State priority occupation list

Methodology paper

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INTRODUCTION

This paper details the process undertaken to create Western Australia's *State priority occupation list* (SPOL).

The SPOL is produced each year by the State Workforce Planning (SWP) branch of the Department of Training and Workforce Development (the Department) in consultation with key stakeholders, including the State's industry training councils, to inform and guide workforce planning and development for Western Australia.

This paper and the detailed occupational profiles for 360 occupational groups (at the Australian Bureau of Statistics' (ABS') four-digit, ANZSCO level[1]) are available from the Department's website at dtwd.wa.gov.au/spol. For SPOL-related queries, please email info@dtwd.wa.gov.au with the subject as follows – "SPOL — *<insert title of your query>*".

BACKGROUND

The SPOL's primary purpose is to inform and guide workforce planning and development in Western Australia. It is provides a key source of guidance for a number of important policy areas including the purchase of publicly-funded training in Western Australia, and informing the development of the State-nominated migration program (SNMP), to help target those occupations in genuine need and where local workers cannot fill such jobs[2].

The list, and related background evidence, also forms the basis for WA Government submissions, migration policy advocacy to the Commonwealth, and various other priorities, as well as general workforce development planning and policy.

The underpinning methodology for developing the SPOL therefore incorporates a diverse range of data and intelligence sources in order to ensure it is robust, defendable and fit for a broad range of purposes.

The methodology in its current format was originally designed during 2009-10 and is internally reviewed every year.

Though smaller changes are applied annually, more significant reviews tend to take place the year of an Australian Bureau of Statistics (ABS) Census release. These major reviews have increased the outputs of the product to meet the needs of users, and provide a more detailed picture of the occupational side of WA's labour market.

In addition, there have been several external reviews undertaken by Western Australian Treasury, Curtin University and the ACT Government under the auspices of the National Training System Commonwealth Own Purpose Expense (NTS COPE).

These reviews have helped ensure that the SPOL has remained robust and fit for purpose over a significant period of time.

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[1] The Australian and New Zealand Standard Classification of Occupations (ANZSCO) is a skill-based classification commonly used to categorise occupations in Australia – for more information see: How ANZSCO works | Australian Bureau of Statistics (abs.gov.au)
[2] For further information on the SNMP, visit migration.wa.gov.au.

A caution regarding short-term 'skills shortages'

The SPOL takes into account a range of statistical indicators and qualitative feedback from employers and other key stakeholders. However, it should not be seen solely as a 'skills shortage' list. The dynamic and complex nature of the Western Australian economy requires that minimum level of effort must be maintained to ensure supply to cover routine ebbs and flows of the State's labour market.

There are also other key considerations which are investigated in the development of the SPOL; human capital elements, the role certain occupations play across the broader economy and community (see also Principal Occupations section on page 10), and/or where there may be changes to entry pathways or workforce demographics.

Furthermore, given the SPOL is designed with a medium-to-longer-term focus, primarily due to required lead times for formal education, training and migration, focusing too much on short-term, cyclical shortages could potentially lead to perverse outcomes, such as encouraging students into training in areas that then are experiencing downturns by the time they finish their studies and look to enter the job market.

It is important also to note that, while the SPOL's many data sources include leading indicators and forecasts of occupational employment up to four years ahead, its broader methodology also recognises that none of these inputs are a 'crystal ball' for predicting future workforce needs, particularly given the SPOL's very granular occupational focus.

There are simply too many factors influencing demand and supply for labour to properly account for all elements of the economy even in routine times, notwithstanding unforeseen 'black swan' events as the past decade or so has shown (via the downturns and subsequent emergency government actions seen in response to the Global Financial Crisis, and more recently, the COVID-19 global pandemic).

Other considerations to note

Analysis and modelling for the SPOL are undertaken at a State-wide level, rather than any single employer, industry or region. Though specific issues may arise at these more granular levels, the interconnected nature of the economy means that for the most part, they will almost certainly be offset or mitigated by events in other sectors of the economy.

The SPOL more or less focuses on where this is not the case, and on issues spread across industries and/or regions, ultimately requiring State-wide responses.

It is important to note that the SPOL must prioritise areas of greatest need from across all industries in a consistent manner, and that an occupation's priority status (or otherwise) is not an assessment of any intrinsic 'worthiness' of that occupation.

'Non-priority' occupations are not considered of limited or lesser value, but merely that there are no current supply, demand or other non-market issues reported that require some form of intervention.

The SPOL's methodology and main uses inherently recognise that it is not the sole influence on student outcomes, which are frequently influenced by many other factors external to any influences from each year's SPOL.

These can include:

- the quality of training delivery and curriculum;
- the calibre / demographic background of students entering the VET sector;
- student (and sometime parental) attitudes towards occupational areas (and similarly, attitudes towards studying at university or VET);
- variable job market openings at any given time (including employer perceptions and attitudes towards VET students); and
- Commonwealth Government incentives and inducements that are training-related; and many others.

This does not mean the SPOL is not a key mechanism for incentivising students into areas of skilling need in WA.

Indeed in a seminal report *Getting Skills Right: Australia*[3] the Organisation for Economic Co-operation and Development (OECD) recognised that:

"The use of SAA (Skills Assessment and Anticipation) information to mitigate skill imbalances spans multiple policy domains (education, migration, employment) in Australia. In education policy, SAA information is used to inform potential learners about the labour market, to update and develop new qualifications, to decide which courses to fund, and to steer students towards skills and qualifications that have good labour market prospects in vocational education and training (VET) and adult training."

The Australian Productivity Commission[4] has also separately noted that:

"Improved use of skills demand forecasts for VET service planning and access — there is a sound rationale for governments' involvement in service planning. Given their access to labour market information, governments are relatively well-placed to estimate current and future training needs as derived from industries' skill needs."

What does the SPOL influence?

The SPOL is primarily used to influence delivery in the State's VET sector; through delivery scope, fee setting, and the purchasing of training from registered training organisations (RTOs) who are private providers of VET training.

In practice, this means it is used to varying degrees to influence the following planning instruments, policies and programs.

1. **WA State Government planning for vocational education and training**
   - The annually produced *State Training Plan;*
   - The *Priority industry qualification list* (PIQL) – Jobs and Skills WA;
   - Training resource allocation;

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[3] OECD (2018), *Getting Skills Right: Australia*, OECD Publishing, Paris. oecd-ilibrary.org/employment/getting-skills-right-australia_9789264303539-en
[4] Productivity Commission (20120), *National Agreement for Skills and Workforce Development Review*, Study Report, Canberra. *https://www.pc.gov.au/inquiries/completed/skills-workforce-agreement/report/skills-workforce-agreement.docx*

- Labour market evidence base for the spending of over half a billion dollars per annum in public funding of WA's VET sector;

2. **Jobs and Skills WA employer incentive scheme (EIS)**
   - Wage and fee subsidies for employers of apprentices in priority occupations;

3. **National skills priority setting**
   - Basis for WA labour market priorities put to the Commonwealth Government, including regarding temporary and permanent skilled migration; and

4. **Other projects and reports/briefings on an as needed basis**
   - Including informing policy and programs that are designed and announced in the intervening period.

Information for each of the above areas is outside the scope of this paper.

More information can be found on the Department's website at dtwd.wa.gov.au/spol or by contacting the Department directly via email to info@dtwd.wa.gov.au.

DATA DRIVEN OCCUPATIONAL ANALYSIS

The SPOL draws its quantitative analysis from the WAJET data repository. Designed and maintained by the Department, the repository provides a consolidated evidence base for decision making from a holistic suite of relevant and reliable labour market information.

As a living database that is continually updated, the WAJET data repository is flexible and responsive to incorporate new data as it becomes available, or when economic circumstances change.

The WAJET has been designed according to the following five key tenets.
1   **Responsive** – it is updated regularly with new data and intelligence.
2   **Flexible** – it allows analysis and has an application to a wide range of policy and reporting purposes across government.
3   **Consistent** in how any data sources are incorporated, analysed and reported.
4   **Robust** – as it uses a combination of traditional (and proven) and innovative statistics and techniques in a transparent way.
5   **Frequent** – it ensures the latest evidence is available at any given time to various policy and program areas who may wish to update their own evidence base(s) for a new / refreshed evidence round to drive decision making.

Indeed, consistent with the second point above, WAJET has many key uses beyond the SPOL.

The holistic occupational information gathered through the WAJET is very useful beyond VET training prioritisation such as for career advice; for updating and developing new qualifications, specific workforce projects and policies, informing migration requirements, and many other uses.

For the determination of SPOL priority ratings, data in the WAJET is organised according to two separate datasets.

Modified z-scores[5] are calculated for each variable in each dataset, weighted and summed to calculate the following for each occupation, for a:

- **_Market index score_** – includes data reflecting cyclical, market factors that have the capacity to change in the short term based on prevailing economic conditions. This broad category is broken down further for end users between short and long-term demand indicators, supply indicators and forecasts; and a

- **_Policy index score_** – includes data items that reflect more policy and structural elements of occupations; demographic characteristics, lead times, qualification coverage, rates of return on investment, as well as adherence to desirable policy characteristics, such as STEM, or the Western Australian government's diversification agenda.

Data is weighted via the use of a data modelling tool – the _WAJET Occupations Matrix Visualiser_ – which allows the plotting of occupations across the two different vectors according to different weightings for each variable. The final index scores for each occupation are plotted on the matrix to determine its potential priority rating.

An example of the visualiser tool, illustrating its application for the occupation group aged and disbled carers, is provided in Figure 1.

The final weightings applied for each element are provided on the page following.

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[5] Median absolute deviations are used to calculate the modified z-scores, which measure differences from the mean or, in the case of flow variables, deviation from zero.

Figure 1: Example of the WAJET Matrix Visualisation
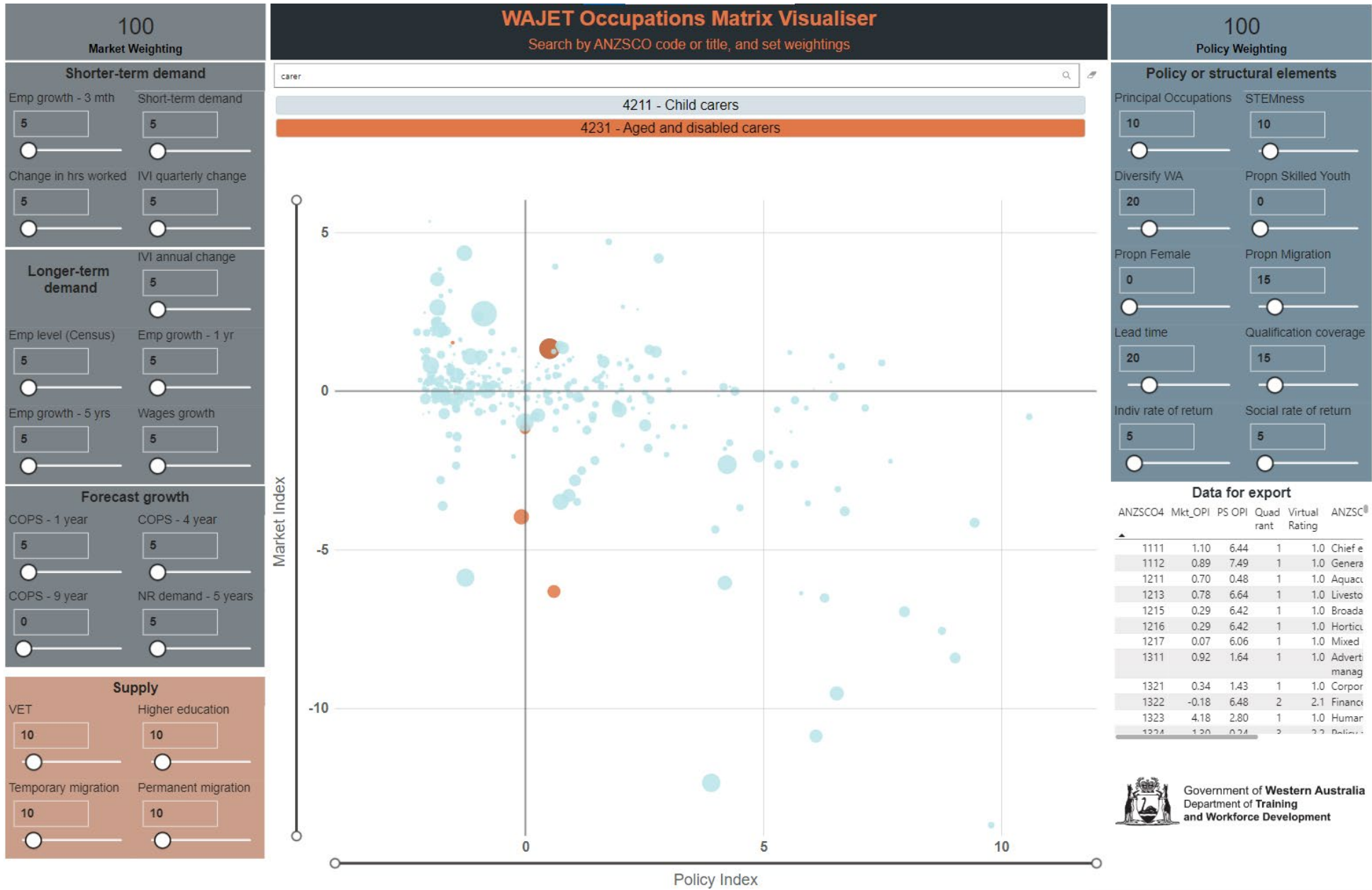
Twenty-five data items from the WAJET data repository are currently available within the WAJET matrix visualiser for SPOL consideration. Two policy-focused items, relating to youth and female participation; and one market-based item, Victoria University's Centre of Policy Studies (CoPS) nine-year employment forecasts, are included in the matrix for use in other projects, but are not currently used for SPOL.

The mix of market index data items focuses on shorter and longer term backward and forward looking jobs demand. The four-year forecast window is in line with WA Treasury forecasts for the WA State Budget. The volatility of the three and 12-month indicators is balanced by more stable five-year historical indicators. The supply of skilled workers similarly ensures that existing activity to alleviate occupational demand, including any skills shortages, are accounted for. The final index weightings are listed in Table 1.

Table 1: WAJET Matrix Weightings

Market index weightings	100.00%
Shorter term demand (last three months) • Employment growth • Change in hours worked • Internet Vacancy index change	20.00%
Longer term demand • Employment level (Census) • Employment growth – last 12 months, five years • Internet Vacancy Index change – last 12 months	25.00%
Forecast demand • CoPS VUEF employment growth forecasts – 12 months, four years • Centre for the Economics of Education and Training (CEET) net replacement (workforce churn) estimates – four years	15.00%
Skilled supply • VET, university, permanent and temporary skilled migration — last five years	40.00%
Structural index weightings	**100.00%**
Proportion of employment in principal occupations	10.00%
Alignment of required skills to STEM	10.00%
Alignment to the WA Government's diversification agenda	20.00%
Migration dependency over past five years	15.00%
Lead time	20.00%
Proportion of workforce with qualifications	15.00%
Rate of return on investment • Individual • Social	10.00%

Further information on the indicators used for the market and structural indices can be obtained by contacting the Department directly via email to info@dtwd.wa.gov.au.

INDUSTRY CONSULTATION PROCESS

Under section 21(1) (b) of the *Vocational Education and Training Act 1996,* the WA State Training Board (STB) has the power to recognise industry training advisory bodies (ITABs) to provide industry intelligence to the STB and the Department. The ITAB network in WA currently comprises several industry training councils (ITCs) focusing across all the major industry areas in the Western Australian economy[6].

To capture holistic information about current and expected occupation demand for the SPOL, the ITC network are provided the online *WAJET Occupation Advice Survey*, designed to gather feedback on the skill and training needs of industry in Western Australia at the ANZSCO 6-digit level, specifically seeking advice on the following.

• Labour supply and demand for specific occupations; and
• Education and training pathways for occupations, including preferred qualifications, training market issues and future or emerging skill needs.

In addition to the above, the Department also seeks advice from a broad range of industry sources and relevant stakeholders, including WA Regional Development Commissions, and Regional Chambers of Commerce and Industry, via the *WAJET Industry Advice Survey*. This survey focuses on industry workforce development trends and developments, and the training and workforce strategies used (or potentially used) to respond to those trends and developments.

Assessment of WAJET Survey submissions

WAJET Survey submissions are reviewed by the Department's SWP branch and assessed against the following criteria:

Unmet demand

This criterion relates to evidence of current and future unmet demand and supply of a workforce at a State-wide level or across industry within the regions (as an example, for the resources sector in the Pilbara, Kimberley, Goldfields, Southwest, Mid-West).

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'. While there are often isolated cases of employers unable to source workers are not considered, and may simply be related to the specific selection criteria, salary and conditions offered by that recruiting employer – particularly if any other similar employers are not experiencing similar issues hiring for the same occupation.

In itself, such evidence is not compelling enough to define an occupation as experiencing unmet demand at a State-wide occupational level, and further evidence is required. Shortages may also exist within a specific specialisation, but not across an entire occupation. Because the SPOL analysis and outcomes are limited to the ANZSCO classification for public reporting, these

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[6] For more information on WA's State Training Board and Training Council network, see stb.wa.gov.au.

instances will be noted but will not necessarily result in the occupation being classified as experiencing unmet demand.

Evidence should be available to show widespread shortages of suitably skilled workers to fill vacant positions across an entire occupation at the State level, or across industry within the regions.

Non-market factors
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 other supply side requirements (for example, skilled migration) for that occupation.

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."

The existence of non-market factors usually infers change at a legislative or regulatory level which will require additional training for new, but particularly *existing* workers, for the occupation.

They may also be relevant where there is credible evidence of an impending disruption to occupational demand and supply, such as a major resource project which will require key material investment commitments not evident in current market data.

Principal occupations

Despite the comprehensive consultation and statistical modelling undertaken in the construction of the SPOL, not all labour market issues are necessarily clearly identified in the quantitative or qualitative data.

There are occupations, such as child carers, which have an impact across the State's economy, but which are not easily reflected in standard employment or wages data (these occupations typically have pay and conditions that are heavily influenced by some form of government regulations).

Modelling techniques to try and evaluate and assess these broader impacts are still in their infancy and are some years away from being robust enough to incorporate within the macroeconomic statistical models used for the SPOL and WAJET.

Other occupations, such as anaesthetists are low in number but are extremely costly and time-consuming to train. Despite their relatively small number in the total labour pool, the key role they play in the surgical area means any shortage of anaesthetists would be severe, as the flow-on effects of disrupted surgery schedules are quite severe (as the ability for surgeons, nurses and other allied health and hospital support staff to undertake their duties would be compromised, and there is of course an impact on patients). Such occupations also tend to have considerable potential for further impacts across the wider economy and/or within the sector they operate in.

The Department flags such occupations as principal occupations, which can be defined as:

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

These occupations may support employment in other occupations, and/or are linked to the provision of key services to the community.

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

An occupation **will not** be considered as a principal occupation due to:
- seasonal or distinct employment patterns and conditions;
- semi-skilled or unskilled workforce needs (ABS skill level 4 or 5), where formal training is traditionally short in duration (if present at all);
- the result of ongoing staffing attraction and retention issues; or
- difficulty in filling positions.

STRUCTURE OF THE SPOL

A priority occupation listed on the SPOL may be assigned one of five ratings. The classification of an occupation as a priority or otherwise is determined by evidence identified via the WAJET Survey process. Principal occupations are also included as priorities.

Market and policy index scores determined by the WAJET matrix visualiser tool are used to determine a relative priority rating for each occupation. Rating descriptors are designed to indicate an occupation's relative position on the matrix, which in turn broadly identifies the nature of the issues which have contributed to its priority rating.

State priority 1 – Critical market and policy priority occupations

These occupations have both a strong connection to desirable structural economic and policy outcomes, such as the State Government's economic diversification strategies, and have high demand or projected high demand over the next five years. The occupation may also be experiencing low supply or the projected supply is not anticipated to meet demand and where intervention is desirable (i.e. increased training and/or migration solutions).

State priority 2 – Longer-term policy priority occupations

These occupations have a strong connection to desirable structural economic or policy outcomes, such as the State Government's economic diversification strategies. For these occupations, it is important that the State maintains a steady supply of graduates, apprentices or trainees through the economic cycle to meet long-term objectives of the State's economy.

State priority 2 – Shorter-term market priority occupations

These occupations are currently experiencing high demand, low supply or a combination of both. The issues they are experiencing are more directly market-based and not structural in nature, and they tend to be less connected to desirable policy outcomes, such as the State Government's economic diversification strategies.

State priority 3 – Occupations with emerging issues

These are those where quantitative evidence is not yet available, but there is significant qualitative evidence from industry stakeholders that there are issues relating to market or structural disruption.

State priority 3 – Transitional priorities

These occupations were considered a priority the year prior, but no recent issues have been raised by industry, or there is inconsistent or conflicting evidence relating to recent industry-raised issues. Given continued uncertainty, they are considered transitional priorities and will continue to be monitored by the Department

Identified occupations

These occupations refer to those occupations where there is inconsistent or conflicting evidence relating to industry raised issues – generally where anecdotal evidence of issues has been raised but is not supported by compelling statistical evidence. These occupations are closely monitored by the Department.

Occupations not identified as a priority

Refer to occupations that are still important to the Western Australian economy but are not State Priorities. Statistical evidence suggests supply and demand for these occupations are in relative equilibrium, and no issues have been raised by industry stakeholders which require an education, training or migration response.

ADDITIONAL INFORMATION ON STATISTICAL ISSUES
Unique employment patterns in detailed ANZSCOs in WA

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 and joiners.

'Carpenter' and 'joiner' both have their own ABS ANZSCO codes and are recognised as separate trades in other states and territories, however in Western Australia, the official trade is 'carpenter and joiner', which is also separately identified in ANZSCO. However, it is most commonly referred to simply as 'carpenter' even by those in the occupation, and this is reflected in official Western Australian data, which shows most employment in the 'carpenters' classification and very few 'carpenters and joiners', even though the former occupation does not technically exist in this State.

In this instance, adjustments are required to ensure data is analysed correctly. 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.

Application of Updated ANZSCO Taxonomy to SPOL

Following the initial ANZSCO publication in 2006, the taxonomy received only three minor updates following each Census. This resulted in growing concern that the taxonomy was not reflective of contemporary developments in the Australian labour market. In response, the ABS has moved to a process whereby the taxonomy is refreshed on a 'near- annual' basis.

The first update under this new arrangement was published in November 2021 amidst SPOL 2022 development. Further changes are planned to occur on a regular basis which, while welcome in many respects, will potentially have significant impact on the ability to maintain time series data, which in turn will affect the capacity to plan and monitor VET policy and activity over time. The Department is engaged in ongoing discussions with the ABS regarding these changes, in an effort to minimise any adverse impacts.

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