by which scores in a distribution differ from the mean, or overall average, of those scores.

For a normal distribution of data as shown in the following example graph, approximately 68% of scores (or data points) lie within one standard deviation of the mean, 95% lie within two standard deviations, and 99% lie within three standard deviations.

Figure 1: Example of a normal distribution curve



As an example, the occupation civil engineer had an employment level of 2,523 in 2011, which is a value greater than the mean employment level for all occupations (806). Using traditional standard deviation calculations, this value represents 0.8 standard deviations above the mean (or a z-score of 0.8). This places the employment level of civil engineers in Western Australia firmly within the dark blue area of the bell curve above (indicated), along with 68% of all other occupations.

The advantage of using standard deviations in this way is that it allows a comparison across all data indicators used for SPOL, each of which represent different datasets and would not otherwise be comparable.

The z-score for each indicator can be weighted and summed to determine OPI values for each occupation.

## APPENDIX 5

### Statistical supply and demand elements (PLDOS and FLDOS)

#### Background

The market OPI figure incorporates two major elements relating to the interaction of labour demand and supply factors:

- past labour demand or supply (PLDOS); and
- Future labour demand or supply (FLDOS).

To calculate these two new indicators, the following data is collected and sorted.

#### For demand

- ABS Census 2011 levels of employment (ANZSCO six digit)
- ABS Census 2016 levels of employment (ANZSCO six digit)
- ABS Labour Force Survey, Australia, Detailed, Quarterly, 6291.0.55.003 (ANZSCO three digit)
- ABS Labour Force Survey, Australia, Summary, 6202.0
- Monash University, Centre of the Economics of Education and Training (CEET) Net Replacement Rate by Occupation (ANZSCO three digit)
- Victoria University, Centre of Policy Studies (CoPS – formerly at Monash University) Forecast of Occupation Employment Growth (ANZSCO three Digit) (FLDOS only)

#### For supply

- Higher education domestic student completions for post graduate and undergraduate courses for the five year period 20012-2016 (by ASCED – Field of Education)
- Vocational education and training (VET) qualifications awarded by course between 2012–2013
- Total VET activity (TVA) qualifications awarded by course between 2014–2016
- Skilled migration arrivals to Western Australia between 2012 – 2016 (primary applicants only)
- Arrivals to WA of Australian permanent residents/citizens who have spent 12 months or more overseas<sup>16</sup>
- Departures of permanent residents/citizens and select long term visitors where WA has been the primary place of residence<sup>17</sup>

Administratively sourced supply side data has a time lag prior to publication from the various responsible agencies. Data from 2017 and 2018 was not fully available at the time of calculations.

#### Demand considerations

Labour market demand refers to the ability of the market to both maintain and increase the number of persons employed at any given time. In other words, we are interested in both

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<sup>16</sup> Following cessation of data collected by the Commonwealth Government (through departure cards), this dataset will be phased out between SPOL2018 and 2022.

<sup>17</sup> Following cessation of data collected by the Commonwealth Government (through departure cards), this dataset will be phased out between SPOL2018 and 2022.

the net change (growth or decline) that occupations experience, as well as the net replacement (sometimes referred to as ‘turnover’ or ‘churn’) needed to maintain stable employment on account of persons moving in and out of the occupation.

An indicative demand indicator at the six digit ANZSCO level is determined by:

- calculating the employment difference between the two points in time; and
- adding the net replacement requirement for the same time period.

Census data provides ANZSCO six digit data, however is not timely (released every five years) and does suffer from a level of non-sample error due to the self-nomination of occupational information by respondents. For this reason, three digit labour force survey data is used and proportioned out to the six digit level using census data. This allows for demand to be calculated more accurately on an annual basis, particularly outside census release years. The employment differential is then adjusted upwards on the basis of CEET net replacement rate data, to account for staff turnover occurring within the same time period<sup>18</sup>.

The combined figure represent indicative demand for a particular occupation within a time period – the last five years for PLDOS (aligning with census periods) and the next four years for FLDOS (aligning with the budget cycle).

The calculation is further moderated to account for the strength of an occupation’s connection to education or training pathways. That is, it is reduced according to the proportion of workers in the occupation that have no qualifications or too low level qualifications according to the ABS’ notional ‘required’ skill level for the occupation<sup>19</sup>.

#### **Example**

Bricklayer is an ABS skill level three occupation, notionally requiring a Certificate IV or Certificate III with two years’ experience (inclusive of apprenticeship). The 2016 Census results showed that 40% of all bricklayers held either no post-school qualifications or held a Certificate I or II only. All else being equal, it is assumed that any growth or turnover required for this occupation will result in demand for a similar proportional breakdown. The indicative demand number is therefore adjusted down by 40% to account for the structural characteristics of this occupation.

These adjustments reflect the SPOL’s primary purpose of prioritising formal education and training pathways<sup>20</sup>. The ABS’ defined skill level for any occupation may be altered where there is clear evidence the pathway to entry has significantly changed<sup>21</sup>.

<sup>18</sup> Labour force data at the ANZSCO minor group (three digit) level and by state has a high volatility at any given time. This volatility is softened somewhat by the application of a four quarter moving average, however strong shifts on an annual and quarterly basis can still occur. It is due to this that the PLDOS takes into account a longer time five year time period for an indicative net change in employment demand, rather than focusing on any short term shifts could equally be noise in the raw data rather than a meaningful employment estimate.

<sup>19</sup> This assumes that the specific labour market for each occupation is currently operating at a level of equilibrium, in terms of demand for skills and qualifications, and that there are no policy or market-based drivers for change.

<sup>20</sup> Field of education data was also considered as a basis for moderating demand measures, as was the concept of over qualification, but in both cases data quality and capture issues precluded their use for such a purpose.

<sup>21</sup> The need to do so is becoming more prevalent as the time elapsed since a major review of ANZSCO increases.

At the end of this calculation, a positive number indicates demand for labour that has formal education and training has grown, while a negative number indicates an overall decline or the occupation shrinking in size.

### **Supply considerations**

Labour market supply in the SPOL context refers to the number of persons completing relevant qualifications for each occupation. While factors such as an individual's workplace experience do impact supply, it is difficult to measure these impacts, particularly across different occupations at the macro level. Those completing education and training qualifications, on the other hand, can be quantified and measured easily and reliably.

Raw supply data in the form of counts from official Government sources is collated and summed to provide a relatively accurate picture of new skilled labour entering the market for different occupations. This data spans the same five year period as the demand-side data<sup>22</sup>.

Though official counts are used, it is acknowledged there are limitations to the data. In particular:

- not all people completing a qualification will move to an occupation immediately but may for example, move into postgraduate study;
- there is not a one to one relationship between qualifications and occupations. In areas such as business and ICT, qualification completion data is proportioned out to ANZSCOs at the four, three or two digit ANZSCO levels where appropriate; and
- it is not possible to accurately estimate interstate migration at an occupational level.

Higher education results are provided by the Commonwealth Government Department of Education – the appointed agency responsible for collecting national higher education data. Data is provided to the Department of Training and Workforce Development according to the Australian Standard Classification of Education (ASCED) field of education and then coded to ANZSCO by the Department. Only completions by domestic students from the five Western Australian based universities are included. Overseas students who study in WA are excluded from counts.

The VET data incorporated into the SPOL includes all qualifications awarded over the five year historical window of the PLDOS. The VET data includes all qualifications awarded and makes distinction between:

- both employment and institution based training delivery;
- public and privately funded delivery; and
- public (TAFE) and private provider delivery.

However, courses that are identified as 'pre-entry' that are designed to lead to further training rather than employment (ie pre-apprenticeships) are not included in the

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<sup>22</sup> The DTWD is unable to publish counts of higher education completions, migration outcomes or total VET activity data. Those wishing to access such data should contact the relevant Commonwealth agency.



calculations<sup>23</sup>. Adult and community education courses are also not counted in these figures as they do not relate to training for a labour market outcome to an occupation.

Occupational outcomes (as defined by ANZSCO) are assigned at the course level for all courses and qualifications. These are the same occupational mappings used for funding and reporting of training delivery. Total VET activity (TVA) data from 2014 onwards is included. Western Australia VET enrolment data is used for the years prior to 2014.

Migration data is provided by the Commonwealth Government Department of Home Affairs (DHA). As part of their data services, the DHA codes visa and migration outcomes by six digit ANZSCO, and no alterations were required nor undertaken by the Department. Data incorporated includes all long term and permanent skilled visas granted in addition to the long term temporary skills shortage (TSS) visa sub-class<sup>24</sup>.

Data on secondary visa holders (partners and dependents of primary visa holders) is not available and therefore cannot be included in SPOL calculations. Data on those arriving under family, humanitarian or special eligibility streams is excluded. Data on long-term arrivals and departures no longer provides an accurate picture at the occupational level calculations following procedural changes applied by DHA to arrivals and departure processes for international travellers on 1 July 2017. This data is gradually being phased out of SPOL calculations.

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<sup>23</sup> This also includes the majority of training that occurs through VET delivery for secondary students.

<sup>24</sup> Historically this long term temporary visa was the '457 subclass.' 457 Visa subclass data is still incorporated into the calculations for the appropriate years. Despite the policy shift by the Commonwealth Government this did not cause a data quality issue or a break in the series for SPOL purposes.

## **APPENDIX 6**

### **Examples of other major data sources**

#### **Australian Bureau of Statistics**

- Census 2006, 2011 and 2016 data
- Monthly and quarterly labour force data
- State final demand / Gross state product data
- Average weekly earnings data
- Various other economic and labour market data sets used as supporting evidence

#### **Department of Training and Workforce Development**

- AVETMISS enrolment and delivery data
- Training record system (TRS) data
- EVAC submission information
- Total VET activity (TVA) data
- Training package implementation and advice (as provided by industry training councils)
- Regional workforce development plan information

#### **Industry training councils**

- SPOL questionnaire returns and related input

#### **Commonwealth Government Department of Education**

- Higher education data

#### **Commonwealth Government Department of Home Affairs**

- Permanent skilled migration stream data
- Long term temporary skills shortage visa data
- Note: Changes to the temporary skilled visa stream occurred after the data cut off for this SPOL iteration. Data reflecting changes to this part of the skilled migration program will be introduced for SPOL 2019
- Quarterly and annual migration reports

#### **Commonwealth Government Department of Employment, Skills, Small and Family Business**

- Survey of employers who have recently advertised (SERA)
- Survey of employers' recruitment experiences (SERE)
- Internet vacancy index (IVI)
- Employment projection data

## **Commonwealth Government Department of Industry, Innovation and Science**

- Australian apprenticeships - National skills needs list

## **Victoria University, CoPS**

- Computable general equilibrium (CGE) employment forecast data

## **Monash University, CEET**

- Net replacement rate data
- Job openings data

## **State and Commonwealth Government Treasury economic / labour market forecasts**

### **Western Australia Treasury Economic Notes**

#### **Deloitte Access Economics**

- Business outlook forecast data
- Investment monitor data

#### **Chamber of Minerals and Energy (CME)**

- State growth outlook
- Western Australian resource sector outlook

#### **Housing Industry Forecasting Group (HIFG)**

- Report on forecast dwelling commencements in Western Australia

#### **National Institute of Labour Studies (NILS)**

- A system for monitoring shortages and surpluses in the market for skills

\* Please note this list is not necessarily comprehensive, and may change over time. Numerous other one-off occupational and/or sector specific publications, studies, articles and reports are also used for validation purposes as required and where available.

## APPENDIX 7

### Secondary SPOL indicators

*Note: All examples provided in this appendix are hypothetical and do not necessarily reflect current labour market realities for Western Australia.*

Introduced as part of the review into the SPOL methodology prior to 2018, occupations may be flagged with a range of labour market issue indicators where there is compelling reasons and supporting evidence. These indicators do not currently on their own affect the final rating awarded to each occupation but identify other issues where verifiable labour market concerns exist. The majority of these indicators are in line with International Labour Organisation (ILO) definitions. This system allows for greater flexibility for Government and policy makers into the future for determining priorities or policy responses at an occupational level.

It is envisioned these secondary indicators will play a greater importance in the coming years. Any of the following secondary indicators may be promoted to a primary indicator in following years allowing them to influence future SPOL ratings of occupations.

Further details regarding these secondary indicators and results by occupation are available upon request.

#### **High demand**

High demand is where an abnormal positive rate of employment growth is occurring. Despite this rapid (and at times sudden) increase in employment, evidence suggests increased requirements for the quantum of labour is being met by the market at this time. Labour supply (including skilled supply via formal training and education) is keeping pace with the increases in demand. The rate of employment opportunity for new labour market entrants in these occupations should be improved.

Judgements are made by the Department's ELMA team on a case by case basis using both quantitative and qualitative inputs. Owing to data paucity at the detailed level for the labour force survey, the determination is not linked to a specific employment growth rate or level.

#### **Example**

Data from the ABS labour force survey and qualitative commentary received from industry suggest employment growth rates have increased significantly in recent years for Bakers (ANZSCO 351111). Administrative data from the VET sector shows the rate of qualifications being awarded in relevant courses has also increased over this same period to match the employment increase.

Given there is no reported shortage of bakers, the determination is made that the occupation is not experiencing unmet demand as the needs of industry are being met by a corresponding increase in training delivery. However, it is noted that the occupation has experienced an increase above historical levels in growth in recent years.

Following occupational analysis conducted by the Department in conjunction with the training council network, there were three occupations flagged as experiencing high demand.

### **Adequate supply**

Adequately supplied occupations are those where the administrative data suggests formal education and training through the VET and higher education sectors, plus additions through skilled migration pathways is readily meeting industry needs for new skilled entrants.

Judgements are made by the Department's ELMA team on a case by case basis using both quantitative and qualitative inputs. Owing to data paucity at the detailed level for the labour force survey, the determination is not linked to a specific rate of supply against quantitative employment data as a proxy for labour demand.

*Note: This indicator is not necessarily in conflict with the high demand secondary indicator.*

Following occupational analysis conducted by the Department, there were 328 occupations flagged as experiencing adequate supply.

### **Oversupply**

Over supplied occupations are those where the administrative data suggests formal education and training through the VET and higher education sectors, plus additions through skilled migration pathways is abundantly meeting industry needs for new skilled entrants. This will likely lead to an on the ground increase in competition for limited job vacancies among greater number of trained applicants. Though formal education and training pathways may be well attended, this indicator does not necessarily mean a reduction or elimination of training is required. Oversupplied occupations may still appear as State priorities for other non-market driven factors, though in the majority of cases will be limited to State priority 3 ratings under the current methodology.

Judgements are made by the Department's ELMA team on a case by case basis using quantitative inputs.

*Note: This indicator is not necessarily in conflict with the high demand secondary indicator. By default, all occupations that are oversupplied also meet the requirements for the adequate supply indicator, though not all adequately supplied occupations are necessarily oversupplied with skilled labour.*

Following occupational analysis conducted by the Department, there were 214 occupations flagged as experiencing oversupply.

### **Sub-occupation Issues**

Driven almost entirely by qualitative commentary from industry, this indicator highlights where market or non-market issues exist but only for a specialisation or a distinct part of an occupation as defined by its ANZSCO code. Despite the established and identified issue, in these instances a priority rating cannot be awarded through the standard

business rules since it would apply to the entirety of the ANZSCO and would not accurately reflect the majority share of the occupation. Further details of the extent of the issue can be garnered from the individual SPOL occupation profile report for the given occupation at [dtwd.wa.gov.au/workforce-development](http://dtwd.wa.gov.au/workforce-development).

In these cases a more bespoke policy response is required with specific needs to be addressed on a case by case basis.

### **Example**

Industry intelligence suggests that the occupation of Pastrycook (ANZSCO 351112) has diverged into two distinct streams; the first focusing on mass manufacture of baked goods, the second for those that are employed in high end hospitality to prepare desserts and other baked dishes to be served in restaurants and hotels. Despite working in the same occupation, each stream is trained through distinct VET courses and the ability for qualified workers to crossover is almost impossible given the diverse differences in skill sets and industry expectations.

Administrative VET data shows a historical trend for the vast majority of training occurring through the first stream for the food manufacturing sector, while training for the pathway to high end hospitality is minimal leading to a case for unmet demand. Confusion among students about the presence of multiple pathways for entering training has also been raised as part of industry intelligence.

The occupation as a whole cannot receive the unmet demand indicator as the shortages do not encompass the entire occupation (and the delivery of training to the first stream may suggest a degree of over subscription in training for market needs). This indicator and the background occupation report outlines the issues for policy makers to address.

Following occupational analysis conducted by the Department in conjunction with the training council network, there were 21 occupations flagged as experiencing sub-occupational issues.

### **Skills gap**

A skills gap occurs where the breadth and/or depth of skills held by the workforce is different from that required to adequately perform the job at the given time. These gaps do not constitute a requirement for the replacement of existing workers. Gaps can arise over time due to technological or innovative shifts that organically move through industry. Training is usually, but not always, addressed on the job with existing workers and can be either formal or informal depending on the need.

### **Example**

Feedback from industry suggests that the occupation of Civil Engineering Draftsperson (ANZSCO 312211) has been impacted with the rollout of a new software package, which has grown in popularity among a number of major engineering design firms. Though existing workers are slowly learning how to use the new software on the job, current students may be at disadvantage if training courses are not updated to reflect changing industry norms. Despite this disruption there is no sign of a shortage of skilled workers available.

Following occupational analysis conducted by the Department in conjunction with the training council network, there were 10 occupations flagged as experiencing a skills gap.

### **Vertical mismatch**

A vertical mismatch occurs where the level of post school qualification requirements applicants are receiving prior to entry in to the occupation is above or below that expected from employers or industry as a whole. This situation will generally require a bespoke, case by case policy response to realign this mismatch to meet industry requirements, including the development of alternative training courses where appropriate.

### **Example**

The occupation of Child Care Worker (ANZSCO 421111) has two levels of VET courses attached to it for funding and reporting purposes. One is at a Certificate III level and the other is at a Diploma level. In both cases these courses are rated as being suitable for labour market entry for those persons that complete them, and both meet regulatory requirements for the industry. Recent industry intelligence however suggests that the majority of employers are only seeking applicants that hold the Diploma level qualification and are viewing the Certificate III as unsuitable.

Following occupational analysis conducted by the Department in conjunction with the training council network, there were 19 occupations flagged as experiencing vertical mismatch issues.

### **Horizontal mismatch**

A horizontal mismatch occurs where the workforce has the appropriate level of qualifications, however the type/field of education or skills held by the workforce is inappropriate for the job.

### **Example**

The occupation of Massage Therapists (ANZSCO 411611) encompasses two broad industry streams, one focused on medical remedial massage while the other for relaxation/leisure purposes. VET pathways exist for both and despite leading to the same occupation the separate courses are designed to meet only the needs of each industry.

Industry intelligence suggests that there are a good number of people completing massage therapy courses through the VET sector, however delivery of the

relaxation/leisure industry focused courses significantly outpaces that of medical remedial massage. The majority of labour market demand is currently coming from the health industry and those completing the recreational/leisurely courses are being viewed as unsuitable for work in the health industry.

Following occupational analysis conducted by the Department in conjunction with the training council network, there were 10 occupations flagged as experiencing horizontal mismatch issues.

### **Over education or under education**

Over or under education occurs when workers have more or less years of formal education than the job requires or the employer desires.

#### **Example**

Feedback from industry suggests that recent graduates attempting to enter workforce as Statisticians (ANZSCO 224113), have the correct formal training however the amount of time it takes to complete the appropriate degree is too long. According to industry the length of the standard degree through local institutions is two years too long, with the additional time spent in formal study not materially improving the calibre of graduates entering the workforce.

Following occupational analysis conducted by the Department in conjunction with the training council network, there were two occupations flagged as experiencing over education issues, and 13 experiencing under education.

### **Over qualification or under qualification**

Over or under qualification exists when workers hold suitable qualifications in terms of the field of education but at a study level significantly over or under the level required.

Over qualification is sometimes referred to as 'crowding out'.

#### **Example**

Feedback from industry suggests the occupation of Electrical Engineering Draftspersons (ANZSCO 312311) is experiencing the impact of a broader downturn across the engineering design sector. Engineering firms hiring draftspersons have a wide selection of applicants including university qualified and experienced engineering professionals that are willing to take on draftsperson or associate level work for the sake of gaining employment in the weaker jobs environment. This is diminishing the ability for VET qualified draftspersons to compete for jobs as they are going up against more qualified workers.

Following occupational analysis conducted by the Department in conjunction with the training council network, there were zero occupations flagged as experiencing over qualification issues, and 16 experiencing under qualification.



## **Skills obsolescence**

Skills obsolescence is where the workforce holds skills that were previously used in a job but are no longer required, to the extent where employment is likely to be affected. These workers may have gone through formal training and hold formal qualifications, however over the passage of time these skills and qualifications are no longer relevant to the modern role. The development of a bridging course or the upskilling for existing workers through formal training may be required to address the issues.

### **Example**

The occupation of Metal Machinist (First Class) (ANZSCO 323214) has historically been using manual processes but over time has almost completely switched to the use of Computer Numerical Control (CNC) machinery for the same kind of work. Though the occupation of Metal Machinist remains the same, the role itself has so fundamentally changed that a proportion of older workers require formal re-training to remain in the occupation.

Following occupational analysis conducted by the Department in conjunction with the training council network, there were three occupations flagged as experiencing skills obsolescence issues.

## **Government policy**

The government policy indicator highlights occupations where there is a concerted drive by the government of the day (State or Commonwealth) to increase employment and/or training for a specific occupation both directly where there are significant stimulus programs to specific industries, or outside of market drivers such as simple government aspirations. This does include impacts to the labour market from broader government projects or programs, but only where the impact is significant, sustained and of Statewide impact.

Following occupational analysis conducted by the Department in conjunction with the training council network, there were 55 occupations flagged as being currently influenced by government policy.

## **Experience**

Experienced based issues exist where employers are seeking a workforce that already has an existing workplace history. This is more likely to occur during periods of weaker labour markets where employers have greater choice of applicants and there are larger pools of applicants. This issue can also occur where employers opt to narrow their potential labour pool by choice to fill roles they identify as being senior and/or supervisory in nature. Experience is in the majority of cases measured subjectively by individual employers and may relate to a job applicant's length of time in the industry or a work history that includes specific tasks, roles or projects.

In labour market public discourse, industry and media usually labels experienced based issues as skills shortages. This is not necessarily the case and a formal training based

solution is in most cases not the answer. More broadly, education, training sectors and the government are unable to provide post-training workplace experience to a workforce.

The highlighting of experienced based issues by industry is also a useful flag for areas where workforce development practices are not necessarily present at the industry level.

### **Example**

Feedback from industry and a public media strategy by its association throughout the year has promoted the perception that there is a skills shortage for Civil Engineers (ANZSCO 233211). It is also feared this situation will worsen as additional resource sector projects are greenlit for development over the coming months. Further investigations show employers in the resources sector are for the most part seeking applicants with a minimum of 15 years of prior mining experience to be members of emerging design and implementation teams attached to these proposed projects. Additional selection criteria including the need for applicants to have worked in the same mineral deposits are also noted as commonplace. Employers are receiving qualified applicants when advertising but they do not meet all the working history requirements that employers are after at this time.

Government nor the education/training sectors simply through increasing training numbers and pushing additional labour supply into the market can assist industry meet their selection criteria to fill vacancies. An industry based strategy is likely required in such cases.

Following occupational analysis conducted by the Department in conjunction with the training council network, there were 10 occupations flagged as experiencing experienced based issues.

### **Watch list**

The watch list highlights occupations where evidence suggests developments are expected over the coming year, though the outcome and impact of which are still unknown. Occupations flagged will be monitored over the year ahead of the next SPOL process.

Following occupational analysis conducted by the Department in conjunction with the training council network, there were 131 occupations flagged to be added to the watch list for SPOL 2020.



**Department of Training and Workforce Development**

**STATE PRIORITY OCCUPATION LIST**

Scope, methodology and sources

August 2019

[dtwd.wa.gov.au](http://dtwd.wa.gov.au)