

2022

Finalisation of the Critical Skills List

Technical Report



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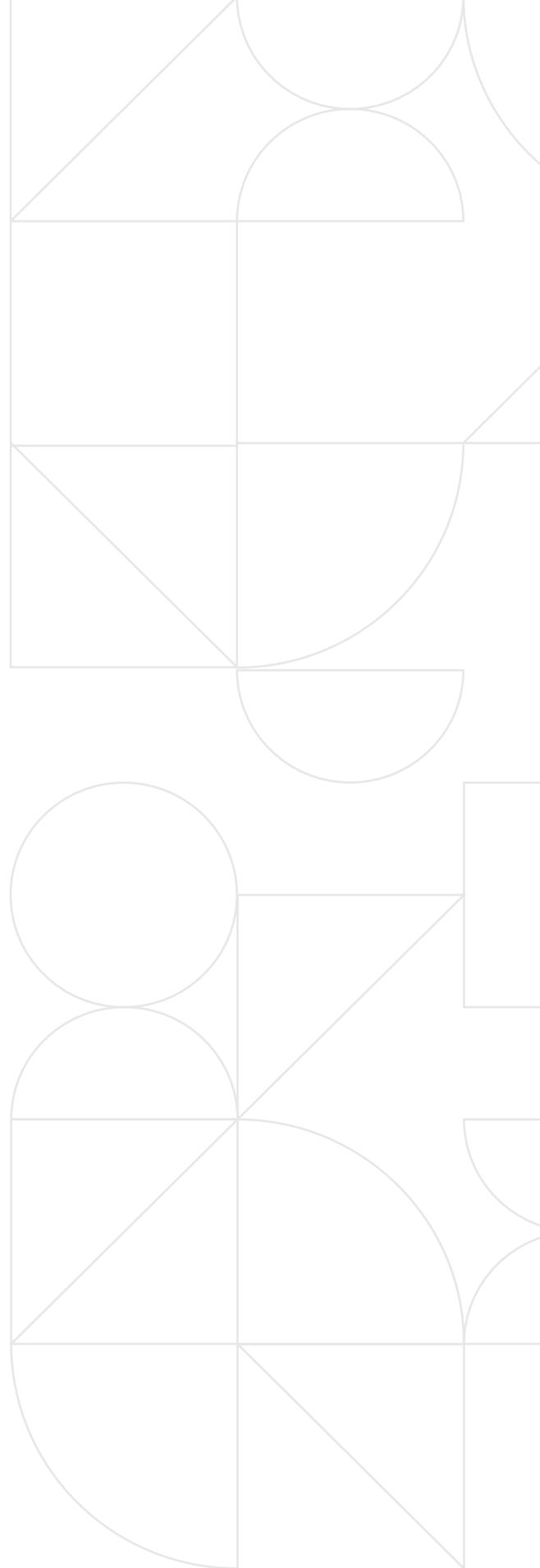
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Acronyms and abbreviations

ACRONYM/ABBREVIATION	TERM/DEFINITION
CESM	Classification of Educational Subject Matter
COVID-19	Coronavirus Disease 2019
CSL	Critical Skills List
CSV	Critical Skills Visa
D1, D2, D3, D4, D5 and D6	Dimensions 1–6
DEL	Department of Employment and Labour
DHA	Department of Home Affairs
DHET	Department of Higher Education and Training
DPRU	Development Policy Research Unit
DTIC	Department of Trade, Industry and Competition
ERRP	Economic Reconstruction and Recovery Plan
ESSA	Employment Services South Africa
IQR	Inter-quartile range
LMDS	Labour Market Dynamics Survey
LMI	Labour Market Intelligence
NA	Not applicable
NEDLAC	National Economic Development and Labour Council
NQF	National Qualification Framework
OFO	Organising Framework for Occupations
PCA	Principal components analysis
PIVOTAL	Professional, Vocational, Technical and Academic Learning
QLFS	Quarterly Labour Force Survey
SAQA	South African Qualifications Authority
SA-TIED	South African Programme Towards Inclusive Economic Development
SETA	Sector Education and Training Authority
STEM	Science, Technology, Engineering and Mathematics

PART 1

Introduction



In 2020, the Department of Higher Education and Training (DHET), through the Labour Market Intelligence (LMI) research programme, supported the Department of Home Affairs (DHA) in the development and application of a methodology to identify occupations for the Critical Skills List (CSL). The CSL forms the basis for the issuance of critical skills visas (CSVs) to critically skilled foreign nationals.

This process culminated in the publication of a technical report that included a description of the methodology and the preliminary CSL.

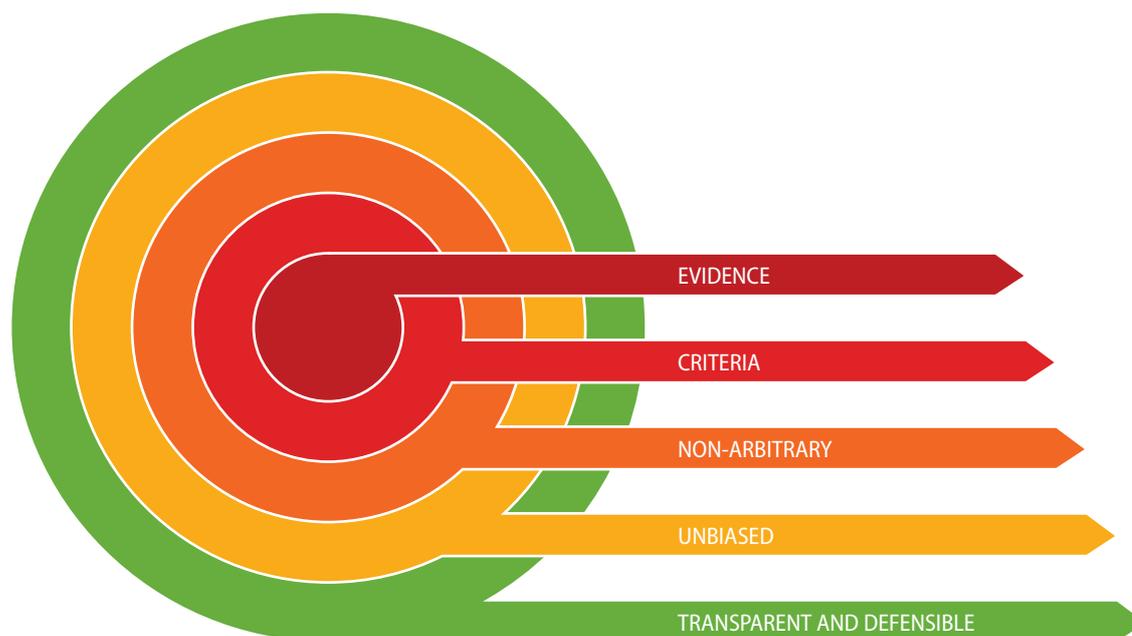
The Minister of Home Affairs gazetted this preliminary CSL on 18 February 2021 for public comment. The number of responses to the request is evidence of the importance of this list. Between the date of publication and the closing date of 31 March 2021, 363 comments were received.

Because of the CSL's importance as a policy tool, ensuring that it responds accurately to the needs it is designed to address is essential. As the technical report for the preliminary CSL stated, balance is essential:

If critical skills work permits are offered too liberally, they risk taking employment opportunities away from South African citizens. Conversely, if these permits are too strictly withheld, skills gaps are perpetuated at the expense of the South African economy. Achieving this balance is largely dependent on accurately defining a critical skill and then using this definition to develop the appropriate criteria for recognising whether a skill is, in fact, critical or not.¹

Therefore, it was important for the DHA and the DHET to ensure that the approach used to identify occupations on the list was evidence-based and consequently defensible. The figure below depicts the guiding principles of the process. The approach centres on evidence. The CSL's purpose guided the development of criteria, and the evidence was used to evaluate whether an occupation fulfilled the criteria or not. This approach minimised the opportunity for arbitrary decision-making, and by extension, the potential influences of biases on decision-making.

FIGURE 1: Principles of the approach to the development and finalisation of the CSL



¹ DNA Economics (2020), The 2020 Critical Skills List: A Technical Report, Tshwane: DHET, available at: <https://lmi-research.org.za/publication/methodologies-oihd-csl-lpo-report/>.

Although guided by evidence, the approach took into account limitations regarding the quality and coverage of the information used to produce the evidence. These limitations are articulated clearly in Table 7 of the technical report that accompanied the preliminary CSL.²

Accordingly, stakeholder engagement and validation emerged as a key component of the approach to the development of both the preliminary and the final CSL. This component and its impact on the preliminary list were documented in the 2020 technical report. The public comment process was a further expansion of this component.

As mentioned in the introductory paragraph, the response to the Minister of Home Affairs' request for public comment was substantial. Comments were received from a wide range of stakeholders, including employers, immigration services, forums, universities, government departments, professional and industry bodies, councils and associations, and individuals not associated with any organisations.

Although the bulk of this report is dedicated to addressing comments regarding requests for inclusion in or exclusion from the list, the comments spanned a broad spectrum of topics. Besides inclusion and exclusion requests, the following types of comments were also received:

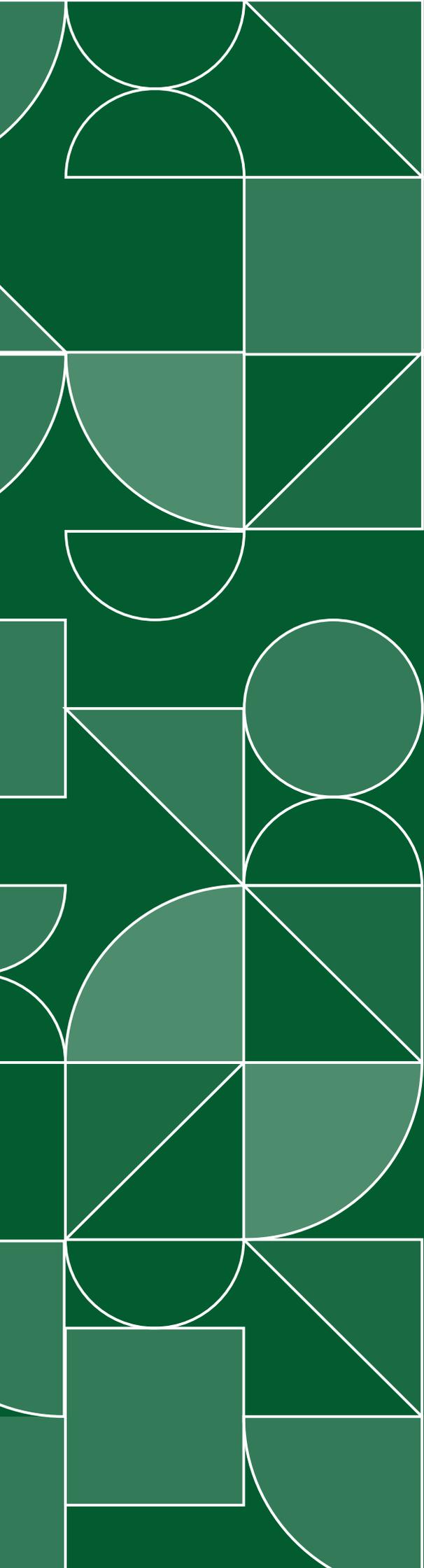
TABLE 1: Summary of comments received

TYPE OF COMMENT	NATURE OF COMMENTS
Methodology	These comments related to the definition of the criteria used, the way measurements were done and the decisions made.
Qualifications	The preliminary CSL included a minimum required for each occupation. These comments suggested alternative levels of qualification.
Industry body	The preliminary CSL included an industry body for each occupation. In some cases, these comments suggested an alternative, while in others the removal of professional bodies from the list was recommended.
Policy, legislation and regulation	These comments related to whether such a list should be used as a policy tool. Responding to these comments is outside the scope of this technical report, but they are listed in order for the DHA to take note of and respond to them.
Organising Framework for Occupations (OFO)³	The OFO is the foundation of the analysis. This framework is updated every two years. Occupations often have alternative titles or specialisations that might not be included in the OFO. These comments suggested amendments.

These additional comments are also summarised and addressed in Annexure 7. The body of this report is focused on the approach to finalising the list and presenting it in its finalised form. Section 2 explains the inclusion and exclusion criteria considered and how these criteria were imposed in conjunction with the requests received through the public comment process. The list after these inclusions and exclusions is then set out in Section 3. This list in Section 3 was validated by various stakeholders through the NEDLAC process, which honed the "penultimate list" (for confirmation by the minister of the DHA) as set out in Section 4.

² DNA Economics (2020).

³ See Annexure 8 for an explanation of the OFO.



PART 2

Addressing requests for exclusion and inclusion

2.1 Criteria used for the Critical Skills List

The preliminary CSL published for public comment was developed by identifying occupations based on criteria along four dimensions. In the revised list, these original four dimensions were supplemented by the latest labour market and macroeconomic data available to ensure that all public comments on the CSL were incorporated, bearing relevant data in mind. The following pieces of labour market and economic information were particularly beneficial in this regard:

1. As part of developing the skills strategy for the Economic Reconstruction and Recovery Plan (ERRP) in 2021, Sector Education and Training Authorities (SETAs) were asked to submit occupations they have identified as being in shortage in their sectors. This information was used to improve the accuracy of Dimension 1's criteria.
2. There were occupations not previously recognised as strategically important (Dimension 2) that were, however, identified as important to the ERRP. These occupations were added to the list of strategically important occupations in the CSL (Dimension 2).
3. After extensive consultation on the Department of Employment and Labour (DEL)'s Employment Services of South Africa (ESSA) database, it was decided that using the number of unemployed individuals according to this database as an exclusion criterion was justified. This data adds a fifth dimension (Dimension 5) to the decision-making criteria.
4. The COVID-19 pandemic was still in its infancy when the preliminary CSL was first developed. Although there were predictions regarding the economic effects of the pandemic on different sectors, it was still too early to see these impacts in economic data. This lack of information is no longer the case as recently published economic data shows the extent to which some sectors have recovered, and others have not. A sixth dimension is therefore added (Dimension 6), which considers the impact of the pandemic on occupational demand.

The above process culminated in a multi-dimensional approach, mixing quantitative and qualitative information, as indicated in Figure 2:

FIGURE 2: Dimensions guiding the finalisation of the CSL

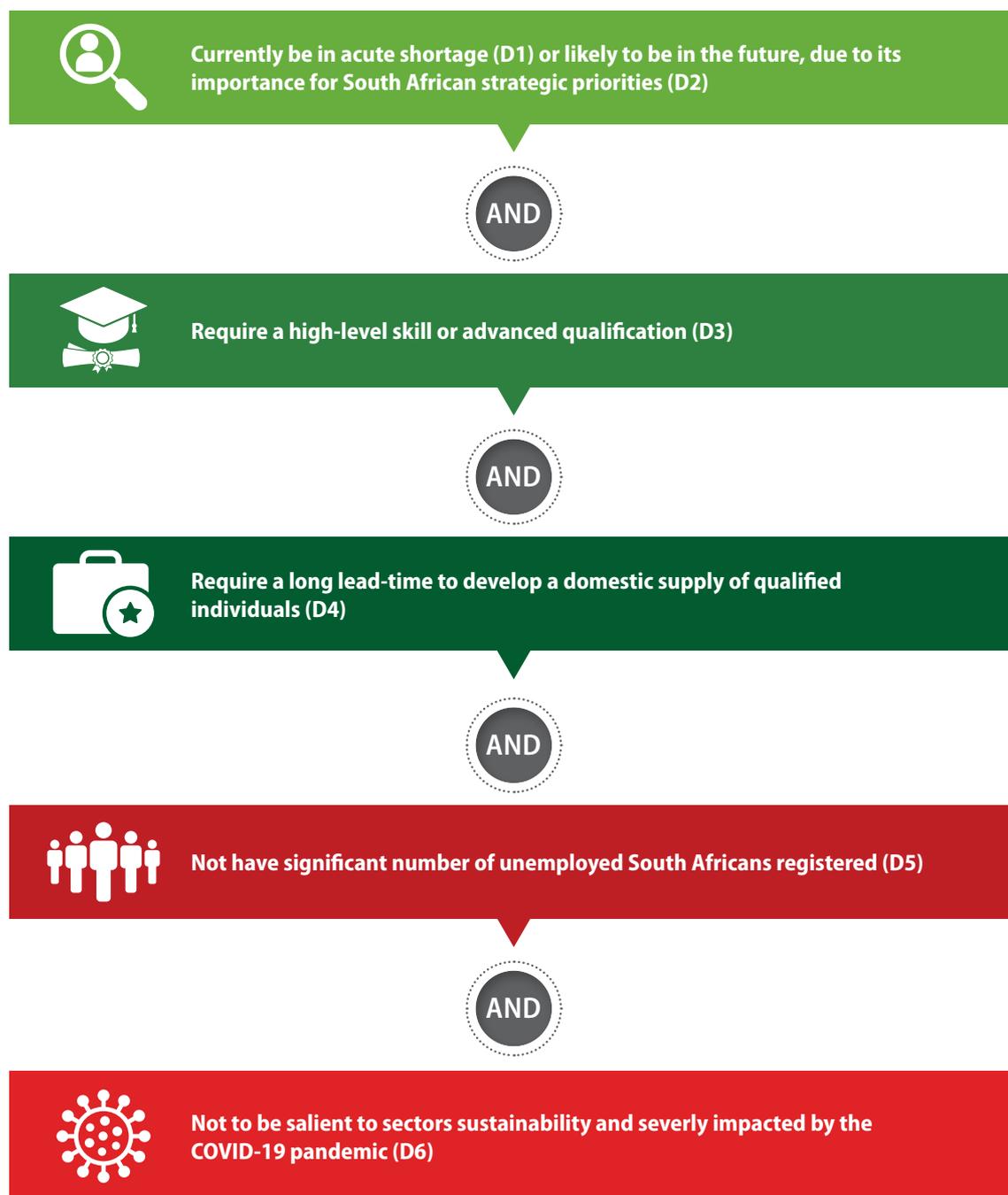
DIMENSION 1: ACUTE SHORTAGE	<ul style="list-style-type: none"> • The occupation's shortage index score is ranked above the 90th percentile • The occupation is included in the SETA's list of occupations in shortage aligned with the ERRP 	
DIMENSION 2: STRATEGIC PRIORITY	<ul style="list-style-type: none"> • The occupation appears in SETA PIVOTAL lists • The occupation appears at least three times across salient government strategic documents and DHET's call for evidence • The occupation is identified as being important to the implementation of the ERRP 	
DIMENSION 3: REQUIRED SKILL LEVEL	<ul style="list-style-type: none"> • The occupation requires NQF 5 or above • The occupation is included in the government gazette outlining artisan trades 	
DIMENSION 4: LEAD TIME	<ul style="list-style-type: none"> • The required qualification for the occupation takes three years or more to complete 	
DIMENSION 5: NUMBER OF REGISTERED UNEMPLOYED	<ul style="list-style-type: none"> • An inordinate number of individuals who are qualified for a given occupation 	
DIMENSION 6: SECTORAL IMPACT OF COVID-19 PANDEMIC	<ul style="list-style-type: none"> • Not be important predominantly salient to catering restaurants, bars, passenger transport and tourism sectors 	

Note: Yellow highlighting indicates that a criterion within the dimension was not applied in the drafting of the

preliminary CSL but, given new information, has been included to supplement the finalisation of the CSL.

The criteria associated with these dimensions were applied to the final published CSL as well as to the occupations requested for inclusion in public comments. For an occupation to be considered for inclusion, it had to meet the requirements outlined in Figure 3.

FIGURE 3: Definition of occupations that appear in the CSL before NEDLAC validation



A full description of the first four dimensions can be found in the technical report for the CSL.⁴ The methodology used to analyse the additional dimensions is, however, described next.

⁴ DNA Economics (2020).

2.1.1 Dimension 5: Number of unemployed

ESSA, a service provided by the DEL, aims to link organisations requiring employees with individuals requiring employment. It does this by allowing unemployed individuals to register on its database and organisations to post opportunities. Because registered individuals have to register for specific occupations, the database can be used to identify occupations for which there is domestic oversupply.

The criteria presented in Figure 7 in Section 2.2.2 are based on a two-stage analysis of the ESSA and the Statistics South Africa (Stats SA) Quarterly Labour Force Survey (QLFS) data.

Stage 1: Identifying absolute outliers in the ESSA database

Outliers are observations in a dataset considered “out of the ordinary” compared to the rest of the data. This concept was used to identify occupations associated with extraordinarily high numbers of registered unemployed. Using the interquartile range (IQR) to identify outliers is a reliable and often-used approach. This approach uses the data distribution to calculate thresholds that divide the outliers from the rest of the data. According to this approach, an outlier is more than 1.5 times the IQR⁵ below the first quartile or 1.5 times the IQR above the third quartile. Quartiles are values that divide observations (occupations) into quarters.

The following steps were performed to identify the upper threshold:⁶

STEP 1: CALCULATE QUARTILE 1:

$$Q1 = 21 \text{ UNEMPLOYED}$$

Quartile 1: The number that divides occupations with the lowest 25% of unemployed from occupations with the next lowest 25% of unemployed (up to the median): i.e., 25% of occupations have fewer than 21 unemployed registered

STEP 2: CALCULATE QUARTILE 3:

$$Q3 = 267 \text{ UNEMPLOYED}$$

Quartile 3: The number that divides occupations with the highest 25% of unemployed from occupations with the next highest 25% of unemployed (down to the median): i.e., 25% of occupations have more than 267 unemployed registered

STEP 3: CALCULATE THE IQR:

$$IQR = Q3 - Q1 = 267 - 21 = 246$$

STEP 4: CALCULATE THE UPPER BOUND:

$$Q3 + 1.5 \times (IQR) = 267 + 1.5 \times 246 = 636$$

Consequently, any occupation with more than 636 registered unemployed would fail Dimension 5's criteria.

⁵ IQR = Quartile 3 – Quartile 1 = Percentile 75 – Percentile 25.

⁶ Outliers below the bottom threshold are not important to know for this analysis.

Stage 2: Identifying relative outliers in the ESSA database

The absolute number of unemployed is important, but it is equally important to identify occupations for which there are many unemployed individuals relative to the employed population (i.e., excess supply in proportion to demand). We therefore also considered those occupations with fewer than 636 unemployed, but with extraordinarily high unemployed numbers relative to employed numbers. We also used the IQR method to identify these occupations.

The QLFS data was used for the number of employed individuals. This kind of analysis must be done at the four-digit level,⁷ as the QLFS data cannot be analysed at a more disaggregated level.

The following steps were performed to identify occupations with proportionately high unemployment:

STEP 1: CALCULATE THE UNEMPLOYMENT RATIO PER OCCUPATION:
 $\text{NUMBER OF UNEMPLOYED PER 100 EMPLOYED PER OCCUPATION} = \times 100$

STEP 2: IDENTIFY QUARTILE 1:
 $Q1 = 1.2 \text{ UNEMPLOYED FOR EVERY 100 EMPLOYED}$

Quartile 1: The number that divides occupations with the lowest 25% unemployment ratio from occupations with the next lowest 25% unemployment ratio (up to the median): i.e., 25% of occupations have fewer than 1.2 unemployed per 100 employed

STEP 3: IDENTIFY QUARTILE 3:
 $Q3 = 9.2 \text{ UNEMPLOYED FOR EVERY 100 EMPLOYED}$

Quartile 3: The number that divides occupations with the highest 25% unemployment ratio from occupations with the next highest 25% unemployment ratio (down to the median): i.e., 25% of occupations have more than 9.2 unemployed per 100 employed

STEP 4: CALCULATE THE IQR:
 $IQR = Q3 - Q1 = 9.2 - 1.2 = 8$

STEP 5: CALCULATE THE UPPER BOUND:
 $Q3 + 1.5 \times IQR = 9.2 + 1.5 \times 8 = 21.2 \text{ UNEMPLOYED FOR EVERY 100 EMPLOYED}$

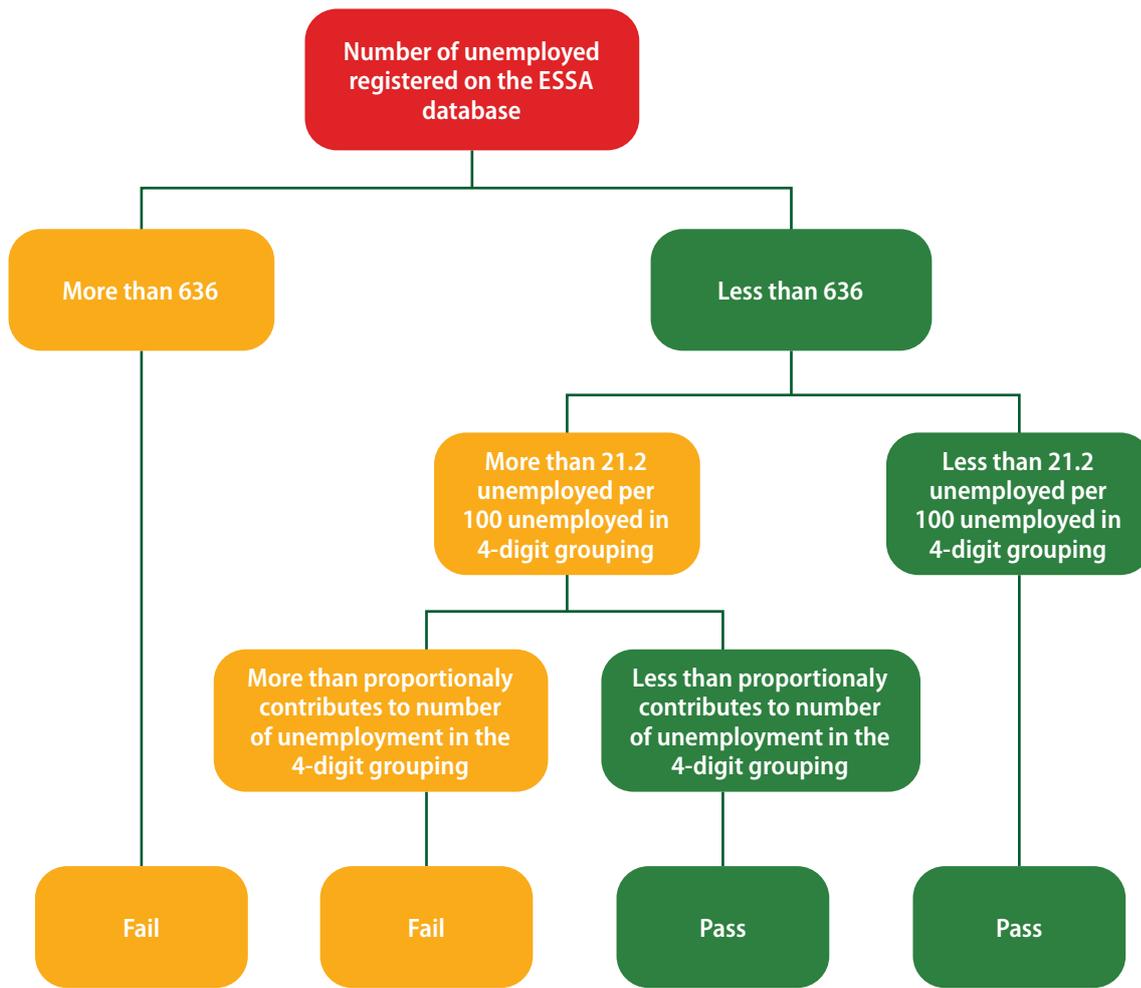
Therefore, all four-digit groupings with more than 21.2 unemployed for every 100 employed are identified for further investigation. For these, those occupations that more than proportionately⁸ contribute to the unemployment number at the four-digit level fail the criteria.

The diagram overleaf illustrates the conditions under which an occupation passes the criteria for Dimension 5. There are two steps. In the first, the total number of unemployed is considered. In the second, those occupations that passed this first criterion are further considered in relation to the current number of employed.

⁷ For more information on this categorisation, see the explanation of the OFO in Appendix 9. The four-digit level denotes a grouping of occupations that fall within the same categories, as defined by the framework. On average, there are approximately four six-digit occupations categorised under each four-digit grouping. However, there can be as few as one, or as many as twelve.

⁸ If there are five occupations within the four-digit grouping, then "more than proportionately" would imply more than 20% (100%/5).

FIGURE 4: Application of Dimension 5 criteria to each occupation



2.1.2 Dimension 6: Pandemic effects

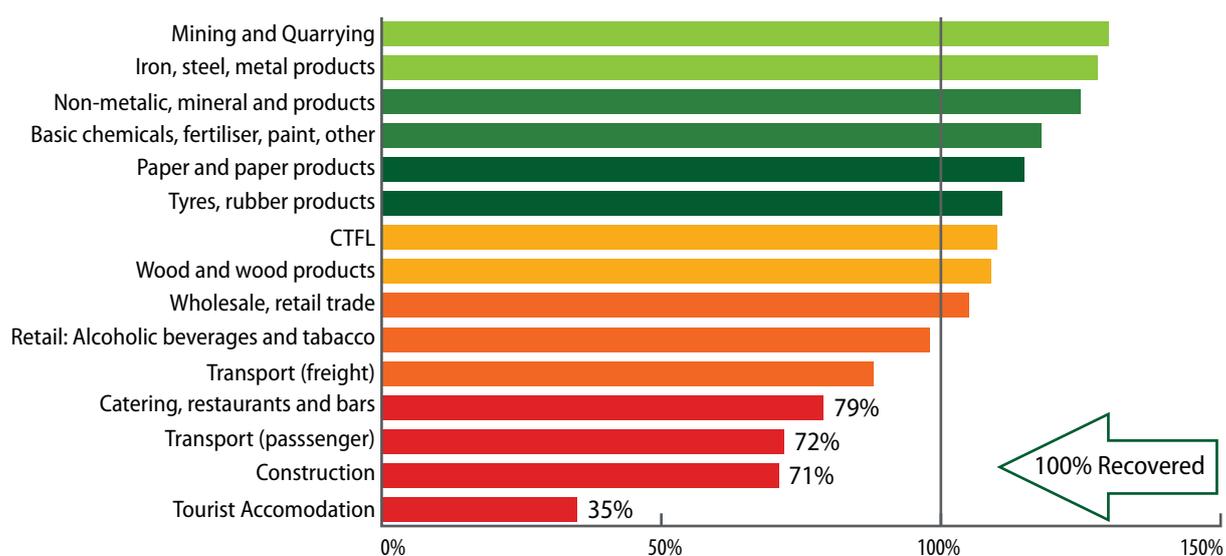
In April 2020, during the beginning stages of the COVID-19 pandemic, a working paper was published as part of the Towards Inclusive Economic Development in Southern African (SA-TIED) programme. The paper aimed to estimate the costs of the pandemic per industry and presented a series of recovery scenarios. In the process, industries that were expected to experience declines were identified.⁹

Because enough time has passed, it is now possible to review these industries to see which ones have recovered. The premise of this review is that those that have recovered least would be those where the economic damage is likely to be more persistent and less likely to recover over the medium term.

The graph below shows the actual recovery levels of the industries that the SA-TIED paper identified as likely to experience large to severe declines as a result of the pandemic. It shows the performance in Quarter 1 of 2021 as a percentage of Quarter 2 of 2020. The measures of performance used for each industry are shown in Annexure 9.

⁹ Arndt, Davies, Gabriel, et al. (2020), Impact of Covid-19 on the South African Economy: An Initial Analysis, SA-TIED Working Paper 111, April 2020, available at: <https://sa-tied.wider.unu.edu/sites/default/files/pdf/SA-TIED-WP-111.pdf>.

FIGURE 5: Industry comparison of economic recovery¹⁰



The good news is that we can see some strong recovery in mining and manufacturing. The impact on construction and the services sector seems to be more persistent. **The analysis makes it clear that occupations salient to catering, restaurants and bars, to passenger transport and to tourist accommodation should not be included in the CSL.** Although the recovery in construction falls in the same category, this industry was deemed too important to South Africa's ERRP for its occupations to be excluded.

2.2 Application of criteria

The criteria have been applied systematically, according to predefined processes, to ensure that decisions regarding exclusion and inclusion are non-arbitrary and made without bias and prejudice. The two sections that follow present the inclusion and exclusion decision-making process in turn. It specifically addresses how the comments received from the public were considered in conjunction with the criteria set out in the previous section.

2.2.1 Inclusion decision-making process and results

A new occupation was included in the preliminary CSL if it passed minimum **inclusion criteria**, and the request was accompanied by **sufficient evidence of shortage or strategic importance**.

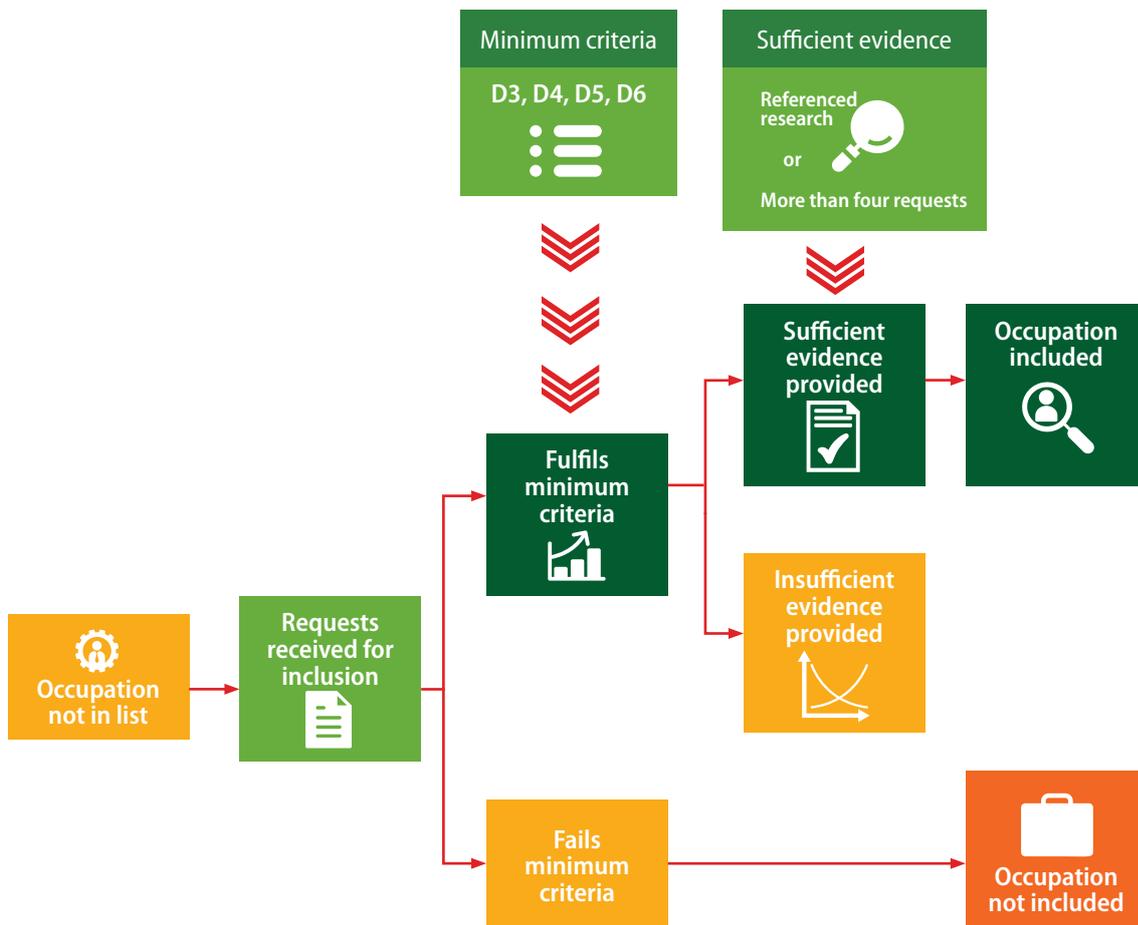
- **Minimum inclusion criteria:** D3, D4, D5 and D6.
- **Sufficient evidence:** Referenced verifiable evidence or five or more requests for inclusion from organisations.

Through the removal of the D1 and D2 criteria, stakeholders were given an opportunity to provide evidence to refute the original analysis of occupational shortage and strategic importance.

¹⁰ Trade and Industrial Policy Strategies (TIPS) (2021), COVID-19 Economic Recovery Index (CERI), available at: <https://www.tips.org.za/manufacturing-data/covid-19-economic-recovery-index-ceri>.

Figure 6 shows the process to which each inclusion request was subjected in the application of the criteria. Each occupation requested for inclusion was first tested against the minimum criteria. If it failed, it was not included. If it fulfilled the minimum criteria, but the evidence provided was insufficient to refute the original analysis regarding shortage or strategic importance, the occupation was also not included. However, if the minimum criteria were fulfilled and if the evidence accompanying the request was sufficient, the request for the inclusion of occupations in the final CSL was accepted.

FIGURE 6: Inclusion decision-making process



The application of this decision-making approach resulted in the inclusion of 43 new occupations to the preliminary list. These are listed in Table 2, along with a description of the associated comments received. Importantly, some of the occupations listed here have some additional requirements attached to them, which are only specified in the final list presented in Table 5.

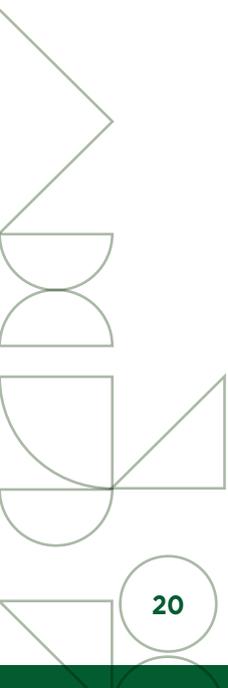
Although there was a strong commitment to abiding strictly by the above criteria and process when deciding whether an occupation should be included in the final CSL, slight deviation in the application of the criteria was undertaken for four occupations (as evident in Table 2). This deviation was introduced to take into account possible data limitations (as indicated in the introduction to this report), as well as specific sector (or sub-sector) requirements – such as the need for foreign language speakers – that made logical sense. The unsuccessful requests for the inclusion of occupations, along with the reasons for non-inclusion, are presented in Annexure 6.



TABLE 2: List of occupations that were included based on requests made through public comments

COUNT	OFO CODE	OCCUPATION NAME	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASONS FOR INCLUSION
1	2019-112101	Director (Enterprise/Organisation)	Determines, formulates and reviews the general policy programme and the overall direction of an organisation, within the framework established by a board of directors or a similar governing body.	8	Referenced research not required given the number of requests for inclusion from organisations.
2	2019-121901	Corporate General Manager	Plans, organises, directs, controls and reviews the day-to-day operations and major functions of a commercial, industrial or other organisation (excluding government or local government) through departmental managers and subordinate executives.	11	Although occupation failed to pass criterion D5, the occupation was included based on the high number of comments requesting inclusion, along with the subsequent request for inclusion by both the Department of Trade, Industry and Competition and the Presidency's Operation Vulindlela, which provided substantiating evidence that the occupation is, indeed, in shortage.
3	2019-121905	Programme or Project Manager	Plans, organises, directs, controls and coordinates special programmes or projects.	4	Most respondents provided no evidence for the inclusion of the occupation; however, one respondent provided strong evidence based on a critical skills surveys conducted across many employers.
4	2019-121908	Quality Systems Manager	Plans, organises, directs, controls and coordinates the deployment of quality systems and certification processes within an organisation.	3	Respondents provided strong evidence based on a critical skills survey conducted across many employers.

COUNT	OFO CODE	OCCUPATION NAME	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASONS FOR INCLUSION
5	2019-122105	Customer Service Manager	Plans, administers and reviews customer services and after-sales services and maintains sound customer relations.	2	Although occupation failed to pass criterion D2 (in terms of the ERRP) and D5, the occupation was included based on the request for inclusion by the Department of Trade, Industry and Competition, which provided evidence of dire shortage in the country and proved that the occupation is indeed a strategic priority for business and government alike.
6	2019-132401	Supply and Distribution Manager	Plans, administers and reviews the supply, storage and distribution of equipment, materials and goods used and produced by an organisation, enterprise or business.	1	Respondent provided strong evidence based on a critical skills survey conducted across many employers.
7	2019-134901	Environmental Manager	Plans, organises, directs, controls and coordinates the development and implementation of an environmental management system within an organisation by identifying, solving and alleviating environmental issues such as pollution and waste treatment in compliance with environmental legislation and ensures corporate sustainable development.	3	Most respondents provided no evidence for the inclusion of the occupation; however, one respondent quoted global research on the importance of the occupation. Given that this occupation either passed D1 or D2, supplementary evidence led to the occupation's inclusion.
8	2019-211101	Physicist	Studies matter, space, time, energy, forces and fields and the interrelationship between these physical phenomena to further understanding of the laws governing the behaviour of the universe, and seeks to apply these laws to solve practical problems and discover new information about the earth and the universe.	5	Most respondents provided no evidence for the inclusion of the occupation; however, one respondent provided strong evidence based on a critical skills surveys conducted across many employers.



COUNT	OFO CODE	OCCUPATION NAME	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASONS FOR INCLUSION
9	2019-211205	Climate Change Scientist	Evaluates scientific data and carries out research on the climate to create predictive models of likely changes in the earth's climate and the concomitant impacts on natural ecosystems and civilisation.	1	Respondent did not provide sufficient evidence for the occupation's inclusion. However, occupation was included based on a submission made to review more recent documents associated with government strategic priority. The occupation subsequently passed D2 and all other dimensions.
10	2019-211301	Chemist	Studies the chemical and physical properties of substances, and develops and monitors chemical processes and production.	11	Referenced research not required given the number of requests for inclusion from organisations.
11	2019-213102	General Biologist	Studies the origin, anatomy, physiology, reproduction and behaviour of living organisms and the ways in which they interact with the environment in which they live.	7	Referenced research not required given the number of requests for inclusion from organisations.
12	2019-213105	Biotechnologist	Studies the anatomy, physiology and characteristics of living organisms and isolated biological molecules, and develops new materials for applying these to a range of purposes.	11	Referenced research not required given the number of requests for inclusion from organisations.
13	2019-213108	Microbiologist	Studies microscopic forms of life such as bacteria, viruses and protozoa.	8	Most respondents (predominantly individuals) provided no evidence for the inclusion of the occupation; however, one respondent provided strong evidence based on a critical skills survey conducted across many employers.
14	2019-213109	Zoologist	Studies the anatomy, physiology, characteristics, ecology, behaviour and environments of animals.	15	Referenced research not required given the number of requests for inclusion from organisations.

COUNT	OFO CODE	OCCUPATION NAME	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASONS FOR INCLUSION
15	2019-213202	Agricultural Scientist	Studies commercial plants, animals and cultivation techniques to enhance the productivity of farms and agricultural industries.	9	Most respondents (predominantly individuals) provided no evidence for the inclusion of the occupation; however, one respondent provided strong evidence based on a critical skills survey conducted across many employers.
16	2019-213301	Conservation Scientist	Develops and implements programmes and regulations for the protection of fish, wildlife and other natural resources.	4	Most respondents provided no evidence for the inclusion of the occupation; however, SETAs have suggested that this occupation is in shortage. This is also generally important in the context of climate change, making green occupations a strategic priority.
17	2019-213302	Environmental Scientist	Studies and develops policies and plans for the control of factors that may produce pollution, imbalance or degradation of the environment.	5	Most respondents (mostly individuals) provided no evidence for the inclusion of the occupation; however, SETAs have suggested that this occupation is in shortage. This is also generally important in the context of climate change, making green occupations a strategic priority.
18	2019-214501	Chemical Engineer	Designs and prepares specifications for chemical process systems and the construction and operation of commercial-scale chemical plants, and supervises industrial processing, fabrication and manufacturing of products undergoing physical and chemical changes and related technologies.	8	Referenced research not required given the number of requests for inclusion from organisations.



COUNT	OFO CODE	OCCUPATION NAME	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASONS FOR INCLUSION
19	2019-214502	Chemical Engineering Technologist	Analyses and modifies new and existing chemical engineering technologies and applies them in the testing and implementation of chemical engineering projects.	2	One respondent referenced global research on the critical importance of the occupation. This evidence, in combination with evidence provided by SETAs that individuals within the occupation are in shortage in the labour market, make the case for including the occupation.
20	2019-214601	Mining Engineer	Plans and directs the engineering aspects of locating and extracting minerals (excluding petroleum) from the earth.	5	One respondent referenced global research on the critical importance of the occupation. Another respondent surveyed employers to prove difficulty in hiring for this occupation within the country. This evidence, in combination with evidence provided by SETAs that individuals within the occupation are in shortage in the labour market, make the case for including the occupation.
21	2019-214605	Metallurgist	Researches, develops, controls and provides advice on processes used in extracting metals from their ores, and processes used for casting, alloying, heat treating or welding refined metals, alloys and other materials to produce commercial metal products or develop new alloys and processes.	1	Respondent provided strong evidence based on a critical skills survey conducted across many employers.
22	2019-214901	Biomedical Engineer	Combines biology, engineering and medicine to help solve medical and scientific health problems.	4	Most respondents provided no evidence for the inclusion of the occupation; however, one respondent provided strong evidence based on a critical skills survey conducted across many employers.

COUNT	OFO CODE	OCCUPATION NAME	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASONS FOR INCLUSION
23	2019-215102	Electrical Engineering Technologist	Analyses and modifies new and existing electrical engineering technologies and applies them in the testing and implementation of electrical engineering projects.	1	SETAs identified that this occupation is experiencing a shortage in the labour market, making the case for including the occupation.
24	2019-215103	Energy Engineer	Plans, designs, organises and oversees the construction or remodelling of energy generation plants and designs, develops, or evaluates energy-related projects to reduce energy costs or improve energy efficiency.	3	One respondent surveyed employers to prove difficulty in hiring for this occupation within the country. This evidence, in combination with evidence provided by SETAs that individuals within the occupation are in shortage in the labour market, make the case for including the occupation.
25	2019-215104	Energy Engineering Technologist	Analyses and modifies new and existing engineering technologies relating to the design and construction of nuclear reactors and auxiliary facilities.	2	One respondent referenced global research on the critical importance of the occupation. This evidence, in combination with evidence provided by SETAs that individuals within the occupation are in shortage in the labour market, make the case for including the occupation.
26	2019-215201	Electronics Engineer	Designs, develops, adapts, installs, tests and maintains electronic components, circuits and systems used for computer systems, communication systems and other industrial applications.	10	Referenced research not required given the number of requests for inclusion from organisations.
27	2019-216401	Urban and Regional Planner	Develops and implements plans and policies for the controlled use of urban and rural land, and advises on economic, environmental and social needs of land areas.	9	Referenced research not required given the number of requests for inclusion from organisations.



COUNT	OFO CODE	OCCUPATION NAME	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASONS FOR INCLUSION
28	2019-233107	FET Phase School Teacher (Grades 10–12)	Teaches one or more subjects at the FET phase, including subjects intended to prepare students for employment in specific occupational as well as vocational areas.	8	Most respondents (mostly individuals) provided no or anecdotal evidence for the inclusion of the occupation. However, a respondent surveying employers suggested a lack of individuals with the training needed to teach in the STEM field, and the subsequent importance of the inclusion of the occupation. This was seconded by the Department of Basic Education.
29	2019-233108	Senior Phase School Teacher (Grades 7–9)	Teaches one or more subjects at the senior phase of schooling.	8	Most respondents (mostly individuals) provided no or anecdotal evidence for the inclusion of the occupation; however, a respondent surveying employers suggested a lack of individuals with the training needed to teach in the STEM field, and the subsequent importance of the inclusion of the occupation. This was seconded by the Department of Basic Education.
30	2019-242402	Occupational Instructor (air traffic industry only)	Conducts and assesses training and development to ensure management and staff acquire the skills and develop the competencies required by an organisation to meet organisational objectives.	2	Respondent suggestions are based on a critical skills survey conducted in 2019 in the global business services sector. The Department of Trade, Industry and Competition has provided evidence to suggest that such posts are usually short-term, requiring very few individuals, and that other forms of visas might be more appropriate in this regard. With that said, this occupation has been included only for occupational instructors in the air traffic industry specifically, as requested by a sole-demander of such individuals.

COUNT	OFO CODE	OCCUPATION NAME	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASONS FOR INCLUSION
31	2019-242204	Corporate Treasurer	Manages corporate funding, liquidity and financial risk associated with the profitable development and operation of an organisation. May be involved in acquisitions, disposals and joint ventures.	3	One respondent referenced global research on the critical importance of the occupation. Another respondent referenced a survey of employers to prove difficulty in hiring for this occupation within the country and a subsequent occupational shortage. This evidence makes the case for including the occupation.
32	2019-252301	Computer Network and Systems Engineer	Plans, develops, deploys, tests and optimises network and system services taking responsibility for configuration management and overall operational readiness of network systems, especially environments with multiple operating systems and configurations, and provides troubleshooting and fault-finding services for network problems.	10	Referenced research not required given the number of requests for inclusion from organisations.
33	2019-263101	Economist	Performs economic research and analysis; develops and applies theories about production and distribution of goods and services, and people's spending and financial behaviour; and provides advice to governments and organisations on subjects relating to economic policies.	8	Referenced research not required given the number of requests for inclusion from organisations.
34	2019-311101	Chemistry Technician	Performs laboratory tests on organic and inorganic chemicals, analyses test data and carries out technical functions in support of chemists or chemical engineers and technologists in a wide variety of areas such as fuels, pharmaceuticals, paints, metals, plastics, textiles, detergents, paper, fertilisers and cosmetics.	1	Respondent provided no evidence for the inclusion of the occupation; however, SETAs have suggested that this occupation is in shortage.



COUNT	OFO CODE	OCCUPATION NAME	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASONS FOR INCLUSION
35	2019-311203	Town Planning Technician	Provides technical support to town planners by preparing and maintaining plans, documents, charts, photographs, tables, reports and exhibition material for projects; public meetings and committees related to the controlled use of urban and rural land.	3	Respondents provided strong evidence based on research done on the demand for individuals within the occupation outstripping supply in the domestic labour market.
36	2019-311401	Electronic Engineering Technician	Conducts tests of electronic systems, collects and analyses data and assembles circuitry in support of electronics engineers and engineering technologists.	2	Respondents provided strong evidence based on research done on the demand for individuals within the occupation outstripping supply in the domestic labour market.
37	2019-311601	Chemical Engineering Technician	Tests new and existing engineering technologies related to chemical, biochemical, industrial chemistry, chemical quality control and environmental protection.	1	Most respondents provided no evidence for the inclusion of the occupation; however, one respondent quoted global research on the importance of the occupation. Given that this occupation either passed D1 or D2, supplementary evidence led to the occupation's inclusion.
38	2019-314101	Life Science Technician	Identifies and collects living organisms and conducts field and laboratory studies in support of life scientists and technologists.	1	Respondents provided strong evidence based on a critical skills survey conducted across many employers.
39	2019-315401	(Air) Traffic Controller	Ensures the safe and efficient movement of aircrafts in controlled airspace and aerodromes by directing aircraft movements.	1	Respondent provided strong evidence for the inclusion of the occupation, which was made more robust given that the respondent is the sole-hirer and trainer for the occupation in the country.

COUNT	OFO CODE	OCCUPATION NAME	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASONS FOR INCLUSION
40	2019-422201	Inbound Contact Centre Consultant	Provides expert response to complex customer enquiries according to agreed key performance indicators.	6	Although occupation failed to pass criterion D3 and D4, the occupation was included based on the high number of comments requesting inclusion, along with the subsequent request for inclusion by the Department of Trade, Industry and Competition, which provided evidence for the lack of foreign language speakers within the country who can assist in such a role in the short-term.
41	2019-422202	Outbound Contact Centre Consultant	Initiates specialised contact with targeted and/or selected customers according to agreed key performance indicators or outcomes.	4	Although occupation failed to pass criterion D3 and D4, the occupation was included based on the request for inclusion by the Department of Trade, Industry and Competition, which provided evidence for the lack of foreign language speakers within the country who can assist in such a role in the short-term.
42	2019-642701	Air Conditioning and Refrigeration Mechanic	Installs, maintains and repairs piping, ducting and equipment for the heating, cooling and ventilation of buildings or vessels.	2	Respondents provided strong evidence based on a critical skills survey conducted across many employers.
43	2019-671202	Millwright	Installs, maintains, troubleshoots and repairs stationary industrial machinery and electromechanical equipment.	3	Most respondents provided no evidence for the inclusion of the occupation; however, one respondent quoted global research on the importance of the occupation. Given that this occupation either passed D1 or D2, supplementary evidence led to the occupation's inclusion.

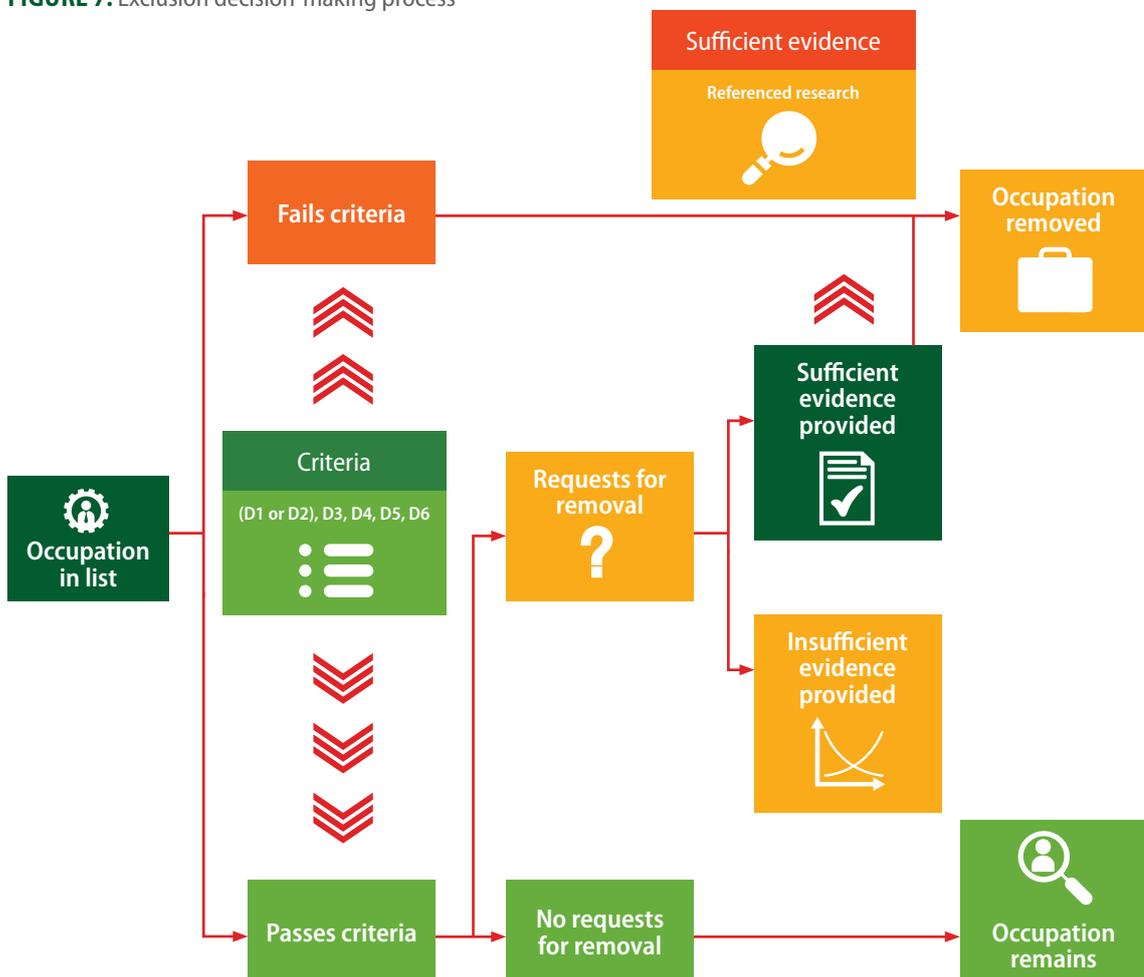
2.2.2 Exclusion decision-making process and results

An occupation was excluded if it failed to meet the **inclusion criteria**. When it did fulfil the criteria, it was removed if the comments provided **sufficient evidence**.

- **Inclusion criteria:** (D1 or D2) and (D3, D4, D5 and D6).
- **Sufficient evidence:** Referenced verifiable evidence.

Figure 7 shows the process to which each occupation on the preliminary list was subjected in applying the criteria. The occupation was first tested against the criteria. If it failed, it was removed.¹¹ If it met the criteria and there were no comments requesting exclusion, the occupation remained. If there were requests for removal, but the evidence provided for the request was not verifiable, the occupation also remained. However, if the evidence accompanying the request could be verified, the request for exclusion was accepted.

FIGURE 7: Exclusion decision-making process



The application of this decision-making approach resulted in the removal of 49 occupations from the preliminary CSL of 126 occupations. Of these, 36 were removed based on the updated criteria and 12 based on the evidence provided in public comments. The occupations and the reasons for their exclusion are presented in Table 3.

A further 37 occupations that were requested for removal remained. These are indicated in the final list presented in Annexure 3.

¹¹ Occupations could have met the criteria for the original list but now failed because of the new information and new dimensions.

TABLE 3: List of occupations that were excluded from the preliminary list based on requests made through public comments and expanded criteria

COUNT	OFO CODE	OFO DESCRIPTION	REASON FOR EXCLUSION
1	2019-122101	Sales and Marketing Manager	Failure in terms of D1, D5
2	2019-143908	Travel Accommodation Inspector	Failure in terms of D1, D2, D6
3	2019-241101	General Accountant	Failure in terms of D5
4	2019-241102	Management Accountant	Although one request for removal did not cite evidence, another comment quoted from the WEF's <i>Future of Jobs Report 2020</i> , indicating that the demand for this occupation is likely to decrease over time. As a result, there is sufficient evidence to exclude the occupation.
5	2019-241106	Accountant in Practice	Although one request for removal did not cite evidence, another comment quoted from the WEF's <i>Future of Jobs Report 2020</i> , indicating that the demand for this occupation is likely to decrease over time. As a result, there is sufficient evidence to exclude the occupation.
6	2019-241107	Financial Accountant	Although one request for removal did not cite evidence, another comment quoted from the WEF's <i>Future of Jobs Report 2020</i> , indicating that the demand for this occupation is likely to decrease over time. As a result, there is sufficient evidence to exclude the occupation.
7	2019-242209	Accounting Officer	Although one request for removal did not cite evidence, another comment quoted from the WEF's <i>Future of Jobs Report 2020</i> , indicating that the demand for this occupation is likely to decrease over time. As a result, there is sufficient evidence to exclude the occupation.
8	2019-243101	Advertising Specialist	Although one request for removal did not cite evidence, another comment quoted from the WEF's <i>Future of Jobs Report 2020</i> , indicating that the demand for this occupation is likely to decrease over time. As a result, there is sufficient evidence to exclude the occupation.
9	2019-243103	Marketing Practitioner	Although one request for removal did not cite evidence, another comment quoted from the WEF's <i>Future of Jobs Report 2020</i> , indicating that the demand for this occupation is likely to decrease over time. As a result, there is sufficient evidence to exclude the occupation.
10	2019-143906	Caravan Park and Camping Ground Manager	Failure in terms of D1, D2, D6
11	2019-143909	Travel Agency Manager	Failure in terms of D1, D2, D6
12	2019-243201	Communication Coordinator	Failure in terms of D1, D2
13	2019-331401	Statistical and Mathematical Assistant	Failure in terms of D1, D2

COUNT	OFO CODE	OFO DESCRIPTION	REASON FOR EXCLUSION
14	2019-351201	ICT Communications Assistant	Although one request for removal did not cite evidence, another comment quoted from the WEF's <i>Future of Jobs Report 2020</i> , indicating that the demand for this occupation is likely to decrease over time. As a result, there is sufficient evidence to exclude the occupation.
15	2019-641501	Carpenter and Joiner	Although one request for removal did not cite evidence, another comment quoted from the WEF's <i>Future of Jobs Report 2020</i> , indicating that the demand for this occupation is likely to decrease over time. As a result, there is sufficient evidence to exclude the occupation.
16	2019-641502	Carpenter	Failure in terms of D1, D5
17	2019-242210	Business Administrator	Failure in terms of D1, D2, D5
18	2019-312201	Production/ Operations Supervisor (Manufacturing)	Failure in terms of D1, D5
19	2019-343401	Chef	Failure in terms of D5, D6
20	2019-242101	Management Consultant	Failure in terms of D5
21	2019-242203	Company Secretary	Failure in terms of D1, D2
22	2019-243202	Communication Strategist	Failure in terms of D1, D2
23	2019-132301	Construction Project Manager	Failure in terms of D1, D5
24	2019-216601	Digital Artist	Failure in terms of D1, D2
25	2019-333401	Property Manager	Failure in terms of D1, D2
26	2019-422204	Contact Centre Resource Planner	Comment quoted from the WEF's <i>Future of Jobs Report 2020</i> , indicating that the demand for this occupation is likely to decrease over time. As a result, there is sufficient evidence to exclude the occupation.
27	2019-652302	Fitter and Turner	Failure in terms of D5
28	2019-671207	Armature Winder	Failure in terms of D1, D2
29	2019-133104	Application Development Manager	Failure in terms of D1, D5
30	2019-143907	Dockmaster	Failure in terms of D1, D5
31	2019-216604	Web Designer	Failure in terms of D1, D2
32	2019-241301	Financial Investment Advisor	Failure in terms of D1, D5
33	2019-242213	Regulatory Affairs Officer	Failure in terms of D1, D2
34	2019-242214	Intellectual Property Special Advisor	Failure in terms of D1, D2
35	2019-242215	Fraud Examiner	Failure in terms of D1, D2
36	2019-243104	Market Campaign Analyst	Failure in terms of D1, D2

COUNT	OFO CODE	OFO DESCRIPTION	REASON FOR EXCLUSION
37	2019-641503	Joiner	Comment quoted from the WEF's <i>Future of Jobs Report 2020</i> , indicating that the demand for this occupation is likely to decrease over time. As a result, there is sufficient evidence to exclude the occupation.
38	2019-653306	Diesel Mechanic	Failure in terms of D5
39	2019-671205	Weapon Systems Mechanic	Failure in terms of D1, D2
40	2019-684305	Quality Controller (Manufacturing)	Comment quoted from the WEF's <i>Future of Jobs Report 2020</i> , indicating that the demand for this occupation is likely to decrease over time. As a result, there is sufficient evidence to exclude the occupation.
41	2019-243203	Corporate Communication Manager	Failure in terms of D1, D2
42	2019-252101	Database Designer and Administrator	Failure in terms of D5
43	2019-132101	Manufacturer	Exclusion requested and granted based on similarity to Manufacturing Operations Manager, which is already on the list.
44	2019-134502	FET College Principal	Failure in terms of D1, D2
45	2019-242102	Organisation and Methods Analyst	Failure in terms of D1, D2
46	2019-351301	Computer Network Technician	Failure in terms of D1, D5
47	2019-351303	Marine GIS Technician	Failure in terms of D1, D2
48	2019-422205	Contact Centre Forecast Analyst	Failure in terms of D1, D3, D4
49	2019-653301	Industrial Machinery Mechanic	Failure in terms of D1, and subsequent failure of D2 upon further analysis of strategic priority documentation.



PART 3

**Second
preliminary
list
(post-public
comments)**

The application of the criteria as articulated in the previous section results in a list of 117 occupations. These are presented in the table below. Note that many occupations have alternative names or specialisations. These have been listed in Annexure 1, but only relate to the final list (Section 4) and not this preliminary CSL.

TABLE 4: Preliminary CSL after processing public comments

NUMBER	OFO CODE	OCCUPATION NAME
1	2019-112101	Director (Enterprise/Organisation)
2	2019-121301	Policy and Planning Manager
3	2019-121901	Corporate General Manager (medium enterprises or larger ¹²)
4	2019-121905	Programme or Project Manager
5	2019-121908	Quality Systems Manager
6	2019-122105	Customer Service Manager
7	2019-122301	Research and Development Manager
8	2019-131101	Agricultural Farm Manager
9	2019-132102	Manufacturing Operations Manager
10	2019-132104	Engineering Manager
11	2019-132401	Supply and Distribution Manager
12	2019-133101	Chief Information Officer
13	2019-133102	ICT Project Manager
14	2019-133103	Data Management Manager
15	2019-133105	Information Technology Manager
16	2019-133106	Information Systems Director
17	2019-134901	Environmental Manager
18	2019-143905	Call or Contact Centre Manager
19	2019-211101	Physicist
20	2019-211205	Climate Change Scientist
21	2019-211301	Chemist
22	2019-211401	Geologist
23	2019-211402	Geophysicist
24	2019-211403	Materials Scientist
25	2019-211405	Mineralogist
26	2019-211406	Hydrologist
27	2019-211407	Oceanographer
28	2019-212101	Actuary
29	2019-213102	General Biologist
30	2019-213105	Biotechnologist
31	2019-213108	Microbiologist
32	2019-213109	Zoologist
33	2019-213202	Agricultural Scientist
34	2019-213205	Food and Beverage Scientist
35	2019-213301	Conservation Scientist
36	2019-213302	Environmental Scientist
37	2019-214101	Industrial Engineer

¹² The definition of such enterprises is provided in Annexure 10, and varies by economic sector.

NUMBER	OFO CODE	OCCUPATION NAME
38	2019-214102	Industrial Engineering Technologist
39	2019-214201	Civil Engineer
40	2019-214202	Civil Engineering Technologist
41	2019-214401	Mechanical Engineer
42	2019-214402	Mechanical Engineering Technologist
43	2019-214403	Aeronautical Engineer
44	2019-214404	Aeronautical Engineering Technologist
45	2019-214405	Naval Architect
46	2019-214501	Chemical Engineer
47	2019-214502	Chemical Engineering Technologist
48	2019-214601	Mining Engineer
49	2019-214605	Metallurgist
50	2019-214901	Biomedical Engineer
51	2019-214904	Quantity Surveyor
52	2019-214905	Agricultural Engineer
53	2019-214906	Agricultural Engineering Technologist
54	2019-215102	Electrical Engineering Technologist
55	2019-215103	Energy Engineer
56	2019-215104	Energy Engineering Technologist
57	2019-215201	Electronics Engineer
58	2019-216101	Architect
59	2019-216401	Urban and Regional Planner
60	2019-216603	Multimedia Designer
61	2019-221101	General Medical Practitioner
62	2019-222103	Registered Nurse (Child and Family Health)
63	2019-222104	Registered Nurse (Community Health)
64	2019-222108	Registered Nurse (Medical)
65	2019-222109	Registered Nurse (Medical Practice)
66	2019-222110	Registered Nurse (Mental Health)
67	2019-222114	Nurse Educator
68	2019-226201	Hospital Pharmacist
69	2019-226202	Industrial Pharmacist
70	2019-226203	Retail Pharmacist
71	2019-231101	University Lecturer (Senior) ¹³
72	2019-233107	FET Phase School Teacher (Grades 10–12 STEM) ¹⁴
73	2019-233108	Senior Phase School Teacher (Grades 8–9 STEM) ¹⁵
74	2019-241103	Tax Professional
75	2019-241104	External Auditor
76	2019-241108	Forensic Accountant
77	2019-241202	Investment Manager
78	2019-241203	Investment Advisor
79	2019-242103	Business Development Officer

¹³ A senior lecturer is defined as having five years of experience, and should only be considered for the fields listed in Annexure 2.

¹⁴ Reserved for Science, Technology, Engineering and Mathematics (STEM) teachers.

¹⁵ Reserved for STEM teachers. Although Senior Phase includes Grade 7, primary school teachers were specifically excluded from the list at the request of the DBE.

NUMBER	OFO CODE	OCCUPATION NAME
80	2019-242202	Policy Analyst
81	2019-242204	Corporate Treasurer
82	2019-242208	Organisational Risk Manager
83	2019-242211	Internal Auditor
84	2019-242402	Occupational Instructor
85	2019-243102	Market Research Analyst
86	2019-251101	ICT Systems Analyst
87	2019-251102	Data Scientist
88	2019-251201	Software Developer
89	2019-251202	Programmer Analyst
90	2019-251203	Developer Programmer
91	2019-251301	Multimedia Specialist
92	2019-251302	Web Developer
93	2019-251401	Applications Programmer
94	2019-251901	Computers Quality Assurance Analyst
95	2019-252301	Computer Network and Systems Engineer
96	2019-252302	Network Analyst
97	2019-252901	ICT Security Specialist
98	2019-262202	Information Services Manager
99	2019-263101	Economist
100	2019-311101	Chemistry Technician
101	2019-311203	Town Planning Technician
102	2019-311401	Electronic Engineering Technician
103	2019-311501	Mechanical Engineering Technician
104	2019-311502	Pressure Equipment Inspector
105	2019-311503	Aeronautical Engineering Technician
106	2019-311601	Chemical Engineering Technician
107	2019-311801	Draughtsperson
108	2019-314101	Life Science Technician
109	2019-315401	Traffic Controller
110	2019-422201	Inbound Contact Centre Consultant (with first-language speaking and translating capabilities in the following languages: German, Swiss German, Flemish, Greek, Swedish, Danish, Italian, Dutch, Spanish, Mandarin and French)
111	2019-422202	Outbound Contact Centre Consultant (with first-language speaking and translating capabilities in the following languages: German, Swiss German, Flemish, Greek, Swedish, Danish, Italian, Dutch, Spanish, Mandarin and French)
112	2019-642701	Air Conditioning and Refrigeration Mechanic
113	2019-652301	Metal Machinist
114	2019-671202	Millwright
115	2019-671203	Mechatronics Technician
116	2019-671204	Lift Mechanic
117	2019-671208	Transportation Electrician

Part 4

Penultimate list

The penultimate list is presented in Table 5. This is not the final list because the Minister of Home Affairs is responsible for the concluding step in the process: finalisation of the CSL.

The list is the result of various phases of research that included quantitative analysis, surveys, semi-structured interviews, stakeholder workshops, and public comment. The last step was engaging with the final stakeholders to ensure that all views and positions had been considered. The 117 occupations listed in Section 3 above were presented to these stakeholders for final input. Stakeholders included:

- National Department of Health (NDoH)
- National Department of Basic Education (DBE)
- Department of Public Enterprise (DPE)
- Department of Employment and Labour (DEL)
- Department of Trade, Industry and Competition (DTIC)
- Operation Vulindlela
- National Economic Development and Labour Council (NEDLAC)

There is important information associated with this table presented in the annexures. Specifically:

- **Annexure 1:** Specialisation and alternative occupation names for each occupation listed
- **Annexure 3:** Discussion of the public comments received regarding the listed professional bodies
- **Annexure 4:** Discussion of the qualifications listed, the principle applied, and responses to the qualification-related comments received
- **Annexure 5:** A list of occupations requested for exclusion but not excluded (the reason for the decision is provided in each case)
- **Annexure 6:** A list of occupations requested for inclusion but not included (the reason for the decision is provided in each case)
- **Annexure 8:** A description of the Organising Framework for Occupations
- **Annexure 11:** A description of the final stakeholder engagements and the approach to incorporating these inputs

TABLE 5: Penultimate CSL

NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
1	2019-112101	Director (Enterprise/Organisation) (medium enterprises or larger)	Determines, formulates and reviews the general policy programme and the overall direction of an organisation, within the framework established by a board of directors or a similar governing body.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
2	2019-121301	Policy and Planning Manager	Plans, develops, organises, directs, controls and coordinates policy advice and strategic planning within organisations.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
3	2019-121901	Corporate General Manager (medium enterprises or larger)	Plans, organises, directs, controls and reviews the day-to-day operations and major functions of a commercial, industrial or other organisation (excluding government or local government) through departmental managers and subordinate executives.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
4	2019-121905	Programme or Project Manager	Plans, organises, directs, controls and coordinates special programmes or projects.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
5	2019-121908	Quality Systems Manager	Plans, organises, directs, controls and coordinates the deployment of quality systems and certification processes within an organisation.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
6	2019-122105	Customer Service Manager (business process outsourcing sector)	Plans, administers and reviews customer services and after-sales services and maintains sound customer relations.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	

NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
7	2019-122301	Research and Development Manager	Plans, organises, directs, controls and coordinates research and development activities within organisations.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
8	2019-132102	Manufacturing Operations Manager	Plans, organises, directs and controls the manufacturing activities of an organisation including physical and human resources. Measures performance, quality and implements continuous improvement strategies.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
9	2019-132104	Engineering Manager	Plans, organises, directs, controls and coordinates the design, operation and construction of engineering and process plants and mining operations.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	ECSA (Engineering Council of South Africa)
10	2019-132401	Supply and Distribution Manager	Plans, administers and reviews the supply, storage and distribution of equipment, materials and goods used and produced by an organisation, enterprise or business.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
11	2019-133101	Chief Information Officer	Plans, organises, directs controls and coordinates the ICT strategies, plans and operations of an organisation to ensure the ICT infrastructure supports the organisation's overall operations and priorities.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
12	2019-133103	Data Management Manager	Plans, coordinates, and supervises all activities related to the design, development, and implementation of organisational data base systems.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	

PART 4

NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
13	2019-134901	Environmental Manager	Plans, organises, directs, controls and coordinates the development and implementation of an environmental management system within an organisation by identifying, solving and alleviating environmental issues such as pollution and waste treatment in compliance with environmental legislation and ensures corporate sustainable development.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	EAPA-SA (Environmental Assessment Practitioners Association of South Africa); SACNASP (South African Council for Natural Scientific Professions)
14	2019-143905	Call or Contact Centre Manager	Manages the performance of call centre workers, processes and technology against financial and non-financial operational targets.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
15	2019-211101	Physicist	Studies matter, space, time, energy, forces and fields and the interrelationship between these physical phenomena to further understanding of the laws governing the behaviour of the universe, and seeks to apply these laws to solve practical problems and discover new information about the earth and the universe.	Master's Degree (NQF Level 9)	SAIP (South African Institute of Physics); SACNASP (South African Council for Natural Scientific Professions)
16	2019-211205	Climate Change Scientist	Evaluates scientific data and carries out research on the climate to create predictive models of likely changes in the earth's climate, and the concomitant impacts on natural ecosystems and civilisation.	Master's Degree (NQF Level 9)	EAPA-SA (Environmental Assessment Practitioners Association of South Africa); SACNASP (South African Council for Natural Scientific Professions)

NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
17	2019-211301	Chemist	Studies the chemical and physical properties of substances, and develops and monitors chemical processes and production.	Master's Degree (NQF Level 9)	SAIP (South African Institute of Physics); SACNASP (South African Council for Natural Scientific Professions)
18	2019-211401	Geologist	Studies the composition, structure and other physical attributes of the earth to increase scientific knowledge and to develop practical applications in fields such as mineral exploration, civil engineering, environmental protection and rehabilitation of land after mining.	Master's Degree (NQF Level 9)	SAGC (South African Geomatics Council); SACNASP (South African Council for Natural Scientific Professions)
19	2019-211402	Geophysicist	Studies the composition, structure and other physical attributes of the earth, locates minerals, petroleum or ground water, and detects, monitors and forecasts seismic, magnetic, electrical, thermal and oceanographic activity.	Master's Degree (NQF Level 9)	SAIP (South African Institute of Physics); SACNASP (South African Council for Natural Scientific Professions); SAGC (South African Geomatics Council)
20	2019-211403	Materials Scientist	Studies the properties and uses of non-metallic materials and advises on the technical aspects of their manufacture and processing.	Master's Degree (NQF Level 9)	SAGC (South African Geomatics Council); SACNASP (South African Council for Natural Scientific Professions)
21	2019-211405	Mineralogist	Studies the chemistry, crystal structure and physical (including optical) properties of minerals.	Master's Degree (NQF Level 9)	SACNASP (South African Council for Natural Scientific Professions)



NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
22	2019-211406	Hydrologist	Researches the distribution, circulation and physical properties of underground and surface waters; and the form and intensity of precipitation, its rate of infiltration into the soil, its movement through the earth, and its return to the ocean and atmosphere.	Master's Degree (NQF Level 9)	SACNASP (South African Council for Natural Scientific Professions)
23	2019-211407	Oceanographer	Studies the physical, chemical and biological properties of the ocean water masses.	Master's Degree (NQF Level 9)	SACNASP (South African Council for Natural Scientific Professions)
24	2019-212101	Actuary	Analyses mathematical, statistical, demographic, financial or economic data to predict and assess the long-term risk involved in financial decisions and planning.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	ASSA (Actuarial Society of South Africa)
25	2019-213102	General Biologist	Studies the origin, anatomy, physiology, reproduction and behaviour of living organisms and the ways in which they interact with the environment in which they live.	Master's Degree (NQF Level 9)	SACNASP (South African Council for Natural Scientific Professions)
26	2019-213105	Biotechnologist	Studies the anatomy, physiology and characteristics of living organisms and isolated biological molecules, and develops new materials for applying to a range of purposes.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	SACNASP (South African Council for Natural Scientific Professions)
27	2019-213108	Microbiologist	Studies microscopic forms of life such as bacteria, viruses and protozoa.	Master's Degree (NQF Level 9)	SACNASP (South African Council for Natural Scientific Professions)
28	2019-213109	Zoologist	Studies the anatomy, physiology, characteristics, ecology, behaviour and environments of animals.	Master's Degree (NQF Level 9)	SACNASP (South African Council for Natural Scientific Professions)

NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
29	2019-213202	Agricultural Scientist	Studies commercial plants, animals and cultivation techniques to enhance the productivity of farms and agricultural industries.	Master's Degree (NQF Level 9)	SACNASP (South African Council for Natural Scientific Professions); ECSA (Engineering Council of South Africa)
30	2019-213205	Food and Beverage Scientist	Studies the physical and chemical properties of food and beverages and develops new and improved food and beverage products, and sets standards for producing, packaging and marketing food and beverages.	Master's Degree (NQF Level 9)	SACNASP (South African Council for Natural Scientific Professions)
31	2019-213301	Conservation Scientist	Develops and implements programmes and regulations for the protection of fish, wildlife and other natural resources.	Master's Degree (NQF Level 9)	SACNASP (South African Council for Natural Scientific Professions)
32	2019-213302	Environmental Scientist	Studies and develops policies and plans for the control of factors that may produce pollution, imbalance or degradation of the environment.	Master's Degree (NQF Level 9)	EAPA-SA (Environmental Assessment Practitioners Association of South Africa); SACNASP (South African Council for Natural Scientific Professions)
33	2019-214101	Industrial Engineer	Investigates and reviews the utilisation of personnel, facilities, equipment and materials, current operational processes and established practices, to recommend improvement in the efficiency of operations in a variety of commercial, industrial and production environments.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	ECSA (Engineering Council of South Africa)

NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
34	2019-214102	Industrial Engineering Technologist	Analyses and modifies new and existing industrial engineering technologies and applies them in the testing and implementation of industrial engineering projects.	Diploma or Advanced Certificate (NQF Level 6)	ECSA (Engineering Council of South Africa)
35	2019-214201	Civil Engineer	Plans, designs, organises and oversees the construction and operation of civil engineering projects such as structural, transportation or hydraulic engineering systems.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	ECSA (Engineering Council of South Africa)
36	2019-214202	Civil Engineering Technologist	Analyses and modifies new and existing engineering technologies and applies them in the testing and implementation of civil, mechanical, electrical or electronic engineering projects.	Diploma or Advanced Certificate (NQF Level 6)	ECSA (Engineering Council of South Africa)
37	2019-214401	Mechanical Engineer	Plans, designs, organises and oversees the assembly, erection, operation and maintenance of mechanical and process plant and installations.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	ECSA (Engineering Council of South Africa)
38	2019-214402	Mechanical Engineering Technologist	Analyses and modifies new and existing mechanical engineering technologies and applies them in the testing and implementation of mechanical engineering projects.	Diploma or Advanced Certificate (NQF Level 6)	ECSA (Engineering Council of South Africa)
39	2019-214403	Aeronautical Engineer	Performs and supervises engineering work concerned with the design, development, manufacturing, maintenance and modification of aircraft for flight.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	ECSA (Engineering Council of South Africa)
40	2019-214404	Aeronautical Engineering Technologist	Analyses and modifies new and existing engineering technologies relating to the design and construction of aircraft for flight.	Diploma or Advanced Certificate (NQF Level 6)	ECSA (Engineering Council of South Africa)

NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
41	2019-214405	Naval Architect	Designs, constructs and repairs ships, boats, other marine vessels and offshore structures, both civil and military.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	ECSA (Engineering Council of South Africa)
42	2019-214501	Chemical Engineer	Designs and prepares specifications for chemical process systems and the construction and operation of commercial-scale chemical plants, and supervises industrial processing, fabrication and manufacturing of products undergoing physical and chemical changes and related technologies.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	ECSA (Engineering Council of South Africa)
43	2019-214502	Chemical Engineering Technologist	Analyses and modifies new and existing chemical engineering technologies and applies them in the testing and implementation of chemical engineering projects.	Diploma or Advanced Certificate (NQF Level 6)	ECSA (Engineering Council of South Africa)
44	2019-214601	Mining Engineer	Plans and directs the engineering aspects of locating and extracting minerals (excluding petroleum) from the earth.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	ECSA (Engineering Council of South Africa)
45	2019-214605	Metallurgist	Researches, develops, controls and provides advice on processes used in extracting metals from their ores, and processes used for casting, alloying, heat treating or welding refined metals, alloys and other materials to produce commercial metal products or develop new alloys and processes.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	ECSA (Engineering Council of South Africa); SACNASP (South African Council for Natural Scientific Professions)
46	2019-214901	Biomedical Engineer	Combines biology, engineering and medicine to help solve medical and scientific health problems.	Master's Degree (NQF Level 9)	ECSA (Engineering Council of South Africa)

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NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
47	2019-214904	Quantity Surveyor	Estimates and monitors construction costs from the feasibility stage, through tender preparation, to the construction period and beyond.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	SACQSP (South African Council for the Quantity Surveying Profession)
48	2019-214905	Agricultural Engineer	Performs and supervises engineering work related to the use and development of agricultural land, buildings, machines and equipment.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	ECSA (Engineering Council of South Africa); SACNASP (South African Council for Natural Scientific Professions)
49	2019-214906	Agricultural Engineering Technologist	Analyses and modifies new and existing engineering technologies relating to the use and development of agricultural land, buildings, machines and equipment.	Diploma or Advanced Certificate (NQF Level 6)	ECSA (Engineering Council of South Africa); SACNASP (South African Council for Natural Scientific Professions)
50	2019-215102	Electrical Engineering Technologist	Analyses and modifies new and existing electrical engineering technologies and applies them in the testing and implementation of electrical engineering projects.	Diploma or Advanced Certificate (NQF Level 6)	ECSA (Engineering Council of South Africa)
51	2019-215103	Energy Engineer	Plans, designs, organises and oversees the construction or remodelling of energy generation plants and designs, develops, or evaluates energy related projects to reduce energy costs or improve energy efficiency.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	ECSA (Engineering Council of South Africa)
52	2019-215104	Energy Engineering Technologist	Analyses and modifies new and existing engineering technologies relating to the design and construction of nuclear reactors and auxiliary facilities.	Diploma or Advanced Certificate (NQF Level 6)	ECSA (Engineering Council of South Africa)

NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
53	2019-215201	Electronics Engineer	Designs, develops, adapts, installs, tests and maintains electronic components, circuits and systems used for computer systems, communication systems and other industrial applications.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	ECSA (Engineering Council of South Africa)
54	2019-216101	Architect	Designs buildings and advises on the procurement of buildings, provides concepts, plans, specifications and detailed drawings, and negotiates with builders.	Master's Degree (NQF Level 9)	SACAP (South African Council for the Architectural Profession)
55	2019-216401	Urban and Regional Planner	Develops and implements plans and policies for the controlled use of urban and rural land, and advises on economic, environmental and social needs of land areas.	Master's Degree (NQF Level 9)	SACAP (South African Council for the Architectural Profession); SACLAP (South African Council for the Landscape Architectural Profession)
56	2019-216603	Multimedia Designer	Plans, designs and develops the production of digitally delivered information, promotional content, instructional material and entertainment through online and recorded digital media using static and animated information, text, pictures, video and sound to produce information and entertainment tailored to an intended audience and purpose.	Bachelor's Degree or Advanced Diploma (NQF Level 7)	
57	2019-222114	Nurse Educator	Designs, plans, implements and evaluates the delivery of nursing education and staff development programmes, and manages educational resources.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	SANC (South African Nursing Council)



NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
58	2019-231101	University Lecturer – Senior Lecturer and above for only those CESM categories listed in Annexure 2	Lectures students and conducts tutorials in one or more subjects within a prescribed course of study at a university and conducts research in a particular field of knowledge.	Professional Doctorate or Doctorate Degree (NQF Level 10)	SACE (South African Council for Educators)
59	2019-233107	FET Phase School Teacher (Grades 10–12) – only for STEM subjects	Teaches one or more subjects at FET phase, including subjects intended to prepare students for employment in specific occupational as well as vocational areas.	Bachelor's Degree or Advanced Diploma (NQF Level 7)	SACE (South African Council for Educators)
60	2019-233108	Senior Phase School Teacher (Grades 8–9) – only for STEM subjects	Teaches one or more subjects at FET phase of schooling.	Bachelor's Degree or Advanced Diploma (NQF Level 7)	SACE (South African Council for Educators)
61	2019-241103	Tax Professional	Analyses, reports and provides advice on taxation issues to tax entities, prepares and reviews tax returns and reports and handles disputes.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
62	2019-241104	External Auditor	Designs and operates information and reporting systems, procedures and controls to meet external financial reporting requirements.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
63	2019-241108	Forensic Accountant	Examines financial records to detect and deter fraud and white-collar crime.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
64	2019-241201	Investment Analyst	Analyses individual securities, industries and the economy, publishes reports and makes recommendations regarding investments.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	

NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
65	2019-241202	Investment Manager	Manages a portfolio of securities, in which he/she may exercise his/her own discretion, on behalf of clients.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
66	2019-241203	Investment Advisor	Advises clients in respect of securities and other financial investments and instruments.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
67	2019-242103	Business Development Officer	Supports the coordination, implementation, monitoring and reporting of local economic development initiatives in creating a conducive environment for entrepreneurs and businesses, encouraging investment, job opportunities to improve the economy and social upliftment of an area.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
68	2019-242202	Policy Analyst	Collects and analyses information and data to produce intelligence for public or private sector organisations to support planning, operations and human resource functions.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
69	2019-242204	Corporate Treasurer	Manages corporate funding, liquidity and financial risk associated with the profitable development and operation of an organisation. May be involved in acquisitions, disposals and joint ventures.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	
70	2019-242208	Organisational Risk Manager	Advises organisations on assessment processes to determine actual and potential risks pertaining to the organisation as a total entity.	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	

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NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
71	2019-242211	Internal Auditor	Evaluates and improves the effectiveness of risk management, control and governance processes within an organisation.	Bachelor's Degree or Advanced Diploma (NQF Level 7)	
72	2019-242402	Occupational Instructor (Air Traffic Space)	Conducts and assesses training and development to ensure management and staff acquire the skills and develop the competencies required by an organisation to meet organisational objectives.	Bachelor's Degree or Advanced Diploma (NQF Level 7) and Air-traffic qualification not benchmarked to the NQF	
73	2019-243102	Market Research Analyst	Determines the market for new goods and services, develops advertising strategies and evaluates the best business sites for commercial organisations.	Master's Degree (NQF Level 9)	
74	2019-251101	ICT Systems Analyst	Evaluates processes and methods used in existing ICT systems, proposes modifications, additional system components or new systems to meet user needs as expressed in specifications and other documentation.	Bachelor's Degree or Advanced Diploma (NQF Level 7)	
75	2019-251102	Data Scientist	Collects large amounts of unruly data and transforms it into a more usable format; solves business-related problems using data-driven techniques.	Bachelor's Degree or Advanced Diploma (NQF Level 7)	
76	2019-251201	Software Developer	Researches, analyses and evaluates requirements for existing or new software applications and designs, develops, tests and maintains software solutions.	Bachelor's Degree or Advanced Diploma (NQF Level 7)	
77	2019-251202	Programmer Analyst	Designs, develops, modifies documents and tests, implements, installs and supports software applications and systems.	Bachelor's Degree or Advanced Diploma (NQF Level 7)	

NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
78	2019-251203	Developer Programmer	Interprets specifications, technical designs and flow charts; builds, maintains and modifies the code for software applications; constructs technical specifications from a business functional model; and tests and writes technical documentation.	Bachelor's Degree or Advanced Diploma (NQF Level 7)	
79	2019-251301	Multimedia Specialist	Creates and manipulates computer animation, audio, video and graphic image files into multimedia programmes to produce data and content for information kiosks, multimedia presentations, web sites, mobile telephone resources, electronic gaming environments, e-commerce and e-security solutions, and entertainment and education products.	Bachelor's Degree or Advanced Diploma (NQF Level 7)	
80	2019-251401	Applications Programmer	Writes and maintains programmable code of software applications and operating systems.	Bachelor's Degree or Advanced Diploma (NQF Level 7)	
81	2019-251901	Computers Quality Assurance Analyst	Installs software and hardware and configures operating system software in preparation for testing and conduct testing.	Bachelor's Degree or Advanced Diploma (NQF Level 7)	
82	2019-252301	Computer Network and Systems Engineer	Plans, develops, deploys, tests and optimises network and system services taking responsibility for configuration management and overall operational readiness of network systems, especially environments with multiple operating systems and configurations, and provides troubleshooting and fault-finding services for network problems.	Bachelor's Degree or Advanced Diploma (NQF Level 7)	

NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
83	2019-252302	Network Analyst	Researches and analyses network architecture, recommends policies and strategies for designing, planning and coordinating an organisation's network such as the total system environment and architecture; may also perform operational tasks such as monitoring system performance, software and hardware upgrades, backups, support and network maintenance.	Bachelor's Degree or Advanced Diploma (NQF Level 7)	
84	2019-252901	ICT Security Specialist	Establishes, manages and administers an organisation's ICT security policy and procedures to ensure preventive and recovery strategies are in place, and minimise the risk of internal and external security threats.	Bachelor's Degree or Advanced Diploma (NQF Level 7)	
85	2019-263101	Economist	Performs economic research and analysis; develops and applies theories about production and distribution of goods and services, and people's spending and financial behaviour; and provides advice to governments and organisations on subjects relating to economic policies.	Master's Degree (NQF Level 9)	
86	2019-311101	Chemistry Technician	Performs laboratory tests on organic and inorganic chemicals, analyses test data and carries out technical functions in support of chemists or chemical engineers and technologists in a wide variety of areas such as fuels, pharmaceuticals, paints, metals, plastics, textiles, detergents, paper, fertilisers and cosmetics.	Diploma or Advanced Certificate (NQF Level 6)	

NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
87	2019-311203	Town Planning Technician	Provides technical support to town planners by preparing and maintaining plans, documents, charts, photographs, tables, reports and exhibition material for projects, public meetings and committees related to the controlled use of urban and rural land.	Diploma or Advanced Certificate (NQF Level 6)	SACAP (South African Council for the Architectural Profession); SACLAP (South African Council for the Landscape Architectural Profession)
88	2019-311401	Electronic Engineering Technician	Conducts tests of electronic systems, collects and analyses data and assembles circuitry in support of electronics engineers and engineering technologists.	Diploma or Advanced Certificate (NQF Level 6)	ECSA (Engineering Council of South Africa)
89	2019-311501	Mechanical Engineering Technician	Conducts tests of mechanical systems, collects and analyses data and assembles and installs mechanical assemblies in support of mechanical engineers and engineering technologists.	Diploma or Advanced Certificate (NQF Level 6)	ECSA (Engineering Council of South Africa)
90	2019-311801	Draughtsperson	Prepares technical drawings, maps and illustrations from sketches, measurements and other data, and copies final drawings and paintings onto printing plates in support of architects, engineers and engineering technologists. Note: the terms "drafting technician" or "drafting officer" can be used interchangeably.	Diploma or Advanced Certificate (NQF Level 6)	
91	2019-315401	Air Traffic Controller	Ensures the safe and efficient movement of aircrafts in controlled airspace and aerodromes by directing aircraft movements.	National Certificate (NQF Level 4) and Air-traffic qualification not benchmarked to the NQF	

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NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
92	2019-422201	Inbound Contact Centre Consultant (with first-language speaking and translating capabilities in the following languages: German, Swiss German, Flemish, Greek, Swedish, Danish, Italian, Dutch, Spanish, Mandarin and French)	Provides expert response to complex customer enquiries according to agreed key performance indicators.	National Certificate (NQF Level 4)	
93	2019-422202	Outbound Contact Centre Consultant (with first-language speaking and translating capabilities in the following languages: German, Swiss German, Flemish, Greek, Swedish, Danish, Italian, Dutch, Spanish, Mandarin and French)	Initiates specialised contact with targeted and/or selected customers according to agreed key performance indicators or outcomes.	National Certificate (NQF Level 4)	
94	2019-642701	Air Conditioning and Refrigeration Mechanic	Installs, maintains and repairs piping, ducting and equipment for heating, cooling and ventilation of buildings or vessels.	Intermediate Certificate (NQF Level 3)	
95	2019-652301	Metal Machinist	Sets up and operates machine tools to shape and form metal stock and castings to fine tolerances, using detailed drawings and specifications.	Intermediate Certificate (NQF Level 3)	
96	2019-671202	Millwright	Installs, maintains, troubleshoots and repairs stationary industrial machinery and electromechanical equipment.	National Certificate (NQF Level 4)	
97	2019-671203	Mechatronics Technician	Repairs and maintains integrated industrial systems based on mechanical, electrical, electronic and information technology and advanced technology components.	Intermediate Certificate (NQF Level 3)	

NUMBER	OFO CODE	OCCUPATION NAME	DESCRIPTION (OFO)	MINIMUM QUALIFICATION REQUIRED	STATUTORY PROFESSIONAL BODY
98	2019-671204	Lift Mechanic	Designs, installs, maintains, services and repairs electric and hydraulic passenger and freight lifts, escalators, moving walkways and other lift equipment.	Intermediate Certificate (NQF Level 3)	
99	2019-671206	Electrical Equipment Mechanic	Services and repairs electrical equipment and household appliances.	Intermediate Certificate (NQF Level 3)	
100	2019-671208	Transportation Electrician	Installs, maintains and repairs electrical wiring and electronic components in motorised vehicles.	National Certificate (NQF Level 4)	
101	2019-672105	Instrument Mechanician (Industrial Instrumentation and Process Control)	Installs, modifies, maintains and repairs electronic instruments and control systems.	Intermediate Certificate (NQF Level 3)	



Part 5

Conclusion

Given the complexities within the country's labour market, the development and subsequent finalisation of the CSL is a monumental task.

As the technical report of the draft CSL correctly points out:

The primary aim of the CSL is to identify occupations that are in shortage and unlikely to be developed domestically in time to prevent the obstruction of economic growth potential in the short to medium term. The importance of accurately identifying these occupations cannot be understated. If the criteria for inclusion are too flexible, South African citizens are disadvantaged; too strict and the economy suffers.¹⁶

The aim of this analysis was, therefore, to provide a balanced analysis of the evidence provided in a transparent and defensible manner.

As a result of this pooling together of the evidence, the occupations on this CSL have met the following criteria:

- The occupations on the list show signs of acute shortage in the labour market, and this acute shortage is unable to be remedied in the short term.
- The occupations on the list are also critically important for the development of the country going forward.

Beyond these criteria, every effort was made to ensure that there were also insufficient numbers of qualified South Africans available in the labour market to take up these specific occupations for the time being. It is further unlikely that such a supply of qualified South Africans could be generated in the short term.

A wide array of engagements with public and private entities and persons, combined with analysis of the available data, allowed for a deeper and more nuanced understanding of the country's labour market. These engagements ultimately assisted in developing a robust CSL, which will unlock growth that is not at the expense of South African nationals and their job prospects.

¹⁶ DNA Economics (2020), p. 114.

ANNEXURE 1: Specialisations and alternative titles for occupations listed

Table 6 presents a list of all alternative names or specialisations included under the occupations included in the final CSL. In some cases, public comments made mention of specialisations or alternative titles for particular occupations that should be considered as critical skills. While most of these specialisations and alternative titles are found in the OFO, there are some titles mentioned that are currently not found in the OFO. For that reason, the researchers have compiled the following list of all specialisations and alternative titles linked to the occupations in the final CSL (i.e., Table 4). The key to this table is provided below, before the table itself.

- Occupations left unhighlighted but bold simply match some of the occupations in Table 4.
- Titles highlighted in **green** are either specialisations or alternative titles within the OFO that were mentioned in public comments,¹⁷ or else specialisations or alternative titles not housed in the OFO but proposed as critical skills in public comments.¹⁸

TABLE 6: List of relevant specialisations and alternative titles

OFO CODE	NAME	CATEGORY
2019-112101	Director (Enterprise/Organisation)	Occupation listed
2019-112101	Managing Director	Specialisation or alternative title (OFO)
2019-112101	Chief Executive Officer (CEO)	Specialisation or alternative title (OFO)
2019-121905	Programme or Project Manager	Occupation listed
2019-121905	Project Manager	Specialisation or alternative title (Comments)
2019-121905	Quality Analyst	Specialisation or alternative title (Comments)
2019-121908	Quality Systems Manager	Occupation listed
2019-121908	Quality Control Manager	Specialisation or alternative title (OFO)
2019-121908	Quality Assurance/Systems Auditor	Specialisation or alternative title (OFO)
2019-122301	Research and Development Manager	Occupation listed
2019-122301	Research Manager	Specialisation or alternative title (OFO)
2019-132401	Supply and Distribution Manager	Occupation listed
2019-132401	Supply Chain Manager	Specialisation or alternative title (OFO)
2019-133101	Chief Information Officer	Occupation listed
2019-133101	Innovator and Futurist	Specialisation or alternative title (Comments)

¹⁷ Denoted in the category column as "Specialisation or alternative title (OFO)".

¹⁸ Denoted in the category column as "Specialisation or alternative title (Comments)".

OFO CODE	NAME	CATEGORY
2019-143905	Call/Contact Centre Manager	Occupation listed
2019-143905	Call/Contact Centre Quality Manager	Specialisation or alternative title (OFO)
2019-143905	Contact Centre Director	Specialisation or alternative title (Comments)
2019-211101	Physicist	Occupation listed
2019-211101	Astrophysicist	Specialisation or alternative title (OFO)
2019-211101	Atmospheric Physicist	Specialisation or alternative title (Comments)
2019-211101	Astronomer	Specialisation or alternative title (Comments)
2019-211301	Chemist	Occupation listed
2019-211301	Analytical Chemist	Specialisation or alternative title (OFO)
2019-211301	Manufacturing Chemist	Specialisation or alternative title (OFO)
2019-211301	Chemical Scientist	Specialisation or alternative title (Comments)
2019-211301	Chemist Specialist (personal care industry)	Specialisation or alternative title (Comments)
2019-211301	Industrial Chemist	Specialisation or alternative title (Comments)
2019-211301	Pharmacologist (non-clinical)	Specialisation or alternative title (Comments)
2019-211401	Geologist	Occupation listed
2019-211401	Geochemist	Specialisation or alternative title (OFO)
2019-211401	Palaeontologist	Specialisation or alternative title (OFO)
2019-211401	Geology Engineer	Specialisation or alternative title (Comments)
2019-211406	Hydrologist	Occupation listed
2019-211406	Hydrology Engineer	Specialisation or alternative title (Comments)
2019-213102	General Biologist	Occupation listed
2019-213102	Biological Scientist	Specialisation or alternative title (Comments)
2019-213105	Biotechnologist	Occupation listed
2019-213105	Molecular Geneticist	Specialisation or alternative title (OFO)
2019-213105	Bioinformatician	Specialisation or alternative title (OFO)
2019-213105	Bioinformaticist	Specialisation or alternative title (Comments)
2019-213108	Microbiologist	Occupation listed
2019-213108	Virologist	Specialisation or alternative title (OFO)
2019-213109	Zoologist	Occupation listed

OFO CODE	NAME	CATEGORY
2019-213109	Animal Scientist	Specialisation or alternative title (OFO)
2019-213109	Entomology Engineer	Specialisation or alternative title (OFO)
2019-213205	Food and Beverage Scientist	Occupation listed
2019-213205	Food Safety Standards Auditor	Specialisation or alternative title (OFO)
2019-213205	Food Technologist	Specialisation or alternative title (OFO)
2019-213205	Protein Development Technologist	Specialisation or alternative title (OFO)
2019-214101	Industrial Engineer	Occupation listed
2019-214101	Health and Safety Engineer	Specialisation or alternative title (OFO)
2019-214101	Process Engineer	Specialisation or alternative title (OFO)
2019-214101	Automation and Control Engineer	Specialisation or alternative title (OFO)
2019-214102	Industrial Engineering Technologist	Occupation listed
2019-214102	Fabrication Technologist	Specialisation or alternative title (OFO)
2019-214102	Manufacturing Technologist	Specialisation or alternative title (OFO)
2019-214102	Quality Management Technologist	Specialisation or alternative title (OFO)
2019-214401	Mechanical Engineer	Occupation listed
2019-214401	Mechatronics Engineer	Specialisation or alternative title (OFO)
2019-214201	Civil Engineer	Occupation listed
2019-214201	Water and Wastewater Engineer	Specialisation or alternative title (OFO)
2019-214201	Geotechnical Engineer	Specialisation or alternative title (OFO)
2019-214201	Structural Engineer	Specialisation or alternative title (OFO)
2019-214201	Hydraulics Engineer	Specialisation or alternative title (OFO)
2019-214202	Civil Engineering Technologist	Occupation listed
2019-214202	Charting and Geographical Information Systems Specialist	Specialisation or alternative title (Comments)
2019-214401	Mechanical Engineer	Occupation listed
2019-214401	Mechatronics Engineer	Specialisation or alternative title (OFO)
2019-214401	Automotive Engineer	Specialisation or alternative title (OFO)
2019-214402	Mechanical Engineering Technologist	Occupation listed
2019-214402	Maintenance Technologist	Specialisation or alternative title (OFO)
2019-214403	Aeronautical Engineer	Occupation listed
2019-214403	Avionics Engineer	Specialisation or alternative title (OFO)
2019-214403	Air Traffic Safety Electronics Personnel	Specialisation or alternative title (Comments)
2019-214403	Airspace Modelling and Simulation Specialist	Specialisation or alternative title (Comments)
2019-214403	Airspace Modelling and Simulation Specialist	Specialisation or alternative title (Comments)
2019-214403	Flight Procedure Designer	Specialisation or alternative title (Comments)

OFO CODE	NAME	CATEGORY
2019-214404	Aeronautical Engineering Technologist	Occupation listed
2019-214901	Biomedical Engineer	Occupation listed
2019-214901	Clinical Engineer	Specialisation or alternative title (OFO)
2019-215103	Energy Engineer	Occupation listed
2019-215103	Nuclear Energy Engineer	Specialisation or alternative title (OFO)
2019-215104	Energy Engineering Technologist	Occupation listed
2019-215104	Energy Sustainability Specialist	Specialisation or alternative title (OFO)
2019-215201	Electronics Engineer	Occupation listed
2019-215201	Instrumentation Engineer	Specialisation or alternative title (OFO)
2019-215201	Computer Engineer	Specialisation or alternative title (OFO)
2019-216603	Multimedia Designer	Occupation listed
2019-216603	Digital Media Designer	Specialisation or alternative title (OFO)
2019-241203	Investment Advisor	Occupation listed
2019-241203	Financial Markets Investment Advisor	Specialisation or alternative title (OFO)
2019-241203	Securities Sales Trader	Specialisation or alternative title (OFO)
2019-242202	Policy Analyst	Occupation listed
2019-242202	Policy Consultant/Officer/Planner	Specialisation or alternative title (OFO)
2019-242202	Risk/Planning/Review/Analyst	Specialisation or alternative title (OFO)
2019-242202	Research and Evaluation Analyst	Specialisation or alternative title (OFO)
2019-242204	Corporate Treasurer	Occupation listed
2019-242204	Financial Risk Manager	Specialisation or alternative title (OFO)
2019-242208	Organisational Risk Manager	Occupation listed
2019-242208	Risk Compliance Manager	Specialisation or alternative title (OFO)
2019-242208	Organisational Risk Officer	Specialisation or alternative title (OFO)
2019-242402	Occupational Instructor	Occupation listed
2019-242402	Air Traffic Services Instructor	Specialisation or alternative title (Comments)
2019-242402	Air Traffic Safety Electronics Personnel Instructor	Specialisation or alternative title (Comments)
2019-251101	ICT Systems Analyst	Occupation listed
2019-251101	ICT System Designer	Specialisation or alternative title (OFO)
2019-251101	Artificial Intelligence Specialist	Specialisation or alternative title (Comments)
2019-251101	Machine Learning Specialist	Specialisation or alternative title (Comments)
2019-251101	Systems Integration Specialist	Specialisation or alternative title (Comments)
2019-251101	Cloud Architect	Specialisation or alternative title (Comments)

OFO CODE	NAME	CATEGORY
2019-251102	Data Scientist	Occupation listed
2019-251102	Data Scientist Manager	Specialisation or alternative title (Comments)
2019-251201	Software Developer	Occupation listed
2019-251201	Software Engineer	Specialisation or alternative title (OFO)
2019-251201	UI/UX Designer	Specialisation or alternative title (Comments)
2019-251201	SQL/Cisco Developer	Specialisation or alternative title (Comments)
2019-251201	Air Traffic Control–Related Software Specialist	Specialisation or alternative title (Comments)
2019-251202	Programmer Analyst	Occupation listed
2019-251202	Architect (Applications/Call Centre/ Computing/Desktop/E-Commerce)	Specialisation or alternative title (OFO)
2019-251202	Architect (Enterprise/Internet/IT/Network/ Software/Unix/Web)	Specialisation or alternative title (OFO)
2019-251202	Database Designer	Specialisation or alternative title (OFO)
2019-251202	Solutions Architect	Specialisation or alternative title (Comments)
2019-251202	Robotic Process Automation (RPA) Specialist	Specialisation or alternative title (Comments)
2019-251202	Artificial Intelligence Specialist	Specialisation or alternative title (Comments)
2019-251203	Developer Programmer	Occupation listed
2019-251203	ICT Developer	Specialisation or alternative title (OFO)
2019-251203	Programme Analyst	Specialisation or alternative title (Comments)
2019-251301	Multimedia Specialist	Occupation listed
2019-251301	Digital Commercial Director	Specialisation or alternative title (Comments)
2019-251301	E-Commerce Director	Specialisation or alternative title (Comments)
2019-251301	Digital Transformation Manager	Specialisation or alternative title (Comments)
2019-251301	Digital Experience Manager	Specialisation or alternative title (Comments)
2019-251301	Digital Marketing Specialist	Specialisation or alternative title (Comments)
2019-252301	Computer Network and Systems Engineer	Occupation listed
2019-252301	Systems Integrator	Specialisation or alternative title (OFO)
2019-252301	Computer Systems Integrator	Specialisation or alternative title (OFO)

OFO CODE	NAME	CATEGORY
2019-252301	Network Engineer	Specialisation or alternative title (OFO)
2019-252301	Systems Engineer	Specialisation or alternative title (OFO)
2019-252301	Network Programmer/Analyst	Specialisation or alternative title (OFO)
2019-252301	Cisco Engineer	Specialisation or alternative title (Comments)
2019-252301	DevOps Engineer	Specialisation or alternative title (Comments)
2019-252301	Blockchain Professional	Specialisation or alternative title (Comments)
2019-252301	Cloud Engineering Professional	Specialisation or alternative title (Comments)
2019-252301	Linux Engineering Professional	Specialisation or alternative title (Comments)
2019-252302	Network Analyst	Occupation listed
2019-252302	Network Architect	Specialisation or alternative title (OFO)
2019-252901	ICT Security Specialist	Occupation listed
2019-252901	ICT Security Architect	Specialisation or alternative title (OFO)
2019-252901	Cloud Security Operations Manager	Specialisation or alternative title (Comments)
2019-263101	Economist	Occupation listed
2019-263101	Agricultural Economist	Specialisation or alternative title (OFO)
2019-263101	Transport Economist	Specialisation or alternative title (Comments)
2019-311401	Electronic Engineering Technician	Occupation listed
2019-311401	Medical Equipment Maintainer	Specialisation or alternative title (OFO)
2019-311401	Clinical Engineering Technician	Specialisation or alternative title (OFO)
2019-315401	Traffic Controller	Occupation listed
2019-315401	Air Traffic Controller	Specialisation or alternative title (Comments)
2019-652301	Metal Machinist	Occupation listed
2019-652301	Fitter Machinist	Specialisation or alternative title (OFO)
2019-671208	Transportation Electrician	Occupation listed
2019-671208	Aircraft Electrician	Specialisation or alternative title (OFO)

ANNEXURE 2: Fields of study included under university lecturer

CESM	SPECIALISATION
Accounting and Informatics	<ul style="list-style-type: none"> • Actuarial Science • Auditing • Financial Accounting • Financial Planning – Certified Financial Planner with academic qualifications • Financial Econometrics and Technical Analysis • Financial Management • Entrepreneurship • Management Accounting
Agricultural, Environmental and Natural Sciences	<ul style="list-style-type: none"> • Agricultural Economist • Agricultural Engineering • Agricultural Policy Development • Agronomy: Weed Science • Analytical Chemists and Hydro Metallurgists • Animal Scientist • Bioinformatics • Crop Science • Data Analytics/Statistics/Biometry • Dendrochronology • Dairy Science Occupational Code • Disaster Management • Entomology • Earth System Science • Economic Geology • Exposure Biology • Epidemiology/Food Microbiology • Food Engineering • Food Scientist • Food Safety • Forest Planner • Food Processing and Storage Technology • Forest Resource Management and Planning • Genetics: Applied Plant Breeding • Geology • Geography • Ground Water Hydrology • Hydrogeology • Mathematics • Mathematical Statistics • Meat Science • Microbiology and Biochemistry • Mining Geology • Molecular Biophysics • Natural Resource Economics • Nematology • Physics • Plant Science • Plant Breeding • Plant Pathology, Especially Epidemiology • Plant Taxonomy and Systematics • Plant Ecology • Plant Sciences • Statistics • Soil Science • Software Developers (Agricultural) • Structural Biology • Surface Process Geochemistry • Surface and Soil Water Hydrology • Risk Analyst • Veterinary Science • Viticulturist • Zoology (Aquatic Scientist, Animal Scientist, Biological Scientist, Ecological Scientist)
Arts – Design and Social Sciences	<ul style="list-style-type: none"> • Arts Entrepreneurship • Communication and Media • Criminology • Geography and Environmental Studies • GIT Geomatics • Urban and Regional Planners (professionally registered) • Geographical Information Systems • Environmental Epidemiology • Graphic Design • Fashion Design • Fashion and Textile • Information Science • Information Science • Artificial Intelligence • Data Science • Cybersecurity and Cyberwarfare • Socio-Informatics • Interior Design • Journalism, Film and Television • Dutch • Non-South African African Languages and Culture • Foreign Languages (Chinese, French, German, Dutch) • General Linguistics and Modern Languages • Linguistics Literature, Heritage and Culture • Theory of Translation and Interpretation • Theory of Lexicography • Library and Information Science • Music • Music: Strings Players • Ethnomusicology Experts (especially non-South African African music, essential for the renewal of the curriculum) • Music in the fields of Music Technology and Music Therapy and Community Music • Political Science/International Relations • Sociology • Social Science Research Methods and Particularly Quantitative Data Analysis • Monitoring and Evaluation Specialists • Science Policy Analysts • Visual Arts • Digital Production and/or Graphic Design • Communication and Media • Applied Virtual/Augmented Reality
Business Studies	<ul style="list-style-type: none"> • Business Innovation • Change Management • Corporate Governance • Development Finance • HR Information Systems and Technology • Entrepreneurship Management • Financial Planning • Finance/Investment • Investments • Local Governance • International Business • Operations Management: Productivity • Ergonomics, Operations Management • Project Management • Responsible Leadership • Safety Management • Technology Management
Commerce	<ul style="list-style-type: none"> • Information Systems • Macroeconomic • Microeconomic • Accounting • Actuarial Science • Organisational Psychology • Tax
Economics	<ul style="list-style-type: none"> • Behavioural and Experimental Economics • Cliometrics • Data Analytics • Econometrics • Environmental Economics • Health Economics • Industrial Policy • International Trade • Industrial Organisation • Macroeconomics • Political Economy

CESM	SPECIALISATION
Education	<ul style="list-style-type: none"> Accounting Education Non-South African African Languages Aeronautical Engineering Chemistry Education Critical Management Education Curriculum Studies Early Childhood Care and Education (ECCE) Educational Psychology Education Research English Geography Higher Education Studies, Especially Higher Education Leadership, Educational Finance and Student Affairs Linguists – Formal, Forensic, Digital Mathematics Mechanical Engineering Mechatronics Medical Laboratory Sciences: in disciplines such as Clinical, Chemistry, Cytology, Histology Methodology/Health/Sport/Physical Education and/or Sports Coaching Movement Education Music (Specialised) Physical Science Technology (Civil, Mechanical and Electrical) Science (Biology, Life Science, Chemistry and Physics) Physics Education Science and Technology Education Special Education Social Sciences Education Biology Chemistry
Management Sciences	<ul style="list-style-type: none"> Administration and Economics Management Actuarial Science Chartered Accountants Financial Risk Management General Economics Hospitality Information Systems Logistics Management Macro and Micro Econometrics Management Mineral Economics Operation Management Project Management Statistics Mathematical Statistics (including Distribution Theory) Statistical Modelling, Inference Biostatistics/Biometrics Including Spatial Statistics/Geostatistics and Survival Analysis Extreme Value Theory Statistical Process Control Statistics of Data Science and Machine Learning Supply Chain Management (SCM) Transport Economics
Engineering and the Built Environment	<ul style="list-style-type: none"> Agricultural Engineering Architecture Bio and Water Engineering Biomedical Engineering Civil Engineering Transport Engineering Structural Engineering Urban Engineering Geotechnical Engineering Water Resource Engineering Construction Engineering Quantity Surveying Chemical Engineering Bioprocessing Engineering Biochemical Engineering Biomolecular Engineering Process Modelling- Simulation Engineering Clinical Engineering Computer Engineering Construction Management Construction Project Management Control Engineering Corrosion Data Science Digital Construction Technology Data Engineering Economic Geology Electrical Engineering Electronics Engineering Electrical Power Engineering Energy Engineering Engineering Management Environmental Engineering Explosive Engineering (Explosive Rock Engineering) Facilities Management Geotechnical Engineering Geomatics Mine Surveying Mineral Resources Management Mineral Economics Photogrammetry Geostatistics Geohydrologists and Water Resource Scientist Geostatistics (Mineral Resources and Reserves Evaluation) Geotechnical Engineering High Voltage Engineering Hydrometallurgy Industrial Engineering Instrumentation Engineering Intelligent Systems Jewellery Design Land Surveyor Materials Engineer Mechatronics Engineering Mechanical Engineering Metallurgical Engineering Mineral Economics Mining Engineering Mining Surveying Mine Environmental Engineering Operation Management Petroleum Engineering Physical Metallurgy Planning Programme Power and Energy Process and Control Engineering Production Engineers Property Valuation and Management Property Studies Rock Engineering (Rock Mechanics Or Geotechnical Engineering) Pyrometallurgy Quantity Surveying Reactor Design Real Estate and Property Studies Structural Engineering Technology Telecommunication Engineering Town and Regional Planning Transportation Engineering Urban and Regional Planning Ventilation Engineering Water Engineering
Food Service Management	<ul style="list-style-type: none"> Dietetics
Health Sciences	<ul style="list-style-type: none"> Pharmacology Clinical Pharmacy Psychology Industrial Psychology
Humanities	<ul style="list-style-type: none"> Non-South African African Languages Anthropology Clinical Psychology History International Relations Leadership Local Languages Education Philosophy Research Psychologists Political Studies Sign Language Linguistics Sociology Social Work

CESM	SPECIALISATION
Information and Communications Technology	<ul style="list-style-type: none"> • Analysis and Projection • Applied Virtual/Augmented Reality • Artificial Intelligence • Big Data Analytics, Filtering • Business Information Systems • Business and Systems Analysts • Cloud Computing • Cheminformatics • Computer Forensics • Computer Network Professionals • Computer Science • Cryptocurrency • Cyber Security • Database and Systems Administrators • Data Science • Digital Government • Digital Media in the fields of Game Design and Animation and Interactive Media • Digital Platform Business Models • Disaster Informatics • Enterprise Architecture • Expert Systems • Cheminformatics • Health Informatics • Infopreneurial Skills • ICT and Data Science – all fields • ICT Security Specialists • ICT Support and Computer Science • Internet of Things – 4IR Skills • Information System and Strategy • IS Auditing • IS Development • IS Security/ Cyber Security • ITS • Management Information Systems/Information Technology Management • Multimedia Specialists and Web Developers • Project Management • Retail Analytics • Social Media Management • Software Development • Software Engineering • Software and Applications Programmers
Law	<ul style="list-style-type: none"> • International Trade Law • International Criminal Law • International Law • International Commercial Law • International/Global Environmental Law • Public International Law
Medicine and Health Sciences	<ul style="list-style-type: none"> • Academic Pharmacy • Allied Health Professions and Rehabilitation Sciences Including Disciplines – Audiology, Hearing Therapy, Occupational Therapy, Physical Medicine, Physiotherapy, Rehabilitation Sciences and Speech-Language Therapy) • Anesthesiology and Critical Care (with disciplines including Anaesthesiology and Critical Care Medicine/Intensive Care Medicine) • Bioinformatics • Biomaterials Sciences • Biomedical Engineering and Medical Data Science (with disciplines including Biomedical Engineering, Medical Data Science, Health Informatics and Medical Informatics) • Biomedical Sciences (with disciplines including Anatomy/Clinical Anatomy, andrology, Bacteriology, Biochemistry/Medical Biochemistry, Bioinformatics and Computational Biology, Biological Sciences, Biophysics, Cancer Biology, Cell Biology, Cytology, Developmental Biology, Electron Microscopy, Enzymology, Genetics/Human Genetics, Genomics and Proteomics, Histology, Laboratory Medicine, Medical Laboratory Sciences, Medical Laboratory Technology, Medicinal Chemistry, Microbiome Sciences, Microscopy, Molecular Biology, Morphology/Morphological Sciences, Physiology/Medical Physiology, Reproductive Biology, Synthetic Biology, and Vaccinology) • Biostatistics • Clinical Pharmacy • Comparative Medicine (with disciplines including Laboratory Animal Sciences, Animal Technology, Comparative Medicine, and Veterinary Sciences) • Family and Emergency Medicine (with disciplines including Emergency Medicine, Family Medicine, Hyperbaric Medicine, Palliative Care and Primary Health Care) • Global and Public Health (with disciplines including Biostatistics, Cancer Science, Community Health, Dietetics, Environmental Health, Epidemiology, Global Surgery, Global Health, Health Economics, Health Systems, Human Nutrition, Occupational Health, Preventive Medicine, Public Health and Rural Health) • Educational Technology • Emergency Medical Care • Environmental Health • Exposure Science • Foetal Medicine • Health Professions Education • Human Anatomy and Physiology • Industrial Pharmacy • Infertility • Maxillo Facial • Medical Ethics and Medical Law (with disciplines including Medical Ethics, and Medical Law/Legal Medicine) • Medical Imaging and Clinical Oncology (with disciplines including Medical Physics, Neuroimaging, Nuclear Medicine, Oncology/Radiation Oncology, Radiobiology, and Radiodiagnosis) • Medicine (with disciplines including Allergology, Bariatric Medicine, Cardiology, Clinical Immunology, Clinical Pharmacology, Dermatology, Endocrinology, Gastroenterology, General Internal Medicine, Geriatrics and Gerontology, Haematology, Hepatology, Infectious Diseases, Environmental Toxicology, Metabolism, Nephrology, Neurology, Proctology, Pulmonology, Rheumatology, Toxicology, Transfusion Sciences, and Venereology) • Neurosciences • Nursing and Midwifery – Specialised Care Lecturers in the areas of Paediatrics, Trauma, Forensic Nursing, Oncology, Neonatal ICU, Wound Care and Infection Control as well as Stoma Care • Obstetrics and Gynaecology (with disciplines including Gynaecology, Gynaecologic Oncology, Medical Genetics, and Obstetrics)

CESM	SPECIALISATION
Medicine and Health Sciences <i>cont.</i>	<ul style="list-style-type: none"> • Occupational Therapists • Occupational Medicine • Oral Medicine and Periodontics • Paediatrics and Child Health (with disciplines including Adolescent Medicine, Child Health, Neonatology, and Paediatrics) • Pathology (with disciplines including Anatomical Pathology, Chemical Pathology, Cytopathology, Forensic Medicine, Haematological Pathology, Histopathology, Immunology, Microbiology/Medical Microbiology, Parasitology, and Virology/Medical Virology) • Paediatric Dentistry • Pharmaceutical Sciences • Plastic Surgery • Psychiatry (with disciplines including Addiction Science, Child and Adolescent Psychiatry, Clinical Psychology, Forensic Psychiatry, Geriatric Psychiatry, Neuroscience, and Psychiatry) • Physiotherapists • Physiology • Quality Assurance and Regulatory Pharmacy • Radiation Oncology • Sports Science and Sports Medicine (with disciplines including Biokinetics, Exercise Medicine, Sports Medicine, Sport Psychology and Sport Science) • Surgical Sciences (with disciplines including Cardiothoracic Surgery, General Surgery, Neurosurgery, Ophthalmology, Orthopaedic Surgery, Otorhinolaryngology, Paediatric Surgery, Plastic and Reconstructive Surgery, Podiatric Surgery, Transplant Surgery, Urology, Vascular Surgery • Radiography (Diagnostic Radiology, Interventional Radiology) • Public Health Biostatistics Application • Transplant Surgery
Science	<ul style="list-style-type: none"> • Archaeobotanical • Applied Mathematics • Astronomy • Astrophysics • Bioinformatics • Climate Science • Computational Geoscientists • Chemical Sciences • Earth Observation • Geological Sciences • Geoarchaeology • Geographical Information Science • Inorganic Chemistry • Materials Science • Mathematics • Mathematical Statistics • Mining Geologists • Nanotechnology/Nanoscience • Nuclear and Particle Physics • Oceanography • Physics • Population Genetics • Radio Astronomy • Remote Sensing • Seismologists • Sensory Science • Systematists/Taxonomists In The Biological Sciences • Statistical Sciences • Theoretical • Theoretical and Computational Sciences Physics
Physics	<ul style="list-style-type: none"> • Few-Body Physics
Public Management and Administration	<ul style="list-style-type: none"> • Disaster and Risk Management • Public Administration • Public Management/ Cooperatives • Supply Chain Management • Research Administration • Innovation Management and Administration • Digital Research Management • Research Management • Research Administration
Theology	<ul style="list-style-type: none"> • Ancient Studies and Classics • Religion Studies

Source: USAf

ANNEXURE 3: Professional bodies

Stakeholders provided a total of 19 comments related to either the correction or addition of professional bodies related to particular occupations. It is important to note the following:

- There are statutory as well as voluntary professional bodies in South Africa.
- Statutory bodies (such as the Health Professions Council of South Africa and the South African Nursing Council) are established as a result of an Act of Parliament and govern the practice of specific occupations in South Africa.
- Voluntary (or non-statutory) bodies normally act to “create an enabling environment for professional development in a discipline, and [grow] the maturity of that discipline by contributing to its body of knowledge, its relevance, governing principles and accessibility to new and existing practitioners. A professional body serves as the impartial, autonomous representative of its various stakeholders in matters related to the discipline.”¹⁹

In addition to specific proposed changes, stakeholders and respondents to the call for public comment highlighted two broader points. These were that the DHA should consider either:

- Clarifying in the report that the professional bodies mentioned therein are not necessarily the only professional bodies foreign nationals can apply to; or
- Simply excluding reference to specific professional bodies from the CSL because the exclusion of some may be anti-competitive. In this instance, the DHA could apply its CSL rules regarding professional bodies by checking against the total list of professional bodies registered by the South African Qualifications Authority (SAQA).

As it stands, the legislation governing the publication of the CSL requires that occupations fall within the ambit of a SAQA-registered (statutory or non-statutory) professional body. In light of this legislation, the researchers have done the following to ensure that no relevant SAQA-registered professional body is excluded from the analysis:

- If an individual is required by law to be licensed to practice within an occupation, the CSL will reflect the SAQA-registered professional body or bodies that provide such licensing.
- If an individual is not required by law to be licensed to practice within an occupation, the CSL will reflect no professional bodies relevant to that occupation (of which there may be many). In this case, the following database houses all SAQA-registered professional bodies that are relevant to the CSL: <https://pbdesig.saqa.org.za/search.php>

As a result, the below set of comments relate directly to the amendment of **statutory** professional bodies registered with SAQA in the final CSL.

TABLE 7: Requests for changes to professional bodies in preliminary CSL

OFO CODE	OFO DESCRIPTION	PROFESSIONAL BODY IN THE PREVIOUS CSL	PROPOSED CHANGE
2019-213202	Agricultural Scientist		Engineering Council of South Africa
2019-213205	Food and Beverage Scientist		South African Council for Natural Scientific Professions
2019-231101	University Lecturer		South African Council for Educators

¹⁹ Project Management South Africa (n.d.), FAQs, available at: <https://www.projectmanagement.org.za/page/A1FAQs>.

ANNEXURE 4: Qualifications

A handful of comments noted that certain qualification levels mentioned in the draft CSL seemed to be too low relative to the skill level needed for the associated occupations. Matching qualifications to occupations relied on reviewing evidence from the National Careers Portal and discussions with the South African Qualifications Authority (SAQA). This evidence was supplemented with the following main guiding principle:

If a post is to be filled using the issuance of a CSV, the NQF requirement should tip the scale towards South Africans: in other words, the non-South African's qualification expectation should be higher than the South African's.

In line with this principle, the researchers have set qualifications criteria in the CSL slightly beyond the qualifications required by South Africans to practice. This, we believe, will attract skilled individuals from overseas while not disadvantaging South Africans with such qualifications.

In general, the qualifications in the CSL reflect the following tenets:

- Occupations in the field of natural sciences (earth sciences, life sciences, physical sciences, and so forth) require a foreign national to have an NQF Level 9 qualification;
- Occupations in the field of research and development (including statistics and data science) require a foreign national to have an NQF Level 9 qualification;
- Occupations in the field of ICT, unless relating to advanced statistics or analyses, require a foreign national to hold an NQF Level 7 qualification; and
- Occupations in the fields of management, engineering, and finance require a foreign national to have an NQF Level 8 qualification.

These general tenets were applied on a case-by-case basis to allow for some flexibility in the determination of the requisite qualifications for skilled foreign nationals.

Beyond the comment on the general NQF levels in the draft CSL, more than 20 comments were received relating to the amendment of specific qualifications provided in the draft CSL. The exact changes proposed are shown in Table 8.

The issue of experience, meanwhile, is discussed in Annexure 7.

TABLE 8: Requests for changes to qualifications in preliminary CSL

OFO CODE	OFO DESCRIPTION	QUALIFICATION IN OLD CSL	REQUEST FOR QUALIFICATION CHANGE	DECISION ON NQF LEVEL
2019-112101	Director (Enterprise/Organisation)**	Not included in CSL draft, but included at Master's Degree (NQF Level 9) during NEDLAC consultation	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)
2019-121301	Policy and Planning Manager**	Diploma or Advanced Certificate (NQF Level 6)	Remain at Diploma or Advanced Certificate (NQF Level 6)	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)
2019-121901	Corporate General Manager (medium enterprises or larger)**	Not included in CSL draft, but included at Master's Degree (NQF Level 9) during NEDLAC consultation	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)
2019-121905	Programme or Project Manager**	Not included in CSL draft, but included at Master's Degree (NQF Level 9) during NEDLAC consultation	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)
2019-122301	Research and Development Manager	Diploma or Advanced Certificate (NQF Level 6)	PhD (NQF Level 10)	Master's Degree (NQF Level 9)
2019-143905	Call or Contact Centre Manager**	Master's Degree (NQF Level 9)	No suggestion, but stated that level was too high	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)
2019-213202	Agricultural Scientist	Not included in CSL draft	PhD (NQF Level 10)	Master's Degree (NQF Level 9)
2019-213205	Food and Beverage Scientist	Bachelor's Degree or Advanced Diploma (NQF Level 7)	PhD (NQF Level 10)	Master's Degree (NQF Level 9)
2019-214401	Mechanical Engineer	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	Minimum qualification as stipulated, or with equivalent experience or certification	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)
2019-214402	Mechanical Engineering Technologist	Diploma or Advanced Certificate (NQF Level 6)	Minimum qualification as stipulated, or with equivalent experience or certification	Diploma or Advanced Certificate (NQF Level 6)
2019-214405	Naval Architect	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	Bachelor's Degree (NQF Level 7)	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)
2019-216101	Architect	Bachelor's Degree or Advanced Diploma (NQF Level 7)	Master's Degree (NQF Level 9)	Master's Degree (NQF Level 9)

OFO CODE	OFO DESCRIPTION	QUALIFICATION IN OLD CSL	REQUEST FOR QUALIFICATION CHANGE	DECISION ON NQF LEVEL
2019-216401	Urban and Regional Planner	Not included in CSL draft	Bachelor's Degree (NQF Level 8)	Master's Degree (NQF Level 9)
2019-231101	University Lecturer – Senior Lecturer and above for only those CESM categories listed in Annexure 2**	Master's Degree (NQF Level 9)	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	Professional Doctoral Qualification (NQF Level 9) or Doctorate (NQF Level 10)
2019-241104	External Auditor	Bachelor's Degree or Advanced Diploma (NQF Level 7)	Honours Degree (NQF Level 8)	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)
2019-241108	Forensic Accountant	Bachelor's Degree or Advanced Diploma (NQF Level 7)	Minimum qualification as stipulated, or with equivalent experience or certification	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)
2019-241202	Investment Manager	Diploma or Advanced Certificate (NQF Level 6)	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)
2019-242103	Business Development Officer**	Diploma or Advanced Certificate (NQF Level 6)	Remain at Diploma or Advanced Certificate (NQF Level 6)	Bachelor Honours Degree, Postgraduate Diploma, or Bachelor's Degree (NQF Level 8)
2019-251102	Data Scientist**	Bachelor's Degree or Advanced Diploma (NQF Level 7)	PhD (NQF Level 10) based on public comment Diploma or Advanced Certificate (NQF Level 6) based on NEDLAC input	Bachelor's Degree or Advanced Diploma (NQF Level 7) ²⁰
2019-311501	Mechanical Engineering Technician	Diploma or Advanced Certificate (NQF Level 6)	Minimum qualification as stipulated, or with equivalent experience or certification	Diploma or Advanced Certificate (NQF Level 6)
2019-311801	Draughtsperson	Higher Certificate (NQF Level 5)	Minimum qualification as stipulated, or with equivalent experience or certification	Diploma or Advanced Certificate (NQF Level 6)

Note: Occupations with asterisks next to their name (**) had qualifications reviewed during the NEDLAC process.

20 Although data scientists conduct research, the position relies on a host of short courses to build on foundational education, in a similar way to other occupations in the ICT space. Therefore, the qualification included is consistent with all other ICT-related occupations in the CSL.

ANNEXURE 5: Unsuccessful exclusion requests from the public comment

The list below presents the reasons for the denial of removal requests. Therefore, these occupations may remain on the list for validation by various departments and NEDLAC, despite requests for their exclusion based on public comment. Depending on stakeholder consultations, some of these occupations may be removed from the finalised CSL.

COUNT	OFO CODE	OFO DESCRIPTION	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	WHY WAS THE REQUEST FOR EXCLUSION DENIED?
1	2019-121301	Policy and Planning Manager	Plans, develops, organises, directs, controls and coordinates policy advice and strategic planning within organisations.	2	One respondent put forward the fact that South African universities produce many social science graduates. However, profession does not only deal with social policy, but also corporate policy and planning.
2	2019-122301	Research and Development Manager	Plans, organises, directs, controls and coordinates research and development activities within organisations.	3	Insufficient evidence provided by respondents, apart from their position that the occupation is not in shortage.
3	2019-131101	Agricultural Farm Manager	Plans, directs and coordinates production in large scale agricultural and horticultural operations such as collective farms and agricultural co-operatives to grow and harvest crops.	1	Insufficient evidence provided by respondent, apart from their position.
4	2019-132104	Engineering Manager	Plans, organises, directs, controls and coordinates the design, operation and construction of engineering and process plants and mining operations.	1	Insufficient evidence provided by respondent.
5	2019-132407	Airport or Harbour Manager	Plans, organises, directs, controls and coordinates the operations of an airport or harbour.	2	Individuals did not provide verifiable evidence. Organisation indicates that enough South Africans have the skill required for this occupation. However, no verifiable evidence is provided.

COUNT	OFO CODE	OFO DESCRIPTION	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	WHY WAS THE REQUEST FOR EXCLUSION DENIED?
6	2019-133101	Chief Information Officer	Plans, organises, directs controls and coordinates the ICT strategies, plans and operations of an organisation to ensure the ICT infrastructure supports the organisation's overall operations and priorities.	2	Insufficient evidence provided by respondents.
7	2019-133103	Data Management Manager	Plans, coordinates and supervises all activities related to the design, development and implementation of organisational data base systems.	1	Insufficient evidence provided by respondent.
8	2019-143905	Call or Contact Centre Manager	Manages the performance of call centre workers, processes and technology against financial and non-financial operational targets.	3	Insufficient evidence provided by respondent, apart from their position that the occupation is not in shortage.
9	2019-214101	Industrial Engineer	Investigates and reviews the utilisation of personnel, facilities, equipment and materials, current operational processes and established practices, to recommend improvement in the efficiency of operations in a variety of commercial, industrial and production environments.	1	Insufficient evidence provided by respondent.
10	2019-214102	Industrial Engineering Technologist	Analyses and modifies new and existing industrial engineering technologies and applies them in the testing and implementation of industrial engineering projects.	1	Insufficient evidence provided by respondent.
11	2019-214201	Civil Engineer	Plans, designs, organises and oversees the construction and operation of civil engineering projects such as structural, transportation or hydraulic engineering systems.	1	Insufficient evidence provided by respondent.

COUNT	OFO CODE	OFO DESCRIPTION	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	WHY WAS THE REQUEST FOR EXCLUSION DENIED?
12	2019-214202	Civil Engineering Technologist	Analyses and modifies new and existing engineering technologies and applies them in the testing and implementation of civil, mechanical, electrical or electronic engineering projects.	1	Insufficient evidence provided by respondent.
13	2019-216101	Architect	Designs buildings and advises on the procurement of buildings, provides concepts, plans, specifications and detailed drawings, and negotiates with builders.	1	Insufficient evidence provided by respondent.
14	2019-216603	Multimedia Designer	Plans, designs and develops the production of digitally delivered information, promotional content, instructional material and entertainment through online and recorded digital media using static and animated information, text, pictures, video and sound to produce information and entertainment tailored to an intended audience and purpose.	2	Insufficient evidence provided by respondents, apart from their position that the occupation is not in shortage.
15	2019-222103	Registered Nurse (Child and Family Health)	Provides nursing care to children from birth to school age and their families with an emphasis on preventing, and early detection of, and intervening in physical, emotional and social problems affecting children and their families such as assistance with parent craft, immunisation and developmental milestones.	1	No evidence provided. Respondents misconstrued "critical" as simply being important for the country.

COUNT	OFO CODE	OFO DESCRIPTION	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	WHY WAS THE REQUEST FOR EXCLUSION DENIED?
16	2019-222104	Registered Nurse (Community Health)	Provides nursing care, health counselling, screening and education to individuals, families and groups in the wider community with a focus on patient independence and health promotion.	2	Insufficient evidence provided by respondents.
17	2019-222108	Registered Nurse (Medical)	Provides nursing care to patients with conditions such as infections, metabolic disorders and degenerative conditions which require medical intervention in a range of health, aged care and community settings.	2	Insufficient evidence provided by respondents.
18	2019-222109	Registered Nurse (Medical Practice)	Provides clinical care to patients, undertakes clinical organisation and practice administration and facilitates communication within a general practice environment and between the practice and outside organisations and individuals.	2	Insufficient evidence provided by respondents.
19	2019-222110	Registered Nurse (Mental Health)	Provides nursing care to patients with mental health illness, disorder and dysfunction, and experiencing emotional difficulties, distress and crisis in health, welfare and aged care facilities, correctional services and the community.	1	No evidence provided. Respondents misconstrued "critical" as simply being important for the country.
20	2019-222114	Nurse Educator	Designs, plans, implements and evaluates the delivery of nursing education and staff development programmes, and manages educational resources.	1	No evidence provided. Respondents misconstrued "critical" as simply being important for the country.

COUNT	OFO CODE	OFO DESCRIPTION	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	WHY WAS THE REQUEST FOR EXCLUSION DENIED?
21	2019-231101	University Lecturer	Lectures students and conducts tutorials in one or more subjects within a prescribed course of study at a university and conducts research in a particular field of knowledge.	1	No evidence provided. Respondents misconstrued "critical" as simply being important for the country.
22	2019-241103	Tax Professional	Analyses, reports and provides advice on taxation issues to tax entities, prepares and reviews tax returns and reports and handles disputes.	2	Insufficient evidence provided by respondent, apart from their position that the occupation is not in shortage.
23	2019-241104	External Auditor	Designs and operates information and reporting systems, procedures and controls to meet external financial reporting requirements.	1	No evidence provided. Respondents misconstrued "critical" as simply being important for the country.
24	2019-241108	Forensic Accountant	Examines financial records to detect and deter fraud and white-collar crime.	1	Insufficient evidence provided by respondent, apart from their position that the occupation is not in shortage.
25	2019-241202	Investment Manager	Manages a portfolio of securities, in which he/she may exercise his/her own discretion, on behalf of clients.	1	No evidence provided. Respondent misconstrued "critical" as simply being important for the country.
26	2019-242103	Business Development Officer	Supports the coordination, implementation, monitoring and reporting of local economic development initiatives in creating a conducive environment for entrepreneurs and businesses, encouraging investment, job opportunities to improve the economy and social upliftment of an area.	2	Insufficient evidence provided by respondent, apart from their position that the occupation is not in shortage.

COUNT	OFO CODE	OFO DESCRIPTION	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	WHY WAS THE REQUEST FOR EXCLUSION DENIED?
27	2019-242202	Policy Analyst	Collects and analyses information and data to produce intelligence for public or private sector organisations to support planning, operations and human resource functions.	2	Insufficient evidence provided by respondent, apart from their position that the occupation is not in shortage.
28	2019-242208	Organisational Risk Manager	Advises organisations on assessment processes to determine actual and potential risks pertaining to the organisation as a total entity.	1	No evidence provided. Respondent misconstrued "critical" as simply being important for the country.
29	2019-242211	Internal Auditor	Evaluates and improves the effectiveness of risk management, control and governance processes within an organisation.	1	No evidence provided. Respondent misconstrued "critical" as simply being important for the country.
30	2019-243102	Market Research Analyst	Determines the market for new goods and services, develops advertising strategies and evaluates the best business sites for commercial organisations.	3	Individuals did not provide verifiable evidence. Organisation indicates that enough South Africans have the skill required for this occupation. However, no verifiable evidence is provided.
31	2019-251202	Programmer Analyst	Designs, develops, modifies documents and tests, implements, installs and supports software applications and systems.	1	No evidence provided. Respondent misconstrued "critical" as simply being important for the country.
32	2019-251203	Developer Programmer	Interprets specifications, technical designs and flow charts, builds, maintains and modifies the code for software applications, constructs technical specifications from a business functional model, and tests and writes technical documentation.	1	No evidence provided. Respondent misconstrued "critical" as simply being important for the country.

COUNT	OFO CODE	OFO DESCRIPTION	DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	WHY WAS THE REQUEST FOR EXCLUSION DENIED?
33	2019-251301	Multimedia Specialist	Creates and manipulates computer animation, audio, video and graphic image files into multimedia programmes to produce data and content for information kiosks, multimedia presentations, web sites, mobile telephone resources, electronic gaming environments, e-commerce and e-security solutions, and entertainment and education products.	1	No evidence provided. Respondent misconstrued "critical" as simply being important for the country.
34	2019-251302	Web Developer	Plans, produces and maintains web sites using web programming languages, software applications, technologies and databases together with specifications of user needs, often in conjunction with other ICT professionals such as business analysts, web designers and network and usability specialists.	2	Insufficient evidence provided by respondents, apart from their position that the occupation is not in shortage.
35	2019-671203	Mechatronics Technician	Repairs and maintains integrated industrial systems based on mechanical, electrical, electronic and information technology and advanced technology components.	1	No evidence provided. Respondent misconstrued "critical" as simply being important for the country.
36	2019-671204	Lift Mechanic	Designs, installs, maintains, services and repairs electric and hydraulic passenger and freight lifts, escalators, moving walkways and other lift equipment.	2	Insufficient evidence provided by respondents, apart from their position that the occupation is not in shortage.
37	2019-671208	Transportation Electrician	Installs, maintains and repairs electrical wiring and electronic components in motorised vehicles.	2	Insufficient evidence provided by respondents, apart from their position that the occupation is not in shortage.

ANNEXURE 6: Unsuccessful inclusion requests

The occupations in the following list were requested for inclusion by the public but were not included due to a lack of evidence and/or their failure to meet the minimum criteria for inclusion. In the event that engagements with government departments or at NEDLAC show sufficient evidence for the inclusion of occupations named in this annexure, the occupation was subsequently added back into the penultimate CSL.

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
1	2019-121101	Finance Manager	6	D1, D5
2	2019-121103	Credit Manager	3	Respondents requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, indicated that this occupation is not in shortage.
3	2019-121104	Internal Audit Manager	3	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, indicated that this occupation is not in shortage. Respondent also recommends inclusion based on "criticality, scarcity and lead time". However, no evidence is provided in this regard. Respondent consulted within its own organisation and with clients, but did not provide evidence in this regard.
4	2019-121909	Sustainability Manager	1	Respondent provided a list of skills which are included in the WEF <i>Future of Jobs Report</i> that satisfy the criteria set out in the technical report. Given that this is a report with a global perspective, suggestions are accepted based on whether D1 or D2 have been satisfied. In this case, neither D1 or D2 have been fulfilled.
5	2019-122102	Sales Manager	2	Respondent consulted internally and with clients, but no evidence of this consultation was forthcoming.
6	2019-122103	Director of Marketing	1	Respondent consulted internally and with clients, but no evidence of this consultation was forthcoming.
7	2019-122104	Interactive and Direct Marketing Strategist	1	Respondent consulted internally and with clients, but no evidence of this consultation was forthcoming.
8	2019-122201	Advertising and Public Relations Manager	3	D1, D2, D5

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
9	2019-131201	Aquaculture Farm Manager	2	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, indicated that this occupation is not in shortage. Other respondent provided no evidence for inclusion.
10	2019-132108	Metrologist	1	Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to: <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.
11	2019-132201	Mining Operations Manager	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also not indicated this occupation as being in shortage.
12	2019-134201	Medical Superintendent	6	Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to: <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.
13	2019-134205	Health Service Specialised Clinic Manager	1	Respondent canvassed its members and received submissions on suggested inclusions. Evidence in this regard was not provided.
14	2019-134402	Community Development Manager	1	Respondent provided strong case for inclusion based on the importance and complexity of the problem addressed by this profession. However, this occupation requires detailed knowledge of local cultural context and is, therefore, not appropriate for the CSL.

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
15	2019-134903	Small Business Manager	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also not indicated this occupation as being in shortage.
16	2019-134904	Office Manager	1	Respondent did not provide evidence.
17	2019-134906	Practice Manager	1	Respondent did not provide evidence.
18	2019-143901	Facilities Manager	1	Respondent recommends inclusion based on "criticality, scarcity and lead time". However, no evidence is provided in this regard.
19	2019-211201	Meteorologist	5	Respondents did not provide evidence.
20	2019-212102	Mathematician	1	Respondent recommend inclusion based on "criticality, scarcity and lead time". However, no evidence is provided for this position.
21	2019-212103	Statistician	6	Respondent recommends inclusion based on "criticality, scarcity and lead time". However, no evidence is provided for this position. Other respondents did not provide evidence
22	2019-213104	Biochemist	1	Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to: <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students the importance of these occupations for addressing climate change and other conservation challenges, and the impacts of pandemics the impact that such removal will have on the attractiveness of South African Universities The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
23	2019-213106	Botanist	6	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> • the detrimental effects their removal will have on current foreign students who will not be able to continue their research • the value of foreign students at universities in terms of diversity • their contribution to the training of South African students • the importance of these occupations for addressing climate change and other conservation challenges, and the impacts of pandemics • the impact that such removal will have on the attractiveness of South African Universities <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
24	2019-213110	Medical Scientist	2	Respondents did not provide evidence.
25	2019-213201	Agriculture Consultant	3	<p>Respondents requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, indicated that this occupation is not in shortage.</p>
26	2019-213203	Forest Scientist	1	<p>Respondent provided a list of skills which are included in the WEF <i>Future of Jobs Report</i> that satisfy the criteria set out in the technical report. Given that this is a report with a global perspective, suggestions are accepted based on whether D1 or D2 have been satisfied. In this case, neither D1 or D2 have been fulfilled.</p>
27	2019-213204	Wine Maker	2	D1, D6
28	2019-213304	Earth and Soil Scientist	3	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> • the detrimental effects their removal will have on current foreign students who will not be able to continue their research • the value of foreign students at universities in terms of diversity • their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based. Other respondents provided no evidence for inclusion.</p>

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
29	2019-213306	Water Quality Analyst	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also indicated this occupation as not being in shortage.
30	2019-213309	Toxicologist	1	Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to: <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based. Other respondent provided no evidence for inclusion.
31	2019-214103	Production Engineer	3	Respondent provided a list of skills which are included in the WEF <i>Future of Jobs Report</i> that satisfy the criteria set out in the technical report. Given that this is a report with a global perspective, suggestions are accepted based on whether D1 or D2 have been satisfied. In this case, neither D1 or D2 have been fulfilled.
32	2019-214301	Environmental Engineer	1	Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to: <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students the importance of these occupations for addressing climate change and other conservation challenges, and the impacts of pandemics the impact that such removal will have on the attractiveness of South African Universities The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
33	2019-214302	Environmental Impact and Restoration Analyst	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also indicated this occupation as not being in shortage.
34	2019-214406	Marine Engineering Technologist	3	Respondents recommend inclusion based on "criticality, scarcity and lead time". However, no evidence is provided for this position.
35	2019-214603	Metallurgical Engineer	1	Respondents recommend inclusion based on "criticality, scarcity and lead time". However, no evidence is provided for this position.
36	2019-214903	Marine Salvage Engineer	1	Respondent did not provide evidence.
37	2019-215101	Electrical Engineer	14	D1, D5
38	2019-215202	Electronics Engineering Technologist	1	Respondent provided a list of skills which are included in the WEF <i>Future of Jobs Report</i> that satisfy the criteria set out in the technical report. Given that this is a report with a global perspective, suggestions are accepted based on whether D1 or D2 have been satisfied. In this case, neither D1 or D2 have been fulfilled.
39	2019-215301	Telecommunications Engineer	3	Respondent recommends inclusion based on "criticality, scarcity and lead time". However, no evidence is provided for this position. Other respondents provided no evidence for inclusion.
40	2019-215302	Telecommunications Engineering Technologist	1	Respondent recommends inclusion based on "criticality, scarcity and lead time". However, no evidence is provided for this position.
41	2019-215303	Telecommunications Network Engineer	1	Respondent recommends inclusion based on "criticality, scarcity and lead time". However, no evidence is provided for this position.
42	2019-216201	Landscape Architect	2	Respondents requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also indicated this occupation as not being in shortage.
43	2019-216301	Fashion Designer	1	Respondent did not provide evidence.
44	2019-216302	Industrial Designer	2	Respondents did not provide evidence.
45	2019-216303	Jewellery Designer	1	D1, D2, D3,D4

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
46	2019-216502	Surveyor	2	Respondents requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also indicated this occupation as not being in shortage.
47	2019-221103	Public Health Physician	1	Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to: <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.
48	2019-221201	Anaesthetist	1	Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to: <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.
49	2019-221202	Cardiologist	1	Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to: <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
50	2019-221203	Emergency Medicine Specialist	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
51	2019-221204	Obstetrician and Gynaecologist	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
52	2019-221205	Ophthalmologist	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
53	2019-221206	Paediatrician	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
54	2019-221207	Pathologist	4	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based. Other respondents simply stated their position that the occupation should be on the CSL, but provided no evidence related to their submission.</p>
55	2019-221208	Psychiatrist	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
56	2019-221209	Radiologist	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
57	2019-221210	General Medicine Specialist Physician	6	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based. Other respondents requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also not indicated this occupation as being in shortage.</p>
58	2019-221211	Surgeon	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
59	2019-221212	Forensic Pathologist	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
60	2019-221213	Radiation Oncologist	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
61	2019-221214	Nuclear Medicine Specialist	2	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p> <p>Other respondents requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also not indicated this occupation as being in shortage.</p>

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
62	2019-221215	Family Physician	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
63	2019-221216	Neurologist	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
64	2019-221217	Clinical Pharmacologist	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
65	2019-221218	Medical Geneticist	2	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> • the detrimental effects their removal will have on current foreign students who will not be able to continue their research • the value of foreign students at universities in terms of diversity • their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based. Other respondents requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also not indicated this occupation as being in shortage.</p>
66	2019-221219	Plastic and Reconstructive Surgeon	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> • the detrimental effects their removal will have on current foreign students who will not be able to continue their research • the value of foreign students at universities in terms of diversity • their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
67	2019-221220	Urologist	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> • the detrimental effects their removal will have on current foreign students who will not be able to continue their research • the value of foreign students at universities in terms of diversity • their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
68	2019-221221	Public Health Medicine Specialist	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
69	2019-221222	Public Health Occupational Medicine Specialist	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
70	2019-221223	Paediatric Surgeon	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
71	2019-221224	Orthopaedic Surgeon	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> • the detrimental effects their removal will have on current foreign students who will not be able to continue their research • the value of foreign students at universities in terms of diversity • their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
72	2019-221225	Neurosurgeon	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> • the detrimental effects their removal will have on current foreign students who will not be able to continue their research • the value of foreign students at universities in terms of diversity • their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
73	2019-221226	Otorhinolaryngologist	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> • the detrimental effects their removal will have on current foreign students who will not be able to continue their research • the value of foreign students at universities in terms of diversity • their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
74	2019-221227	Dermatologist	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
75	2019-222101	Clinical Nurse Practitioner	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
76	2019-222102	Aged Care Registered Nurse	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
77	2019-222105	Registered Nurse (Critical Care and Emergency)	2	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based. Other respondent provided no evidence for inclusion.</p>
78	2019-222106	Registered Nurse (Developmental Disability)	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
79	2019-222107	Registered Nurse (Disability and Rehabilitation)	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
80	2019-222111	Registered Nurse (Operating theatre)	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
81	2019-222112	Registered Nurse (Surgical)	1	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p>
82	2019-223101	Acupuncturist	1	No evidence provided.
83	2019-225101	Veterinarian	6	<p>Respondent requested the re-inclusion of the Health Sciences occupations from the 2014 CSL due to:</p> <ul style="list-style-type: none"> the detrimental effects their removal will have on current foreign students who will not be able to continue their research the value of foreign students at universities in terms of diversity their contribution to the training of South African students <p>The arguments provided do not distinguish the occupation satisfactorily from other high-skill occupations while making the case for acute shortage that is evidence-based.</p> <p>Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also not indicated this occupation as being in shortage.</p> <p>Other respondents did not provide any evidence.</p>

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
84	2019-226102	Dentist	1	Respondent did not provide evidence.
85	2019-226302	Safety, Health, Environment and Quality (SHE&Q) Practitioner	5	D1, D5
86	2019-226401	Physiotherapist	3	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also indicated this occupation as not being in shortage.
87	2019-226501	Dietitian	1	Respondent did not provide evidence.
88	2019-226601	Audiologist	1	Respondent did not provide evidence.
89	2019-226602	Speech Pathologist	1	Respondent did not provide evidence.
90	2019-226902	Occupational Therapist	2	Respondents did not provide evidence.
91	2019-226903	Podiatrist	1	Respondent makes the case for the inclusion from an NHI perspective. Including an occupation based on the assumption that public sector demand for health occupations will increase in the future. Given budgetary constraints in the public health sector, this is unlikely to be the case.
92	2019-226905	Biokineticist	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also indicated this occupation as not being in shortage.
93	2019-232121	Social Sciences Teacher	1	Respondent provided anecdotal evidence with no verifiable source.
94	2019-232130	TVET Educator	2	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also not indicated this occupation as being in shortage.
95	2019-234101	Foundation Phase School Teacher	7	D1, D5
96	2019-234102	Intermediate Phase School Teacher (Grades 4-6)	7	Respondents did not provide evidence.
97	2019-235101	Education or Training Advisor	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also indicated this occupation as not being in shortage.

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
98	2019-235201	Special Needs Teacher	2	Respondent provided anecdotal evidence with no verifiable source.
99	2019-242207	Compliance Officer	2	Respondents did not provide evidence.
100	2019-242303	Human Resource Advisor	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also indicated that this occupation is indeed in shortage.
101	2019-242304	Industrial Relations Advisor	2	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. However, the occupation is: <ul style="list-style-type: none"> • Not in SETA PIVOTAL list or ERRP list • Not in acute shortage as per the index • Not appropriate to include on the CSL In the South African context, occupation requires fundamental contextual knowledge of labour negotiations and union practice.
102	2019-243401	ICT Account Manager	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also indicated that this occupation is indeed not in shortage.
103	2019-243402	ICT Business Development Manager	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also indicated that this occupation is indeed not in shortage.
104	2019-243403	ICT Sales Representative	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also indicated that this occupation is indeed not in shortage.
105	2019-252201	Systems Administrator	5	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also indicated that this occupation is indeed not in shortage. Respondent recommends inclusion based on "criticality, scarcity and lead time". However, no evidence is provided for this position. Respondent consulted internally and with clients, but no evidence from this consultation was forthcoming. Other respondents provided no evidence.

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
106	2019-261101	Attorney	5	Respondents make the case, with verifiable evidence, for the inclusion of the occupation into the CSL. However, in terms of the legislation governing legal professions, foreigners cannot practice as attorneys unless they are permanent residents. Including this occupation here is in conflict with the provisions for legal professions. CSL is therefore an inappropriate instrument to address shortage.
107	2019-261105	Tribunal Member	1	D1, D2, D4
108	2019-261106	Advocate	1	Respondent points to the OIHD list to make a case for the inclusion of specialised legal professions. The OIHDs focus was on demand, not shortage. They further point to the importance of the legal profession for the economy. Although true, this case can be made for many other high-skill occupations. Beyond this, foreign nationals are not legally able to practice law in the country.
109	2019-263204	Sociologist	1	Respondent did not provide evidence.
110	2019-263401	Clinical Psychologist	1	Respondent did not provide evidence.
111	2019-263403	Organisational Psychologist	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also not indicated this occupation as being in shortage.
112	2019-263501	Social Counselling Worker	3	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also not indicated this occupation as being in shortage.
113	2019-263506	Probation Social Worker	2	Respondents did not provide evidence.
114	2019-263507	Adoption Social Worker	2	No evidence provided.
115	2019-263512	Community Development Practitioner	1	D1, D2, D4
116	2019-264301	Interpreter	1	Respondent did not provide evidence.
117	2019-311201	Civil Engineering Technician	4	D1, D5

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
118	2019-311301	Electrical Engineering Technician	3	D1, D5
119	2019-311302	Electric Substation Operations Manager	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also not indicated this occupation as being in shortage.
120	2019-311903	Food and Beverage Technician	3	D1, D3, D4
121	2019-311904	Manufacturing Technician	1	Respondent did not provide evidence.
122	2019-311905	Industrial Engineering Technician	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also indicated that this occupation is indeed in shortage.
123	2019-312103	Engineering Supervisor	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also not indicated this occupation as being in shortage.
124	2019-314102	Environmental Science Technician	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also not indicated this occupation as being in shortage.
125	2019-314201	Agricultural Technician	1	D1, D4
126	2019-314301	Forestry Technician	2	Respondents did not provide evidence.
127	2019-315101	Marine Engineer	2	Respondents did not provide evidence.
128	2019-315201	Ship's Master	1	Respondent provided anecdotal evidence with no verifiable source.
129	2019-315202	Ship's Officer	1	Respondent provided anecdotal evidence with no verifiable source.
130	2019-321101	Medical Diagnostic Radiographer	3	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also not indicated this occupation as being in shortage.
131	2019-325501	Massage Therapist	2	D1, D2, D4

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
132	2019-325703	Agricultural/ Horticultural Produce Inspector	2	Respondents requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, indicated that this occupation is not in shortage.
133	2019-325802	Intensive Care Ambulance Paramedic/ Ambulance Paramedic	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also indicated that this occupation is indeed in shortage.
134	2019-331101	Securities Dealer	1	D1, D2, D3, D4
135	2019-331201	Credit or Loans Officer	1	D2, D4
136	2019-331504	Insurance Risk Surveyor	4	D1, D2, D4
137	2019-332301	Retail Buyer	2	D1, D4
138	2019-334103	Call Centre Team Leader	3	D1, D2, D3
139	2019-341110	Associate Legal Professional	1	D1, D2, D4
140	2019-343201	Interior Designer	1	Individual did not provide evidence.
141	2019-343203	Visual Merchandiser	1	D1, D2, D5
142	2019-351101	Computer Operator	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also not indicated this occupation as being in shortage.
143	2019-351302	Geographic Information Systems Technicians	2	Respondents did not provide evidence.
144	2019-422102	Travel Consultant	1	D2, D6
145	2019-422203	Contact Centre Real Time Advisor	1	D1, D4
146	2019-422206	Call or Contact Centre Agent	1	D1, D3, D4
147	2019-431102	Cost Clerk	1	D2, D3, D4
148	2019-441601	Human Resources Clerk	1	D1, D4
149	2019-441903	Programme or Project Administrators	1	D1, D4, D5

NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
150	2019-511302	Tour Guide	1	D1, D2, D3, D4, D6
151	2019-514101	Hairdresser	1	Respondent did not provide evidence.
152	2019-514202	Slimming Therapist	1	D1, D2, D3, D4
153	2019-516301	Funeral Director	1	D1, D3, D4
154	2019-542301	Infantry Soldier	1	D1, D2, D3, D4
155	2019-641201	Bricklayer	2	D1, D5
156	2019-641402	Fibre-cement Moulder	1	D1, D3, D4
157	2019-642201	Wall and Floor Tiler	1	Respondent did not provide evidence.
158	2019-642301	Fibrous Plasterer	1	D1, D3, D4
159	2019-642302	Plasterer	1	D1, D3, D5
160	2019-642501	Glazier	1	Respondent did not provide evidence.
161	2019-642601	Plumber	2	D1, D5
162	2019-642607	Pipe Fitter	1	D1, D3, D5
163	2019-651101	Moulder	1	D1, D3
164	2019-651202	Welder	6	D1, D5
165	2019-651301	Sheet Metal Worker	1	D1, D2, D5
166	2019-651302	Boiler Maker	4	D1, D5
167	2019-651402	Structural Steel Erector	1	D1, D2, D3, D4, D5
168	2019-651501	Rigger	2	D1, D5
169	2019-652201	Toolmaker	2	Respondents did not provide evidence.
170	2019-653101	Automotive Motor Mechanic	4	D1, D5
171	2019-653303	Mechanical Fitter	1	D5
172	2019-661501	Glass Maker	2	Respondents suggestions are based on a survey done in 2019 in the Global Business Services Sector. However, the Department of Trade, Industry and Competition has provided evidence to suggest that such posts are usually short-term, and can therefore be fulfilled with short-term contracts after short training periods.
173	2019-662202	Small Offset Lithography Operator	1	D1, D3
174	2019-671101	Electrician	5	D5

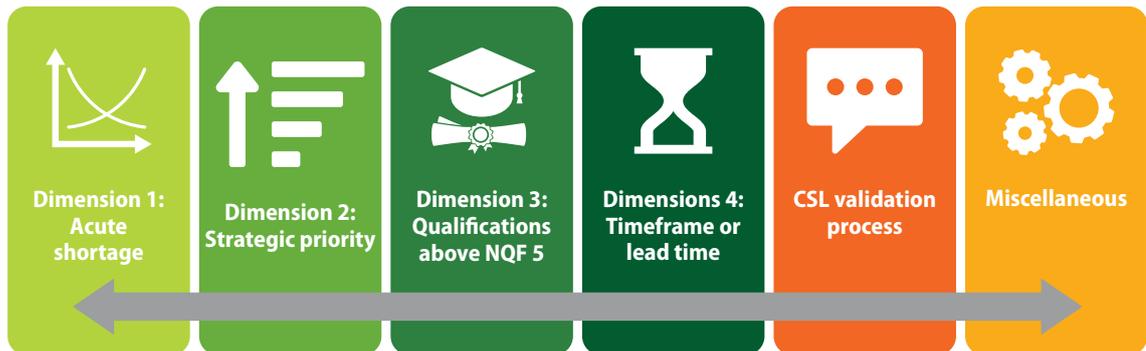
NUMBER	OFO CODE	OFO DESCRIPTION	NUMBER OF RESPONDENTS (INDIVIDUALS AND ORGANISATIONS)	REASON FOR NOT INCLUDING
175	2019-671301	Electrical Line Mechanic	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also not indicated this occupation as being in shortage.
176	2019-672101	Avionics Mechanician	3	Respondents did not provide evidence.
177	2019-672104	Electronic Equipment Mechanician	1	Respondent requested re-inclusion due to not agreeing with the secondary shortage cut-off applied in the methodology. SETAs have, however, also not indicated this occupation as being in shortage.
178	2019-681103	Butcher	4	D1, D5, D6
179	2019-681201	Confectionary Baker	3	D1, D5, D6
180	2019-682201	Cabinet Maker	1	Respondents did not provide evidence.
181	2019-682303	Wood Machinist	1	D1, D5
182	2019-683101	Tailor	2	Respondents did not provide evidence.
183	2019-683201	Clothing, Home Textiles and General Goods Cutter	1	D1, D3, D4, D5
184	2019-683202	Apparel and Related Pattern Maker	1	D1, D3, D4
185	2019-683302	Sail Maker	1	D1, D2, D3, D4
186	2019-684101	Diver	1	D1, D3, D4
187	2019-711301	Driller	2	D1, D2, D3, D4
188	2019-716111	Meat Processing Machine Operator	1	D1, D2, D3, D4, D5
189	2019-718101	Clay Production Machine Operator	1	D1, D2, D3, D4
190	2019-721901	Product Assembler	1	D1, D3, D4, D5
191	2019-732102	Delivery Driver (Motorcycle)	1	D1, D2, D3, D4
192	2019-214906	Materials Engineering Technologist	2	Respondents did not provide evidence.

ANNEXURE 7: Other comments received

Methodology

Fourteen comments were received regarding the methodology of the analysis. These comments can be broken down into six themes, as summarised below.

FIGURE 8: Themes of comments on methodology



Acute shortage

The following analysis responds to the comments associated with Dimension 1 of the methodology, as outlined in the technical report.

The use of principal component analysis (PCA) as a weighting technique places too much weight on the first component of the analysis.

As discussed in the technical report, PCA is a statistical technique that determines the appropriate weights to assign to indicators when developing an index. This technique was used to rank occupations by their relative degree of occupational shortage, with indicators of such shortage selected based on their relation to labour market supply and demand. Using a range of indicators to develop a composite index is preferred in the literature.²¹

The following process summarises the use of a PCA:

FIGURE 9: PCA Process Flow

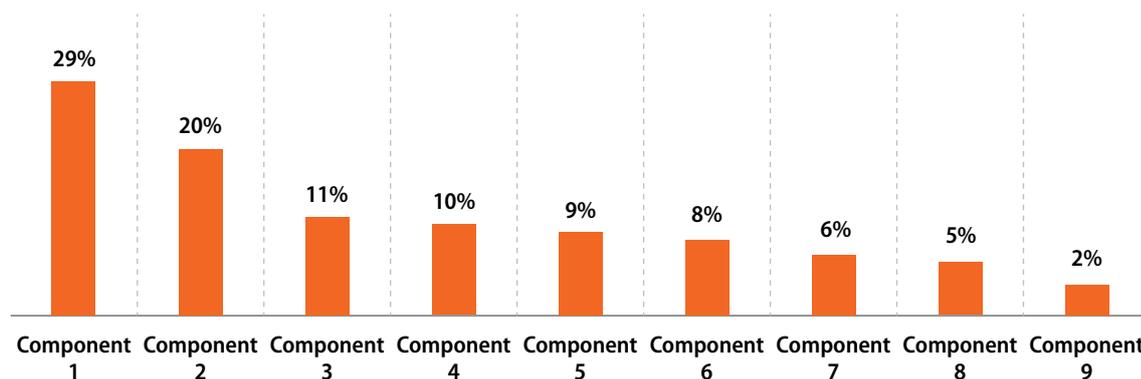


²¹ Jaadi (2021), A Step-by-Step Guide to Principal Component Analysis, available at: <https://builtin.com/data-science/step-step-explanation-principal-component-analysis>; Jolliffe (2011), *Principal Components Analysis*, Berlin: Springer.

As shown in Figure 9, the PCA process estimates weights for each indicator across what are known as components. A component is a suggestion of ways in which to weight already-existing indicators in order to create a new variable/index. Given that the analysis in the technical report looked to combine nine indicators of acute shortage, the PCA process estimated nine components, with a weight attached to each indicator (making for 81 weights in total).

These nine components each contain a percentage of the information associated with the index of acute shortage, as summarised in the next figure.

FIGURE 10: Information distribution across principal components



Therefore, 29% of the information contained across all indicators is captured by the first component. Rooting this in the current case, the index of acute shortage contains nine indicators. Suppose the researchers used the weights in the first component to create this index. In this case, 29% of the information or variability within the indicators would be used to construct the index of acute shortage.

The comments, therefore, rightly caution against the use of the first component alone. Using only 29% of the information at the researchers' disposal would be problematic if there were more than one "principal component". Principal components are simply the most important, or the "principal", components that relate to the underlying index being measured – in this case, occupational shortage.

However, to ensure the use of all principal components, the researchers used the Kaiser-Guttman rule²² to determine which components were most salient in explaining acute shortage given the nine indicators under review. Resultantly, the team did not use only the first component but the second as well. Both of these components were principal or most important in signalling acute occupational shortage. Although a combined 49% of information is captured in these two components, it is this 49% that is arguably most critical to the analysis of acute shortage. Please refer to Kaiser (1991) for more information regarding the rule imposed.

However, because this rule of thumb excludes other components, the research did not rely on PCA alone. This point links to the next general comment on the acute shortage dimension, which will be discussed below.

The use of PCA as a weighting technique is not appropriate for binary data.

22 Kaiser (1991). Coefficient Alpha for a Principal Component and the Kaiser-Guttman Rule. *Psychological Reports*, pp. 855-858.

The nine indicators used to indicate acute shortage are all “binary”, meaning that each indicator either produces a yes or no response (a one or a zero in the technical report). For example, if employment intensity was higher than the median for a given occupation, the variable would equal one; if lower, zero.

As the comment points out, the use of PCA is often believed to be inappropriate in the case of binary data. However, this binary data problem was only applicable to PCA before the mid-to-late 2000s. In fact, due to advancements in statistical analysis, PCA analysis is possible and, in fact, effective with binary data.²³

With that said, the report’s authors went to additional lengths to ensure that the PCA was not the only means of estimating an index of acute shortage. Beyond PCA, Appendix 1 of the technical report provides a robustness check dealing with weighting indicators differently. This robustness check puts forward an additional 31 occupations that did not appear on the PCA-weighted list of occupations in acute shortage. These occupations were then added to the list for further validation and subsequently included in the preliminary list if they met the rest of the criteria and validation process.

This robustness check also provides the basis for the response to the next general comment.

The use of Career Junction, QLFS and LMDS data biases the CSL towards certain occupations.

As mentioned previously, the researchers developed a composite index of acute shortage indicators that does not rely too heavily on a single data source. This index was further subject to robustness checks to ensure that the reliance on such data did not impede the analysis.

It is also critical to flag the national representativity of the QLFS and LMDS data. These data sources are both curated by Stats SA, sampling tens of thousands of South Africans at random in any given quarter. This representativity ensures that the data from both sources is not biased towards any individual or occupation, but rather that each occupation’s probability of being sampled is as good as random.

Furthermore, although the CJ data is not representative at the national level, this data is still valid and extremely useful for analysis. The CJ data indicates acute shortage and is not the only data source used to gauge acute shortage. Instead, it forms part of the quantitative analysis to develop the CSL.

With that said, the quantitative and qualitative components of the CSL methodology are complementary. Should an occupation be in shortage that is not picked up by the index of acute shortage, a dive into grey literature, stakeholder validation and the public comments process ensures the inclusion of such occupations. It is specifically because the quantitative analysis is only indicative that the inclusion criteria are very broad. The researchers erred on the side of inclusion rather than exclusion of occupations in/from the list. In this vein, an occupation either had to show signs of acute shortage or be a strategic priority to government or business to be included in the CSL. This mix between qualitative and quantitative analysis provides a well-rounded list net of any major data deficiencies where they may occur.

²³ See, for example, Lee (2009).

Strategic Priority

Outdated documents used in strategic priority analysis.

Only one respondent flagged that the strategic priority dimension of analysis did not include an up-to-date version of a particular document for analysis that should have been included otherwise. At the time of writing the technical report, this document was not provided to the authors for analysis. After receiving this document, however, the list of occupations that pass the D2 criteria was updated.

Qualification

Using the NQF Level 5 cut-off might exclude individuals from applying for a CSV who are sufficiently skilled through experience, especially artisans.

Five comments mentioned the overreliance of the NQF Level 5 cut-off as a proxy for skill. Such comments also proposed that, beyond the NQF level of their qualification, individuals with the requisite experience might still have an acceptable degree of skill. These comments also made specific reference to trade-related occupations for which individuals might not meet the NQF cut-off but where they still show a high degree of skill.

From the perspective of artisans, the authors of the CSL technical report made sure that such an NQF level did not influence whether a trade/artisanal occupation was included in the CSL or not. If an occupation passed either Dimension 1 of the analysis (i.e., showed signs of acute shortage) or Dimension 2 of the analysis (i.e., showed signs of being a strategic priority for the government), artisan occupations mentioned in the government gazette of trades were precluded from needing to pass Dimensions 3 (NQF Level 5 or above) or 4 to be included in the CSL.

Beyond the specific mention of artisans, there is the broader issue of recognising experience. Ultimately, this is more of an administrative challenge than a methodological one. The CSL uses NQF level as a proxy of skills level to ensure that the CSL remains focused on intermediate – to high-level skills. It is proposed that the DHA consider whether and how it could use experience as a requirement for CSL applicants as part of its application processes.

Timeframe or lead time

Inclusion of experience needed in the lead-time analysis.

One comment flagged that the lead time needed to train an individual for a particular occupation includes both the time to qualify and the time it takes to obtain occupation-specific experience. The experience required was not included here because it is likely to vary substantially – even for the same occupation. However, the number of years needed to complete a qualification is mostly standardised. Therefore, it is a good proxy for the time it would take for South Africa to address an occupational shortage domestically.

Validation process

Two comments related to the validation process.

The use of sensibility filters is subjective.

The first of these comments related to the use of sensibility filters in the technical report, stating that the filtering process (excluding certain occupations based on whether they were sensible in the context of the CSL) was extremely subjective.

The researchers did attempt to ground that subjectivity in a handful of rules:

1. **Excluding government management positions.** These occupations often have long vacancies due to government hiring processes rather than acute shortage.
2. **Excluding occupations based on special talents.** Such occupations cannot be produced by a post-school system reliably because the talents of individuals are often either innate or learnt from a very early age.
3. **Excluding occupations that are mandated to be filled by South African nationals through legislation or executive order.** Including such occupations would contravene such legislation or such an order.
4. **Excluding occupations not related to priority areas of economic development.** This sense-check aims to exclude occupations that do not link to development priorities in the country.

While some aspects of these rules were subjective, interdepartmental communication produced a list of occupations that were agreed to be excluded from the CSL based on these rules. Such interdepartmental consultation relied not only on subjectivity but also on individuals' expertise in analysing the labour market.

Beyond this, subjectivity in such a process is, to an extent, unavoidable, as the Migration Advisory Council (2013) points out. The data and consultation might include an occupation seen as an outlier or an idiosyncrasy in some cases. In these instances, relying on sensibility filters is necessary in order to drop off such occupations included in the CSL due to either mixed evidence or a lack of strong evidence, which passed through the first four dimensions by the thinnest of margins.

The use of the index score cut-off excludes occupations that should otherwise be included in the CSL.

The second comment on the validation process states that using the index score cut-off might exclude occupations that otherwise show signs of shortage, making for an incomplete CSL. Although this is potentially true, the engagement process and public comment ensured that it ultimately made no material difference. Occupations excluded by this secondary cut-off were reincluded when requests were made accompanied by verifiable evidence.

Miscellaneous comments

A further five comments were received on general issues surrounding the CSL.

The filtering approach used in Dimensions 1–4 in the technical report are too strict and require relaxation.

The dimensions aim to find a balance between including occupations for which the domestic labour market is unable to develop a supply of sufficiently skilled individuals and excluding occupations where there are individuals within South Africa able to enter into such an occupation that are unemployed.

Relaxing these dimensions criteria would increase the size of the CSL (i.e., the number of occupations on the list). Increasing the number of occupations in the final CSL will likely have the adverse effect of impacting unemployment. Suppose occupations are included in the list where there are many unemployed South Africans available to fill posts. In that case, such an expansion might allow businesses to hire outside of the country for no reason other than believing there are insufficient skills within the country.

The use of other methodologies.

One commenter proposed using futures research to either develop the next iteration of the CSL or complement the analysis of the next CSL. Other methodologies will be considered going forward.

Occupations should be clustered into thematic areas.

A comment proposed the clustering of occupations by economic sector/theme as was done in the 2014 iteration of the CSL. This clustering will be done by the DHA should it feel the need to represent the occupations accordingly.

More discussion should be held with the private and public sectors to produce the CSL.

A comment notes the need for further stakeholder engagement to ensure that the final CSL truly represents the country's needs. For this reason, the list was made public and the call for public comment was issued out. This call for comment was a nationwide invitation for all to engage with the CSL and provide their inputs. Nevertheless, such a list is not completed in a vacuum, and further stakeholder engagements have already taken place to hone the list further.

More focus should be placed on using the ESSA data on unemployment per occupation.

Originally, ESSA data supplemented the analysis of the CSL. Since the drafting of the CSL in 2020, ESSA data has been incorporated into the current analysis to ensure that the country's persistent unemployment is not exacerbated. Such practice will continue for further iterations of the list.

Organising Framework for Occupations

A total of 32 comments were received relating to the Organising Framework for Occupations (OFO). Broadly two main issues were prominent in the comments:

The CSL currently makes provision for occupations and not specialisations.

In some cases, comments opted to include specific occupations based on what the commentor knew of as being the occupational title which often did not match the occupational title in the OFO. Instead, what individuals might refer to as an occupation might be a specialisation in the OFO. Yet, there are no specialisations currently reflected in the CSL. The team has, therefore, included the names of all relevant specialisations under each occupation mentioned by the public comments.

Some skills do not appear in the OFO that are, nevertheless, critical for the country.

The OFO aims to encompass as many occupations within South Africa as possible. Of course, when technology advances, certain new occupations might arise that are not yet found in the OFO. Such occupations will likely be included in future iterations of the OFO.

With that said, the public comment process illuminated the fact that some key occupations and skills are missing from the OFO that are nevertheless still critical to the country. In particular:

- PhD graduates and academics across fields;
- IT professionals performing specific coding or IT functions not yet included in the OFO (blockchain, machine learning, cloud engineering, etc.); and
- E-commerce occupations not yet included in the OFO.

The finalised CSL makes provision for some of these skills as follows:

1. Foreign language speakers have now been accommodated under both in- and outbound call centre consultant occupational codes.
2. The CSL provided to the public for comment included university lecturers as an occupational classification. However, as USAF clarified during a consultation, university lecturers are necessarily involved in both research and teaching. For that reason, it is not possible to divorce the role of university lecturer from that of academic. This issue has been clarified in the definition of a university lecturer provided in the finalised CSL. Individuals holding either a professional doctoral qualification at NQF Level 9 or a PhD at NQF Level 10 are eligible to apply for a CSV in this category.
3. As regards the remaining 4IR related occupations and skills, while there is no provision for such occupations in the OFO explicitly, the CSL now includes specialisations under which such occupations would fall (see Annexure 1). These specialisations in ICT-related occupations provide individuals with relevant ICT-related qualifications (between NQF Levels 7 and 9) to apply for a CSV. Due to the ever-changing nature of ICT roles, such occupations not in the OFO will require inclusion in the OFO as standalone occupations or specialisations going forward.

Policy, legislation, and regulation

Thirty-seven comments related to the policy, legislation and regulation surrounding the CSL. Two general points came out in the majority of these comments.

First, there was general uncertainty surrounding the CSVs issued off the back of the 2014 CSL. In some cases, occupations in the 2014 CSL have subsequently not been included in the new iteration of the list. Individuals with CSVs in these occupations are unsure of whether they can still work in the Republic of South Africa until their CSV expires or not. This point warrants further clarification from the DHA.

Second, and more generally, there was opposition to the list's existence as a labour market tool. Whether or not South Africa requires a CSL with a high unemployment rate warrants further discussion with the DHA.

There are, however, 14 more specific comments encompassing the improvement of the CSL and CSV processes:

- Allow individuals with a background in law in other countries to apply for a special law-practice CSV;
- Allow partners of a CSV holder to enter the South African workforce as well, even if not on the CSL;
- Amend the Employment Services Act 4 of 2014, Section 8(2)c, to include an obligation that critically skilled foreign nationals transfer skills to South African nationals;
- Amend the period for Zimbabwean nationals to allow for a change of status from visitor to CSV holder within 90 days;
- Apply the DHA skills visa criteria when individuals earn above a particular level;
- The DHA should submit and publish information on CSV provision per month;
- The DHA should track the migration of scarce-skilled individuals out of South Africa;
- The DHA should exclude the restrictions of the CSV for all companies setting up African headquarters in South Africa;
- Exclude applicants for a CSV from SAQA qualification assessment for universities ranked among the world's finest institutions;
- Expand the list of trusted corporates;
- Fast track CSVs for ICT professionals with specific coding language knowledge;
- Improve application process and turnaround time for the CSVs;
- The DHA should consider moving away from a list-based approach;
- Put regulations in place to verify skills and not just qualifications (like competency testing); and
- Use the CSL as a basis for educational reform in South Africa to ensure critical skills gaps are closed.

These comments are all valid and will be engaged with in the development of the next iteration of the CSL. These comments will also be considered by the DHA in their processes to review regulations governing the CSL.

ANNEXURE 8: Organising Framework for Occupations (OFO)

According to the DHET, the OFO is a classification framework that attempts to “establish a common language for talking about occupations”. The OFO

is a skill-based, coded classification system of occupations which is used by the DHET for “identifying, reporting and monitoring skills demand and supply” in the labour market. It captures almost all occupations in the country and classifies them by skill level and skill specialisation.²⁴

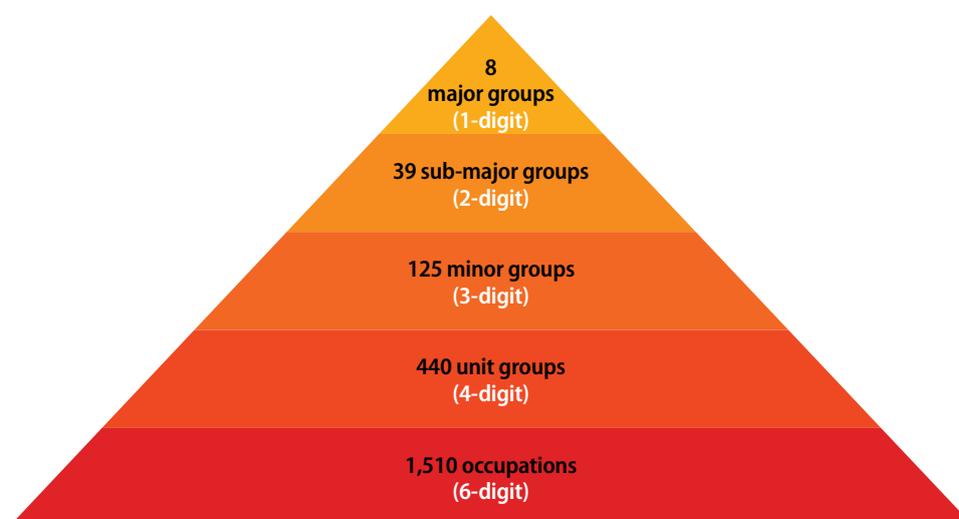
The framework consists of eight major groups categorised primarily according to skill level and secondarily according to area of specialisation. The eight major groups are presented in Table 8.

TABLE 9: Meaning of first digit of OFO code

OFO CODE FIRST DIGIT	DESCRIPTION
1	Managers
2	Professionals
3	Technicians and associate professionals
4	Clerical support workers
5	Service and sales workers
6	Skilled agricultural, forestry, fishery, craft and related trades workers
7	Plant and machine operators and assemblers
8	Elementary occupations

Each of these major groups is then disaggregated. There are four levels of disaggregation, with each subsequent level providing more specific detail than its predecessor. As shown in Figure 11, the eight one-digit major groups together encapsulate the entire set of 1 510 six-digit occupations.

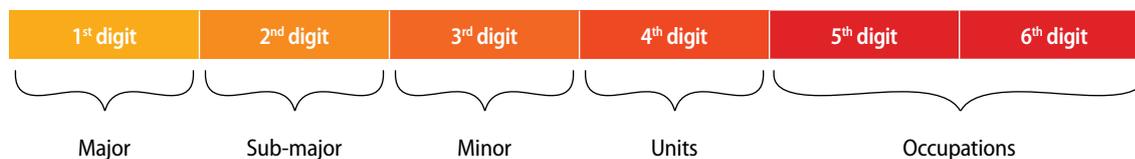
FIGURE 11: Number of classifications in the OFO



Source: (The Department of Higher Education and Training, 2019)

²⁴ Reddy et al. (2018), p. 10.

Occupations are, therefore, the lowest coded level of disaggregation.²⁵ Each occupation is given a six-digit code, with each digit in the code referring to its respective groupings, as depicted in the pyramid above. This can most easily be understood as follows:



The eight major groups will be of specific interest when analysing the composition of the list. The major group indicates the skill level and the broad area of specialisation. Figure 12 maps the major groups to the NQF levels. It shows that the lower major groups are generally associated with higher NQF levels and vice versa.

FIGURE 12: Relationship between OFO major categories and NQF level

NSDS (level of skill required for a given NQF)	NQF	OFO MAJOR GROUP			
High	10	<div style="text-align: center;"> 2 Professionals </div>		<div style="text-align: center;"> 1 Managers </div>	
	9				
	8				
	7				
Intermediate	6	<div style="text-align: center;"> 3 Technicians and associate professionals </div>			
	5				
Entry	4	<div style="text-align: center;"> 4 Clerical support workers </div>	<div style="text-align: center;"> 5 Service and sales workers </div>	<div style="text-align: center;"> 6 Skilled agricultural, forestry, fishery, craft, and related trade workers </div>	<div style="text-align: center;"> 7 Plant and machine operators and assemblers </div>
	3				
	2	<div style="text-align: center;"> 8 Elementary occupations </div>			
	1				

Source: DHET (2015)

²⁵ There are specialisations within the occupations in the OFO, but these are not coded.

ANNEXURE 9: Measure of industry performance

SUB-SECTOR	STATISTICS SOUTH AFRICA PUBLICATION	PRE-COVID TIMEFRAME	POST-COVID TIMEFRAME	PRE-COVID VALUE	POST-COVID VALUE	RECOVERY	UNIT
Tourist accommodation	P6410	2020-Q1	2021-Q1	10 896	3 815	35%	Total income – total industry. R million, current prices, seasonally adjusted.
Construction	P5041.1 – and also SIC 2	2020-Q1	2021-Q1	16 979	12 100	71%	Total buildings reported as completed to larger municipalities by type of building, current prices, R million, not seasonally adjusted.
Transport (passenger)	P7162	2020-Q1	2021-Q1	2 837	2 052	72%	Income for passenger transportation in R million, current prices, seasonally adjusted.
Catering, restaurants and bars	P6420	2020-Q1	2021-Q1	16 743	13 160	79%	Total income – total industry. R million, current prices, seasonally adjusted.
Transport (freight)	P7162	2020-Q1	2021-Q1	41 183	39 173	95%	Income for freight transportation in R million, current prices, seasonally adjusted.
Retail: Alcoholic beverages and tobacco	P6242.1 and P6242.2	2020-Q1	2021-Q1	22 421	21 802	97%	Total quarterly sales in R million, current prices, not seasonally adjusted.
Wholesale, retail trade	P6242.1 and P6242.2	2020-Q1	2021-Q1	279 782	284 909	102%	Total quarterly sales in R million, current prices, seasonally adjusted.
Wood and wood products	P30412	2020-Q1	2021-Q1	40 341	41 686	103%	Total quarterly sales in R million, seasonally adjusted.

SUB-SECTOR	STATISTICS SOUTH AFRICA PUBLICATION	PRE-COVID TIMEFRAME	POST-COVID TIMEFRAME	PRE-COVID VALUE	POST-COVID VALUE	RECOVERY	UNIT
CTFL	P30412	2020-Q1	2021-Q1	14 156	14 651	103%	Total quarterly sales in R million, seasonally adjusted.
Tyres, rubber products	P30412	2020-Q1	2021-Q1	4 456	4 665	105%	Total quarterly sales in R million, seasonally adjusted.
Paper and paper products	P30412	2020-Q1	2021-Q1	19 654	20 761	106%	Total quarterly sales in R million, seasonally adjusted.
Basic chemicals, fertiliser, paint, other	P30412	2020-Q1	2021-Q1	61 895	65 718	106%	Total quarterly sales in R million, seasonally adjusted.
Non-metallic mineral and products	P30412	2020-Q1	2021-Q1	12 661	14 830	117%	Total quarterly sales in R million, seasonally adjusted.
Iron, steel, metal products	P30412	2020-Q1	2021-Q1	128 662	151 837	118%	Total quarterly sales in R million, seasonally adjusted.
Mining and Quarrying	P2041	2020-Q1	2021-Q1	158 630	213 607	135%	Total quarterly mining sales in R million, including gold, seasonally adjusted.

ANNEXURE 10: Definition of enterprise sizes

In the case of Corporate General Manager (CGM) and Director, the organisation's size is an important distinction to make. Should the organisation's size not be specified, CSVs for these occupations could be abused (i.e., individuals who are self-employed, sole employees and designated as a manager will be able to obtain a CSV). As a result, only individuals applying for posts in medium-sized or larger enterprises will be considered for a CSV.

The definition of a medium-sized or larger enterprise is based on the definition of "small enterprise" provided by the Department of Small Business Development:²⁶

a separate and distinct business entity, together with its branches or subsidiaries, if any, including cooperative enterprises, managed by one owner or more predominantly carried on in any sector or subsector of the economy mentioned in column 1 of the Schedule and classified as a micro, a small or a medium enterprise by satisfying the criteria mentioned in columns 2 and 4 of the Schedule.

The Schedule referred to in the definition sets out the thresholds for defining enterprise size classes. It uses two criteria: (1) the number of full-time equivalent paid employees; and (2) Total Annual Turnover. Both applicable criteria must be met for an enterprise to be classified as either a micro, small or medium enterprise. For example, a small-sized enterprise in the agricultural sector must have between 11 and 50 full-time equivalent (FTE) paid employees **and** a total annual turnover of less than R17 million.

For the CSVs, the interest lies in defining "medium-sized or larger enterprises". Therefore, we use the **upper bound** threshold of what defines a **small-sized enterprise** and set the criteria as any value that **exceeds it**. As shown before, a small-sized enterprise in the agricultural sector has between 11 and 50 employees and an annual turnover of less than R17 million. Consequently, a "medium-sized enterprise or larger" is defined as an enterprise with 51 employees or more and an annual turnover of more than R17 million. Based on the same logic, the criteria for the remaining sectors are set out in the table below.

TABLE 10: Definition of a medium or larger enterprise²⁷

ECONOMIC SECTOR	TOTAL FULL-TIME EQUIVALENT OF PAID EMPLOYEES	TOTAL ANNUAL TURNOVER
Agriculture	> 51 full-time equivalent of paid employees	> R17 million
Mining and Quarrying	> 51 full-time equivalent of paid employees	> R50 million
Manufacturing	> 51 full-time equivalent of paid employees	> R50 million
Electricity, Gas and Water	> 51 full-time equivalent of paid employees	> R60 million
Construction	> 51 full-time equivalent of paid employees	> R75 million
Retail, Motor Trade and Repair Services	> 51 full-time equivalent of paid employees	> R25 million
Wholesale	> 51 full-time equivalent of paid employees	> R80 million
Catering, Accommodation and Other Trade	> 51 full-time equivalent of paid employees	> R15 million
Transport, Storage and Communication	> 51 full-time equivalent of paid employees	> R45 million
Finance and Business Services	> 51 full-time equivalent of paid employees	> R35 million
Community, Social and Personal Services	> 51 full-time equivalent of paid employees	> R22 million

²⁶ See Government Notice 399 in Government Gazette, 15 March 2019: https://www.gov.za/sites/default/files/gcis_document/201903/423041gon399.pdf.

²⁷ Based on Notice 399 in Government Gazette, 15 March 2019.

ANNEXURE 11: Final stakeholder engagements and approach to incorporating inputs

Once the preliminary list of 117 occupations was defined following the systematic processing of the public comments received, the list was presented to several stakeholders for final inputs. These include the following:

- National Department of Health
- National Department of Basic Education
- Department of Public Enterprise
- Department of Employment and Labour
- Department of Trade, Industry and Competition
- Operation Vulindlela

During each engagement, the methodology (as per Section 2 of this report) was presented, and the occupations included were discussed. After the engagement, stakeholders were invited to submit any proposed exclusions or inclusions. If such requests were made, they had to be accompanied by evidence.

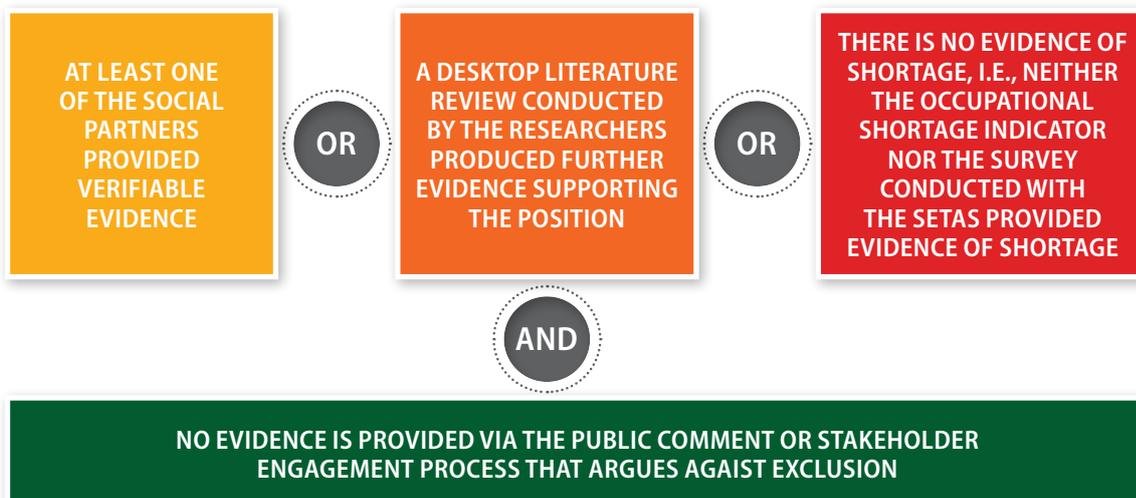
Tabling the list for engagement with the NEDLAC social partners was the last step before finalisation. A comprehensive list – inclusive of the 117 occupations in the preliminary list and additional occupations proposed by the stakeholders listed above – was submitted for comment. After two rounds of comments and several formal engagements between NEDLAC representatives of all four constituent parties, NEDLAC submitted a report detailing its response to the list presented.

The report categorised the occupations into three categories as follows:

1. Occupations for which there is inclusion consensus among the social partners.
2. Occupations for which there is exclusion consensus among the social partners.
3. Occupations for which there is disagreement among the social partners.

Occupations in the second and third category were reviewed. An occupation in these categories could be excluded in the following instance:

FIGURE 13: Decision-making framework for incorporating inputs from stakeholders



This set of decision-making criteria was applied to all occupations and produced a list of occupations as set out in the next table.

Before the table is presented, however, it is important to flag what each cell in the table includes:

- **Columns 1 and 2** include the 6-digit OFO code and occupation name for all occupations presented to NEDLAC.
- **Column 3** indicates whether there was consensus at NEDLAC to include/exclude the occupation.
- **Column 4** indicates the number of unemployed South Africans, as per the DEL's ESSA database, that were available to work within each occupation as of July 2021.
 - ▶ Note: "NA" (not applicable) in this column and all subsequent columns indicates that there was NEDLAC consensus regarding the occupation and that further analysis of other shortage indicators or public comment was therefore not needed.
- **Column 5** indicates whether an occupation was described as being in shortage by SETAs during a survey on the country's ERRP.
- **Column 6** indicates whether or not an occupation was in shortage based on the development of a relative index of occupational shortage.
- **Column 7** indicates comments from stakeholder departments or secondary research that provided evidence for or against the inclusion of the occupation in the final CSL.
 - ▶ "No further comments" in this column indicates that consensus about the occupation was reached by NEDLAC.
- **Column 8** provides a summary of public comment regarding the inclusion/exclusion of the occupation in question.
 - ▶ A blank space indicates either that NEDLAC reached consensus regarding the occupation, or that there was sufficient from Columns 4–7 evidence to include the occupation, without the need for public comment corroboration.
- **Column 9** indicates the final decision made regarding the inclusion or exclusion of the occupation.

This decision table is provided below and overleaf.

TABLE 11: Decisions made on occupations sent to NEDLAC for validation

(1) OFO CODE	(2) OCCUPATION NAME	(3) NEDLAC CONSENSUS	(4) ESSA NUMBER (JULY 2021)	(5) SETA SURVEY	(6) OCCUPATIONAL SHORTAGE INDEX	(7) STAKEHOLDER ENGAGEMENTS/ DESKTOP RESEARCH	(8) PUBLIC COMMENT RECEIVED	(9) FINAL DECISION
2019-112101	Director (Enterprise/ Organisation)	Y	NA	NA	NA	No further comments		Include
2019-121301	Policy and Planning Manager	N	71	Yes	No	No further comments		Include
2019-121901	Corporate General Manager (medium enterprises or larger)	Y	NA	NA	NA	DTIC: INCLUDE: Not only for the GBS sector, as per BPESA request, but this is also a critically important occupation across the board. Many managers start as engineers, for example, and as their expertise develops they move into a managerial role, and a CSV as an engineer will not be appropriate. This visa allows international companies to employ personnel that are required to be in the country on a permanent basis and an ICT will not suffice. For domestic companies it allows for the recruitment of business specific skills. It is an often-requested visa and exclusion will have a dire impact on global competitiveness. It is recommended that added requirements be considered to allow for only highly skilled and experienced individuals to apply. For example, the size of the employer can be considered as well as the length in a similar role. Operation Vuliindlela also requested inclusion based on their own consultation process.		Include



(1) OFO CODE	(2) OCCUPATION NAME	(3) NEDLAC CONSENSUS	(4) ESSA NUMBER (JULY 2021)	(5) SETA SURVEY	(6) OCCUPATIONAL SHORTAGE INDEX	(7) STAKEHOLDER ENGAGEMENTS/ DESKTOP RESEARCH	(8) PUBLIC COMMENT RECEIVED	(9) FINAL DECISION
2019-121905	Programme or Project Manager	Y	NA	NA	NA	No further comments		Include
2019-121908	Quality Systems Manager	Y	NA	NA	NA	No further comments		Include
2019-122105	Customer Service Manager	N	1347	Yes	No	DTIC: INCLUDE: Long term, high level of skill required and shortages are experienced. Can be a campaign- or client-specific requirement. Allowing experienced managers to support campaign development will boost overall GBS employment opportunities for South Africans (employment multiplier opportunities for second- and third-level support roles).	No relevant public comment	Include (only BPO sector)
2019-122301	Research and Development Manager	N	110	Yes	Yes	No further comments		Include
2019-131101	Agricultural Farm Manager	N	523	No	Yes	Evidence from desktop review about emigrating farmers due to domestic shortage of opportunity. ²⁸	Although lacking evidence, there were requests for exclusion among public comments.	Exclude
2019-132102	Manufacturing Operations Manager	Y	NA	NA	NA	No further comments		Include
2019-132104	Engineering Manager	Y	NA	NA	NA	No further comments		Include

28 See, for example, the following article: <https://www.news24.com/fin24/economy/sa-losing-more-and-more-farmers-as-agriculture-faces-tough-challenges-20210908>. The article uses evidence from the Competition Commission's Essential Food Pricing Monitoring Reports.

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2019-132401	Supply and Distribution Manager	Y	NA	NA	NA	No further comments		Include
2019-132407	Airport or Harbour Manager	N	61	No	Yes	DTIC: EXCLUDE: One of the purposes of the CSV is to attract a number of skills. This is a niche occupation and the country does not require numerous airport and harbour managers. If the skill is to be imported, another type of visa could be used.	Although lacking evidence, there were requests for exclusion among public comments.	Exclude
2019-133101	Chief Information Officer	N	106	No	Yes	No further comments		Include
2019-133102	ICT Project Manager	N	103	Yes	Yes	Oppose based on JCSE-IITPSA ICT Skills Survey	No relevant public comment	Exclude
2019-133103	Data Management Manager	N	119	No	Yes	No further comments		Include
2019-133105	Information Technology Manager	N	192	Yes	Yes	Oppose based on JCSE-IITPSA ICT Skills Survey	No relevant public comment	Exclude
2019-133106	Information Systems Director	N	33	No	Yes	Oppose based on JCSE-IITPSA ICT Skills Survey	No relevant public comment	Exclude
2019-134901	Environmental Manager	Y	NA	NA	NA	No further comments		Include
2019-143905	Call or Contact Centre Manager	N	81	Yes	Yes	Accept: Requested by business processes sector		Include
2019-211101	Physicist	Y	NA	NA	NA	No further comments		Include
2019-211205	Climate Change Scientist	Y	NA	NA	NA	No further comments		Include



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2019-211301	Chemist	Y	NA	NA	NA	No further comments		Include
2019-211401	Geologist	Y	NA	NA	NA	No further comments		Include
2019-211402	Geophysicist	Y	NA	NA	NA	No further comments		Include
2019-211403	Materials Scientist	Y	NA	NA	NA	No further comments		Include
2019-211405	Mineralogist	Y	NA	NA	NA	No further comments		Include
2019-211406	Hydrologist	Y	NA	NA	NA	No further comments		Include
2019-211407	Oceanographer	Y	NA	NA	NA	No further comments		Include
2019-212101	Actuary	Y	NA	NA	NA	No further comments		Include
2019-213102	General Biologist	Y	NA	NA	NA	No further comments		Include
2019-213105	Biotechnologist	Y	NA	NA	NA	No further comments		Include
2019-213108	Microbiologist	Y	NA	NA	NA	No further comments		Include
2019-213109	Zoologist	Y	NA	NA	NA	No further comments		Include
2019-213202	Agricultural Scientist	Y	11	Yes	No	No further comments		Include
2019-213205	Food and Beverage Scientist	Y	NA	NA	NA	No further comments		Include
2019-213301	Conservation Scientist	Y	NA	NA	NA	No further comments		Include
2019-213302	Environmental Scientist	Y	NA	NA	NA	No further comments		Include
2019-214101	Industrial Engineer	Y	NA	NA	NA	No further comments		Include
2019-214102	Industrial Engineering Technologist	Y	NA	NA	NA	No further comments		Include
2019-214103	Robotics and Production Automation Engineer	Y	NA	NA	NA	No further comments	No relevant public comment	Exclude

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2019-214201	Civil Engineer	Y	NA	NA	NA	No further comments		Include
2019-214202	Civil Engineering Technologist	Y	NA	NA	NA	No further comments		Include
2019-214401	Mechanical Engineer	Y	NA	NA	NA	No further comments		Include
2019-214402	Mechanical Engineering Technologist	Y	NA	NA	NA	No further comments		Include
2019-214403	Aeronautical Engineer	Y	NA	NA	NA	No further comments		Include
2019-214404	Aeronautical Engineering Technologist	Y	NA	NA	NA	No further comments		Include
2019-214405	Naval Architect	Y	NA	NA	NA	No further comments		Include
2019-214501	Chemical Engineer	Y	NA	NA	NA	No further comments		Include
2019-214502	Chemical Engineering Technologist	Y	NA	NA	NA	No further comments		Include
2019-214601	Mining Engineer	Y	NA	NA	NA	No further comments		Include
2019-214605	Metallurgist	Y	NA	NA	NA	No further comments		Include
2019-214901	Biomedical Engineer	Y	NA	NA	NA	No further comments		Include
2019-214904	Quantity Surveyor	Y	NA	NA	NA	No further comments		Include
2019-214905	Agricultural Engineer	Y	NA	NA	NA	No further comments		Include
2019-214906	Agricultural Engineering Technologist	Y	NA	NA	NA	No further comments		Include
2019-215102	Electrical Engineering Technologist	Y	NA	NA	NA	No further comments		Include
2019-215103	Energy Engineer	Y	NA	NA	NA	No further comments		Include

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2019-215104	Energy Engineering Technologist	Y	NA	NA	NA	No further comments		Include
2019-215201	Electronics Engineer	Y	NA	NA	NA	No further comments		Include
2019-216101	Architect	Y	NA	NA	NA	No further comments		Include
2019-216301	Fashion Designer	N	64	Yes	No	Proposed by business. Balance of evidence did not favour inclusion.		Exclude
2019-216401	Urban and Regional Planner	Y	NA	NA	NA	No further comments		Include
2019-216603	Multimedia Designer	Y	NA	NA	NA	No further comments		Include
2019-221101	General Medical Practitioner	N	66	No	No	Research – consultation with NDoH and a review of the Human Resources for Health (HRH) strategy for 2030 – indicates that the shortages in the health sector are created due to an unequal distribution of health resources, rather than a sector-wide shortage.		Exclude
2019-222103	Registered Nurse (Child and Family Health)	N	14	No	No	Research – consultation with NDoH and a review of the Human Resources for Health (HRH) strategy for 2030 – indicates that the shortages in the health sector are created due to an unequal distribution of health resources, rather than a sector-wide shortage.		Exclude

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2019-222104	Registered Nurse (Community Health)	N	154	No	No	Research – consultation with NDoH and a review of the Human Resources for Health (HRH) strategy for 2030 – indicates that the shortages in the health sector are created due to an unequal distribution of health resources, rather than a sector-wide shortage.		Exclude
2019-222108	Registered Nurse (Medical)	N	63	No	No	Research – consultation with NDoH and a review of the Human Resources for Health (HRH) strategy for 2030 – indicates that the shortages in the health sector are created due to an unequal distribution of health resources, rather than a sector-wide shortage.		Exclude
2019-222109	Registered Nurse (Medical Practice)	N	38	No	No	Research – consultation with NDoH and a review of the Human Resources for Health (HRH) strategy for 2030 – indicates that the shortages in the health sector are created due to an unequal distribution of health resources, rather than a sector-wide shortage.		Exclude
2019-222110	Registered Nurse (Mental Health)	N	15	No	No	Research – consultation with NDoH and a review of the Human Resources for Health (HRH) strategy for 2030 – indicates that the shortages in the health sector are created due to an unequal distribution of health resources, rather than a sector-wide shortage.		Exclude
2019-222114	Nurse Educator	Y	NA	NA	NA	No further comments		Include



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2019-226201	Hospital Pharmacist	N	33	Yes	No	Research – consultation with NDoH and a review of the Human Resources for Health (HRH) strategy for 2030 – indicates that the shortages in the health sector are created due to an unequal distribution of health resources, rather than a sector-wide shortage.		Exclude
2019-226202	Industrial Pharmacist	N	6	No	No	Research – consultation with NDoH and a review of the Human Resources for Health (HRH) strategy for 2030 – indicates that the shortages in the health sector are created due to an unequal distribution of health resources, rather than a sector-wide shortage.		Exclude
2019-226203	Retail Pharmacist	N	66	Yes	No	Research – consultation with NDoH and a review of the Human Resources for Health (HRH) strategy for 2030 – indicates that the shortages in the health sector are created due to an unequal distribution of health resources, rather than a sector-wide shortage.		Exclude
2019-231101	University Lecturer	N	506	Yes	No	USAF: INCLUDE: Should only be for Senior Lecturers with 5 years' experience, doctoral qualifications, and in the CEM categories listed in Appendix.		Include

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2019-233107	FET Phase School Teacher (Grades 10–12)	N	0	Yes	No	DBE: INCLUDE: During presentation: Should only be for STEM subjects. This aligns with the comments received as well.		Include
2019-233108	Senior Phase School Teacher (Grades 8–9)	N	0	Yes	No	DBE: INCLUDE: During presentation: Should only be for STEM subjects and should not include Grade 7. This aligns with the comments received as well.		Include
2019-241103	Tax Professional	Y	NA	NA	NA	No further comments		Include
2019-241104	External Auditor	Y	NA	NA	NA	No further comments		Include
2019-241108	Forensic Accountant	Y	NA	NA	NA	No further comments		Include
2019-241201	Investment Analyst	Y	NA	NA	NA	No further comments		Include
2019-241202	Investment Manager	N	11	No	No	No further comments		Include
2019-241203	Investment Advisor	Y	NA	NA	NA	No further comments		Include
2019-242103	Business Development Officer	N	0	No	Yes	No further comments		Include
2019-242202	Policy Analyst	N	32	No	Yes	No further comments		Include
2019-242204	Corporate Treasurer	Y	NA	NA	NA	No further comments		Include
2019-242208	Organisational Risk Manager	Y	NA	NA	NA	No further comments		Include
2019-242211	Internal Auditor	Y	NA	NA	NA	No further comments		Include



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2019-242304	Industrial Relations Advisor	N	96	No	No	No further comments	Public comment request for inclusion, but no further evidence provided.	Exclude
2019-242402	Occupational Instructor	Y	NA	NA	NA	The occupation should entail in-depth knowledge of processes or products and therefore a local incumbent could fill the post or be upskilled. There should also not be a need for a large volume of occupational instructors. If the need arises, another visa category could be considered.		Include
2019-243102	Market Research Analyst	N	108	Yes	Yes	No further comments		Include
2019-243103	Marketing Practitioner	N	277	No	Yes	Proposed by business. Balance of evidence did not favour inclusion.	Commentor quoted the WEF's <i>Future of Jobs Report 2020</i> , indicating that the demand for this occupation is likely to decrease.	Exclude

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2019-251101	ICT Systems Analyst	N	117	Yes	Yes	No further comments	No relevant public comment	Include
2019-251102	Data Scientist	Y	NA	NA	NA	No further comments		Include
2019-251201	Software Developer	Y	NA	NA	NA	No further comments		Include
2019-251202	Programmer Analyst	Y	NA	NA	NA	No further comments		Include
2019-251203	Developer Programmer	Y	NA	NA	NA	No further comments		Include
2019-251301	Multimedia Specialist	Y	NA	NA	NA	No further comments		Include
2019-251302	Web Developer	N	NA	NA	NA	Oppose based on JCSE-IITPSA ICT Skills Survey	Although lacking evidence, there were requests for exclusion among public comments.	Exclude
2019-251401	Applications Programmer	Y	NA	NA	NA	No further comments		Include
2019-251901	Computers Quality Assurance Analyst	Y	NA	NA	NA	No further comments		Include
2019-252301	Computer Network and Systems Engineer	Y	NA	NA	NA	No further comments		Include
2019-252302	Network Analyst	Y	NA	NA	NA	No further comments		Include
2019-252901	ICT Security Specialist	N	110	Yes	No	No further comments		Include
2019-262202	Information Services Manager	N	53	No	No	No further comments	No relevant public comment	Exclude



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2019-263101	Economist	Y	NA	NA	NA	No further comments		Include
2019-311101	Chemistry Technician	Y	NA	NA	NA	No further comments		Include
2019-311203	Town Planning Technician	Y	NA	NA	NA	No further comments		Include
2019-311401	Electronic Engineering Technician	Y	NA	NA	NA	No further comments		Include
2019-311501	Mechanical Engineering Technician	Y	NA	NA	NA	No further comments		Include
2019-311502	Pressure Equipment Inspector	N	54	No	No	No further comments	No relevant public comment	Exclude
2019-311503	Aeronautical Engineering Technician	N	172	No	No	No further comments	No relevant public comment	Exclude
2019-311601	Chemical Engineering Technician	N	306	No	No	No further comments	Commentor pointed to global research indicating the importance of the profession. However, this research does not indicate a domestic shortage.	Exclude
2019-311801	Draughtsperson	Y	NA	NA	NA	No further comments		Include
2019-315401	Traffic Controller	Y	92	No	No	No further comments		Include

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2019-422201	Inbound Contact Centre Consultant (with first-language speaking and translating capabilities in the following languages: German, Swiss German, Flemish, Greek, Swedish, Danish, Italian, Dutch, Spanish, Mandarin and French)	Y	NA	NA	NA	DTIC: INCLUDE: Long-term entry to medium level of skill, shortages experienced. Can be campaign-related: for example, retailer of airline for rapid mobilisation. Proven potential in unlocking jobs. For the GBS sector it is important to note that many of the companies operating in the RSA provide services to a third party. In Africa alone, the RSA is competing with Rwanda, Ghana, Kenya and Mauritius. These countries have removed immigration barriers as the sector has proven its ability to unlock jobs and allow foreign language speakers access. Foreign language speaking for specialist language support and technical sales support remains a critical skill. Only foreign language speakers (German, Swiss German, Flemish, Greek, Swedish, Danish, Italian, Dutch, Spanish, Mandarin and French). As in the 2014 CSL.		Include

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2019-422202	Outbound Contact Centre Consultant (with first-language speaking and translating capabilities in the following languages: German, Swiss German, Flemish, Greek, Swedish, Danish, Italian, Dutch, Spanish, Mandarin and French)	Y	NA	NA	NA	DTIC: INCLUDE: Long-term entry to medium level of skill, shortages experienced. Can be campaign-related: for example, retailer of airline for rapid mobilisation. Proven potential in unlocking jobs. For the GBS sector it is important to note that many of the companies operating in the RSA provide services to a third party. In Africa alone, the RSA is competing with Rwanda, Ghana, Kenya and Mauritius. These countries have removed immigration barriers as the sector has proven its ability to unlock jobs and allow foreign language speakers access. Foreign language speaking for specialist language support and technical sales support remains a critical skill. Only foreign language speakers (German, Swiss German, Flemish, Greek, Swedish, Danish, Italian, Dutch, Spanish, Mandarin and French). As in the 2014 CSL.		Include

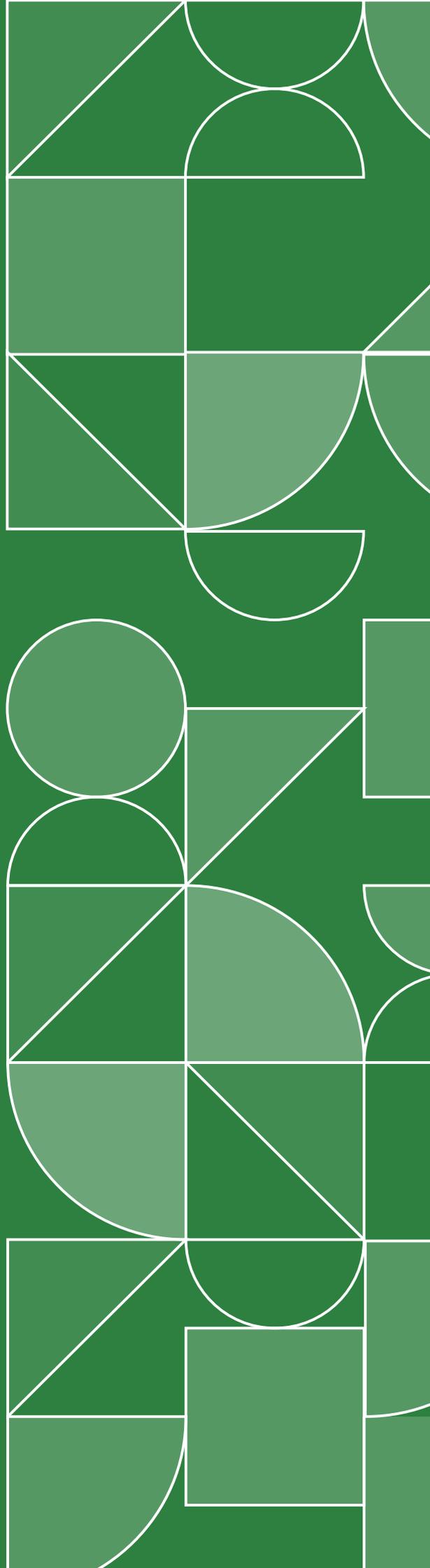
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2019-642701	Air Conditioning and Refrigeration Mechanic	N	151	Yes	No	DEL: During presentation: Satisfied for inclusion, but should require senior-level experience. Did not say how many years' experience this would imply. DTIC: INCLUDE: Air conditioning in relation to environmentally friendly or green sector; we have a need in terms of housing, not so much shopping centres, etc. Refrigeration for commercial purposes. This should specifically be related to green economy (low carbon cooling systems).		Include
2019-652301	Metal Machinist	N	369	Yes	Yes	DEL: During presentation: Satisfied for inclusion, but should require senior-level experience. Did not say how many years' experience this would imply. DTIC: INCLUDE: Technical skills are requested in large numbers by companies in the manufacturing industry. To support industrialisation the inclusion is agreed with.		Include
2019-653301	Industrial Machinery Mechanic	N	57	No	No	DTIC: INCLUDE: Technical skills are requested in large numbers by companies in the manufacturing industry. To support industrialisation the inclusion is agreed with.	No relevant public comment	Exclude



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2019-661501	Glass Maker	Y	NA	NA	NA	DTIC: EXCLUDE: The request from the glass companies was in relation to furnace repairs; they needed technicians from Germany on a short-term basis.		Exclude
2019-671206	Electrical Equipment Mechanic	N	252	No	Yes	DTIC: INCLUDE: Technical skills are requested in large numbers by companies in the manufacturing industry. To support industrialisation the inclusion is agreed with.		Include
2019-671208	Transportation Electrician	N	160	Yes	Yes	DEL: During presentation: Satisfied for inclusion, but should require senior-level experience. Did not say how many years' experience this would imply. DTIC: INCLUDE: Technical skills are requested in large numbers by companies in the manufacturing industry. To support industrialisation the inclusion is agreed with.		Include
2019-672105	Instrument Mechanician (Industrial Instrumentation and Process Control)	Y	160	Yes	No	No further comments		Include

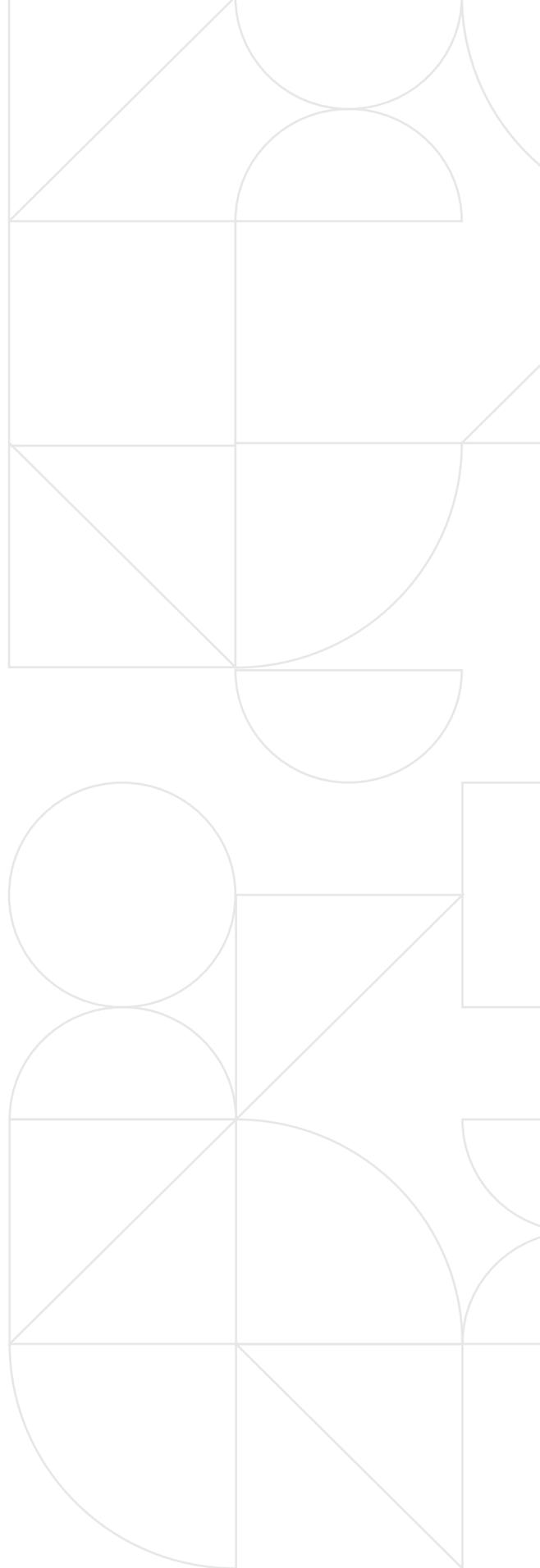
Part 6

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