The Australian Industry Group

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Jobs & Skills Australia
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2025 Core Skills Occupation List (CSOL) consultations

The Australian Industry Group welcomes the opportunity to provide a submission to Jobs & Skills Australia (JSA) regarding the 2025 Core Skills Occupation List (CSOL) consultations.

The Australian Industry Group is a peak national employer organisation representing traditional, innovative and emerging industry sectors. Our membership and affiliates include private sector employers large and small from more than 60,000 businesses employing over 1 million staff.

Skilled migration makes an essential contribution to the Australian economy and labour market. In 2024, Australia attracted approximately 90,000 migrants through the temporary and permanent skilled pathways, accounting for 18.9% of non-citizen migrant arrivals[1]. By providing access to skilled employees in areas of identified need, the skilled migration program helps address occupational shortages which impact the ability of industry to deliver on our national goals for housing, care, the net zero transition and many more.

The Australian Industry Group welcomes the new approach being adopted via the CSOL to identify those occupations appropriate for inclusion in skilled migration pathways. In précis, the new CSOL methodology comprises the following three stages:

1. Identification of occupations where there are demonstrated labour market shortages relative to employer demand, via JSA's existing Occupational Shortage List (OSL) analysis
2. Analysis of the performance of migration in addressing OSL-identified occupational shortages, via a new JSA Migration Model (MM) which analyses labour market outcomes for recent migrants
3. Consultations with industry and other stakeholders in edge-cases where the *quantitative* findings generated by the OSL/MM models require further supplementation with *qualitative* evidence regarding employer needs and migrant outcomes

We welcome the rigor which this new approach will bring to identifying those occupations suitable for inclusion in skilled migration pathways. It ensures that areas of occupational shortage are identified in an evidence-based manner, and that decisions regarding the role of migrant labour market outcomes are made in a similar manner. The supplementation of

[1] Australian Industry Group analysis of ABS Net Overseas Migration microdata, https://www.abs.gov.au/statistics/microdata-tablebuilder/available-microdata-tablebuilder/net-overseas-migration. For the purposes of this calculation, 'non-citizen migrant arrivals' excludes both Australian and NZ (subclass 444) citizens.

quantitative evidence with qualitative industry consultation importantly also provides the flexibility to respond to changing labour market conditions that may not be apparent in statistical data.

The adoption of the new CSOL methodology introduces new structural features to the way in which Australia identifies occupations for inclusion in the skilled migration program. Principal amongst these are: (1) the introduction of periodic annual review; (2) the introduction of a new machine-learning supplemented methodology to identify occupational shortages; and (3) the introduction of systematic analysis of migrant labour market outcomes.

These new features are welcome additions to Australia's skilled migration system. However, to ensure the CSOL meets the needs of Australian employers, migrants and the wider community it is critical that these new structural features are implemented in a transparent and responsive manner.

We recognise and welcome that JSA has provided detailed information through its published technical papers on the CSOL[2] and OSL[3] methodologies. However, we argue there are three areas where further information and clarification on these three features is required. These areas, and our recommendations for further consultation, are enumerated in the remainder of this submission below.

1. Greater clarity regarding periodic review arrangements of the CSOL

The Commonwealth *Migration Strategy* of December 2023 creates a new role for JSA in developing the CSOL, which will function as advice to government regarding occupational inclusions for skilled migration pathways[4]. We understand there is an expectation that JSA will review and update the CSOL on an annual basis, based on updated labour market data available through the OSL and MM analyses.

This will introduce a much greater frequency of updates to skilled migration pathways than in the past. Depending on how frequently the Minister elects to update visa rules in line with new editions of the CSOL, it could potentially lead to annual changes in the occupational lists that underpin a major component of the skilled migration program. This will pose two distinct challenges for industry users of skilled migration.

The first is the need for employer consultation on occupations where additional qualitative evidence is required. These consultations place a significant administrative burden on employers and their representative bodies, which are required to collate information and respond to detailed questionnaires on many distinct occupations and migrant outcomes. Performing these consultations on an annual basis will greatly increase the administrative

[2] JSA *2024 Core Skills Occupations List Key Findings Report August 2024*, https://www.jobsandskills.gov.au/download/19706/2024-core-skills-occupations-list-key-findings-report/2953/2024-core-skills-occupations-list-key-findings-report/pdf

[3] JSA 2024 *Occupational Shortage List Methodology October 2024,* https://www.jobsandskills.gov.au/sites/default/files/2024-10/2024%20OSL%20Methodology%20%281%29.pdf

[4] At present the CSOL principally informs the Core Skills Stream of the Skills in Demand (subclass 482) visa, but in future may also inform other skilled migration pathways and visa subclasses.

burden on employers utilising the skilled migration system.

The scope of these consultations is extremely broad. The CSOL is produced at the 'six-digit' level, and when first compiled in 2024 comprised 704 distinct occupations. The 2025 CSOL review identifies 278 occupations for stakeholder engagement, a larger than normally expected number due to the transition between the ANZSCO and OSCA classification systems. However, we anticipate that the ongoing figure is likely to be over 100 occupations per annual revision based on analysis of previous CSOL reviews[5].

To lessen the impact of administrative burden on employers and their representative associations, we recommend that JSA develop more systematic planning arrangements for the conduct of annual CSOL reviews. This should include:

- Establishing a broad timetable for consultations (potentially August and September) so that stakeholders have better expectations for consultations and can allocate resources appropriately
- Publishing priority review lists ahead of consultations so that consultation efforts can be efficiently targeted to those occupations and employers of greatest relevance
- Publishing priority review lists for both the on- and off-list elements of the CSOL so that employers can identify anticipated changes to both[6].

The second challenge is the potential for annual CSOL updates to trigger annual changes to visa rules. While the latter remains a Ministerial decision, we note that that annual CSOL updates will function as a trigger for such decisions to be made. The implications for employers utilising the relevant visa subclasses of annual changes will be highly adverse. Establishing successfully pathways for skilled migration takes several years and involves significant upfront cost. If an occupation is at risk of being removed from the CSOL annually, employers will be unable to develop these pathways or properly utilise the skilled migration system.

A particularly adverse outcome would be if an occupation was included in the CSOL one year, removed the next, and reinstated the year after. This may occur in edge-case occupations where the labour market metrics used in the OSL oscillate around selection thresholds with short-run labour market volatility. In such a situation of inconsistent inclusion, that occupation would be effectively inaccessible in practical terms for skilled migration. Such annual volatility in the CSOL should therefore be avoided.

This is particularly important given the addition of migrant outcomes data (via the MM component) of the CSOL. This intends to measure migrant outcomes at the occupational level to determine their performance and appropriateness for ongoing inclusion. For this approach to be robust, it requires that an occupation is included for a sufficiently long period of time for

[5] For example, of the 456 occupations included in the 2024 CSOL on-list, 133 were identified as edge-cases where inclusion in subsequent updates would require further stakeholder consultation.
[6] In the 2024 CSOL review, JSA identified 133 on-list occupations that were likely to require additional consideration (namely, that they may be move off-list) in future reviews. However, no such indication was provided for off-list occupations marked for review with a mind to moving them on-list. To ensure employers have symmetrical visibility of anticipated change to both the on- and off-lists, we recommend this identification is also made for the latter.

migrants to be recruited, participate in the workforce, and for their labour market outcomes to become apparent and be measured. An occupation would need to be included for a minimum number of years for sufficient data to be available.

We therefore recommend that a significant evidentiary burden should be placed on removing occupations from the CSOL. Where evidence suggests an occupation may warrant moving to the off-list, this should be initially flagged for consultations, and several years of data should be collected to ensure annual volatility in the labour market does not distort decision making. When new occupations are added to the on-list, they should be guaranteed a minimum number of years of inclusion to ensure time for proper migrant outcomes to be collected. Ongoing CSOL reviews should demonstrate the highest degree of transparency regarding JSA's considerations and methodology for making these determinations.

2. Greater clarity regarding the machine learning methodology used to identify occupational shortages

Perhaps the most significant innovation of the CSOL is its introduction of a machine learning method for identifying occupational shortages in the Australian labour market.

This is introduced via the OSL, which uses a gradient-boosted machine learning model (GBM) to estimate vacancy fill-rates for the approximately 700 six-digit occupations in the OSCA standard based on 24 other sources of labour market and administrative data. Where an occupation is estimated to have a fill rate below 67% by the GBM, it is classified as being in shortage on the OSL, which in turn advances that occupation past the first filter in CSOL analysis. In this way, the GBM functions as the foundational data source on which the CSOL is built.

Importantly, the data generated by GBM is not *directly observed* like other economic data – it is what a machine learning model *infers* the fill-rate for an occupation to be based on other data. As JSA elsewhere acknowledges[7], the outputs of the GBM are "black box" in nature, with limited control over model structure and other statistical risks. Moreover, they cannot be independently reproduced and/or validated by other parties.

The use of machine learning data is a novel solution to shortages of conventional data required to meet the objectives of the CSOL. There is no survey or administrative dataset in Australia with sufficient statistical power to observe fill-rates at the six-digit occupational level required. The use of the GBM allows estimates of fill-rates to be computed for specific occupations using other sources of relevant data, providing an evidence-base for shortage classifications that would otherwise not exist. This is an innovative use of new technology to fill data gaps that cannot be addressed using conventional data sources.

Nonetheless, the use of machine learning tools to inform policy decisions is novel. It is potentially one of the first instances in Australia where a machine learning output is being directly and semi-mechanically fed into policy decision-making. It is therefore critical that stakeholders have a high level of information and understanding regarding how the GBM is

[7] JSA 2024 *Occupational Shortage List Methodology October 2024,* p. 29.

designed and functions, and how its outputs are validated against observed data.

We note that JSA has provided detailed information on the GBM in the methodology annexure to the 2024 Occupational Shortages List. However, the subsequent use of the GBM as the foundational data for CSOL analysis is not made explicit in public documentation regarding the CSOL itself[8]. This obscures the foundational role of a machine learning model in the CSOL and our skilled migration program more broadly.

We therefore recommend that the role of machine learning in compilation of the CSOL should be made transparent in its public documentation and annual consultations. Importantly, this information should also be presented in plain language that is accessible to a non-technical audience, and explains the rationale, benefits and risks for utilising a machine learning model to produce this data[9].

We further recommend that both the inputs and outputs of the GBM should be published to the extent privacy and administrative considerations allow. At present, independent parties have no ability to evaluate either the 24 data sources utilised by the GBM, or the ~700 occupational fill-rates which it estimates using that data. In the interests of transparency, these datasets should also be made public. While some of the input data is administrative and not-for-publication, many of the components are ABS or JSA data which is publishable. Similarly, if the GBM output data regarding estimated fill rates is of sufficiently high quality to have confidence in its use in compiling OSL and CSOL, it should also be of sufficient quality for publication.

Finally, we recommend that JSA conduct and publish an evaluation on the performance of the GBM model. Technical documentation indicates that the outputs of the GBM are calibrated against JSA's SERA survey, which provides "true" (i.e. observed) fill rates. This calibration should be an ongoing process to ensure the GBM continues to perform reliably in future revisions to the OSL and CSOL. Publishing an evaluation report – ideally conducted, or at minimum reviewed, by independent technical experts – would increase confidence in this novel and innovative use of machine learning in the Australian policy system.

3. Greater clarity regarding the methodology used to identify migrant outcomes

The machine learning-powered OSL is further supplemented by JSA's new Migration Model (MM). This second filter model is designed to evaluate migrant outcomes at the occupational level, and inform decisions whether existing migration classifications are appropriately meeting skills needs while delivering desirable outcomes for migrants and the labour market.

[8] JSA's August 2024 *CSOL Key Findings Report,* provided as background for these consultations, does not mention the OSL or the GBM, and only makes indirect reference to the (now defunct) Skills Priority List (SPL). A reader would need to be independently aware that the SPL has subsequently been replaced by the OSL, and in that process had the GBM component added, to be aware that a machine learning tool was involved in the compilation of the CSOL.
[9] The OSL methodology annexure which describes the GBM is written in highly technical language which is likely to be inaccessible to a non-technical audience. A plain language summary should be included in both this note and documentation regarding the CSOL.

The Australian Industry Group welcomes the inclusion of migrant outcome indicators in the compilation of the CSOL. Ensuring that labour market outcomes are aligned to policy objectives is critical for stakeholder and community confidence in the migration system. Over time, the MM will function as a quasi-evaluation of previous editions of the CSOL, allowing ongoing adjustments that will improve outcomes from the skilled migration program.

However, greater clarity regarding the structure and design of the MM should be provided to stakeholders. At present, JSA has only published a single and lower-detail technical paper on the MM[10]. The paper lists the data sources used in the MM and outlines a points system for their weighting, but does not provide further detail on how the model is constructed. Given that the MM is of equal importance to the OSL in compiling the CSOL, we recommend that a detailed technical paper is also published. This should be of similar quality and form to the OSL Methodology Annexure, and be opened for stakeholder feedback.

Finally, we recommend that the input and output data from the MM be published alongside that from the GBM. While the MM is not a machine learning model like the GBM, it performs an equally important function in determining occupational inclusions on the CSOL. The same considerations regarding transparency and validation which apply to the GBM also apply to the MM, warranting the publication of its data to the extent that administrative provisions allow.

Should you wish to discuss the matters raised in this submission, [redacted]

Sincerely yours,

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[10] JSA *Migration Labour Market Indicator Model - Short Methodology*. We note this paper, dated November 2024, anticipates a longer version being published. However, such a version is not available at time of writing.