



**Sector Skills Plan for the Mining and Minerals Sector
Submitted by the Mining Qualifications Authority
(MQA) to the Department of Higher Education and
Training 2014-2019**

**Final
31 January 2014**



MINING QUALIFICATIONS AUTHORITY

FOREWORD

It is with pleasure that the Mining Qualifications Authority Board submits to the Department of Higher Education and Training (DHET) the Final Sector Skills Plan (SSP) update for the Mining and Minerals Sector for the period 2014 to 2019.

The Sector Skills Plan has been prepared in accordance with the National Skills Development Strategy (NSDS) III for the period 2011 to 2016, and in accordance with the expectations of the DHET. This SSP has been presented to the Skills Research and Planning Committee and has been approved by all stakeholder conveners. The improvement of the skills of our workforce is imperative for the economic development of our sector, for the improvement of our health and safety record and for the growth and wellbeing of all employees. The main purpose of this SSP update is to guide and inform skills development initiatives in the sector. It is the result of not only a thorough research process, but also of extensive stakeholder consultation. Through the consultative processes the stakeholders have taken ownership of this plan and now all stakeholders are urged to work together over the next five years to address the skills development priorities and to achieve the goals and objectives set in this SSP.

Mr David Msiza

Chairperson: MQA Board

STAKEHOLDER ENDORSEMENT

This is the Sector Skills Plan update prepared by the Mining Qualifications Authority (MQA) for the Mining and Minerals Sector (2014 – 2019). It is submitted to the Minister of Higher Education and Training in partial compliance with the requirements of the Skills Development Act of 1998 as amended. The MQA was registered as a Sector Education and Training Authority for this sector on 20 March 2000. The Sector Skills Plan update is hereby endorsed by duly authorized representatives of the state, employer organizations and organised labour in this national economic sector.

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LIST OF ABBREVIATIONS AND ACRONYMS

ABET	Adult Basic Education and Training
AEMFC	African Exploration Mining and Finance Corporation
AGOA	African Growth and Opportunity Act
AIDS	Acquired Immune Deficiency Syndrome
ANC	African National Congress
AQP	Assessment Quality Partners
ASPASA	Aggregates and Sand Producers Association of Southern Africa
ATR	Annual Training Report
B-B-BEE	Broad-based Black Economic Empowerment
BEE	Black Economic Empowerment
CAD	Computer-aided Design
CBO	Community-based Organisation
CHE	Council on Higher Education
CLAS	Cement, Lime, Aggregates and Sand
CPI	Consumer Price Index
CRM	Customer Relationship Management
CSMI	Centre for Sustainability in Mining and Industry
CTF	Culture Transformation Framework
DBE	Department of Basic Education
DEA	Department of Environmental Affairs
DHET	Department of Higher Education and Training
DME	Department of Minerals and Energy
DMR	Department of Mineral Resources
DoL	Department of Labour
DPW	Department of Public Works
DQP	Development Quality Partner
DR	Disaster Recovery
DRDLR	Department of Rural Development and Land Reform
ECSA	Engineering Council of South Africa
EIUG	Energy Intensive User Group
ETF	Exchange Traded Funds
EPWP	Expanded Public Works Programme
ETQA	Education and Training Quality Assurance
Exco	Executive Committee
FC	Foundational Communication
FET	Further Education and Training
FLC	Foundational Learning Competency
FML	Foundational Mathematical Literacy
GATT	General Agreement on Trade and Tariffs
GCC	Government Certificate of Competency
GDP	Gross Domestic Product
GET	General Education and Training
GVA	Gross Value Added
HDI	Historically Disadvantaged Individual
HDSA	Historically Disadvantaged South African
HEMIS	Higher Education Management Information System
HET	Higher Education and Training

HIV	Human Immunodeficiency Virus
HR	Human Resources
HRD	Human Resources Development
HSRC	Human Sciences Research Council
IDC	Industrial Development Corporation
IMF	International Monetary Fund
IPAP	Industrial Policy Action Plan
IRM	Industrial Raw Materials
ISO	International Standards Organisation
JIPSA	Joint Initiative on Priority Skills of South Africa
JSE	Johannesburg Securities Exchange
KSO	Key Strategic Objective
LED	Local Economic Development
LFS	Labour Force Survey
LME	London Metal Exchange
LDPM	Labour Demand Prediction Model
MDP	Management Development Programme
MEC	Member of the Executive Council
merSETA	Manufacturing, Engineering and Related Services SETA
MHSA	Mine Health and Safety Act
MHSC	Mine Health and Safety Council
MIGDETT	Mining Industry Growth, Development and Employment Task Team
MIS	Management Information System
MMS	Mining and Minerals Sector
MRAC	Mining Regulation Advisory Committee
MPRDA	Mineral and Petroleum Resources Development Act
MRSW	Mines Rescue Services Worker
MQA	Mining Qualifications Authority
MTSF	Medium-term Strategic Framework
NATED	National Technical Education
NCV	National Certificate Vocation
NDP	National Development Plan
NEC	National Executive Committee
NEET	Not in employment, education and training
NGO	Non-Governmental Organisation
NGP	New Growth Path
NHI	National Health Insurance
NLPE	Non-levy-paying enterprise
NLRD	National Learners' Records Database
NPA	National Prosecuting Authority
NPC	National Planning Commission
NQF	National Qualifications Framework
NSDF	National Sustainable Development Framework
NSDS	National Skills Development Strategy
NSF	National Skills Fund
NSFAS	National Student Financial Aid Scheme
NSSD	National Strategy for Sustainable Development
NUM	National Union of Mineworkers

NYDA	National Youth Development Agency
OECD	Organisation for Economic Cooperation and Development
OFO	Organising Framework for Occupations
OHS	Occupational Health and Safety
OTC	Over-the-counter
PES	Public Employment Services
PGM	Platinum Group Metals
PIVOTAL	Professional, Vocational, Technical and Academic Learning
PTT	Platinum Task Team
QCTO	Quality Council for Trades and Occupations
R	Rand
R&D	Research and Development
RDP	Reconstruction and Development Plan
RPL	Recognition of Prior Learning
RRT	Resource Rent Tax
SA	South Africa
SADC	Southern African Development Community
SADPMR	South African Diamond and Precious Metals Regulator
SAQA	South African Qualifications Authority
SDC	Skills Development Committee
SDL	Skills Development Levy
SDF	Skills Development Facilitator
SDF	Skills Development Framework
SDM	Sustainable Development in Mining
SDT	State Diamond Trader
SEE	Survey of Employment and Earnings
SETA	Sector Education and Training Authority
SGB	Standards Generating Body
SHE	Safety, Health and Environment
SHE&Q	Safety, Health, Environment and Quality
SIC	Standard Industrial Classification
SIMS	State Intervention in the Minerals Sector
SIP	Strategic Integrated Project
SME	Small and Micro Enterprises
SMME	Small, medium and micro enterprises
SOC	Standard Occupational Classification
SRP	Skills Research and Planning
SSP	Sector Skills Plan
TB	Tuberculosis
TDCA	Trade, Cooperation and Development Agreement
TEBA	The Employment Bureau of Africa
The dti	Department of Trade and Industry
UASA	United Association of South Africa
UNCSD	United Nations Conference on Sustainable Development
Unisa	University of South Africa
US	United States
USD	United States Dollar
WBMS	World Bureau of Metal Statistics
W&R SETA	Wholesale and Retail SETA

WIL	Workplace-integrated Learning
WSP	Workplace Skills Plan
ZAR	South African Rand

SYNOPSIS

INTRODUCTION

The Sector Education and Training Authority (SETA) for the Mining and Minerals Sector (MMS), the Mining Qualifications Authority (MQA), prepared this Sector Skills Plan (SSP) update according to the requirements of the Department of Higher Education and Training (DHET). It is based on the following DHET approach of quality assurance framework:

- SSP cluster reciprocal learning using drafts as reference
- Sector (MQA) practitioners' evaluation (business and labour)
- Sector (MQA) practitioners' output
- DHET Input to MQA: MQA practitioners' evaluation report

From the outset, it is important to take cognisance of the fact that the MQA was established in terms of the Mine Health and Safety Act (Act No. 29 of 1996) (MHSA), i.e., before the promulgation of the Skills Development Act and the establishment of SETAs. The MQA was established in order to improve health and safety standards through education and training in the mining sector. The MHSA also prescribes the composition and governance structures of the MQA. It specifies the tripartite nature of the MQA, with the state in the form of the Department of Mineral Resources (DMR), organised labour, and employers playing equally important roles in the governance of the organisation. In this tripartite structure, the state (in the person of the Chief Inspector of Mines) occupies the chairperson position on a permanent basis.

Furthermore, the Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) (MPRDA) establishes the Minerals and Mining Development Board that must "in consultation with the Mining Qualifications Authority, ensure the promotion of human resource development in the mining and minerals industry".

The legislative arrangements impose on the MQA a legislated responsibility to place health and safety at the centre of its focus and skills development activities. It also means that the MQA has a dual mandate: to satisfy the requirements of the skills development legislation, as well as those of the mine health and safety legislation.

The analysis presented in this Sector Skills Plan (SSP) draws on a range of information sources, including the official statistical information published by the DMR, Statistics South Africa and the Department of Higher Education and Training, and other relevant resources, such as legislation, and local and international public and private publications. The MQA has also developed its own data system, which is updated annually with information from the workplace skills plans (WSPs) and annual training reports (ATRs). These WSPs contain considerably more information than the legislated minimum requirements. Notably, the WSPs submitted for the 2013/2014 year represented approximately 75% of the workers in the sector. As was the case in the past years two years, in 2013/2014, employers submitted individual employee records with all the demographic variables used in the construction of the sector profile, as well as information on the training that those individuals received. This information, referred to as

“source data”, enabled the MQA to do a much more accurate and detailed analysis of the sector.

This information, combined with the information that all mines submit to the DMR every three months, was used to build a coherent statistical picture of the MMS and to track trends over time. It also forms the foundation of the data used in the sector profile. The projections of the future demand for labour were derived from a demand projection model developed for the MQA, as well as alternative research facilities, but is still based on the source data mentioned above. However, the scarce skills mapped against Organising Framework of Occupations (OFO) Version 2013 were drawn from the source data of the WSP/ATR submissions for the 2013/2014 year.

In 2012, the MQA once again established a task team (under the Board Standing Committee: Skills Research and Planning) to assist with and contribute to the SSP update. This task team consisted of representatives of the three stakeholder groupings: employers, organised labour and the state (DMR), together with relevant MQA managers.

In 2013, the MQA Board Standing Committee: Skills Research and Planning (SRP) guided and contributed to the SSP update. This Board Standing Committee consisted of representatives of the three stakeholder groupings: employers, organised labour and the state (DMR), together with relevant MQA managers.

Statistical information, wherever possible, was updated with the most recent information. New legislation and policies that impact on the sector were also considered and incorporated into the document where appropriate. The revised information was then presented to the SRP Committee for comment and further input, within the tight time constraints.

The SSP update, together with the strategic plan, will be reviewed and approved by the MQA Board. A final SSP update will be submitted in November 2013, incorporating further stakeholder and Board input, more recent data on employment in the MMS, and feedback from the DHET, if received.

POLICIES IDENTIFIED AS THE KEY MQA POLICY DRIVERS

The following government policies, inter alia, form the economic drivers of the mining sector:

- National Development Plan – Vision for 2030 (2011) (National Planning Commission)
- The Beneficiation Strategy for the Minerals Industry of South Africa (June 2011) (DMR)
- The Industrial Policy Action Plan (IPAP) (2010) (the dti)
- The Amended Mining Charter
- The Mineral and Petroleum Resources Development Act, Act No. 28 of 2002 (DMR)
- The Diamonds Amendment Act, Act No. 29 of 2005 (DMR)
- The Diamonds Second Amendment Act, Act No. 30 of 2005 (DMR)
- The Precious Metals Act, Act No. 37 of 2005 (DMR)
- The Metals Sector Development Strategy of 2006 (Department of Trade and Industry – the dti)
- The New Growth Path: The Framework (2010)

- Draft Framework Agreement for a Sustainable Mining Industry (entered into by organised labour, organised business and government – 14 June 2013)

As mentioned and demonstrated earlier in the introduction, the MQA's thrust of responsibility is demarcated by the MHSA) and the MPRDA. A myriad of other legislation is also applicable and creates the legal foundation and framework within which the MQA operates.

The MQA is, inter alia, also driven by the following policies and strategies, among others:

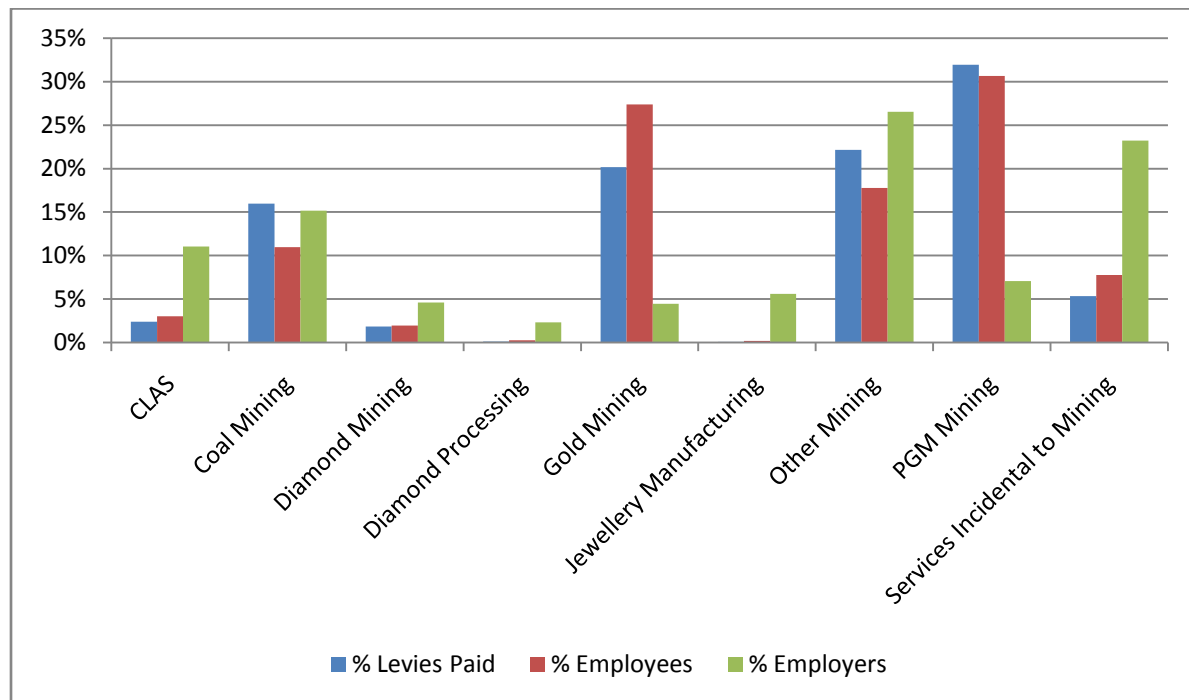
- National Youth Accord
- NSDS III
- State Presidential Priorities
- National Skills Accord
- Local Economic Development (LED)
- National Sustainable Development Framework
- DMRs' "Green Mining Strategy";
- DMR's Sustainable Development through Mining Strategic Framework
- Strategic Integrated Projects (SIPs)

All of the above are in some way incorporated into the strategic objectives and action plan of the MQA (Chapter 7).

EMPLOYMENT IN THE SECTOR

Total employment at the end of August 2013 was estimated at approximately 572 518. This figure includes permanent employees as well as contractors. The largest subsector was PGM mining with 175 579 employees (30.6% of total employment), followed by gold mining with 156 771 employees (27.7% of total employment) and other mining with 101 871 employees (17.8% of total employment). The coal mining subsector employed 62 864 people (10.9% of total employment) and services incidental to mining employed 44 485 people (7% of total employment) (Figure 1 below). At present 5809 organisations are paying levies and 1396 are non-payers of levies.

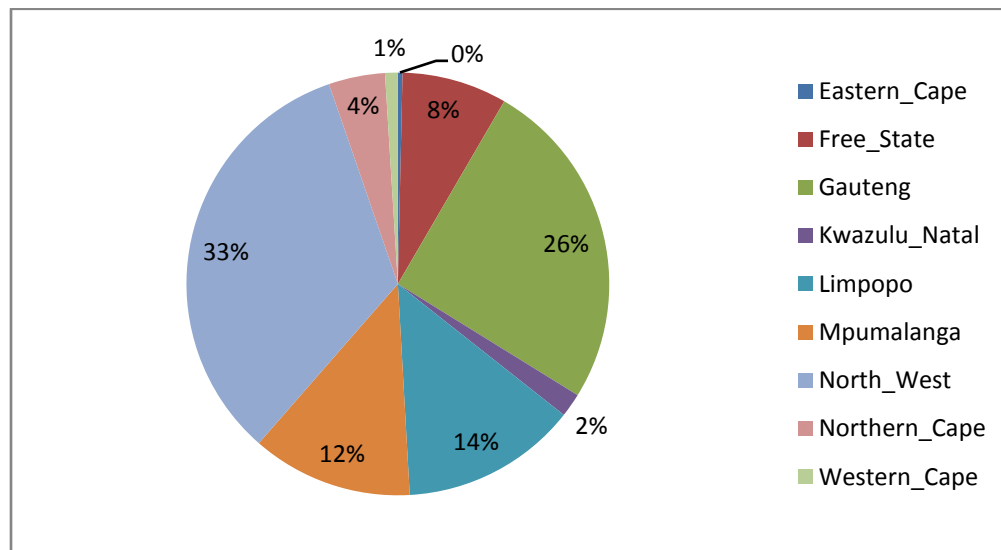
Figure 1 Total number of employees per subsector and SDL contribution: 2012/2013



Source: Calculated from MQA data system, August 2013.

The provincial distribution of employees per subsector is depicted in Figure 2 below:

Figure 2 Provincial distribution of employees according to subsector: 2013/2014year



Source: Calculated from MQA data system, August 2013.

EDUCATION PROFILE IN SECTOR

The MMS employs large numbers of people with no or very little formal schooling. The educational profile of employees is depicted in Table 1.

Table 1 Highest educational qualifications of employees in the MMS 2013/2014 year

Highest Qualification	Number of Employees	% of Employees
No Schooling	15 239	2.7%
Pre-ABET	7 992	1.4%
ABET 1	20 753	3.6%
ABET 2 / Std 3, Grade 5	28 285	4.9%
ABET 3 / Std 5, Grade 7	38 605	6.7%
ABET 4 / Std 7, Grade 9	31 249	5.5%
Std 8 / Grade 10, NATED 1 / NCV Level 1	41 703	7.3%
Std 9 / Grade 11, NATED 2 / NCV Level 2	48 586	8.5%
Std 10 / Grade 12, NATED 3 / NCV Level 3	143 811	25.1%
National Certificate/Diploma/Advanced Certificate/NATED 4 - 6	20 449	3.6%
National/Higher Certificate	35 835	6.3%
National Certificate/ Advanced Diploma/ B Tech Degree/ Bachelor's Degree	9 203	1.6%
National Certificate/Master's Degree/Master's Diploma	1 529	0.3%
Bachelor Honour's Degree/Postgraduate Diploma/Bachelor's Degree(480 credits)	5 418	0.9%
Doctoral Degree & Post-doctoral Degree	231	0.0%
Undefined	123 630	21.6%
	572518	100%

Source: Calculated from MQA data system, August 2013

RACE AND GENDER DISTRIBUTION OF EMPLOYEES

Although Africans formed the majority of the workers in the sector, they were not equally represented in all the occupational groups. The majority, 17% of managers, and 27% of professionals were Indian, 28% of Technicians and Associate Professionals were white and 48% of Plant and Machine Operators and Assemblers were African and 21% of the category skilled agricultural, forestry, fishery, craft and related trades workers (the category that includes artisans) were White (Table 2). This shows a marked difference from the previous reporting year.

Table 2 Racial distribution of employees according to occupational group: 2013/2014 year

Row Labels	African		Coloured		Indian		White		Grand Total
	Number	% of Occupation	Number	% of Occupation	Number	% of Occupation	Number	% of Occupation	
1: Managers	5 031	1%	502	4%	487	17%	8 656	12%	14 677
2: Professionals	13 604	3%	1 103	8%	781	27%	10 891	15%	26 379
3: Technicians and Associate Professionals	38 698	8%	1 944	14%	529	19%	19 693	28%	60 864
4: Clerical Support Workers	14 865	3%	1 331	10%	419	15%	6 537	9%	23 152
5: Service and Sales Workers	5 382	1%	207	2%	24	1%	709	1%	6 322
6: Skilled Agricultural, Forestry, Fishery, Craft and Related Trades Workers	20 066	4%	1 810	13%	258	9%	14 852	21%	36 985
7: Plant and Machine Operators and Assemblers	235 107	48%	4 260	31%	194	7%	4 775	7%	244 335
8: Elementary Occupations	145 082	30%	2 202	16%	74	3%	3 256	5%	150 614
Grand Total	485 210	98%	13 763	97%	2 855	97%	70 690	98%	572 518

Source: Calculated from MQA data system, August 2013

In Table 3 females, make up 15% of managers, compared to 85% of male managers. A marked difference is present in the professional grouping (31% compared to 69%), which is a positive indication of the potential development of female managers from the professional grouping. A substantive impact on this potential development will be if more females can be developed in the technicians and associate professionals grouping, as this grouping has a natural tendency to develop new members of the professional grouping.

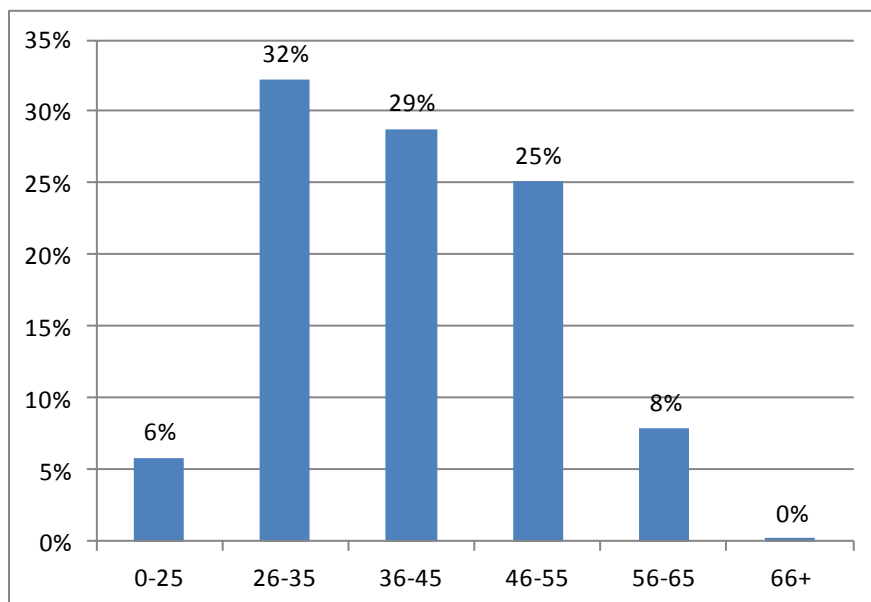
Table 3 Gender distribution of employees according to occupational group: 2013/2014

	Female	%	Male	%	Grand Total
1: Managers	2 261	15%	12 416	85%	14 677
2: Professionals	8 189	31%	18 190	69%	26 379
3: Technicians and Associate Professionals	8 431	14%	52 432	86%	60 864
4: Clerical Support Workers	11 366	49%	11 786	51%	23 152
5: Service and Sales Workers	1 723	27%	4 599	73%	6 322
6: Skilled Craft and Related Trades Workers	2 061	6%	34 924	94%	36 985
7: Plant and Machine Operators and Assemblers	12 514	5%	231 822	95%	244 335
8: Elementary Occupations	19 543	13%	131 071	87%	150 614
Grand Total	68 544	12%	503 974	88%	572 518

year

Source: Calculated from MQA data system, August 2013

The age distribution of employees in the MMS can be seen in Figure 3. In 2013, only 6% of the total number of employees was 25 years or younger.

Figure 3 Age distribution of employees: 2013/2014 year

Source: Calculated from MQA data system, August 2013

DISABILITIES

Most of the work in the MMS is of a strenuous physical nature and the opportunities for the employment of people with disabilities in certain occupations (especially those on the mining sites) are limited. The professional, clerical and administrative positions in mining, and positions in the non-mining subsectors, such as diamond processing and jewellery manufacturing, lend themselves to the employment of people with disabilities. In 2013, the sector employed 4450 people with disabilities – 0.8% of total employment (Table 4). This a positive increase.

Table 4 People with disabilities according to subsector 2013/2014 year

	Not Disabled	Disabled	Total	% Disabled
Cement, Lime, Aggregates and Sand (CLAS)	17 068	187	17 256	1.1%
Coal Mining	62 533	331	62 864	0.5%
Diamond Mining	11 135	81	11 216	0.7%
Diamond Processing	1 296	76	1 372	5.6%
Gold Mining	156 304	467	156 771	0.3%
Jewellery Manufacturing	1 092	12	1 104	1.1%
Other Mining	101 604	267	101 871	0.3%
PGM Mining	172 688	2 891	175 579	1.6%
Services Incidental to Mining	44 348	137	44 485	0.3%
Grand Total	568 068	4 450	572 518	0.8%

Source: Calculated from MQA data system, August 2013.

Occupational demand

The latest occupational composition of the MMS can be seen in Table 5.

Table 5 Occupational composition of the MMS 2013/2014 year

	Total	% Employment
1: Managers	14 677	2.6%
2: Professionals	26 379	4.6%
3: Technicians and Associate Professionals	60 864	10.6%
4: Clerical Support Workers	23 152	4.0%
5: Service and Sales Workers	6 322	1.1%
6: Skilled Craft and Related Trades Workers	36 985	6.5%
7: Plant and Machine Operators and Assemblers	244 335	42.7%
8: Elementary Occupations	150 614	26.3%
Grand Total	572 518	98.4%

Source: Calculated from MQA data system, August 2013

The percentage (98.4%) indicated in Table 5 excludes the category “Other” as derived from the data.

Table 6 Managers employed according to race (top 12 positions)

OFO Code	Occupation	African	Coloured	Indian	White	Total	% Managers
132104	Engineering Manager	1 531	50	28	818	2 427	17%
132201	Production / Operations Manager (Mining)	523	50	28	1 026	1 626	11%
121101	Finance Manager	163	33	59	767	1 022	7%
132102	Production / Operations Manager (Manufacturing)	258	46	34	683	1 021	7%
132202	Mineral Resources Manager	271	27	28	575	900	6%
112101	Director (Enterprise / Organisation)	184	19	24	589	817	6%
121201	Personnel / Human Resource Manager	254	19	15	329	617	4%
121905	Programme or Project Manager	69	13	28	490	600	4%
121901	Corporate General Manager	90	16	27	397	529	4%
111402	Trade Union Representative	479	4	-	31	514	4%
132301	Construction Project Manager	88	-	5	299	392	3%
121206	Health and Safety Manager	96	23	13	231	363	2%
		4 005	299	288	6 235	10 826	74%

Source: Calculated from MQA data system, August 2013.

The number of professionals employed in the industry per population group is summarised in Table 7 below.

Table 7 Professionals employed according to race (top 12 positions)

OFO Code	Occupation	African	Coloured	Indian	White	Total	% Professionals
242303	Human Resource Advisor	1 628	165	47	965	2 805	11%
226302	Safety, Health, Environment and Quality (SHE&Q) Practitioner	1 135	75	39	873	2 122	8%
242401	Training and Development Professional	1 014	94	17	719	1 844	7%
242402	Occupational Instructor / Trainer	1 233	21	1	171	1 425	5%
214401	Mechanical Engineer	444	40	40	831	1 355	5%
216502	Surveyor	737	25	6	541	1 309	5%
241101	Accountant (General)	410	69	73	619	1 171	4%
211401	Geologist	578	44	35	388	1 045	4%
214601	Mining Engineer	373	15	29	437	853	3%
214101	Industrial Engineer	226	21	36	276	559	2%
241102	Management Accountant	168	40	30	282	520	2%
242403	Assessment Practitioner	445	6	5	53	509	2%
		8 390	613	358	6 155	15 516	59%

Source: Calculated from MQA data system, August 2013.

Table 8 Engineering professionals employed according to race (top 17 positions)

	African	Coloured	Indian	White	Total	% Professionals
Mechanical Engineer	444	40	40	831	1 355	5.1%
Mechanical Engineering Technician	385	40	12	454	890	3.4%
Mining Engineer	373	15	29	437	853	3.2%
Electrical Engineering Technician	294	12	17	348	671	2.5%
Industrial Engineer	226	21	36	276	559	2.1%
Electrical Engineer	137	11	19	312	479	1.8%
Metallurgical Engineer	166	15	25	229	434	1.6%
Civil Engineer	54	7	13	152	227	0.9%
Electronics Engineering Technologist	75	16	2	111	204	0.8%
Industrial Engineering Technologist	60	7	13	79	160	0.6%
Civil Engineering Technician	77	5	2	58	143	0.5%
Rock Engineering Technician	67	5	4	53	128	0.5%
Electronics Engineer	28	1	4	80	112	0.4%
Mechanical Engineering Technologist	25	7	4	63	99	0.4%
Metallurgical Engineering Technologist	70	1	1	21	93	0.4%
Chemical Engineer	39	7	6	40	92	0.3%
Mining Engineering Technologist	24	-	1	65	91	0.3%
	2 544	209	230	3 608	6 591	25.0%

Source: Calculated from MQA data system, August 2013.

Table 9 Technicians and associate professionals employed according to race (top 12 positions)

OFO Code	Occupation	African	Coloured	Indian	White	Total	% Tech
312102	Miner	18 701	236	23	2 747	21 707	36%
312101	Production / Operations Supervisor (Mining)	8 158	570	92	8 516	17 336	28%
312201	Production / Operations Supervisor (Manufacturing)	1 091	152	25	715	1 984	3%
325707	Mines Safety Inspector	989	54	8	616	1 668	3%
332302	Purchasing Officer	590	94	51	711	1 447	2%
312202	Maintenance Planner	492	125	23	765	1 404	2%
311701	Mining Technician	480	30	16	519	1 045	2%
311101	Chemistry Technician	806	44	8	76	934	2%
311501	Mechanical Engineering Technician	385	40	12	454	890	1%
311801	Draughtsperson	116	36	18	716	887	1%
334302	Personal Assistant	259	50	22	510	841	1%
311702	Metallurgical or Materials Technician	508	22	10	177	716	1%
		32 576	1 453	308	16 521	50 859	84%

Source: Calculated from MQA data system, August 2013.

Table 10 Skilled agricultural, forestry, fishery, craft and related trades workers employed according to race (top 12 positions)

OFO Code	Occupation	African	Coloured	Indian	White	Total	% Skilled Trades
671101	Electrician	4 107	247	41	2 929	7 323	20%
651302	Boiler Maker	2 342	324	23	2 664	5 353	14%
652302	Fitter and Turner	1 764	196	35	2 082	4 077	11%
653303	Mechanical Fitter	2 107	156	46	1 683	3 992	11%
653306	Diesel Mechanic	1 981	241	19	1 501	3 743	10%
651501	Rigger	1 669	28	2	489	2 188	6%
671202	Millwright	1 020	88	16	936	2 060	6%
672105	Instrument Mechanician	585	31	30	374	1 021	3%
651401	Metal Fabricator	630	27	2	144	803	2%
651202	Welder	452	57	6	187	703	2%
652301	Metal Machinist	353	37	6	208	605	2%
651404	Structural Plater	129	82	2	273	487	1%
		17 141	1 514	230	13 469	32 355	87%

Source: Calculated from MQA data system, August 2013

Table 11 Service and sales workers employed according to race

OFO Code	Occupation	African	Coloured	Indian	White	Total	% Service
541401	Security Officer	3 187	148	8	429	3 773	60%
512101	Cook	960	-	-	1	962	15%
513201	Bar Attendant	185	-	-	2	187	3%
524903	Sales Clerk / Officer	64	12	12	73	161	3%
515301	Caretaker	99	4	-	25	128	2%
532901	First Aid Attendant	126	-	-	-	126	2%
531106	Hostel Parent	117	-	-	1	119	2%
524501	Service Station Attendant	97	1	-	2	100	2%
513102	Cafe Worker	77	-	-	5	82	1%
522301	Sales Assistant (General)	23	11	-	41	75	1%
541101	Fire Fighter	59	-	-	5	64	1%
541402	Alarm, Security or Surveillance	39	1	-	19	59	1%
		5 035	177	21	605	5 837	92%

Source: Calculated from MQA data system, August 2013.

Table 12 Plant and machine operators employed according to race

OFO Code	Occupation	African	Coloured	Indian	White	Total	% Operator
711101	Mining Operator	53 328	1 080	19	803	55 230	23%
711302	Rock Drill Operator	41 703	96	-	77	41 876	17%
734301	Crane or Hoist Operator	39 194	76	1	1 426	40 698	17%
731101	Train Driver	20 802	25	6	187	21 021	9%
711301	Driller	13 786	85	1	410	14 282	6%
734206	Loader Operator	12 290	247	7	154	12 698	5%
711201	Mineral Processing Mach	10 488	657	50	385	11 579	5%
734214	Dump Truck Operator (O	5 387	292	-	83	5 762	2%
733208	Mobile Mining Equipmen	5 122	168	1	137	5 428	2%
718905	Engineering Production S	4 522	24	2	114	4 662	2%
734210	Scraper Operator	4 635	2	1	12	4 651	2%
733201	Truck Driver (General)	4 387	133	10	108	4 638	2%
		215 644	2 885	99	3 896	222 524	91%

Source: Calculated from MQA data system, August 2013.

Table 13 Percentage of people employed in elementary occupations according to race

OFO Code	Occupation	African	Coloured	Indian	White	Total	% Elementary
831101	Mining Support Worker	95 923	560	22	1 268	97 773	65%
832901	Metal Engineering Proce	10 612	189	11	462	11 274	7%
831301	Builder's Worker	6 235	282	12	525	7 053	5%
862918	Electrical or Telecommur	5 261	161	11	288	5 720	4%
831103	Mineral Beneficiation Pla	4 784	230	1	75	5 090	3%
831102	Driller's Assistant	3 077	138	-	67	3 282	2%
831310	Surveyor's Assistant	2 841	44	1	102	2 988	2%
811201	Commercial Cleaner	2 901	58	1	22	2 982	2%
862202	Handyperson	1 700	133	2	138	1 973	1%
831302	Drainage, Sewerage and	1 925	2	-	12	1 939	1%
862919	Mechanic's Assistant	1 432	99	2	123	1 657	1%
833402	Store Person	1 104	30	5	51	1 190	1%
		137 795	1 926	69	3 132	142 922	95%

Source: Calculated from MQA data system, August 2013.

Projections for Future Demand

A demand projection model was used to calculate future demand. This acts as a bridge between past data and future expectations and is built at detailed occupational levels. The assumptions used in this model can be summarized as follows:

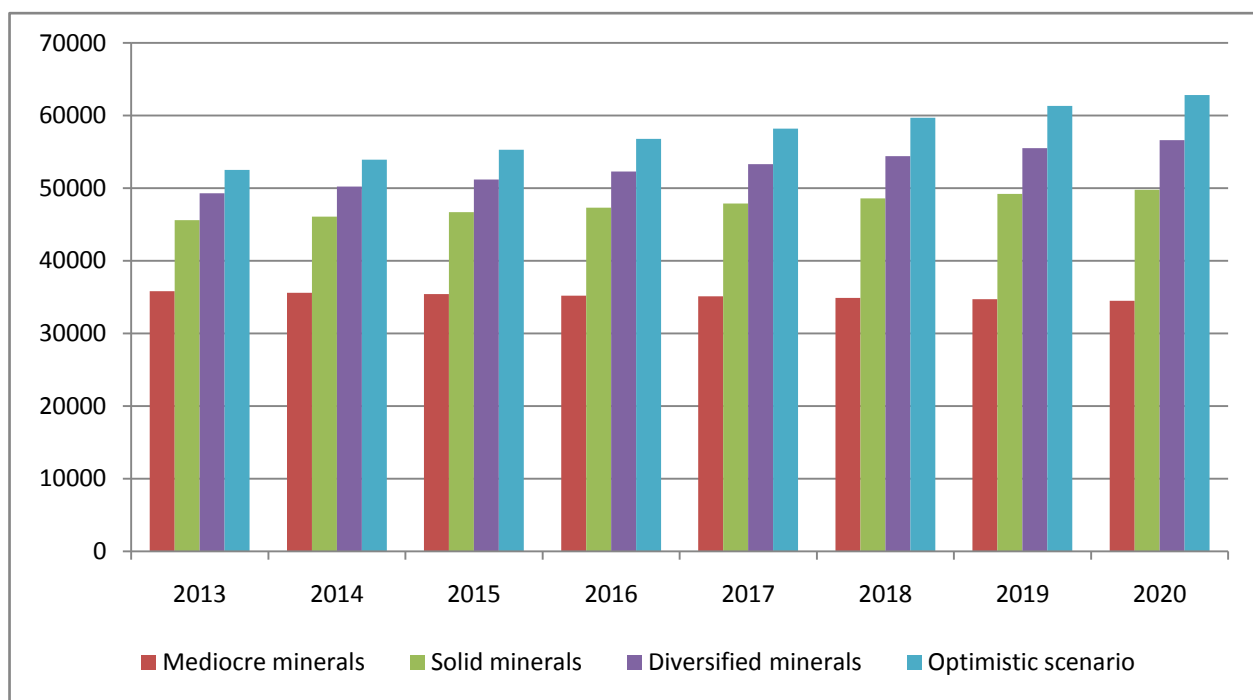
- Employment growth: 4 scenarios used

- National Development Plan (NDP) vision 2030 incorporated
- National Development Plan (NDP) for Mining: 3 scenarios used
- MQA Labour Demand Projection Model (LDPM)
- Employment growth scenario assumptions:
 - Mediocre minerals scenarios (NDP): -0.5% per annum
 - Solid minerals scenario (NDP): 1.3% per annum
 - Diversified scenario (NDP): 1.98% per annum
 - Optimistic scenario (LDPM): 2.6% per annum
- 2.6% p.a. growth in employment overall
- Vacancy rates – included to estimate total positions
- Retirement and mortality – based on age distribution of workers
- Mortality improvement – latest census figures included
- People leaving the sector – rates assumed

The MQA Labour Demand Projection Model (LDPM) assumptions on mortality, vacancy, retirement, people leaving the sector, etc., were kept for NDP scenarios.

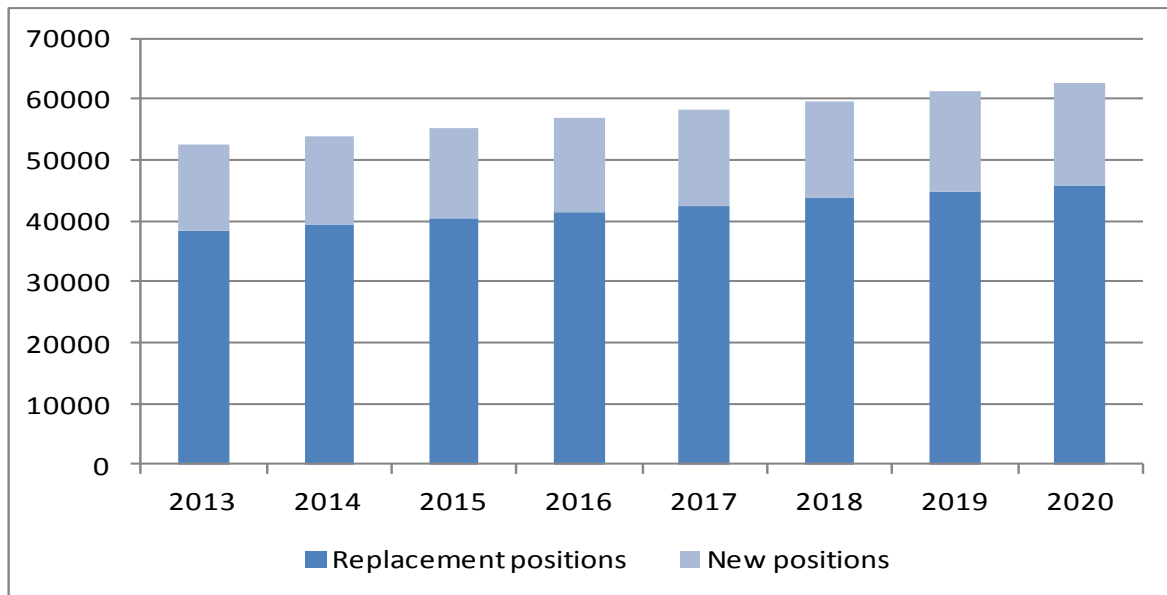
Future Demand

Figure 4 Four Scenarios: Total number of positions to be filled by 2020



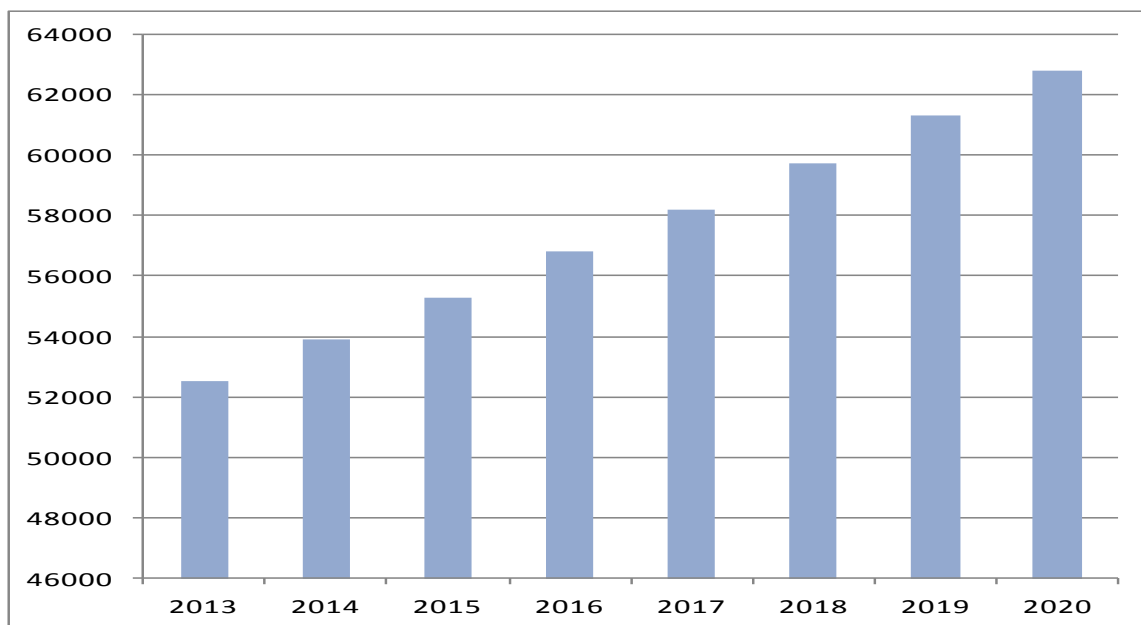
Source: Information and assumptions as stated in this section, together with calculations from MQA data system, August 2013.

Figure 5 Projections for future demand: new and replacement demand 2013-2020



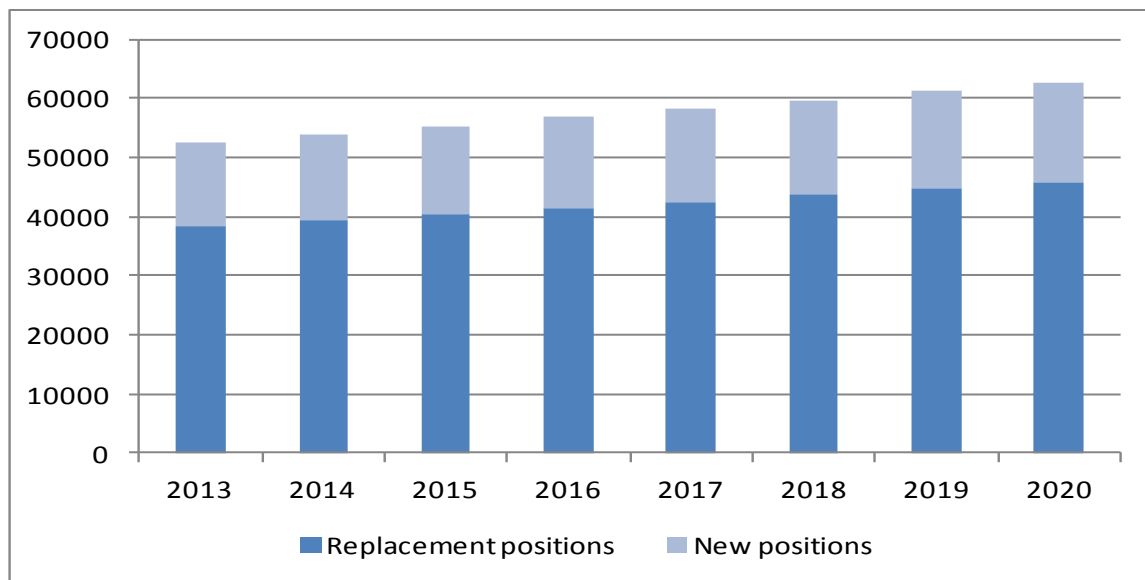
Source: Information and assumptions as stated in this section, together with calculations from MQA data system, August 2013.

Figure 6 Positions to be filled as per OFO major group



Source: Information and assumptions as stated in this section, together with calculations from MQA data system, August 2013.

Figure 7 Sector replacement positions compared to new positions



Source: Information and assumptions as stated in this section, together with calculations from MQA data system, August 2013.

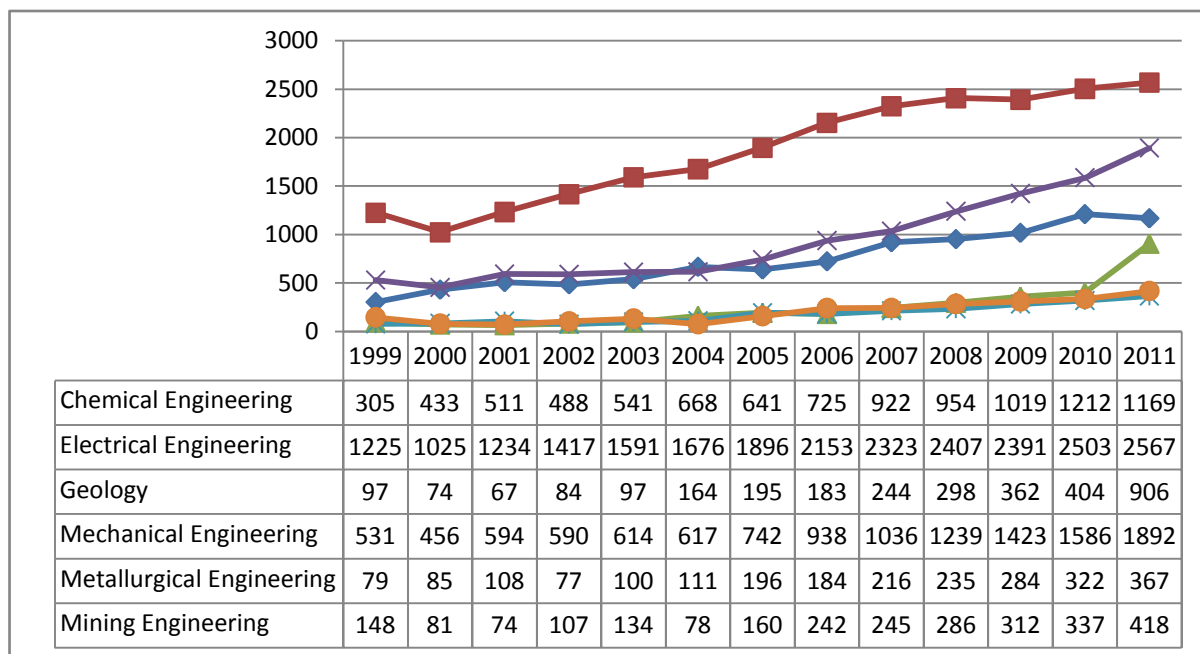
SUPPLY OF SKILLS

The stock of skills available to the sector consists of the people currently employed, as well as those that are unemployed but available for work. The previous chapters gave an overview of the people currently employed in the MMS. Most of the workers have relatively low educational levels. In 2009, it was estimated that 17.8% have no formal school qualification, 36% have some formal schooling in the General Education and Training (GET) band, 36.3% have qualified in the Further Education and Training (FET) band, and only 9.9% have higher education qualifications.

Supply of New Skills

The fields of study relevant to this sector have been identified in Chapter 2 as mining engineering, metallurgy, chemical engineering, geology, electrical engineering, mechanical engineering, analytical chemistry, environmental management, mine surveying, and jewellery design and manufacturing. (Computer-aided Design (CAD) is a component of many of qualification in these study areas.) Further information on these speciality areas was also discussed in Chapter 4.

Figure 8 Entry-level qualifications awarded in the relevant fields of study: 1999–2011



Source: Department of Higher Education and Training (DHET), Higher Education Management Information System (HEMIS), Table 2.13, 1999 to 2012.

Figure 9 The gender distribution of 2011 graduates

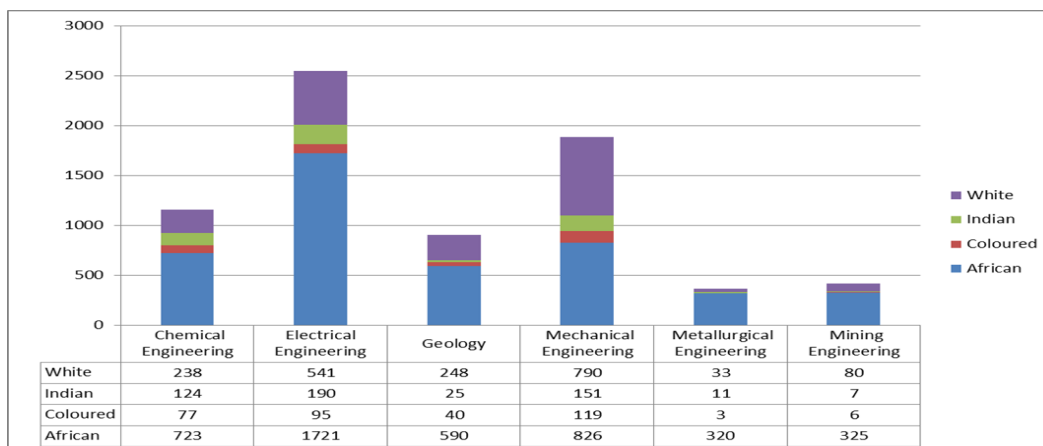


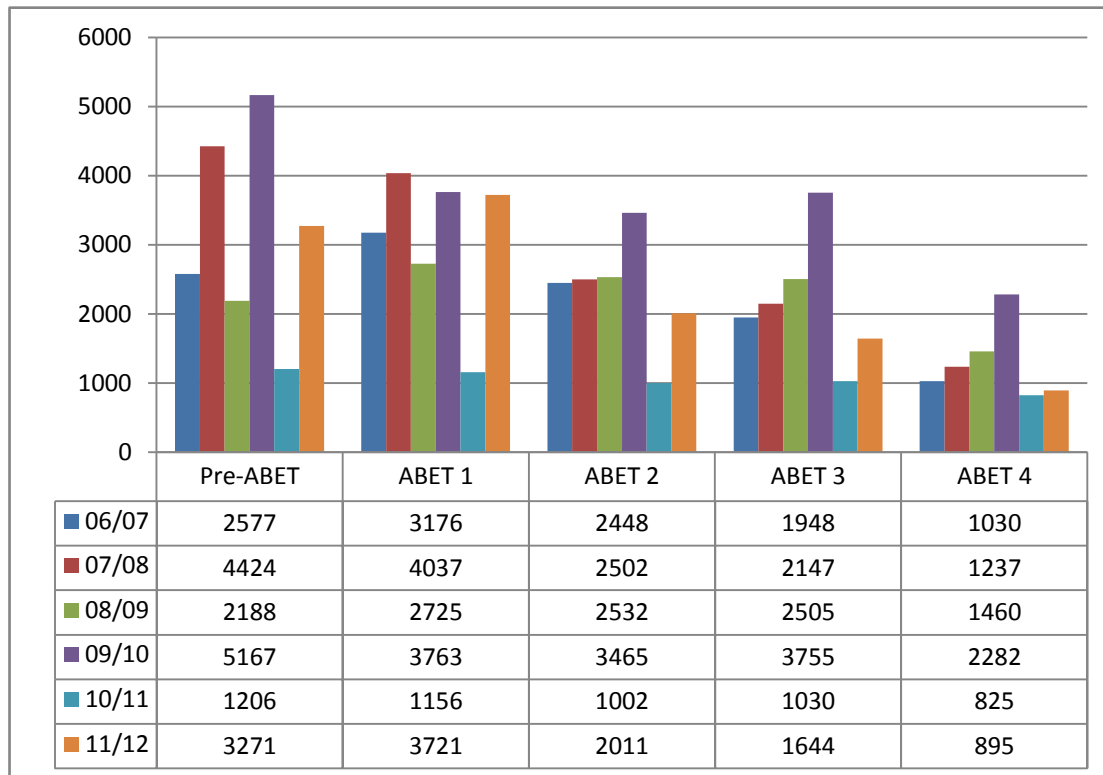
Figure 9 shows the gender distribution of the 2011 graduates. In some of the fields of study, women formed a substantial percentage. In chemical engineering, geology and metallurgical engineering, women formed around 40%. Substantial numbers of women are also qualifying in electrical engineering (27%) and mining engineering (22%).

Example of amount of training conducted in sector:

Except for Accountants, key managerial and professional occupations receive on average between 2 and 6 programmes each per year. The following is a breakdown of the situation:

- Other (49%)
- Short Course (21%)
- Refresher / Ex Leave Training + Induction (17%)
- Certificate (6%)
- Operator License Renewal (2%)
- Figure 5.18 shows the numbers of ABET learners who completed programmes between 2006/07 and 2010/11.

Figure 10 Employees who completed ABET: 2006/07 to 2011/12



Source: MQA Source Data 2012

SKILLS NEEDS OF THE MMS

Employers indicated that 3 552 scarce skills exist in all the occupational groupings (Table 6.1 below). This represents nine job opportunities less than in 2012. It proves a relative consistent demand in the groupings of managers and professionals, coupled with skilled agricultural, forestry, fishery, craft and related trades workers. This situation creates an opportunity for a progressive, developmental and nascent approach to alleviate the shortages as demonstrated in the below occupational categories (Table 14).

Table 14 Scarce skills: all main groups 2013 versus 2014¹

		2013: Total number of people needed in which there were skills shortages	2014: Total number of people needed in which there were skills shortages
1	Managers	220	243
2	Professionals	552	654
3	Technicians and Associate Professionals	698	464
4	Clerical Support Workers	17	32
5	Service & Sales Workers	3	4
6	Skilled Agricultural, Forestry, Fishery, Craft and Related Trades Workers	955	1030
7	Plant & Machine Operators and Assemblers	1116	1114
8	Elementary Occupations	0	11
		3561	3552

Source: Calculated from MQA data system, August 2013.

Table 14 above depicts the lack of skilled people in the different main groupings.

In terms of Table 2.4 below, the sector is not meeting the 2014 target of 40% for HDSA management employees as per the MRPDA.

HOW WILL THESE CHALLENGES BE ADDRESSED

The following MQA skills development objectives, through the implementation of various projects, will address these challenges.

- Support transformation of the sector through skills development
- Support objective decision-making for skills development through research in the sector
- Enhance information management for skills development in the sector
- Facilitate and support the implementation of core sector skills and develop programmes aligned with the sector qualifications framework
- Enhance the monitoring, evaluation and review of the delivery capacity and quality of skills development in the sector.

BRIEF OVERVIEW OF THE METHODOLOGY EMPLOYED

¹ Table numbering relates to the tables in Chapter 6.

DEVELOPMENT OF SECTOR PROFILES

There is no single database that provides a complete and comprehensive profile of the MMS as it has been defined for the purposes of the Skills Development Act. In order to develop such a profile, a variety of data sources were used. For each of the subsectors and for each of the variables needed in the profile, the sources that provided the best data were selected.

MINING

For five of the mining subsectors (coal mining, gold mining, PGM mining, diamond mining and other mining), the DMR's database of mines (employment in the first quarter of 2013) was used to establish total employment in each subsector. The reason for including the most recently available data is to create some bridging between past data and the need for projection into the future through the Labour Demand Projection Model (LDPM).

Information on population group, gender, occupational distribution and educational levels was not available from the DMR database. However, the MQA has a relatively high return of WSPs/ATRs every year and the WSPs contain comprehensive information on the workforce of the sector. The WSPs/ATRs submitted for the 2013/2014 year represented roughly 75% of the workers in the sector. Thus, for the purpose of establishing a sector profile, the individual records in the source data were weighted using the formulas as described in Appendix 1.

SERVICES INCIDENTAL TO MINING, CEMENT, LIME, AGGREGATES AND SAND, DIAMOND PROCESSING AND JEWELLERY MANUFACTURING

The cement, lime, aggregates and sand (CLAS) subsector includes cement manufacturing, which is not included in the DMR data. For this reason the WSP/ATR data of the CLAS subsector were weighted, using Skills Development Levy (SDL) payment information. Similarly, to arrive at an estimate of total employment in the services incidental to mining, diamond processing and jewellery manufacturing subsectors SDL payments were used in weighting the source data. It was assumed that there is a direct relationship between the amount of levies paid by an organisation and the number of people employed. It was also assumed that organisations in a particular subsector would have similar wage structures and that the employment-levy relationship of companies that submitted WSPs/ATRs would be the same as for those in the same subsector that did not submit WSPs/ATRs.

OCCUPATIONAL DATA

In cases where data was available according to occupation level, as derived from the WSPs/ATR data, but not subdivided according to mining subsector, a proportional weighting was applied in order to create consistency across all reported employment numbers. This weighting was taken as the total estimated mining population (according to the method outlined above) divided by the total WSP population.

Due to the different ways in which weightings could be applied, it was possible that some discrepancies could arise when inflating certain employment numbers emanating from the

WSPs/ATR data. In such cases, in order to ensure consistency across reported employment totals, the subsector weighting method was regarded as being “more reliable” and was given precedence, through the use of the appropriate scaling.

DEVELOPMENT OF THE LABOUR DEMAND PROJECTION MODEL

In setting up the model, several assumptions regarding mortality rates, vacancy rates, retirement rates and the rates at which employees leave the mining sector were made. These assumptions are described in Section 4.2 in Chapter 4. For the sake of completeness, some further assumptions (that may overlap with those in Chapter 4) are included here.

MORTALITY RATES

It was assumed that crude death rate improvements of the South African population, as reported in the Statistics South Africa 2013 mid-year population estimates, apply uniformly to the mining sector occupational levels and subsectors.

Otherwise, the same mortality assumptions used in the 2011 SSP were assumed, i.e., the 2011 SSP mortality rates were used as a baseline and adjusted proportionally according to the mortality improvements referred to above.

OTHER RATES

It was assumed that vacancy rates, mortality rates, retirement rates and rates at which employees leave the mining sector remain unchanged during the projection period. It was also assumed that growth in labour demand (due to economic growth) remains constant for the duration of the projection period, as described in Section 4.4.

NOTES ON THE LDPM

It should be noted that there is significant room for improving the LDPM in order to make it more realistic. The assumption of constant mortality and other rates may be refined. For example, it is known that mortality rates improve over time due to various factors such as the development of and better access to medical care. The assumption of constant mortality throughout the projection period could typically lead to an overestimation of projected labour demand numbers.

The current assumptions lead to a model that predicts a linear increase in labour demand over the projection period. An advantage of the model is its simplicity. However, the variables involved in this projection are known to behave in a non-linear fashion over time. Hence an over-simplistic model may not capture some relevant and significant movements in the population under the study. It must, however, be noted that the complexities involved in the accurate modelling of these variables are considerable and may require extensive modelling effort and expertise.

It is currently planned to extend the projection period beyond 2020, for example, until 2030. However, it should be noted that the further a model is projected, or extrapolated, into the future, the more the possible deviations between actual and projected experience are amplified.

In order to ameliorate this problem, the ideal model should be flexible enough to be amenable to updates from year to year, as new experience is recorded.

A further improvement that could vastly enhance the way in which the LDPM is used, is the introduction of a scenario approach. Such an approach was, in a different context, introduced in Chapter 3. Scenario analysis is a key concept in the analysis of future uncertainties. In this instance, where there is considerable uncertainty about future trends and outcomes, it may be especially important to include a range of outcomes – instead of a single outcome – in order to reflect this uncertainty.

Accordingly 4 scenarios were used to calculate future demand and can be summarised as follows:

- Employment growth: 4 scenarios used
 - National Development Plan (NDP) vision 2030 incorporated
 - National Development Plan (NDP) for Mining: 3 scenarios used
 - MQA Labour Demand Projection Model (LDPM)
 - Employment growth scenario assumptions:
 - Mediocre minerals scenarios (NDP): -0.5% per annum
 - Solid minerals scenario (NDP): 1.3% per annum
 - Diversified scenario (NDP): 1.98% per annum
 - Optimistic scenario (LDPM): 2.6% per annum
- 2.6% p.a. growth in employment overall
- Vacancy rates – included to estimate total positions
- Retirement and mortality – based on age distribution of workers
- Mortality improvement – latest census figures included
- People leaving the sector – rates assumed

The MQA Labour Demand Projection Model (LDPM) assumptions on mortality, vacancy, retirement, people leaving the sector, etc., were kept for NDP scenarios.

OTHER ASSUMPTIONS

A base assumption underlying the calculations of employment and projected numbers is the assumption that the underlying data is correct.

Due to the use of weightings in the calculations, it was possible that certain population totals or subtotals appear that are not integer numbers. In such cases, the totals should be rounded to the nearest integer. When reporting population figures, such rounding was often used for the sake of producing tables or graphs. Due to rounding, it may occasionally happen that the values in reported tables or graphs do not add up to the exact number given in the tables. In such cases, these slight differences (if present at all) were regarded as immaterial.

1. INTRODUCTION

1.1 BACKGROUND

On 30 April 2010, the Minister of Higher Education and Training, in consultation with the National Skills Authority, released the first draft framework for the National Skills Development Strategy 2011/12 to 2015/16 (NSDS III) for comment and response from stakeholders.

According to this document, all sector education and training authorities (SETAs) were required to submit sectoral analyses to the Department of Higher Education and Training (DHET). They were to follow the broad guidelines given in the framework document. The submission date for the sector analyses was 30 June 2010 and the Mining Qualifications Authority (MQA) duly submitted a sector analysis of the Mining and Minerals Sector (MMS).

Subsequently the Sector Skills Plan (SSP) development process continued and the MQA submitted a draft SSP to the DHET on 30 September 2010. The final version of the SSP was submitted to the DHET on 16 February 2011.

The DHET also requires the SETAs to revise and update their SSPs every year. This current SSP is a revision of the one submitted in August 2012 and the first update submitted in August 2011.

The main purpose of the SSP is described in the guideline document issued by the DHET on 23 June 2010, entitled *Department of Higher Education and Training – Guide to the process and time frames for developing sector skills plans and the NSDS III*. According to this guideline, the purpose of the SSP is as follows:

- Determine skills development priorities after an analysis of the skills demand and trends, and supply issues within the sector.
- Identify a set of sector specific [skills development] objectives and goals that will meet sector needs, economic or industrial growth strategies, and meet scarce and critical skills [needs] in the sector.
- Identify strategies to address these objectives and goals.
- Identify activities that will support these strategies.
- Report on performance in relation to these objectives and goals.

Although the writing of this SSP was guided by the DHET's requirements, it is important to take cognisance of the fact that the MQA was established in terms of the Mine Health and Safety Act (Act No. 29 of 1996) (MHSA), i.e., before the promulgation of the Skills Development Act and the establishment of the SETAs. The MQA was established to improve health and safety standards through education and training in the mining sector. The MHSA also prescribes the composition and governance structures of the MQA. It specifies the tripartite nature of the MQA, with the state (in the form of the Department of Mineral Resources (DMR)), organised labour

and employers playing equally important roles in the governance of the organisation. In this tripartite structure, the state (in the person of the Chief Inspector of Mines) occupies the chairperson position on a permanent basis. The MHSA is currently being reviewed to strengthen enforcement provisions, simplify the administrative system for issuing fines, reinforce offences and penalties, substitute and remove ambiguities and also effect certain amendments to ensure consistency with the Mineral and Petroleum Resources Development Act (MPRDA). These amendments will soon serve before Cabinet to obtain approval for submission to Parliament.²

Furthermore, the MPRDA establishes the Minerals and Mining Development Board that must “in consultation with the Mining Qualifications Authority, ensure the promotion of human resource development in the mining and minerals industry”.³

The legislative arrangements set out above impose on the MQA a legislated responsibility to place health and safety at the centre of its focus and activities. It also means that the MQA has a dual responsibility: to satisfy the requirements of the skills development legislation, as well as those of the mine health and safety legislation.

1.2 PROCESS FOLLOWED IN THE DEVELOPMENT OF THIS SSP UPDATE

1.2.1 Information sources utilised

No single database currently provides a complete and comprehensive profile of the MMS as it has been defined for the purposes of the Skills Development Act, and for this reason it was necessary to use a range of data sources in the development of this SSP and in the current update:

- The MQA has, over the years, developed a format for the workplace skills plans (WSPs) and annual training reports (ATRs) that exceeds the minimum legislated requirements. This is because the MQA has always argued that the information submitted in the WSPs/ATRs should provide detailed baseline statistical information on the sector. The WSP/ATR information has been captured on an electronic data system and analysed every year. Notably, the WSPs/ATRs submitted for the financial year 2011/12 represented approximately 75% of the workers in the sector. The 2011/12 mandatory grant applications also differed substantially from those of the previous years. In this year, employers submitted individual employee records with all the demographic variables used in the construction of the sector profile, as well as information on the training that those individuals received. This information, referred to as *source data*, enabled the MQA to do a much more accurate and detailed analysis of the sector.

²Department of Mineral Resources. *Annual Report 2011/12*.

³Minerals and Petroleum Resources Development Act, Act No. 28 of 2002, Section 58(1)(b).

The source data referred to above classified all employees according to version 10 of the Organising Framework for Occupations (OFO). Version 10 differs substantially from version 9 that was used in the previous SSP. A direct comparison of occupational information is therefore not possible. The source data of the WSP/ATR submissions for the 2012/13 financial year were according to OFO Version 2013 and Data Tables.

Another aspect that needs to be mentioned is that in the time between the submission of the SSP and this SSP update, the MQA used various mechanisms to correct organisations' allocation to the nine MMS subsectors (plus a tenth subsector, Non-Mining) used in the SSP. This led to re-weighting of the WSP/ATR data and a more accurate description of the sector and its subsectors.

- The DMR's database of mines is updated quarterly through mandatory submissions. This data, which is also regarded by Statistics South Africa as the official statistics on employment in the mining industry, was used to supplement and weight the information from the WSPs in the MQA's data system (see Appendix 1 for more details). This SSP update uses the DMR's employment figures for the first quarter of 2013.
- Other national data sources used include, for example, the economic data series of the Labour Force Survey (LFS) published by Statistics South Africa and the Higher Education Management Information System (HEMIS) maintained by the DHET.

In addition to the quantitative data sources outlined above, the MQA has also undertaken a range of research projects based on its research agenda. Several of the research projects contributed to the understanding of the MMS and were used in the preparation of this SSP update. These were augmented with research conducted by other institutions in the sector, such as the Mine Health and Safety Council (MHSC).

Finally, the demand projections presented in Chapter 4 of this report were derived from two models: an econometric model that produces forecasts for the total economy, and a demand projection model developed specifically for the MQA. In the previous SSP, projections were only made at the broad occupational level. The availability of the source data referred to above made it possible to refine this model and to project the demand for labour at a detailed occupational level.

1.2.2 Consultation process for SSP update (2011–2016)

1.2.2.1 Sector participation

When the DHET announced that SETAs had to submit sector analysis reports, the MQA Board established a project team to work with its research partner in the development of the SSP that was submitted in February 2011. This team consisted of representatives from each of the three constituencies: employers, labour and the state (DMR), together with the MQA managers and key personnel in the Skills Development and Research Unit. The team provided information for the original sector analysis and commented on the SSP.

In 2010, the MQA conducted a series of workshops with its stakeholder constituencies. Six workshops were held (including one with the MQA Board). At these workshops, the sector analysis report was interrogated and commented on. The workshops also focused on the stakeholders' views regarding the skills development priorities that the MQA should set for the next five years and the contributions that the MQA and the sector could make to the national imperatives set out in various government policies. Subsequently, a further MQA Board workshop was held to present and receive comments on the draft SSP and the strategic plan.

1.2.2.2 Other consultations

In the SSP preparation process, the MQA contacted all nine provinces via their premiers' offices to obtain their economic development plans and inputs into the skills needs and priorities in their provinces. In this process, the inputs were limited, but the MQA continues to participate in the relevant forums in the provinces, particularly where the MMS has a significant presence. Written input was also received from the Department of Environmental Affairs (DEA), which was then followed up by further engagements on the SSP. Discussions between the MQA and this department will continue in the longer term.

After submission of the first draft SSP to the DHET in September 2010, the SSP was put out for comment in the sector. It was distributed to all MQA committees and participants in the SSP workshops, all MQA skills development facilitators, MQA-accredited training providers, relevant national government departments, the premiers' offices of all provincial governments and relevant professional associations. Comments from stakeholders and the comments received by the DHET were considered at an MQA Board strategic planning session held on 18 and 19 November 2010. As far as possible, comments were accommodated and incorporated. When the final NSDS III was released by the DHET on 13 January 2011, the MQA aligned the SSP with the NSDS III. The additions and amendments were minimal as the SSP was developed taking the draft NSDS III into consideration. The SSP was then finalised and presented to the various stakeholder representatives for final sign-off.

1.2.2 Consultation process for SSP update (2012–2017)

In 2011, the MQA once again established a task team to assist with and contribute to the SSP update. This task team consisted of representatives of the three stakeholder groupings: employers, organised labour and the state (DMR), together with the relevant MQA managers.

All the statistical information was updated with the most recent information available. New legislation and policies that impact on the sector were also considered and incorporated into the document where appropriate. The revised information was presented to the task team for comment and further input.

The SSP was then reviewed and approved by the MQA Board during a strategic planning session.

1.2.3 Consultation processes followed in the development of the SSP update (2013–2018)

In 2012, the MQA Board Standing Committee: Skills Research and Planning (SRP) guided and contributed to the SSP update. This Board Standing Committee consisted of representatives of the three stakeholder groupings: employers, organised labour and the state (DMR), together with the relevant MQA managers.

Statistical information, wherever possible, was updated with the most recent information. New legislation and policies that impact on the sector were also considered and incorporated into the document where appropriate. The revised information was then presented to the SRP Committee for comment and further input. .

The SSP update, together with the strategic plan, was then reviewed and approved by the MQA Board during a strategic planning session on 28 and 29 August 2012. A final SSP update was submitted in November 2012, incorporating further stakeholder and Board input, more recent data on employment in MMS, and feedback received from DHET.

1.2.4 Consultation processes followed in the development of the SSP update (2014–2019)

Statistical information, wherever possible, was updated with the most recent information. New legislation and policies that impact on the sector were also considered and incorporated into the document where appropriate.

The revised information was then presented to the SRP Committee for comment and further input, within the tight time constraints. Comments were received from the MQA Board at the Board session on the 3rd/4th of October 2013.

1.3 STRUCTURE OF THE SSP

This SSP consists of eight chapters. Chapter 1 serves as an introduction to both the MQA as an organisation, as well as to the process followed in developing this document. Chapter 2 provides a descriptive profile of the sector. After a brief overview of the nine MQA subsectors and the profile of the organisations that make up the MMS, employment in the sector is discussed from various perspectives. This is followed by a summary of the characteristics of the sector that have a particular impact on skills development priorities and programme implementation. The transformation of the sector is considered in light of the relevant government legislation and policy documents, including the Beneficiation Strategy and the proposed State Intervention in the Minerals Sector (SIMS).

Chapter 3 deals with the economic performance of the sector. Within a framework of sustainable development, this chapter considers the various factors that have an impact on the economic performance of the MMS, presently and in the future, as well as data on the economic growth of the sector and its contribution to GDP, and the initiatives that are in place to enhance the sector's growth.

Chapter 4 considers the sector's demand for labour. Past demand is described and forecasts for future demand are made according to a MQA Labour Projection Demand Model (LPDM, the optimistic growth scenario of 2.6% per annum) for the period 2013–2020. It also takes into consideration the, and National Development Plan (NDP) for Mining which depicts the following 3 employment growth scenario assumptions:

- Mediocre minerals scenario (NDP): -0.5% per annum
- Solid minerals scenario (NDP): 1.3% per annum
- Diversified scenario (NDP): 1.98% per annum

Chapter 5 describes the supply of labour to the sector. A description of current supply (including both employed and unemployed workers) is supplemented by a discussion on the supply of new skills into the sector, as well as development of skills among those already employed within the sector. The chapter also considers the MQA's interventions that are aimed at alleviating skills shortages.

Chapter 6 provides a qualitative comparison between skills demand and skills supply. An outline of the broad categories of skills development needs as they emerge from this SSP is followed by more detailed information on specific scarce skills in the sector. The final section, which directly compares demand and supply, highlights the areas of skills shortages and skills gaps, and the challenges that need to be considered if the mismatch is to be addressed.

Chapter 7 outlines the six skills development priorities, known as strategic objectives, for the MQA – the culmination of the research and consultations processes described above. This chapter also outlines the MQA's contribution to the strategic areas of focus of the NSDS III, government's Medium-term Strategic Framework (MTSF) objectives, government's Industrial Policy Action Plan (IPAP), the New Growth Path (NGP), the National Skills Accord and the Beneficiation Strategy of South Africa. Furthermore, the recently released National Development Plan: Vision 2030 and the Infrastructure Plan have been considered.

Chapter 8 concludes this SSP update and reports on the progress made so far in respect of the skills development priorities identified in Chapter 7

It is important to note when reading this SSP, that while issues are complex and cross-cutting, adherence to the structure of an SSP document demands that only particular aspects of any given issue are discussed in one particular chapter. This document must therefore be read as a whole.

2. SECTOR PROFILE

2.1 INTRODUCTION

The profile of the MMS presented in this chapter highlights the most important characteristics of the sector that impact on skills development. The intention is to provide a descriptive overview of the sector. The description starts with an exposition of the industrial sectors and activities included in the sector and the subsector demarcation used by the MQA and in the rest of this SSP. Following on this is a description of the organisations and the employees working in the sector. This description portrays the sector as at the end of August 2013. The next part of this chapter deals with special characteristics of the sector that have a direct bearing on the skills needs and requirements of the sector and on the work of the MQA. These include the regulation of the sector, labour, employer and professional organisations, the geographic location of mining activities, the use of migrant and contract workers, small-scale mining, the language situation in the MMS, the prevalence of HIV/AIDS and occupational diseases, mine accidents and fatalities, the environmental impact of the sector and its responsibilities in this regard, and mineral beneficiation and state interventions in the MMS. In the last part of the chapter, the transformation of the sector is discussed.

At present 5809 organisations are paying levies and 1396 are non-levy paying enterprises. The statistical analysis used and the MQA's WSP/ATR data for August 2013 were modelled as follows:

- The base employment number as reflected by the WSPs is given as 473291.
- A grand total employment figure of 572 518 was obtained after applying appropriate weightings in respect of the various subsectors and occupational groups as described in Appendix 1, as well as the methodology description in the Synopsis. With the calculations in the previous SSP, a much higher employment number of 628 000 (an "optimistic" viewpoint and on the high side) was arrived at and used accordingly. Hence, the current total used is a downward adjustment on the estimated employment number, which could be seen as arguably more realistic based on the abovementioned assumptions.

2.2 INDUSTRIAL COVERAGE

The MMS, as demarcated by the Department of Labour (DoL) in 1999 for the purpose of the skills development legislation, includes all mining activities covered by the Standard Industrial Classification (SIC) codes 21000 to 29000, as well as a small component of manufacturing – namely the Manufacturing of Cement, Lime and Plaster (SIC code 34240), Jewellery Manufacturing and Related Articles (SIC code 39210), the Cutting and Polishing of Diamonds (SIC code 39212) Jewellery and Related Articles (composed of precious metals, precious and semi-precious stones and pearls) (SIC code 39211) and Other Precious and Semi-precious Stones Precious and Semi-precious Stone Cutting and Polishing (SIC code 39219).

Although the DHET has defined the sectors to be served by the respective SETAs, organisations have some choice regarding the SETA with which they want to register. A number of organisations not strictly involved in mining activities as such, but closely associated with the sector, have chosen to register with the MQA or have been allocated to the MQA by the DHET.

In order to facilitate the analysis of data covering such a wide spectrum of SIC codes, organisations in the sector have been categorised into the following nine subsectors:

- Coal Mining
- Gold Mining
- Platinum Group Metals (PGM) Mining
- Diamond Mining
- Other Mining, which includes the mining of iron ore, chrome, manganese, copper, phosphates and salt
- Cement, Lime, Aggregates and Sand (CLAS)
- Services Incidental to Mining
- Diamond Processing
- Jewellery Manufacturing

The SIC codes included in each of the subsectors can be seen in Appendix 2. All the organisations that do not fall within the designated SIC codes, but that have elected to register with the MQA or remained with the MQA after being allocated to the SETA by the DHET, are grouped in the subsector Services Incidental to Mining.

2.3 OVERVIEW OF MQA SUBSECTORS

This section provides a brief overview of each of the MQA's nine subsectors. In describing the profile of the sector in the rest of this chapter, subsector breakdowns are presented wherever possible.

2.3.1 Coal mining

The South African coal mining industry is ranked 7th in the world in terms of production and 6th in terms of reserves, contributing 3.6% to global output. Total coal sales by value increased by 23% from 2010 to an amount of R87.8 billion. In 2011, 58% of local coal by value (roughly one quarter in terms of volume) was exported.⁴ South Africa exports coal to 34 countries, with the European Union being the primary market (84.5%). Over 80% of the country's saleable coal is supplied by the five largest mining groups. Coal reserves, and therefore mining activity, are predominantly in Mpumalanga and Limpopo.⁵

⁴Chamber of Mines.*Facts and Figures booklet*, 2012.

⁵Mwape P, Roberts MJ, Mokwena E, Musi L, Tjatjie T, Mnguni M, Mashaba P, Kwata PG. *Part One: South Africa's Mineral Industry – General Review*. Department of Minerals and Energy, South Africa's Mineral Industry, 2007/2008.

The coal sector accounted for 7.7% of merchandise exports in 2011, making it the fourth largest component after PGM, gold and iron ore.

2.3.2 Gold mining

The South African gold mining industry is ranked first in the world in terms of gold reserves and 5th in the world in terms of production.⁶ Three of the world's ten largest gold mining companies have headquarters in South Africa and have operations not only in South Africa, but also in Australia, West Africa and in South America. It is largely predicted that in 2012, the bullion price should lift above the \$1 600/oz mark on which it has settled for some time, and end the year closer to the \$1 700/oz mark.⁷

Gauteng dominates in gold mining, accounting for roughly 49.9% of South African production. This is followed by North West (23.1%), Free State (21.3%), Mpumalanga (4.5%) and Limpopo (1.2%). Only about 5% of the country's gold production is beneficiated locally to coins and jewellery.⁸

2.3.3 PGM mining

PGM is a family of six chemically similar elements: platinum, palladium, rhodium, ruthenium, iridium and osmium. The South African reserve base constitutes 87.7% of the global reserve, while the country contributes 58.7% to global production, ranking 1st in both categories. South African reserves are concentrated in North West and Limpopo, with these two provinces contributing 63.5% and 30.2% respectively to national production. The PGM mining subsector consists of a small number of very large companies.⁹ In order to address the challenges facing the industry, the Minister of Mineral Resources, the Mining Industry Growth and Development Task Team (MIGDETT) and the chief executives of the PGM mining companies are considering a report from the MIGDETT Platinum Task Team (PTT) established to consider the challenges facing the PGM mining sector. Some of the challenges identified by the PTT include the supply and demand imbalance that has resulted in surplus platinum on the market, further aggravated by the increased availability of scrap and recycled metal, the low price of PGMs, the substitution of platinum by palladium and the waning competitiveness of the PGM mining sector. The task team has identified interventions that could help the sector in the short term and locate it along a sustainable growth route in the medium to long term. The short- to medium-term interventions being developed and questioned include the commitment to working together to explore mechanisms of cost reduction for the purpose of improving the feasibility of the industry and

⁶Chamber of Mines. *Facts and Figures booklet*, 2012.

⁷<http://www.miningweekly.com/article/cash-gushing-harmony-levers-80-profit-rise-off-36-gold-price-hike-2012-08-16>; accessed 30 August 2012.

⁸ Mwape P, Roberts MJ, Mokwena E, Musi L, Tjatjie T, Mnguni M, Mashaba P, Kwata PG. *Part One: South Africa's Mineral Industry – General Review*. Department of Minerals and Energy, South Africa's Mineral Industry, 2007/2008.

⁹ Ibid.

protecting jobs. There are also suggestions to support increased domestic downstream value addition to PGMs as a means of generating demand for platinum, while supporting the objectives of the National Beneficiation Strategy. The long-term plans include a commitment by the parties to a programme that will investigate strategies for sustainable growth in the PGM industry to support growth and job creation through competitive interventions, skills development, increased levels of PGM beneficiation and the diversification of PGM applications and demand drivers¹⁰.

The Platinum Producers' Forum was started a few years ago in response to the need for platinum producers in the Rustenburg area to cooperate on infrastructure and community development issues. Apart from the electricity crisis of 2008, platinum producers were faced with water shortages, as well as a lack of adequate road infrastructure. The main function of the forum is to improve the delivery rate of sustainable projects in collaboration with communities by ensuring that there is a common understanding of the problems at hand and no duplication of efforts in addressing these problems. The Platinum Producers' Forum has identified ways in which producers can pool resources and engage in cooperative ventures. It has engaged local municipalities in infrastructure development, but the efficacy of the model, given the typical lack of institutional capacity and volatile local political dynamics, is yet to be demonstrated. As the platinum sector has successfully pioneered the concept of cooperative social development programmes through the Platinum Producers' Forum, this is being replicated in the coal and in the gold sectors.¹¹

2.3.4 Diamond mining

South Africa was ranked 5th in the world in terms of diamond production by value in 2009, after Russia, Canada, Botswana and Angola¹². In South Africa, deposits are concentrated in the Northern Cape and Limpopo. De Beers Consolidated Mines dominates South African diamond mining, with mines in South Africa, Botswana, Namibia and Tanzania. This company contributed 29% of global production by mass, and 41% by value, in 2007. Diamond supply has fallen nearly 30% since 2007 and demand has risen by the same percentage in that same five-year period.¹³ There are, however, also a few independent mines, with small-scale miners mainly involved in alluvial diamond mining operations.¹⁴

2.3.5 Other mining

¹⁰<http://list.gcis.gov.za/mailman/listinfo/sanews>; released 2 August 2012.

¹¹ Southern African Institute of Mining and Metallurgy: The Rise of Resource Nationalism

¹²<http://list.gcis.gov.za/mailman/listinfo/sanews>; released 2 August 2012.

¹³ Chamber of Mines: Facts & Figures booklet, 2012.

¹⁴<http://www.miningweekly.com/article/diamond-supply-down-30-demand-up-30-de-beers-2012-08-15>; accessed 30 August 2012.

¹⁵ Mwape P, Roberts MJ, Mokwena E, Musi L, Tjatjie T, Mnguni M, Mashaba P, Kwata PG. *Part One: South Africa's Mineral Industry- General Review, Department of Minerals and Energy, South Africa's Mineral Industry, 2007/2008.*

Included in South Africa's other mining sectors are the producers of uranium, copper, iron ore, manganese and salt. Uranium production is a by-product of gold mining and distribution of the sector mirrors that of gold mining. South Africa's copper deposits lie mainly in Limpopo, with copper being mined mainly by one large company.

In terms of iron ore, South Africa is ranked 13th in the world for reserves, 6th for production and 5th for exports. For manganese, the country is ranked 1st in the world for reserves, 2nd for production and 2nd for exports.¹⁵ In 2011, South African manganese production increased by 21% to 8.7 mt. Iron ore and manganese deposits are concentrated in the Northern Cape.¹⁶

2.3.6 Cement, lime, aggregates and sand

The CLAS subsector is dominated by medium and smaller sized mining companies. The vast majority of small-scale mining applications (90%) also fall into this group of industrial commodities. Sales are mainly local, with aggregate and sand contributing 43% to total sales, limestone and lime 21%, and phosphate concentrate 15%. Larger firms in this subsector include cement manufacturers, phosphates, vermiculite and dimension stone producers. Dimension stone is also the one commodity in this group that is exported in bulk.

2.3.7 Services incidental to mining

Made up of a large group of relatively smaller companies, the services incidental to mining subsector consists of an array of companies that provide services to the mining sector. This subsector includes organisations involved in research and development in the field of mining and mineral extraction, and organisations that render services to mining companies, for example, training, catering services, payroll services, the manufacturing, distribution, hiring and maintenance of machinery and equipment used in mining, mining consulting services, and shaft sinking, transportation and logistics.

2.3.8 Diamond processing

The South African diamond processing industry consists of 221 licensed diamond manufacturers. The diamond trading company of De Beers is the major supplier of rough diamonds to the industry, although some are sourced from local independent mines and others imported from Belgium, a major global buyer of rough diamonds. The Master Diamond Cutters' Association has 80 members, which employ approximately 95% of the labour in this small subsector.¹⁷

¹⁵ Ibid.

¹⁶ Chamber of Mines Facts & Figures booklet, 2012.

¹⁷ <http://www.essentialsjewelry.com/southafrica-gem-jewelry/south-africa-rough-diamond.html>, accessed 11 November 2010.

The processing of diamonds for industrial use is often linked to manufacturing processes and, as a result, some of the diamond processing firms are located in the manufacturing sector and are associated with other SETAs.

South Africa's State Diamond Trader (SDT) was launched in February 2008 and is mandated to purchase 10% of South Africa's rough diamond production and to sell these to local beneficiaries.

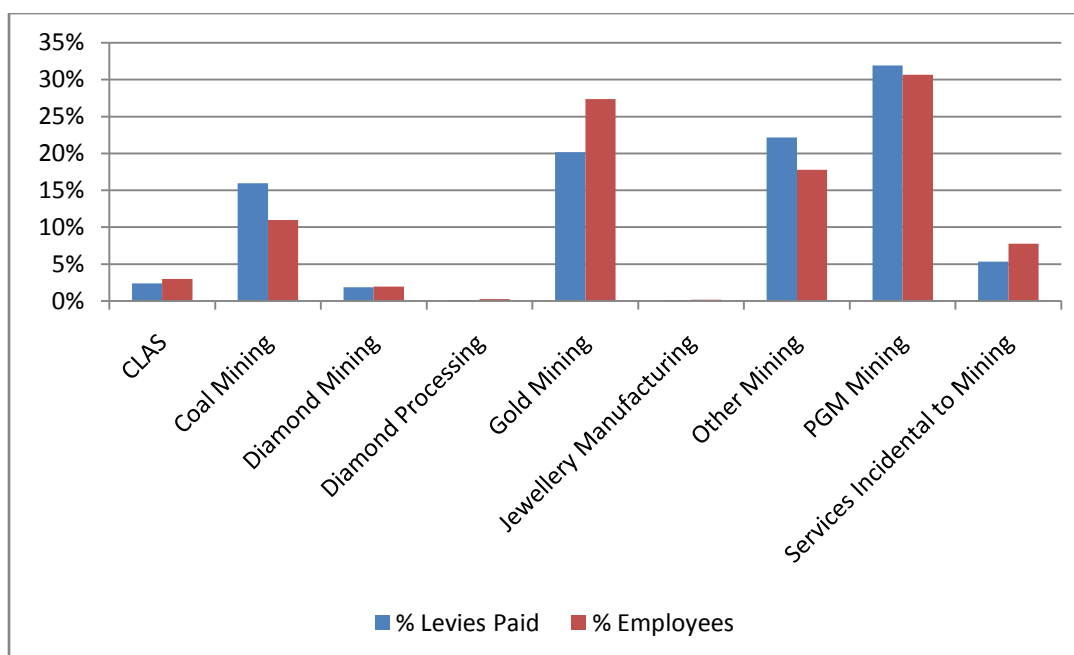
2.3.9 Jewellery manufacturing

Firms in this subsector benefit from mining outputs such as precious metals (gold, platinum and silver) and diamonds in the manufacture of jewellery for both the domestic and the export markets. The majority of the companies in this subsector are small. The jewellery manufacturers are located mainly in Gauteng, the Western Cape and KwaZulu-Natal. Jewellery manufacturing is very often combined with the wholesale or retail sale of jewellery products and, for this reason, many of the jewellery manufacturers are registered with the Wholesale and Retail SETA (W&R SETA).

2.4 ORGANISATIONS IN THE SECTOR

The subsector distribution of the levy-paying organisations, percentage levy payments and percentage employees in each subsector, at the time of this analysis, can be seen in the Figure 2.1 below. The largest proportion of levies were paid by PGM Mining (32%), which at the same time represents 32% of employees in the sector. Compared to this, gold mining paid 20% of the levies in the sector, and represents the second highest number of employees (24%) in the subsector. Other mining paid 23% of the sector levies, but showed a lower proportion ratio of employees (16%) in the sector. At present 5809 organisations are paying levies and 1396 are non-payers of levies.

Figure 2.1 Subsector distribution of MQA organisations and SDL contributions: 2013



Source: Calculated from MQA data system, August 2013.

In addition to the levy-paying organisations, the sector also includes the DMR, which is a non-levy paying organisation. The CLAS and jewellery manufacturing subsectors both include a number of very small non-levy-paying organisations.¹⁸

2.5 EMPLOYMENT IN THE SECTOR

2.5.1 Total employment

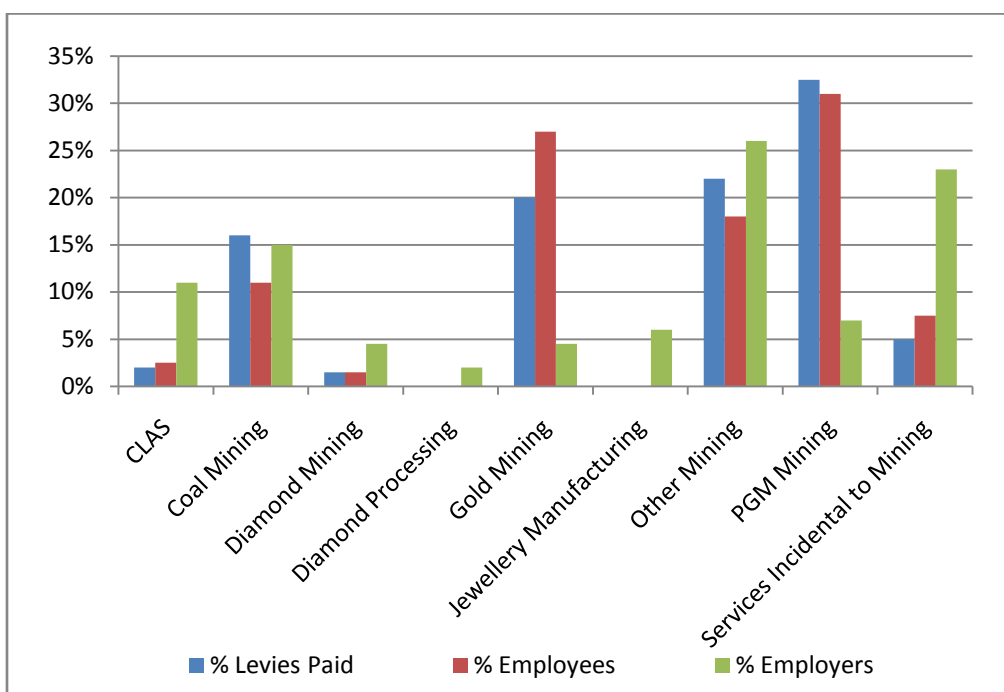
Total employment at the end of August 2013 was estimated at approximately 572 518.

This figure includes permanent employees as well as contractors. The largest subsector was PGM mining with 189 783 employees (34.5% of total employment), followed by gold mining with 138 276 employees (28% of total employment) and coal mining with 86 677 employees (10.5% of total employment). The other mining subsector employed 76 296 people (14.5% of total employment) and services incidental to mining employed 46 168 people (7% of total employment). The smallest subsectors were CLAS with 16 805 employees (2.5%), diamond mining with 12 959 employees (2%), jewellery manufacturing with 1 207 employees (0.2%), and

¹⁸In the previous version of the SSP, weights used to extrapolate WSP information to subsector totals were adjusted to provide for levy-exempt companies. However, in research into small organisations in the MMS, only a very small number of levy-exempt companies could be traced and the research revealed that employment in these companies is almost negligible. For this reason, in this SSP update, no additional weighting was used to account for small non-levy-paying organisations.

diamond processing with 1 702 employees 0.2% of total employment) (Figure 2.2). This figure also shows the relative levy contributions of each subsector and the correlation between the number of employees and the levy contributions of the respective subsectors.

Figure 2.2 Total number of employees per subsector and SDL contribution: 2012/13



Source: Calculated from MQA data system, August 2013.

The majority (48.5%) of employees in the sector are employed in very large organisations (with 5 000 or more employees) while another 47.6% work in large organisations with 150 to 4 999 employees. Medium and small organisations employ 2.7% and 1.15% of the workforce of the sector respectively (Table 2.1).

Table 2.1 Employment distribution according to organisation size

	0-49		50-149		150-4999		5000+		Grand Total	
	Num Emp	%	Num Emp	%	Num Emp	%	Num Emp	%	Num Emp	%
Cement, Lime, Aggregates	677	13%	2 308	16%	14 270	5%	-	0%	17 256	3%
Coal Mining	463	9%	2 124	14%	50 984	19%	9 293	3%	62 864	11%
Diamond Mining	137	3%	786	5%	10 293	4%	-	0%	11 216	2%
Diamond Processing	117	2%	683	5%	571	0%	-	0%	1 372	0%
Gold Mining	91	2%	300	2%	33 390	12%	122 990	44%	156 771	27%
Jewellery Manufacturing	420	8%	685	5%	-	0%	-	0%	1 104	0%
Other Mining	1 707	33%	4 281	29%	67 248	25%	28 635	10%	101 871	18%
PGM Mining	47	1%	328	2%	55 780	20%	119 424	43%	175 579	31%
Services Incidental to Mining	1 496	29%	3 363	23%	39 626	15%	-	0%	44 485	8%
Grand Total	5 156	100%	14 858	100%	272 162	100%	280 342	100%	572 518	100%

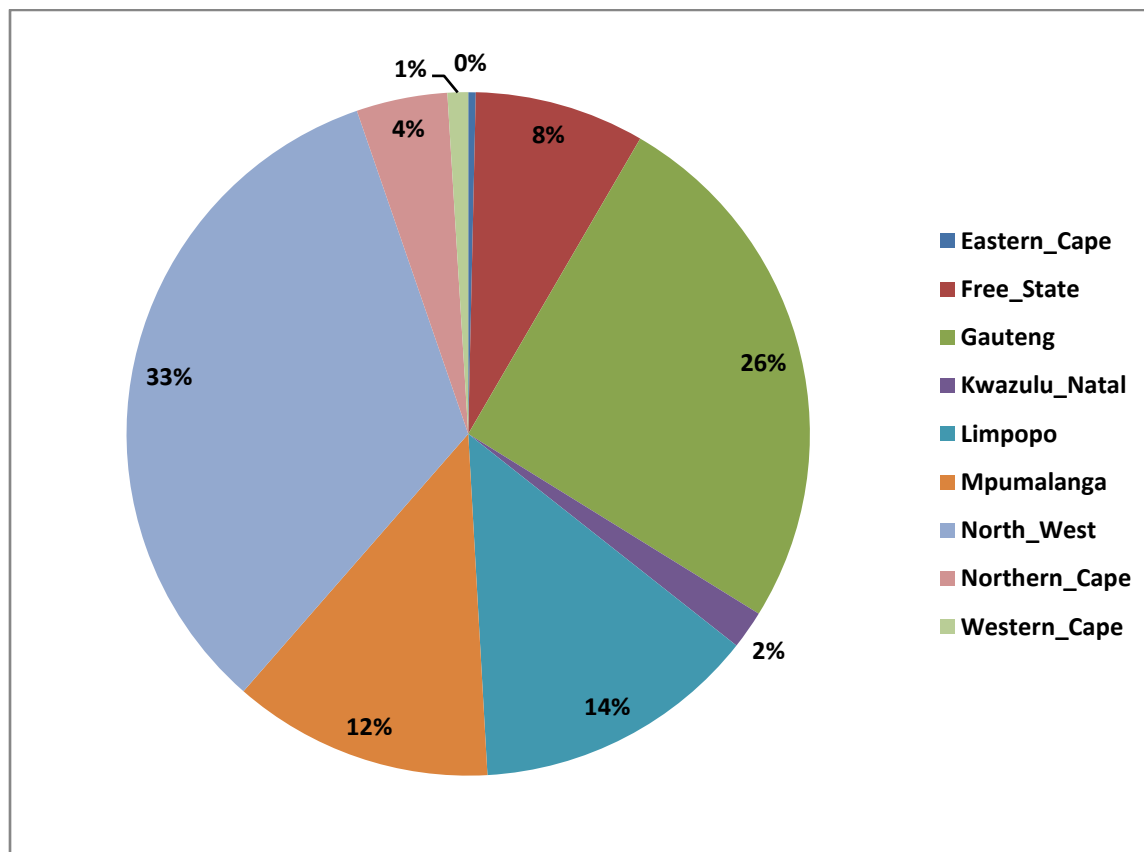
Source: Calculated from MQA data system, August 2013.

2.5.2 Provincial distribution of employees

The provincial distribution of employees can be seen in Figure 2.3 and Table 2.2. The province with the largest number of workers is North West (33%). This is because of the large-scale PGM mining that takes place in the province. Gauteng is home to some of the large gold mines and 26% of the total MMS resides in this province. Limpopo houses 14% of the sector, with most of the coal mines situated in this province. A total of 12% of the sector is based in Mpumalanga, which has substantial numbers of people employed in PGM mining and in the other mining subsector.

The Western Cape and the Eastern Cape have very little mining activity. However, the Eastern Cape is one of the areas from which the MMS sources labour. Therefore, the MMS contributes to the economy of this province. Only 1% of the employees in the MMS are based in the Northern Cape.

Figure 2.3 Provincial distribution of employees according to subsector: 2013



Source: Calculated from MQA data system, August 2013.

Table 2.2 Provincial distribution of employees according to subsector: 2013

		Eastern	Free_State	Gauteng	Kwazulu_Natal	Limpopo	Mpumalanga	North_West	Northern_Cape	Western_Cape	Grand Total
Cement, Lime, Aggregates and Sand	Num	754	230	6 489	2 088	748	921	2 740	1 253	2 035	17 256
	%	4%	1%	38%	12%	4%	5%	16%	7%	12%	100%
Coal Mining	Num	90	2 147	3 845	3 509	4 047	49 221	1	2	1	62 864
	%	0%	3%	6%	6%	6%	78%	0%	0%	0%	100%
Diamond Mining	Num	-	1 219	1 946	-	1 568	-	532	5 316	634	11 216
	%	0%	11%	17%	0%	14%	0%	5%	47%	6%	100%
Diamond Processing	Num	-	-	1 269	-	74	-	-	29	-	1 372
	%	0%	0%	93%	0%	5%	0%	0%	2%	0%	100%
Gold Mining	Num	-	40 829	83 205	5	1 822	5 312	25 599	-	-	156 771
	%	0%	26%	53%	0%	1%	3%	16%	0%	0%	100%
Jewellery Manufacturing	Num	23	13	486	15	1	17	2	-	547	1 104
	%	2%	1%	44%	1%	0%	2%	0%	0%	50%	100%
Other Mining	Num	1 096	443	22 588	4 418	22 283	11 385	20 563	17 158	1 938	101 871
	%	1%	0%	22%	4%	22%	11%	20%	17%	2%	100%
PGM Mining	Num	-	7	11 529	-	41 860	1	122 123	58	-	175 579
	%	0%	0%	7%	0%	24%	0%	70%	0%	0%	100%
Services Incidental to Mining	Num	60	1 148	14 207	348	4 719	3 679	19 041	855	427	44 485
	%	0%	3%	32%	1%	11%	8%	43%	2%	1%	100%
Grand Total		2 023	46 037	145 565	10 382	77 121	70 535	190 601	24 672	5 581	572 518

Source: Calculated from MQA data system, August 2013.

2.5.3 Educational profile

The MMS employs large numbers of people with no or very little formal schooling. The educational profile of employees is depicted in Table 2.3. In 2013, 41% of the employees in the sector had an educational qualification below Grade 12 (the first level on the National Qualifications Framework (NQF)). A quarter (25%) of the employees in the sector had NQF Level 4 qualifications (matric or equivalent) and 12.7% had post-school qualifications.

The MQA started to collect information on educational levels in the 2002/03 financial year. Since this time, significant changes have occurred in the educational profile of the workforce. The percentage of people with educational qualifications below Grade 9, i.e., people who could possibly benefit from adult basic education and training (ABET), decreased from 66.2% in 2002 to 48.9% in 2009.¹⁹

The proportion of people in the sector with post-school qualifications increased from 4.5% in 2002 to 9.5% in 2009 and 12.7% in 2013. The percentage of people in the sector with matric increased from 11.5% in 2002 to 19.5% in 2009 and 25% in 2013.

¹⁹ Owing to limitations of the MQA data system, this level of detailed information was not available for 2010 and 2011.

Table 2.3 Highest educational qualifications of employees in the MMS

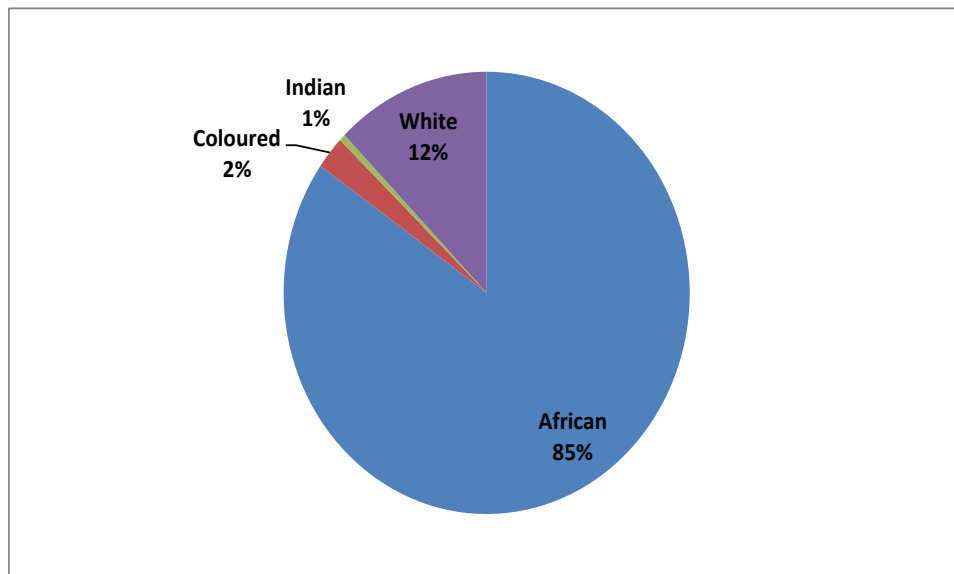
Highest Qualification	Number of Employees	% of Employees
No Schooling	15 239	2.7%
Pre-ABET	7 992	1.4%
ABET 1	20 753	3.6%
ABET 2 / Std 3, Grade 5	28 285	4.9%
ABET 3 / Std 5, Grade 7	38 605	6.7%
ABET 4 / Std 7, Grade 9	31 249	5.5%
Std 8 / Grade 10, NATED 1 / NCV Level 1	41 703	7.3%
Std 9 / Grade 11, NATED 2 / NCV Level 2	48 586	8.5%
Std 10 / Grade 12, NATED 3 / NCV Level 3	143 811	25.1%
National Certificate/Diploma/Advanced Certificate/NATED 4 - 6	20 449	3.6%
National/Higher Certificate	35 835	6.3%
National Certificate/ Advanced Diploma/ B Tech Degree/ Bachelor's Degree	9 203	1.6%
National Certificate/Master's Degree/Master's Diploma	1 529	0.3%
Bachelor Honour's Degree/Postgraduate Diploma/Bachelor's Degree(480 credits)	5 418	0.9%
Doctoral Degree & Post-doctoral Degree	231	0.0%
Unknown	123 630	21.6%
	572518	100%

Source: Calculated from MQA data system, August 2013.

2.5.4 Race and gender distribution of employees

The majority of employees in the MMS are African. In 2013, 85% of the employees were African and 2% coloured (Figure 2.4). Whites constituted 12% of employment and Indians 1%.

Figure 2.4 Racial distribution of employees



Source: Calculated from MQA data system.

Although Africans formed the majority of the workers in the sector, they were not equally represented in all the occupational groups. The majority, 17% of managers, and 27% of professionals were Indian, 28% of Technicians and Associate Professionals were white and 48% of Plant and Machine Operators and Assemblers were African and 21% of the category skilled agricultural, forestry, fishery, craft and related trades workers (the category that includes artisans) were White (Table 2.4). This shows a marked difference from the previous reporting year

Except for the occupational category managers, in which whites make up 12% of the total, Africans (and Africans in general) make up the majority of employees, including 3% of professionals, 8% of technicians and associate professions, 4% of the category skilled agricultural, forestry, fishery, craft and related trades workers (the category that includes artisans) and 48% of plant and machine operators and assemblers. Submissions relevant to Crane and Hoist Operators for 2012 was 39361 (unweighted) and for 2013, 33664 (unweighted). The numbers accurately reflect the MQA data. It is clear that these submissions have dropped there is no basis to challenge their accuracy or validity.

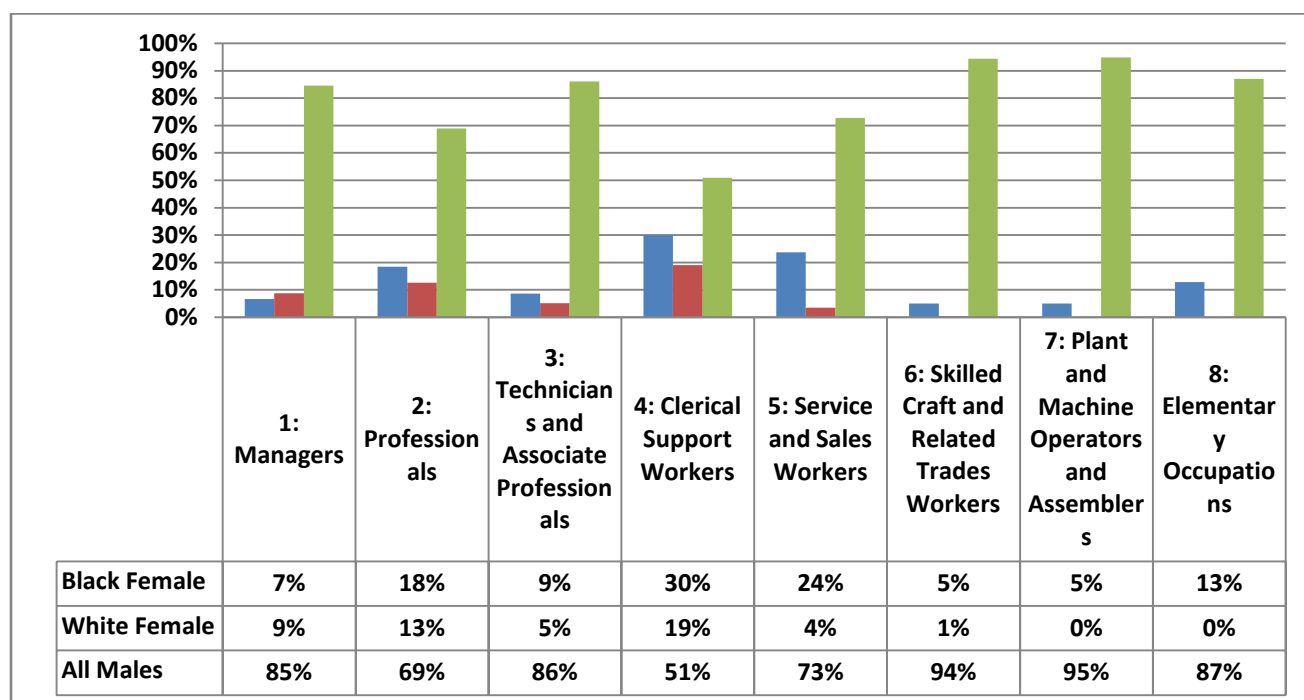
Table 2.4 Racial distribution of employees according to occupational group: 2013

	African		Coloured		Indian		White		Grand Total
Occupational Group	Number	% of Occupation	Number	% of Occupation	Number	% of Occupation	Number	% of Occupation	
1: Managers	5 031	1%	502	4%	487	17%	8 656	12%	14 677
2: Professionals	13 604	3%	1 103	8%	781	27%	10 891	15%	26 379
3: Technicians and Associate Professionals	38 698	8%	1 944	14%	529	19%	19 693	28%	60 864
4: Clerical Support Workers	14 865	3%	1 331	10%	419	15%	6 537	9%	23 152
5: Service and Sales Workers	5 382	1%	207	2%	24	1%	709	1%	6 322
6: Skilled Agricultural, Forestry, Fishery, Craft and Related Trades Workers	20 066	4%	1 810	13%	258	9%	14 852	21%	36 985
7: Plant and Machine Operators and Assemblers	235 107	48%	4 260	31%	194	7%	4 775	7%	244 335
8: Elementary Occupations	145 082	30%	2 202	16%	74	3%	3 256	5%	150 614
Grand Total	485 210		13 763		2 855		70 690		572 518

Source: Calculated from MQA data system, August 2013.

At the end of August 2012, 14.4% of the employees in the MMS were female – 12.2% African female and 2% white female. More than 15 000 were employed as elementary workers and females formed 12.4% of the workforce in this occupational group. Almost 9000 females were employed as clerical support workers and they constituted 47.3% of this occupational category. Another 9 200 were employed as plant and machine operators and assemblers, and in this occupational group, women formed 4.7% of the workforce. Almost 6 500 women were employed as professionals and they constituted 29.7% of all professionals in the sector. In the occupational group managers, the sector employed 1 700 women – 13.2% of the workers in this group (see Figure 2.5).

Figure 2.5 Gender distribution by race according to occupational category: 2013



Source: Calculated from MQA data system, August 2013

Table 2.5 shows the increases in females' share of employment from 2002 to 2013. In 2002, only 4% of the workers were female. This figure increased almost three-fold to 11.2% in 2012. Information on the number of female employees in the different subsectors is only available from 2002. The subsectors diamond processing and jewellery manufacturing proportionally have the largest employment of females (55% and 54% respectively in 2013), while 15% and 16% of the workforce, respectively in the coal and diamond mining subsectors are female. In the gold mining, PGM mining and services incidental to mining subsectors 10%, 11% and 13% respectively are female.

Table 2.5 Females employed according to subsector

Row Labels	Female	% Females	Male	Grand Total
Cement, Lime, Aggregates and Sand (CLAS)	2 854	17%	14 402	17 256
Coal Mining	9 527	15%	53 337	62 864
Diamond Mining	1 824	16%	9 392	11 216
Diamond Processing	757	55%	615	1 372
Gold Mining	16 157	10%	140 614	156 771
Jewellery Manufacturing	595	54%	509	1 104
Other Mining	12 721	12%	89 150	101 871
PGM Mining	18 514	11%	157 065	175 579
Services Incidental to Mining	5 595	13%	38 890	44 485
Grand Total	68 544	12%	503 974	572 518

Source: Calculated from MQA data system, August 2013.

In Table 2.6 females, make up 15% of managers, compared to 85% of male managers. A marked difference is present in the professional grouping (31% compared to 69%), which is a positive indication of the potential development of female managers from the professional grouping. A substantive impact on this potential development will be if more females can be developed in the technicians and associate professionals grouping, as this grouping has a natural tendency to develop new members of the professional grouping. The MQA should focus on the fruition of this skills development opportunity.

Table 2.6 Gender distribution of employees according to occupational group

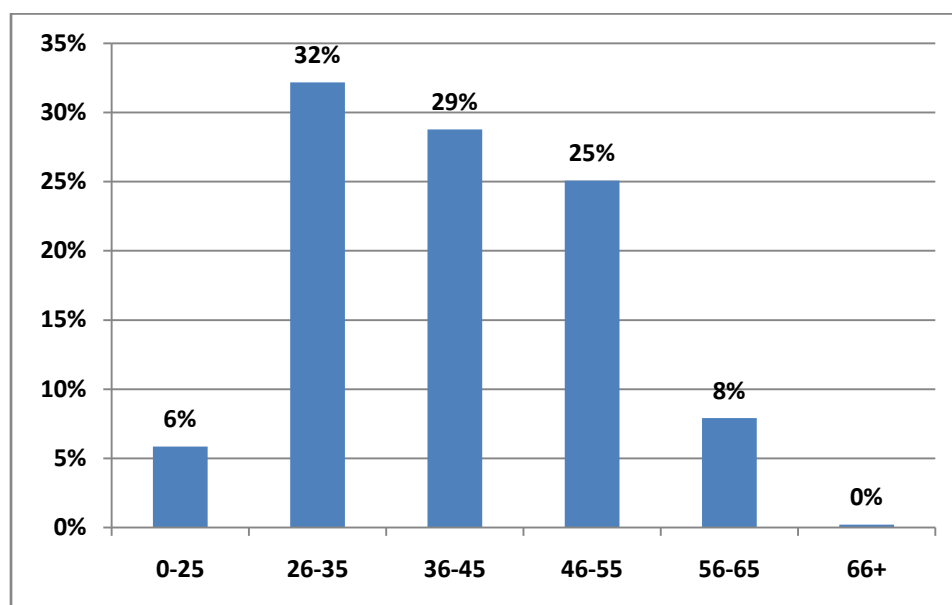
Row Labels	Female	%	Male	%	Grand Total
1: Managers	2 261	15%	12 416	85%	14 677
2: Professionals	8 189	31%	18 190	69%	26 379
3: Technicians and Associate Professionals	8 431	14%	52 432	86%	60 864
4: Clerical Support Workers	11 366	49%	11 786	51%	23 152
5: Service and Sales Workers	1 723	27%	4 599	73%	6 322
6: Skilled Craft and Related Trades Workers	2 061	6%	34 924	94%	36 985
7: Plant and Machine Operators and Assemblers	12 514	5%	231 822	95%	244 335
8: Elementary Occupations	19 543	13%	131 071	87%	150 614
Grand Total	68 544	12%	503 974	88%	572 518

Source: Calculated from MQA data system, August 2013.

2.5.5 Age distribution of employees: 2012

The age distribution of employees in the MMS can be seen in Figure 2.6. In 2012, only 6% of the total number of employees was 25 years or younger. The majority were between 26 and 45, 32% were between 26 and 35; and 29% were between 36 and 45. Only 8% were 56 years and older. The tendency of the possible non-interest in the mining sector by the age grouping 25 and younger (6%) should be a matter of concern as this grouping is the feeding ground for the long-term development of career stability and job creation in the sector. This skills development opportunity should be investigated further in view understanding the criteria to enhance job opportunities in this sector.

Figure 2.6 Age distribution of employees: 2012



Source: Calculated from MQA data system, August 2013.

2.5.6 Disability

Most of the work in the MMS is of a strenuous physical nature and the opportunities for the employment of people with disabilities in certain occupations (especially those on the mining sites) are limited. This statement is underscored by the Mine Health and Safety Inspectorates' Minimum Standards of Fitness to Perform Work at a Mine.²⁰ However, some of the professional, clerical and administrative positions in mining, and positions in the non-mining subsectors, such as diamond processing and jewellery manufacturing, lend themselves to the employment of people with disabilities. In 2013, the sector employed 4450 people with disabilities – 0.8% of total employment (Table 2.7). The subsector with the highest employment of people with disabilities was diamond processing, with people with disabilities constituting 5.6% of total employment.

²⁰Department of Minerals and Energy Mine Health and Safety Inspectorates' Minimum Standards of Fitness to Perform Work at a Mine.

Table 2.7 People with disabilities according to subsector

	Not Disabled	Disabled	Total	% Disabled
Cement, Lime, Aggregates and Sand (CLAS)	17 068	187	17 256	1.1%
Coal Mining	62 533	331	62 864	0.5%
Diamond Mining	11 135	81	11 216	0.7%
Diamond Processing	1 296	76	1 372	5.6%
Gold Mining	156 304	467	156 771	0.3%
Jewellery Manufacturing	1 092	12	1 104	1.1%
Other Mining	101 604	267	101 871	0.3%
PGM Mining	172 688	2 891	175 579	1.6%
Services Incidental to Mining	44 348	137	44 485	0.3%
Grand Total	568 068	4 450	572 518	0.8%

Source: Calculated from MQA data system, August 2013

It is clear from Table 2.8 below that not enough job and skills development opportunities exist for disabled people in the different occupational groupings. Orchestrated efforts should be undertaken for the creation of jobs for this untapped source of stable orientated manpower, male and female, especially if the benefits of beneficiation, as discussed previously, can be affected in practice.

Table 2.8 People with disabilities according to occupational category

	Not Disabled	Disabled	Total	%Disabled
1: Managers	14 587	90	14 677	0.6%
2: Professionals	26 144	235	26 379	0.9%
3: Technicians and Associate Professionals	60 400	463	60 864	0.8%
4: Clerical Support Workers	22 847	305	23 152	1.3%
5: Service and Sales Workers	6 302	19	6 322	0.3%
6: Skilled Craft and Related Trades Workers	36 757	229	36 985	0.6%
7: Plant and Machine Operators and Assemblers	242 776	1 559	244 335	0.6%
8: Elementary Occupations	149 110	1 504	150 614	1.0%
Grand Total	568 068	4 450	572 518	0.8%

Source: Calculated from MQA data system, August 2013.

2.6 CHARACTERISTICS OF THE SECTOR

2.6.1 Regulation of the sector

The MMS is highly regulated with a myriad of policies and pieces of legislation regulating the functioning of organisations in the sector. The most important of these are the MHSA and the MPRDA.

The MHSA and its regulations prescribe, among other things, the competency requirements of people performing certain functions in the mining industry. Some of the certificates of competency are currently issued by the DMR, and mines are obliged to have people with the required certificates in their service in order to retain their mining licences.

The MQA is also responsible for the development and registration of qualifications that provide the necessary competency levels and for the certification of people who have reached the required competency levels.

The MPRDA determines that mineral rights vest in the state and that organisations that wish to engage in or continue with mining activities have to apply for mining licences with the DMR. This means that mining companies have to comply with the requirements set by the DMR in order to secure or to retain mining rights.

The MPRDA also determines that all mining operations have to comply with the National Environmental Management Act (Act No. 107 of 1998) and that they are responsible for the management of the environmental impact of their activities and for the rehabilitation of the environment. Environmental management and rehabilitation is, therefore, an important issue in skills development in the sector.

Another important provision of the MPRDA is the establishment of the Minerals and Mining Development Board, which has, as one of its functions, to ensure (in consultation with the MQA) the development of the human resources of the MMS.²¹

Both pieces of legislation are under review and amended versions are pending.

2.6.2 Labour organisation

The workforce of the MMS, particularly in mining, is largely unionised. The union with the largest membership is the National Union of Mineworkers (NUM). Other unions active in the mining industry include the United Association of South Africa (UASA), Solidarity and the Association of Mineworkers and Construction Union (AMCU) (as well as a few others). The most active union

²¹Minerals and Petroleum Development Act (Act No. 28 of 2002) Section 58.

in the jewellery industry is the Jewellers and Goldsmiths Union (which is currently active only in the Western Cape).^{22,23}

2.6.3 Employer organisations

Employers in the MMS are equally well organised. The largest employer organisation is the Chamber of Mines, which represents most of the large mining companies. Many employers in the CLAS subsector belong to the Aggregates and Sand Producers Association of Southern Africa (ASPASA), while many of those in the diamond processing subsector belong to the Diamond Council. The Jewellery Council is the largest employer organisation in the jewellery manufacturing subsector.

2.6.4 Professional organisations

The professionals working in the sector are affiliated with various professional associations and bodies and many belong to voluntary professional associations. The professional bodies play important roles in skills development in the sector and close relationships exist between them and the MQA.

2.6.5 Geographic location

Although Gauteng, which has a very high concentration of mining operations, is for the most part urbanised, mining operations are mostly situated in the rural areas of the country and in many instances villages and towns have developed as a result of and around mining operations. This has caused the development of close relationships between mines and the surrounding communities. The mining industry also has a long history of involvement with local communities.

The geographic location of mining operations has many implications that need to be taken into consideration in skills planning:

- In many areas, mines are the main employers and, through their involvement with local communities, they play an important role in the development of rural areas.
- Small towns and rural communities are seriously affected when mining operations close down.
- Because of their location, mining operations are often not a first choice for new entrants to the labour market.

The implication of this last point is that the sector is left in an uncompetitive situation – especially in occupations that require high levels of skills, and where there are general shortages in the country.

²² Information provided by the Jewellery Council of South Africa.

²³ At the time of writing this report, statistical information on membership of the various unions was sought, but complete and reliable information could not be obtained in time.

2.6.6 Small-scale mining

Although most of the mining operations are large, small-scale mining also forms an important part of the sector. Small-scale mining activities have grown considerably since 1994, and include both men and women operators of a diverse racial profile. In South Africa, small-scale mining is defined, on the basis of the guidelines provided for in the National Small Business Amendment Act of 2003, as a mining activity that employs fewer than 50 people, that has an annual turnover of less than R7.5 million, and that has a gross asset value of less than R4.5 million. However, as entities do not fit neatly into this category, classification is often difficult.²⁴

Opportunities for small-scale mining in South Africa fall into two broad categories: the mining and quarrying of high-bulk, low-value industrial minerals and construction materials,²⁵ and the mining of relatively high-value minerals, including gold, alluvial diamonds and precious stones, as well as coal. However, 90% of small-scale mining ventures are associated with industrial commodities such as slate, sand, clay, sandstone, dolerite and granites for the production of products for construction and infrastructure such as tiles, clay and cement bricks, aggregates and dimension stone for cladding.

The MPRDA supports the development of the small-scale mining sector through a number of provisions that include technical and financial assistance to the subsector, access to historically classified information, a special permit regime, and preference to historically disadvantaged South Africans (HDSAs). Other support to operators in the sector from the Department of Finance comes in the form of tax incentives for small businesses, and from the Department of Trade and Industry (the dti) through support for education and training, and special interest rates on capital loans for small HDSA businesses.²⁶

Despite this, specific challenges faced in supporting the small-scale mining sector in South Africa are the following:

- Providing research and development support for the small-scale mining sector
- Equipping small-scale mining operators with the requisite expertise, capacity and skills
- Facilitating small-scale miners' access to finance
- Ensuring the orderly and sustainable exploitation of deposits
- Ensuring that all small-scale miners become compliant with Section 28 of the MPRDA in terms of the submission of data on a monthly basis for statistical recording
- Documenting the contribution of small-scale mining to the total mining sector

²⁴MQA-CSMI, Small-scale Mining Colloquium, Johannesburg, South Africa. *Report and Analysis of Outputs*, September 2010.

²⁵ South Africa has abundant resources of aggregate and sands. There are two types of aggregates: fine sand and aggregate, and manufactured sand (milled or crushed rock) and coarse aggregate. The former results from weathering and the disintegration of rocks, and is used mainly as building sand, while the latter, which comprises fresh and unweathered crushed rock, is extensively used in the concrete, road and other pavement construction industries. All South Africa's provinces produce aggregate and sand from different rock types.

²⁶ Cawood F, 2005, Social change through mineral law in South Africa. Paper presented at the Annual Mining Seminar organised by the Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee, held in the Natural History Museum, London, 21 June 2005.

The DMR has developed a draft National Small-Scale Mining Strategy, through which it hopes that a number of challenges that are faced by the small-scale mining sector can be met. A comprehensive implementation plan has since been drafted and, once the strategy and its implementation have been approved, the implementation plan will be used to address all the challenges. The aforementioned is included in the DMR Strategic Plan for 2011–2014.²⁷ The MQA will play a key role in the development of expertise, capacity and skills. Skills development will invariably have an indirect impact on the other challenges faced by small-scale miners, such as becoming compliant with the relevant legislation.

In 2010, the MQA undertook a survey of small organisations in its sector. This survey included small organisations in the CLAS subsector and focused on the skills development needs of these small-scale operations. The study revealed, among other things, that small organisations were particularly hard hit by the recent recession and adverse economic climate. They also face slightly different challenges regarding training to those experienced by larger organisations. The small mines are scattered across the country and seldom have access to training opportunities. They also find it difficult to release people to undergo training off-site. At the same time, they cannot afford in-house training facilities and expertise.²⁸

2.6.7 Migrant labour

The MMS uses large numbers of foreign workers. The MQA required employers who submitted WSPs/ATRs in 2011/12 to provide information on the number of foreign nationals that they employed. Based on this information, it was estimated that at the end of March 2012, the sector employed approximately 82 337 non-South Africans – 14.3% of the total workforce.²⁹ The largest employer of foreign workers is the gold mining subsector – 25.6% of its total workforce (Table 2.9). In the Mining Charter, stakeholders in the MMS undertook to ensure that no discrimination occurs against foreign migrant workers. This implies that these workers are entitled to the same training and development opportunities as local workers.

²⁷Input from the Department of Mineral Resources.

²⁸EE Research Focus, *Small Companies Survey: Diamond Processing, Jewellery Manufacturing, and Cement, Lime, Aggregates and Sand (CLAS) subsectors*, Report to the MQA, May 2011.

²⁹ The difference in the number of foreign migrant workers reported by TEBA and those reported in the WSPs can probably be attributed to the fact that TEBA reports on the total number of foreign workers placed in a particular year, while employers reported on the total number of foreign workers employed at a particular point in time (i.e., on 31 March 2011). Not all workers are necessarily placed by TEBA.

Table 2.9 Non-South African citizens in the MMS

Row Labels	Foreign National	SA Citizen	Total	% Foreign
CLAS	442	16 814	17 256	3%
Coal Mining	1 773	61 091	62 864	3%
Diamond Mining	204	11 011	11 216	2%
Diamond Processing	156	1 216	1 372	11%
Gold Mining	40 146	116 625	156 771	26%
Jewellery Manufacturing	29	1 075	1 104	3%
Other Mining	9 466	92 405	101 871	9%
PGM Mining	25 565	150 014	175 579	15%
Services Incidental to Mining	4 557	39 928	44 485	10%
Grand Total	82 337	490 181	572 518	14%

Source: Calculated from MQA data system, August 2013.

The MMS also employs migrant workers from other parts of the country – specifically from the Eastern Cape. This migrant labour system has created a unique relationship between the MMS and labour-sending areas. Many areas that are situated far from mining activities are essentially dependent on the MMS for their economic survival. These areas are severely affected by the contraction of the MMS. This, in turn, has extended the mining companies' social responsibility to these areas – especially if they are in South Africa. In accordance with the Mining Charter, stakeholders (in partnership with all spheres of government) undertook to cooperate in the formulation of integrated development plans for communities where mining takes place and for major labour-sending areas, with special emphasis on development of infrastructure.³⁰ The number of foreign nationals for 2012 (Table 2.10 above) amounted to 79 660 employees or 13.9% in the sector. In the wake of the unfortunate Marikana tragedy and the mining unrest, the Presidential Special Package announced that money will be spent on improving the living conditions in mining communities. Notwithstanding the fact that there are no overt skills implications in the Presidential Special Package, MQA could in the future contribute towards the realisation of the Presidential Special Package aims and objectives.

2.6.8 Outsourcing and subcontracting of labour

Similar to global trends in employment, roughly one third of all people working in the mining industry are now employed through a non-standard employment contract.³¹ The majority of these are employed by labour brokers, to whom the mines have outsourced or subcontracted a

³⁰Mining Charter, Section 4.4.

³¹A standard contract of employment refers to: a *full-time* contract of employment of *indefinite duration* for work that is performed at the *premises of the employer*. Part-time work, fixed-term contracts, casual work or piece work, or work that is arranged through a third party, such as a labour broker, are all forms of non-standard employment, which implies that the employment contract is no longer subject to regulation by the state or other agencies such as the unions.

portion of their labour requirements, and with whom the mines have commercial contracts. Subcontracting firms range all the way from larger, established contractors employing over 1 000 workers to micro-enterprises employing between one and 100 people.

While labour subcontracting is not a new phenomenon in the industry, it has increased substantially since the 1990s. Surface mine work that tends to be subcontracted includes “non-core” functions such as catering, cleaning, security, and building construction and maintenance. Subcontracting of “core” underground work includes specialised work, such as shaft sinking, as well as general mining activities where contractors either mine certain shafts or parts of shafts, or work in integrated teams alongside permanent employees. Clearly, the introduction of subcontracting into the labour market in mining has divided workers into segments. Often these segments of the labour market are in conflict, since permanent workers fear that their jobs might be lost to subcontracting.³² While labour unions’ concerns around labour subcontracting relate to issues such as lower pay, more dangerous work, and limited or no access to social benefits such as sick-leave and death benefits, employers point to the challenges of maintaining profitable operations in uncertain market conditions as a key reason for using subcontractors. In addition, as many subcontractors are black economic empowerment (BEE) companies, this has a positive impact on employers’ BEE compliance scores.³³ The increase in subcontracting of mining is also leading to an informalisation of work and, subsequently, the emergence of illegal mining has become a major challenge. This is mainly in the Free State, but has also become an issue in other regions.

At some mines, contract workers are made to work in the most dangerous areas of the mine where there are also many illegal miners who normally pose a serious threat to the safety and security of these workers.³⁴ It has recently been revealed that the National Prosecuting Authority (NPA) is involved in over 100 cases against illegal miners, as well as syndicates involved in the buying and selling of stolen precious metals, as confirmed by the Minister of Justice and Constitutional Development³⁵.

2.6.9 Language use

As a consequence of the fact that the MMS uses large numbers of migrant workers, the industry is faced with the challenge of accommodating people from different language groups in the same work environment – some of them foreign workers who have little command of any of the South African languages. This led to the introduction of a pidgin, Fanakalo, into the mining industry.

³²Bezuidenhout, A, Buhlungu, S, Hlela, H, Modisha, G & Sikwebu, D. 2005.*Members first: A research report on the state of servicing in the National Union of Mineworkers*. Johannesburg: Sociology of Work Unit, p. 12; see also Buhlungu, S & Bezuidenhout, A. 2007. Old Victories, New Struggles: The State of the National Union of Mineworkers. In: Buhlungu, S, Daniel, J, Lutchman J and Southall R (eds.) *State of the Nation, 2006-2007*. Pretoria: HSRC Press.

³³Bezuidenhout, A. Chapter 7. New patterns of exclusion in the South African mining industry. In: *Racial redress and citizenship in South Africa*, HSRC Press, 2008.

³⁴Bezuidenhout A, Bischoff, C & Masondo, T. 2010.*Meeting expectations? A research report on the state of servicing in the National Union of Mineworkers*. Society, Work and Development Institute, University of the Witwatersrand, Johannesburg, p 99.

³⁵South African Government News Agency, Over 100 cases against illegal miners and syndicates, <http://list.gcis.gov.za/mailman/listinfo/sanews>, released 2 July 2012.

The language diversity poses many challenges to the MMS and the MQA. The challenges relate to the language(s) used in the preparation of learning material, the offering of training and assessment, and particularly, the offering of literacy and numeracy training, and ABET.

In 2009 and 2010, the MQA undertook a comprehensive study into language use, the use of Fanakalo and the implementation of the MQA's language policy, which dictates that Fanakalo should be phased out of the industry. The study found that Fanakalo is used mostly in the underground work environment, that it is still used in at least 52 of the larger mines in the country, and that approximately 40% of the workers in the mining components of the MMS are still using it or are exposed to it. Fanakalo is also still, to some extent, used in the training environment. The sector's dependence on the pidgin stems from the fact that people from different language groups, and who are not proficient in a common language, work together. Fanakalo is simple in structure and has a limited vocabulary. It is therefore easy to learn. The pidgin, however, is also seen as an inferior communication medium and is associated with the discriminatory labour practices of the past.³⁶ The MQA has appointed a task team that is currently revisiting its language policy on skills development. Some mining houses have started to address the phasing out of Fanakalo on their mines. One such example is Gold Fields' New Way of Communication Project.³⁷ A number of mining companies have taken the initiative and have developed and are implementing programmes to phase out Fanakalo within their companies³⁸. Through the Education Advisory Committee, these companies have the opportunity to share their successes and problems with other Chamber members in respect of phasing out Fanakalo in their companies.³⁹ The biggest challenge with this approach is to effectively manage the cost implications of consequential delays in production and the possible increase in injuries and fatalities due to interpersonal communication breakdowns. People's lives and ability to earn a living is worth more than non-value adding objectives. The true impact on job creation and skills development of this programme is not measured and should be assessed as soon as possible. The 2008 Presidential Audit results underscored this issue by pointing out the importance of effective communication to eliminate accidents and incidents in the mining industry. The DMR noted that "The lack of common communication undermines the efficiency of oral communication and has a negative effect on skills development"⁴⁰.

³⁶EE Research Focus, The MQA's Language Policy: Research into the MQA's Language Policy with specific reference to the phasing out of Fanakalo, Report to the MQA, March 2011.

³⁷University of the Witwatersrand, Wits Language School, Gold Fields New Way of Communication Project <http://www.witslanguageschool.com/Newsroom.aspx>; accessed 09/08/2012.

³⁸Annual Report 2012 Chamber of Mines South Africa.

³⁹Rees D, Murray J, Nelson G, Sonnenberg P. *Oscillating migration and the epidemics of silicosis, tuberculosis, and HIV infection in South African gold miners*. Published online in Wiley InterScience, www.interscience.wiley.com.

⁴⁰Presidential Audit Report 2008. Challenge of Communication.

2.6.10 HIV and AIDS

Knowledge of the HIV epidemic in South Africa is based primarily on the prevalence data collected annually from pregnant women attending public antenatal clinics since 1990. However antenatal surveillance data produces biased prevalence estimates for the general population because only a select group of people (i.e., pregnant women attending public health services) are included in the sample. To correct this bias Statistics South Africa adjusted the antenatal clinic prevalence estimates by adjusting for relative attendance rates at antenatal clinics and for the difference in prevalence between pregnant women and the general adult population. This release assumed the median time from HIV infection to death in line with the UNAIDS Reference Group recommendation of 10.5 years for men and 11.5 years for women. Adult HIV incidence is disaggregated into female and male incidences by specifying the ratio of new female infections to new male infections. This report assumes a ratio of female to male prevalence for those aged 15 to 49 of 1.5 by 2013.

In May 2013, Statistics South Africa estimated that the overall prevalence of HIV and AIDS in the South African population was 10%.⁴¹ Table 2-10 below gives a breakdown of this prevalence in South Africa and the number of people living with HIV in South Africa:

Table 2.10 HIV prevalence estimates and the number of people living with HIV, 2002–2013

Year	Prevalence				Incidence Adult 15-49	HIV population (millions)
	Women 15-49	Adult 15-49	Youth 15-24	Total population		
2002	15,9	15,1	13,6	8,7	1,26	4,00
2003	16,0	15,1	12,8	8,9	1,25	4,10
2004	16,1	15,1	12,0	8,9	1,28	4,18
2005	16,2	15,1	11,4	9,0	1,32	4,25
2006	16,4	15,2	10,9	9,1	1,29	4,34
2007	16,5	15,3	10,5	9,2	1,21	4,46
2008	16,7	15,4	10,1	9,3	1,12	4,59
2009	16,9	15,5	9,7	9,5	1,03	4,74
2010	17,1	15,6	9,3	9,6	0,98	4,88
2011	17,2	15,7	9,0	9,8	0,95	5,01
2012	17,3	15,8	8,7	9,9	0,87	5,13
2013	17,4	15,9	8,5	10,0	0,85	5,26

Source: Statistics South Africa, Mid-year Population estimates, 2013.

⁴¹Statistics South Africa. 2013. *Mid-year population estimates 2013*.

The above table shows a steady growth in the number of people living with HIV in South Africa. Studies show that the prevalence in the mining industry is markedly higher – 27% in gold mining and 24.6% in platinum mining.⁴² In 2005, the DMR estimated that 24% of the mining industry's workers were living with HIV and AIDS.⁴³

Mining is a high-risk environment. The use of migrant labour, single-sex hostels and the severing of family structures contribute to the spread of the infection. The hard physical work required of mine workers, plus the risk of occupational disease, may speed the onset of illness among HIV-positive workers.⁴⁴

In 2008, the DMR reported that most of the large mines have been implementing awareness and wellness programmes to improve the situation with regard to HIV and AIDS and to curb infection rates, which have a profoundly negative impact on labour productivity. Most of the mines are now also administering anti-retroviral medication to boost the health status of infected workers.⁴⁵ The availability of anti-retroviral medication may prevent sectorial mortality rates from surging far above the national mortality rates.

2.6.11 Occupational diseases

Tuberculosis (TB), noise-induced hearing loss and silicosis are the main occupational health challenges faced by the mining industry.⁴⁶ The combination of HIV and silicosis has a large effect on TB risk⁴⁷.

According to the DMR, the incidence of TB is also higher than the national average. This is fuelled by the surge in HIV and AIDS co-infection. The bigger mines have good TB programmes, but the emergence of drug-resistant strains is making control of TB much more difficult. Living conditions in some of the mines also contribute to the scourge of TB.⁴⁸ The DMR's report on TB was released in July 2011 and provides a literature review on TB, silicosis and HIV/AIDS and an appraisal of 63 mining companies.⁴⁹

The monitoring and reporting of occupational diseases, the keeping of reliable statistics and the monitoring of trends in the incidence of occupational diseases are major challenges facing the mining industry, along with the need to raise awareness, change human behaviour that leads to

⁴² Rees D, Murray J, Nelson G & Sonnenberg P. *Oscillating migration and the epidemics of silicosis, tuberculosis, and HIV infection in South African gold miners*. Published online in Wiley InterScience, www.interscience.wiley.com.

⁴³ Chamber of Mines. *Bringing the underground AIDS fight to surface*, [www/http.bullion.org.za](http://http.bullion.org.za), published 2003 June 20.

⁴⁴ Department of Minerals and Energy. *Annual Report of the Mine Health and Safety Inspectorate 2004/05*.

⁴⁵ Ibid.

⁴⁶ Ibid.

⁴⁷ The Mine Health and Safety Council's Strategic Plan for the period 2011/12 – 2013/14, January 2011.

⁴⁸ Department of Minerals and Energy. *Annual Report of the Mine Health and Safety Inspectorate 2007/08*.

⁴⁹ Chamber of Mines of South Africa. *Annual Report 2011*, p. 51.

excessive exposure, and provide enough well-trained occupational health and safety professionals.⁵⁰

The MHSC Summit 2011 adopted an MHSC Summit HIV/AIDS and TB Action Plan aimed at improving the situation of HIV/AIDS in the mining industry, significantly improving the lifestyle of mineworkers, and focusing action on the fight against HIV/AIDS and TB.⁵¹

The DMR Directorate of Occupational Health is working closely with the Department of Health, as was noted during World TB Day, held on 24 March 2012, whereby the focus was TB in the mining industry. The Deputy President, Minister of Mineral Resources and the Minister of Health, as well as other stakeholders, gave speeches relating to TB.⁵²

2.6.12 Mine accidents and fatalities

Mining is an inherently risky activity and the industry worldwide has a record of similar types of accidents associated with known hazards (and occasional disasters). South Africa has very large, deep and labour-intensive mines. In the early 1990s, mainly as a result of pressure exerted by the NUM, the Leon Commission of Enquiry into Mine Health and Safety was established. The resulting report led to the establishment of a new legal and regulatory environment governing health and safety (including the MHSA), as well as tripartite (government, labour and employer) structures and processes for implementation. The report also increased the pressure on companies and management to improve the health and safety record of the industry.

At the Mine Health and Safety Summit of 2003, it was decided that it was imperative that the safety statistics of the South African mining industry become comparable with international trends. The then The former Department of Minerals and Energy (DME), employers and labour reached an agreement to implement new fatality milestones based on the fatality rates of Australia, the USA and Canada at that time. This required a 20% decline in the accident and fatality statistics of the South African mining industry per year.⁵³ Mine health and safety summits have been held more or less every two years since 2003 and role players remain committed to the improvement of the health and safety record of the industry.

The three areas that are regularly the leading cause of accidents and injury are falls of ground, machinery and transportation, and rail-bound equipment.⁵⁴

In 2012, there were a total of 112 mine deaths in South African mine operations. This equates to a 9% reduction compared to the 123 fatalities reported in 2011. The industry has, however,

⁵⁰ Views expressed by a representative of the Mine Health and Safety Council.

⁵¹ The Mine Health and Safety Council. Zero harm through action, 2011 Health and Safety Summit Outcomes

⁵² Department of Mineral Resources. *Annual Report 2011–2012*.

⁵³ Department of Minerals and Energy. *Annual Report of the Mine Health and Safety Inspectorate 2007/08*.

⁵⁴ Mine Health and Safety Council. *Strategic Plan for the period 2011/12 – 2013/14*, January 2011.

achieved an improvement of about 58% over the last nine years from the 270 fatalities reported during 2003. Although there is improvement, it is of great concern that the loss of life in the mining sector is still continuing.

At the September 2008 summit, the participants once again committed themselves to the improvement of the health and safety situation in South African mines. Various targets were set and an important part of the declaration signed at the summit was the development of a learning industry. The MQA was specifically tasked with the improvement of the occupational health and safety (OHS) skills capacity in the industry by reducing the rate of illiteracy and increasing the human resources supply in scarce skills areas that are critical to OHS.⁵⁵

A 2011 Health and Safety Summit for the South African Mining Industry was organised by the Mine Health and Safety Council on 17 and 18 November.⁵⁶ The stakeholders continue with the monitoring of the implementation of the Summit commitments, which include the eradication of fatalities, injuries, silicosis, noise-induced hearing loss, and the implementation of TB and HIV programmes.

Mine safety remains a very important issue for the MMS, and safety-related training will remain prominent on the MQA's agenda. In 2009, the MQA undertook a research project in which, among other things, a selection of MQA qualifications were evaluated in terms of their coverage of the relevant health and safety issues.⁵⁷ The shortcomings identified are in the process of being addressed and the MQA will continue with the evaluation of qualifications in order to ensure that the competencies necessary for and the attitudinal aspects of health and safety are sufficiently covered.

2.6.13 Environmental impact

Although mining is an important industry and employment creator in South Africa, it has also been noted for its environmental footprint, which ranges from biodiversity loss (due to habitat destruction) to air, land and water pollution. The issue of current and future acid mine drainage from deserted gold mines across the Witwatersrand area is currently causing major concern.⁵⁸ The Parliamentary Portfolio Committee on Mineral Resources conducted public hearings on acid mine drainage in 2011⁵⁹.

Developing South Africa's natural resources in a way that is sustainable and does not degrade environmental quality in an unwarranted manner are state priorities reflected in the National Sustainable Development Framework (NSDF). Legislation exists for environmental impact assessments (to inform new developments), waste stream reduction and pollution control, the

⁵⁵ Mine Health and Safety Council Mine Health and Safety Tripartite Leadership Summit, 5 September 2008.

⁵⁶ Chamber of Mines of South Africa. *Annual Report 2011*, p. 51.

⁵⁷ EE Research Focus. *Mine Health and Safety – an Exploratory Study*, March 2010.

⁵⁸ Mail & Guardian. Rising water, rising fear: SA's mining legacy. Part 1 in a series on acid mine drainage. Vol 26, No 43, November 12 to 18, 2010.

⁵⁹ Chamber of Mines of South Africa. *Annual Report 2011*, p. 5.

rehabilitation of mined areas and the restoration of spent mines.⁶⁰ The mining industry has to comply with this legislation and therefore needs to develop and cultivate the skills necessary for environmental management.

Moreover, there is a growing demand for diligent sustainability reporting. Global reporting standards increasingly integrate sustainability practices into their criteria for best practice, and the King III Report argues strongly for the full integration of environmental considerations into the economic and social aspects of sustainability. Listed companies in the mining sector participate in sustainability assessment programmes on an international basis – i.e., the International Standards Organisation (ISO) family of standards – and make such audit outcomes available in monthly reports. Accordingly, the associated standards, skills and job opportunities have in such cases already been put in place. The time is now ripe for unlisted companies in the mining sector to commit to and participate in the same sustainability programmes and international standards. This will create more job opportunities and higher success rates in the overall participation of every South African citizen to protect South Africa against environmental degradation and a poor future for the generations of tomorrow.

In July 2011, the DMR issued the Sustainable Development through Mining Strategic Framework document. This strategic framework document conveys the notional meaning of sustainable development in the mining sector. The vision is that by 2015, the South African minerals sector is expected to contribute optimally to sustainable development. A number of key strategic objectives (KSOs) have been developed out of this vision. Essentially, the mandate of the DMR is to ensure that the extraction of mineral and petroleum resources in South Africa aids sustainable development. The document illustrates and reflects on the model proposed for the Sustainable Development in Mining (SDM) programme for the minerals sector. It is expected that the industry and stakeholders will give their feedback on the strategic document concerning the goals and objectives for the SDM programme, and that detail will be gathered on existing sustainable development projects and initiatives that fit under existing (or new) goals and outcomes. The United Nations Conference on Sustainable Development (UNCSD) outcomes and inputs from industry will be assessed and the development of an implementation plan and indicators to ensure sustainability will follow.⁶¹

2.6.14 Beneficiation

The DMR's June 2011 Beneficiation Strategy Report corresponds with South Africa's Industrial Policy Action Plan and the New Growth Path, which identifies mineral beneficiation as one of the priority growth nodes to help create five million jobs by 2020.⁶² It is expected that beneficiation will become one of the major drivers in enhancing the empowerment of historically disadvantaged communities in South Africa. It also presents opportunities for the development

⁶⁰ Department of Environmental Affairs, Integrating the environmental driver into sector skills plans: An enabling document for all SETAs, July 2010.

⁶¹ Department of Mineral Resources. Sustainable Development through Mining Strategic Framework, July 2011.

⁶² <http://mg.co.za/article/2012-02-10-the-future-is-beneficiation/>; accessed 09 August 2012

of new entrepreneurs in large and small mining industries.⁶³ It is aligned to a national industrialisation programme in that it seeks to enhance the quantity and quality of exports, promote creation of decent employment and diversification of the economy, including the promotion of the green economy. Furthermore, the strategy contributes to the strengthening of the knowledge economy in support of the overall competitiveness of the economy. The strategy presents an intervention that is hoped will advance the developmental agenda of government.

The strategy document covers the strategic framework to promote and enhance local beneficiation of mineral commodities mined in South Africa. It recognises that beneficiation should do the following:

- Be considered on a value-chain by value-chain basis
- Be geared towards higher levels of employment intensity and value-addition
- Take into account infrastructure considerations (such as energy and water availability)

One of the constraints identified in the encouragement of beneficiation is skills sought for expediting local beneficiation. While the challenge for skills is not limited to South Africa, the skills-supply pipeline for scientists and engineers requires specific attention.⁶⁴

Of the five streams in the strategy, two plans have been approved, two are under development and the fifth (jewellery) will only be developed after the Jewellery Summit. Effective from 2012, the measurement of the contribution of a mining company towards beneficiation is on the Mining Charter scorecard. It will be measured by “additional production volume contributory to local value addition beyond the baseline” and the compliance target is a percentage above baseline, to be achieved by 2014.

To ensure downstream value addition, Section 14 of the Diamonds Amendment Act led to the establishment of the SDT, the objectives of which are to promote equitable access to and local beneficiation of South Africa’s diamonds, as well as to promote the South African diamond industry through the necessary research, support and development. In order to promote equitable access, the focus of the SDT’s sales strategy is on small companies with less than five employees, with a high level of HDSA participation (>26% ownership) that do not have access to regular supplies of rough diamonds from any other source. In order to promote beneficiation of South Africa’s diamonds, the SDT has engaged in a policy of only selling to those companies in possession of a valid beneficiation licence issued by the South African Diamond and Precious Metals Regulator (SADPMR). Despite government’s efforts to avail rough diamonds through the SDT, the level of beneficiated diamond output remains low in the country due to limited rough supply. The government therefore continues to look at improving access to rough diamonds by engaging in different pilot projects. This will ensure growth and

⁶³<http://www.dmr.gov.za/beneficiation-economics.html>; accessed 09 August 2012

⁶⁴Department of Mineral Resources. A Beneficiation Strategy for the minerals industry of South Africa.

sustainability of the diamond beneficiation industry, as well as job creation and poverty alleviation in the country. This is an exemplary action plan on beneficiation, which should be applauded and used as a learning curve to establish similar beneficiation projects in South Africa. The MQA and its tripartite members can play a leading role in such projects.

2.7 TRANSFORMATION OF THE SECTOR

2.7.1 Mineral rights and mine ownership

Mineral rights and ownership are regulated through the MPRDA. The MPRDA very strongly emphasises the state's custodianship of mineral and petroleum resources and government's intention to ensure that these resources are utilised in the best interest of the country and its people. The MPRDA also gives effect to government's intention to transform the MMS – especially in terms of providing access to HDSAs and spreading the benefits of mineral and petroleum resources in a more equitable manner.⁶⁵

Despite this legislation, a government review of the Mining Charter, which was completed in October 2009, found that black South Africans still owned only about 9% of the R2 trillion net assets of the mining industry.⁶⁶

The implication is that a renewed emphasis on black ownership can be expected in the next decade or over a longer term, and that the need for the development of appropriate mining and business skills for new entrants to the sector will intensify.

2.7.2 Black economic empowerment and employment equity

Closely linked to the need for transformation of ownership is the issue of black economic empowerment and employment equity. Since 1994 a number of acts pertaining to social transformation, the eradication of the effects of previous discriminatory legislation and practices, black economic empowerment and employment equity have been promulgated. These include, for example, the Employment Equity Act (Act No. 55 of 1998), the Preferential Procurement Framework Act (Act No. 5 of 2000) and the Broad-based Black Economic Empowerment (B-BBEE) Act (Act No. 53 of 2003).

2.7.3 The Mining Charter and Codes of Good Practice

In addition to this legislation, the MPRDA required the development of a broad-based socioeconomic empowerment charter that would set the framework, targets and timetable for affecting the entry of HDSAs into the mining industry. As a consequence, the Broad-based Socioeconomic Empowerment Charter for the South African Mining Industry (the Mining

⁶⁵ Republic of South Africa. Mineral and Petroleum Resources Development Act (Act No. 28 of 2002), Section 2.

⁶⁶ Mopfo, B. *Black share of mine ownership 'remains small'*, Business Day, 23 April 2010.

Charter) was developed in 2002 and was – after an intense consultation process with government, employers and organised labour – accepted by Parliament in October 2002. The Charter covers a wide range of areas for transformation. These include human resources development, employment equity, migrant labour, mine community and rural development, housing and living conditions, procurement, ownership and joint ventures, beneficiation, licensing and financing. The Charter specifies mechanisms and targets for human resources development.

The original Charter made provision for its revision, and in 2009 a review of the Charter was undertaken.⁶⁷ Following the review, the stakeholders signed a declaration on a Strategy for the Sustainable Growth and Meaningful Transformation of South Africa's Mining Industry.⁶⁸ This was followed, in September 2010, by the acceptance and publication of an amended Charter.⁶⁹ The vision of the amended Charter is to facilitate sustainable transformation, growth and development of the mining industry. According to the amended Charter, “sustainable development” refers to “the integration of social, economic and environmental factors into planning, implementation and decision-making, to ensure that petroleum and mineral resources development serves present and future generations”.⁷⁰

The declaration contains 13 different commitments, most of which are also reflected in the amended Charter. Several of the declaration's commitments and the requirements of the amended Charter have a direct bearing on skills development and on the work of the MQA. The most important of these are highlighted below.

First of all, in the declaration, the parties agreed to conduct at least two skills audits by 2014, and assess institutional and organisational absorptive capacity by no later than December 2010. Skills audit is an area in which the MQA is already involved and it plans to provide assistance to employers with the implementation of this undertaking. Secondly, the amended Charter retains an objective of 26% HDSA ownership of mines by 2014. Thirdly, mining companies are bound to invest a percentage of their annual payroll in all skills development activities, but excluding the mandatory skills levy, as follows:

- Target for 2010 – 3%
- Target for 2011 – 3.5%
- Target for 2012 – 4%
- Target for 2013 – 4.5%
- Target for 2014 – 5%

⁶⁷Department of Mineral Resources. Mining Charter Impact Assessment Report, October 2009, http://www.dmr.gov.za/Policy_And_Promotion/Documents/Documents/Mining_Charter_Impact.pdf, accessed 22 September 2010.

⁶⁸Department of Mineral Resources. Stakeholders' Declaration of Strategy for the Sustainable Growth and Meaningful Transformation of South Africa's Mining Industry, 2010.

⁶⁹Department of Mineral Resources. Amendment of the Broad-based Socioeconomic Charter for the Mining and Minerals Sector, September 2010, http://www.dmr.gov.za/Policy_And_Promotion/Documents/Documents/Amended_of_BBSEE_Charter.pdf, accessed 22 September 2010.

⁷⁰Department of Mineral Resources. Amendment of the Broad-based Socioeconomic Charter for the Mining and Minerals Sector, September 2010, page v, http://www.dmr.gov.za/Policy_And_Promotion/Documents/Documents/Amended_of_BBSEE_Charter.pdf, accessed 22 September 2010.

Thirdly, stakeholders also undertook to ensure that mechanisms for directing the mandatory skills levy are in place, efficient and effective. Human resources development is clearly regarded as one of the cornerstones of the transformation that needs to be brought about by the Mining Charter. In the scorecard that accompanies the Charter, human resources development carries a weight of 25%.⁷¹

The implication of the increased spending on training is that the MQA has to ensure that the necessary programmes are in place, that there is a sufficient supply of accredited providers, and that all training that takes place is quality assured.

Fourthly, in terms of employment equity, companies are bound to the following:

- Create an environment conducive to promoting and encouraging diversity in order to increase and retain requisite skills.
- Ensure demographic representation of HDSAs with a minimum target of 40% by 2014 in each of the following occupational categories:
 - Top management (Board)
 - Senior management (Executive Committee (EXCO))
 - Core and critical skills
 - Middle management
 - Junior management
- Identify and fast-track their existing talent pools to ensure high-level operational exposure in terms of career path programmes.

Employment equity is also an important aspect of the Charter and carries a total weight of 16% on the scorecard. The employment equity targets necessitate a greater emphasis on the development of black managers and the development of HDSAs in occupations that are regarded as core and critically important to mining operations.

Fifthly, the amended Mining Charter places great emphasis on the sustainable development and growth of the mining industry. In this regard the mining companies are bound to the following:

- Improve the industry's environmental management.
- Improve the industry's health and safety record by, among other things, providing all employees with health and safety training and by requiring all contractors to provide their employees with such training.
- Enhance the capacity and skills in relevant South African research and development facilities in order to ensure quality, quick turnaround, cost-effectiveness and integrity of such institutions.

⁷¹Department of Mineral Resources. Scorecard for the Broad-based Socioeconomic Charter for the South African Mining Industry, http://www.dmr.gov.za/Police_And_Promotion/Documents/Documents/Scorecard/scorecard.pdf, accessed 22 September 2010.

The focus of the Charter on environmental management places the development of environmental management and related skills on the MQA's skills development agenda. The importance of health and safety training and the role that the MQA has to play in this regard was mentioned in Section 2.5. The Charter requirements underscore the importance of health and safety in the skills development agenda of the MQA.

The Mining Charter Scorecard is attached to this SSP as Appendix 4.

In addition to the above initiatives to transform the mining industry, the government developed a set of Codes of Good Practice for the minerals industry, which was gazetted in April 2009.

The Codes cover the following:

- Ownership
- Management control
- Employment equity
- Human resources development
- Preferential procurement
- Mine community and rural development
- Beneficiation
- Housing and living conditions standards

2.7.4 Social and Labour Plan

Another way in which the MPRDA ensures the effective transformation of the mining industry is by legally requiring applicants to submit a Social and Labour Plan before prospecting and mining rights are granted.

A Social and Labour Plan requires applicants to develop and implement the following:

- Comprehensive human resources development programmes that will promote employment and the advancement of the social and economic welfare of workers.
- Local economic development programmes that focus on how the mine or production operation will address the socioeconomic needs of the area within which it operates and the area from where it sources its workforce.
- Processes to address situations that may negatively affect the employment of workers, i.e., processes that will mitigate the effect of possible downscaling or job losses at the operation.⁷²

With regard to the second of these points, the programmes should be initiatives over and above the social investment that companies have been involved in all along and have to focus on what the mine or production operation would leave behind.

⁷²Department of Mineral Resources. http://www.dme.gov.za/minerals/minreg_social.stm, Accessed 1 June 2010.

Applicants also have to submit annual reports on the implementation of their social and labour plans to the DMR in order to retain their mining licences.

Thus, the Social and Labour Plan aims to ensure that organisations in the MMS are deeply involved in rural development.⁷³

2.8 CONCLUSION

During the research period, in an effort to compile this SSP document, a conservative approach to the analysis of the statistical data of the mining sector in South Africa proved to be sound and creates the opportunity for the more effective assessment of the variables that may have an impact on the sector, resulting in more effective skills assessment and planning. It is recommended that the MQA continues with this approach in future.

The critical issues identified in the MQA sector analysis that requires special attention by the MQA and its tripartite members are as follows:

- Realignment of the objectives of the MQA and its tripartite members, as depicted in the Mine Health and Safety Act, which necessitate closer cooperation and support of each other in the tripartite system.
- Effective mining of available human resources and skills development relevant to the following groups:
 - MMS workers
 - The youth
 - Females
 - People with disabilities
 - People living with HIV/AIDS
- Effective and coordinated intervention to enhance occupational health and safety in the mining sector.
- Direct action to contribute to the beneficiation strategy of the government with special focus on creating appropriate skills development programmes and jobs.”.
- Opportunities to assist retrenched employees in view of maintaining a valuable skills source (or pool) and filling vacancies elsewhere in the mining sector. Huge financial savings to all stakeholders can be realised if this approach is implemented.

Finally, the transformation of the MMS, both in terms of ownership and increased representation of HDSAs in management and professional positions, is driven by a growing body of general and sector-specific legislation. Stemming from this legislation has been the development and revision of the Mining Charter, with its scorecard, which is monitored by the DMR, the development by government of a set of Codes of Good Practice for the Minerals Industry (gazetted in April 2009), and the legal requirement for mining applicants to submit a social and

⁷³Awaiting more information on the implementation of the social and labour plan from the DMR.

labour plan that addresses various aspects of both the social and economic welfare of workers. These various aspects of the transformation effort will influence the skills development agenda of the MQA. For the MQA to overcome identified systemic challenges in the enhancement of effective skills development in the mining sector, a reassessment of its strategic objectives and the functional development of internal value-adding activities will be required. The potential of the MQA's contribution to the effective utilisation of employees, in line with world best practices, is unlimited. Close cooperation and alignment with its tripartite partners will be of critical importance.

3. ECONOMIC PERFORMANCE OF THE SECTOR

3.1 INTRODUCTION

This chapter provides an overview of the economic performance of the sector and the factors that impact on it. The first section considers mining, minerals and sustainable development. It highlights the fact that, increasingly, mining operations have to meet the overall objectives set in the National Development Plan (NDP) for South Africa and the demands of a diverse range of stakeholders if they are to be granted not only a legal, but also a social licence to operate. While the importance of the Mining and Minerals Sector (MMS) to national and global economic development is unquestioned, the huge cost of production on the environment and on communities is becoming more widely appreciated, and it is becoming increasingly clear that the trade-offs between economic growth and sustainable development need to be carefully considered.

In the second section, the factors that influence the economic performance of the MMS are outlined. These interrelated factors include the various sources of demand for MMS products, economic cycles, commodity markets and commodity prices, access to and the cost of credit, the exchange rate, international trade and local access to raw materials, electricity supply, government expenditure and infrastructure development, technological advancements, the issuing of mining licences, the availability of skills, environmental conservation and rehabilitation, and the physical availability of mineral resources.

The following sections consider the economic growth of the sector and its contribution to GDP. Unfortunately, the national accounts data, which is mostly used in this chapter, only covers mining and not the total MMS. No statistical information is available on the performance of the beneficiation components of the MMS (the diamond processing and jewellery manufacturing subsectors) and the services incidental to mining subsector. This economic overview thus focuses on economic growth trends and the contribution of the mining sector to, inter alia, the gross domestic product (GDP) of the country.

The final section looks at the current and planned initiatives to enhance the transformation and economic performance of the sector. A range of recent policy documents are considered in relation to their commitment to and actual impact on beneficiation, or value-added, activities.

3.2 MINING, MINERALS AND SUSTAINABLE DEVELOPMENT

The MMS is of vital importance to national and global economic growth and development. The millions of products constructed or manufactured, using the more than 90 substances mined around the world, are central to almost all aspects of modern living. Despite this, the supply of metals and minerals does not come without heavy social and environmental costs.⁷⁴ The issue of sustainable development has received an increasing amount of attention over the last decade. In 2008, the South African government published the National

⁷⁴World Business Council for Sustainable Development. 2010. Mining, Minerals and Sustainable Development, Executive Brief, March 2010.

Sustainable Development Framework (NSDF) for South Africa, which culminated in the adoption in 2011 by Cabinet of the first National Strategy for Sustainable Development and Action Plan for the period 2011 to 2014, also referred to as NSSD I. According to these documents, sustainable development is about enhancing human wellbeing and quality of life for all time, in particular those most affected by poverty and inequality. The efficient use of resources and intergenerational equity are the core principles of sustainable development. The purpose of the NSDF is to enunciate South Africa's national vision for sustainable development and indicate strategic interventions to re-orientate South Africa's development path in a more sustainable direction. It proposes a national vision, principles and areas for strategic intervention that will enable and guide the development of the national strategy and action plan. The framework identifies the following five priority areas or pathways towards sustainable development:

- Enhancing systems for integrated planning and implementation
- Sustaining our ecosystems and using natural resources efficiently
- Economic development via investing in sustainable infrastructure
- Creating sustainable human settlements
- Responding appropriately to emerging human development, economic and environmental challenges⁷⁵

One most challenging aspect of embedding sustainable development in the MMS is the difficulty of tying the concept to financial success, particularly when companies operate in areas characterised by poor governance capacity and corruption. Another challenge is the question of scale. Sustainable development interventions, whether social or environmental, are most effective when conceived and implemented on a regional scale to a regional plan. Site-level interventions, which are required in law, work against obtaining appropriate levels of scale and increase the risk of duplication. Sustainable development practices – engaging with and considering the needs of all the various stakeholders – will, however, become increasingly critical to the economic success of the MMS. Less and less will the bottom line be purely a function of national and global demand for metal and mineral products.⁷⁶

The NDP was approved by Cabinet in late 2012 and adopted by the ruling African National Congress (ANC) at its elective conference in Mangaung in December 2012 as a launch pad and blueprint for a future economic and socioeconomic development strategy for the country. It incorporates both the Industrial Policy Action Plan (IPAP) of the Department of Trade and Industry's (the dti) and the New Growth Path (NGP) of the Ministry of Economic Development into the new National Planning Framework. The NDP also elaborates extensively on the identified objectives and actions, including to the following issues:⁷⁷

- Economy and employment
- Environmental sustainability
- Improving education, training and innovation

⁷⁵Department of Environmental Affairs and Tourism. 2008. *People, planet and prosperity – A framework for sustainable development in South Africa*, Pretoria.

⁷⁶World Business Council for Sustainable Development. 2002. *Breaking New Ground - Final report of the Mining, Minerals and Sustainable Development Project*.

⁷⁷ National Planning Commission *Our future: Make it work - National Development Plan 2030 - Executive Summary*. <http://www.info.gov.za/issues/national-development-plan/index.html>, accessed 8 August 2013.

- Promoting health
- Building a capable and developmental state
- Fighting corruption

3.3 FACTORS THAT INFLUENCE THE ECONOMIC PERFORMANCE OF THE SECTOR

The economic performance of the MMS is the result of the interaction between a number of factors. These include the sources of demand for MSS products, both locally and internationally, commodity markets and commodity prices, economic cycles, exchange rate movements, international trade barriers and agreements, and local access to raw materials, the electricity supply, production cost factors, notably labour costs and capital expenditure costs, government expenditure and infrastructure development, the demand for energy, technological advancements, the issuing of mining licences, the availability of skills, companies' responsibilities regarding environmental conservation and rehabilitation, and – last but not least – the physical availability of mineral resources. While these are discussed separately in the sections below, it is important to remember that, in reality, these issues are all interrelated.

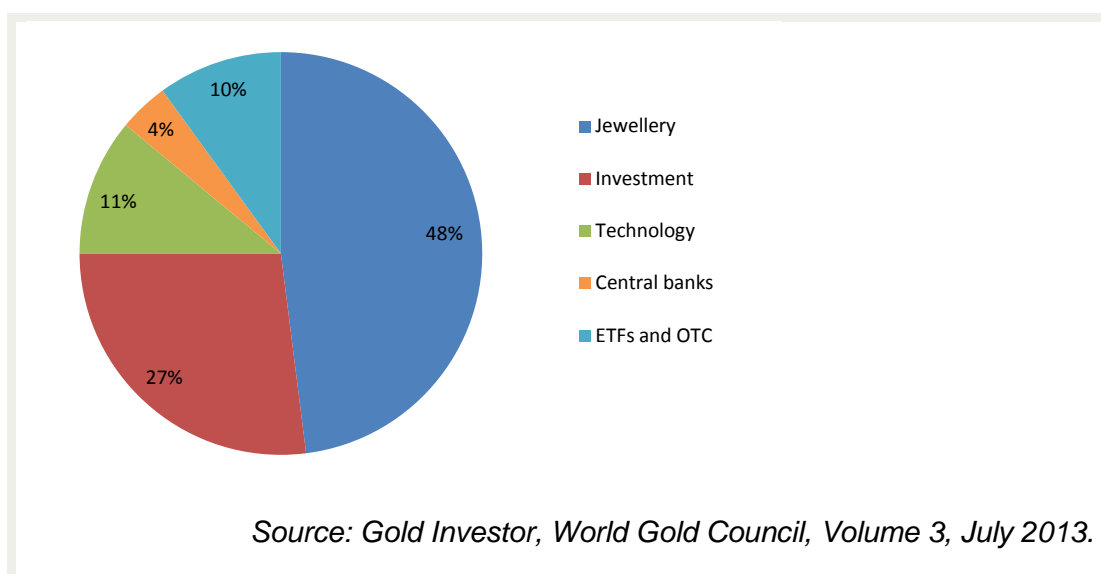
3.3.1 Sources of demand for MMS products

The outputs of the global MMS are utilised as intermediate inputs by a range of other sectors:

- In South Africa, the major share (some 55%) of the output of the coal sector is used as input by the electricity, gas and steam sector, and amounted in value terms to R25.7 billion in 2012. Other big users of coal are the manufacturing subsectors, notably petroleum, chemicals, rubber and plastic (13.6%), and basic iron and steel manufacturing (14.6%). The mining and quarrying sector is a small user of coal products, accounting for only 2.3% of demand (R1.1 billion) in 2012.⁷⁸
- Gold demand is highly dependent on the jewellery manufacturing sector and implied net investment, especially by central bank hoarding, exchange traded funds (ETFs) and over-the-counter (OTC) activities and investment in coins and gold bars.

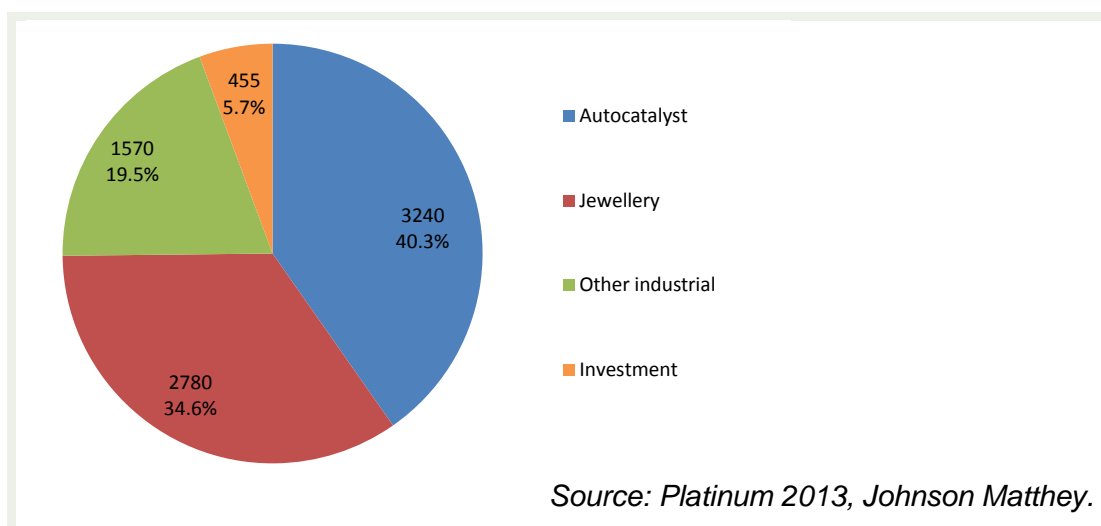
⁷⁸ Quantec Research, Industry Structure Database.

Figure 3.1 Global sources of demand for gold: Average 2007–2012 (percentages)



- The bulk of global demand for Platinum Group Metals (PGM) is from the vehicle and engine manufacturing industry. These metals are used in the production of catalytic convertors, which reduce the toxicity of emissions from internal combustion engines. In addition, platinum is in demand from the jewellery sector, as well as the industrial sector, including glass, electronics and petroleum refining.⁷⁹

Figure 3.2 Global sources of demand for platinum in 2012 ('000 ounces and percentages)



⁷⁹Mwape P, Roberts MJ, Mokwena E, Musi L, Tjatjie T, Mnguni M, Mashaba P, Kwata PG. *South Africa's Mineral Industry 2007/2008: Part One: South Africa's Mineral Industry – General Review*. Department of Minerals and Energy.

- The demand for diamonds comes from two main sectors: the jewellery manufacturing sector and the industrial sector. Only roughly 20% of global production of diamonds is of gemstone quality, the remainder is destined for the industrial market in the form of cutting and grinding tools. To date, demand for diamonds as an investment vehicle has been small, but this could change in the future.
- Copper is used predominantly by the building sector. The electrical engineering sectors are also significant sources of demand, while the light engineering and transport sectors make a notable, but minor contribution.
- Infrastructure development is the primary driver in iron ore demand, while demand for manganese is dependent on steel production, which accounts for over 90% of its consumption.⁸⁰
- Demand for industrial minerals, in particular aggregate, sand, limestone, dimension stone, brick clay and gypsum, is to a large extent dependent on activity levels in the building and construction sector. Phosphate rock, limestone, magnesite, gypsum, vermiculite and sulphur are used in the manufacture of fertilizer and animal feed, with demand driven by the agriculture sector. Various other industrial minerals are also used in the manufacture of pulp and paper, abrasives, plastics and polymers, ceramics and glass.⁸¹

The South African MMS is fully integrated into and thus dependent on an international system of demand for and supply of these commodities.

3.3.2 Economic cycles, commodity markets and commodity prices

The demand for metal and mineral products is highly sensitive to fluctuations in local and international economic and market conditions. A major challenge for the sector is matching supply to demand in order to sustain commodity prices and therefore profitability. When demand outstrips supply, prices rise, which in turn raises the input costs for downstream beneficiaries and ultimately the cost of manufactured products. This has a generally negative impact on global economic growth. Conversely, where supply outstrips demand, prices can fall quickly, resulting in the uneconomical and unsustainable production of raw materials from the MMS. The challenge is that while demand can rise or drop quite quickly, supply volumes are much more sticky as they are related to factors such as exploration and new mine development in the case of increasing supply, and laying off labour or even shutting down operations in the case of receding supply.

With the exception of the outputs of the cement, lime, aggregates and sand (CLAS) subsector, which are mainly sold into the domestic market, the local markets for mining and mineral products are relatively small and for this reason most of South Africa's mining product is exported. The profitability of operations is thus directly affected by world commodity prices and the demand for commodities.

⁸⁰ Ibid.

⁸¹ Ibid.

The global economic recession of 2008 and 2009 had a profound effect on commodity markets and prices. Prior to the crisis, the world experienced a commodities boom, which imploded unexpectedly in 2008 as the positive factors that had driven the boom changed for the worse. By 2010, the prices of most minerals had returned to pre-recession levels, while 2011 saw a vast improvement in mineral sales and commodity prices, with the price index of industrial raw materials (IRM)⁸² rising by 21.7% in dollar terms. However, renewed economic weakness – especially in Europe – again led to a decline of 20.3% in IRM prices, with another drop of more than 3% expected for 2013.

3.3.2.1 Gold

In 2013, the gold market came under severe pressure with the gold price falling by 25% in the second quarter. The main factors driving the decline have been the signal by the US Federal Reserve that it would eventually withdraw monetary stimulus, and persistently lower inflation. Both have negated gold's function as a hedge against hyperinflation and the perceived effects of new monetary stimulus. The Economist Intelligence Unit forecasts that global gold consumption will decline in 2013 by 13.4%. However, it does expect a rebound in demand in 2014, prompted by a sharp deceleration in sales of ETF gold holdings.⁸³

The gold market in India revived substantially in early 2013. In response, the authorities found themselves compelled to intensify measures aimed at suppressing gold imports, in an attempt to lower the outsized role of gold inflows in the current-account deficit. Gold jewellery demand hit its highest level for almost two years in the first quarter of 2013, continuing a turnaround that began in the second half of 2012.⁸⁴

China narrowly missed out on becoming the world's largest gold jewellery consumer in 2012, coming in just behind India, and – as in 2012 – moved ahead of its regional rival in the first quarter of 2013. Chinese consumers responded enthusiastically to the decline in the gold price in late 2012 and early 2013, making record-high purchases in the first quarter of 2013. Lower gold prices will continue to make jewellery purchases more attractive in the coming quarters, and rises in incomes will support consumers' aspiration to own gold jewellery.⁸⁵

South African gold export sales grew quite strongly during the second half of 2011 and the first half of 2012, rising on average by 36.4% year on year in rand terms. However, industrial action and work stoppages, together with a weaker gold price, caused gold exports to decline by 23.9% in the fourth quarter of 2012.⁸⁶

3.3.2.2 Coal

⁸² The Economist Intelligence Unit constructs an IRM price index consisting of nine hard commodities. The metals sector has a weighting of 65.1% in the IRM index, fibres 27.4% and rubber 7.5%.

⁸³ The Economist Intelligence Unit Limited. World commodity forecasts: industrial raw materials. August 2013.

⁸⁴ Ibid.

⁸⁵ Ibid.

⁸⁶ Figures from the Department of Mineral Resources.

In 2012, global demand for coal grew by 2.9%, while sales of natural gas rose by 2.1%. Despite the anticipation that global energy intensity is expected to be 31% lower than in 2011, energy used for power generation is expected to grow by 49% (2.1% p.a.) between 2011 and 2030. The fastest growing fuels will be renewables (including biofuels) with growth anticipated at 7.6% p.a. during 2011 to 2030. Nuclear (2.6% p.a.) and hydro (2.0% p.a.) are both expected to grow faster than total energy consumption. Among fossil fuels, gas will most likely grow the fastest (2.0% p.a.), followed by coal (1.2% p.a.) and oil (0.8% p.a.)⁸⁷.

The Economist Intelligence Unit expects growth in global coal consumption to pick up modestly in 2013/14 to an annual average of 3.2%, up from just 2.9% in 2012. The increase is mainly the result of US consumption growth, which is expected to turn positive in 2013 – after falling by over 11% in 2012 owing to relatively higher domestic gas prices, which will lead to some utilities switching to coal in power generation. Europe's coal consumption is also expected to rise again in 2013, reflecting the higher "spark spread" (or profit margin) enjoyed by utilities burning coal relative to more expensive natural gas. Solid, if unexciting, economic growth in the large developing countries will sustain coal demand, particularly as countries such as India and Indonesia continue with rural electrification projects that will be mainly fuelled by coal. China's coal consumption will continue to grow in 2013/14, but at a slower rate as a result of more modest economic growth, as well as increasing efforts to control carbon emissions.⁸⁸

South African coal production contracted by 4.8% in volume terms during the second half of 2011, but 2012 saw a sustained increase in the production volume of coal, rising by 2.9% year on year on average during the year. The higher rand value per ton achieved during 2012 meant that the value of total local sales rose by 17.2% year on year. Strong domestic demand for coal meant that export sales tapered off during the second half of 2012, with export volumes declining by 5.9% in the final quarter of 2012.⁸⁹

3.3.2.3 Copper

Over the first half of 2013, The Economist Intelligence Unit believes that world growth in apparent copper consumption was slightly negative, as stockpiles built up in China in 2012 were being drawn down and London Metal Exchange (LME) stocks more than doubled. The latest estimates from the World Bureau of Metal Statistics (WBMS) only cover the January to April period, but suggest that year-on-year contractions in apparent copper consumption were recorded not only in China (down 5.7%), but also across the rest of Asia (2%), the European Union (1.5%) and in the world overall (2.3%). However, with real usage levels fairly buoyant in China despite weak macroeconomic indicators, low copper stock levels will be replenished in the third and possibly fourth quarters of the year, therefore boosting apparent demand over the remainder of the year.⁹⁰

⁸⁷BP Energy Outlook 2030. January 2013. http://www.bp.com/content/dam/bp/pdf/statistical-review/BP_World_Energy_Outlook_booklet_2013.pdf, accessed 7 August 2013.

⁸⁸ The Economist Intelligence Unit Limited, August 2013. *World commodity forecasts: industrial raw materials*.

⁸⁹ Figures from the Department of Mineral Resources.

⁹⁰ The Economist Intelligence Unit Limited, August 2013. *World commodity forecasts: industrial raw materials*.

South Africa's 70 000 ton copper produced in 2012 accounted for only 0.3% of total world production. South African total local copper sales contracted in value terms by 9.8% in 2012, while exports sales rose by 6% in value terms.

3.3.2.4 *Platinum group metals*

Total production of PGM fell by 12.2% in 2012 to 254 342 kg, which represented a drop of 17.3% in total sales value. Some 83% of South African PGM production was exported⁹¹.

Following several uninterrupted years of gross surpluses, the global platinum market reached a narrow deficit of 375 000 ounces in 2012 from a surplus of 450 000 ounces in 2011, owing to far-reaching disruptions in mine production in South Africa, the world's largest platinum producer, which resulted in the country's platinum producers losing at least 750 000 ounces of production. As a result, total export sales from South Africa declined by 12.6% year on year in volume terms and by 16.4% in rand value terms in 2012. This also affected global primary supplies of platinum, which fell to a 12-year low of 5.6 million ounces in 2012, from 6.5 million ounces in 2011⁹².

As far as the auto catalyst market is concerned, the depressed light vehicle market in Europe and a lower market share for diesel vehicles led to a significant fall in demand for platinum in this region. However, a rebound in output of vehicles in Japan, a continued surge in the manufacture of diesel vehicles in India and increased demand for pickup trucks in North America made up for most of this decline. Demand for platinum auto catalysts for heavy duty vehicles also improved marginally.

Gross demand for platinum for manufacturing jewellery increased by 305 000 ounces in 2012 to 2.78 million ounces. There was a surge of buying by manufacturers in China in order to supply platinum jewellery to a growing number of retail outlets in Chinese cities. Manufacturers also took advantage of the relatively weak platinum price to increase stocks to an extent. In India, there was wider distribution of platinum jewellery in the retail network. The discount of platinum to gold during nearly all of 2012 made platinum jewellery more competitive with white gold in all markets.

Demand for platinum in industrial applications fell by 405 000 ounces in 2012 to 1.57 million ounces. This was largely due to changing conditions in the glass industry, where excess production capacity, combined with the use of platinum from decommissioned plants and existing inventories, led to a fall in purchases of metal. In the electrical industry, inventory adjustments and weaker demand for hard disk drives impacted on the purchases of platinum. Demand from the chemical sector was slightly lower than in 2011, while demand for platinum in medical, petroleum refining and other applications remained stable.

Net identifiable physical demand for platinum for investment purposes reached 455 000 ounces in 2012, 5 000 ounces lower than the previous year. Demand for platinum ETFs was marginally higher compared to 2011. Significantly lower net purchasing of large bars in

⁹¹Figures from the Department of Mineral Resources.

⁹²Creamer Media's Research Channel Africa, June 2013. Real Economy Insight: Platinum.

Japan was largely offset by a combination of an increase in demand for coins and small bars and the acquisition of metal for the launch of a new physically-backed product in North America.

3.3.2.5 *Diamonds*

While the impact of economic fluctuations on commodity prices is complex and variable, depending on whether demand increases or decreases for particular commodities in uncertain times, the demand for luxury items such as high-value jewellery is almost always negatively impacted by an economic downturn. The diamond processing and jewellery manufacturing subsectors are usually among the first to experience a drop in demand for their products. Reductions in demand by the USA, Europe and Japan (which account for about 75% of global demand) during the recent recession saw the value of sales of rough diamonds to the diamond cutting centres falling by 51.1%. Destocking and consumer demand contraction impacted severely on diamond miners, with the South African industry not being spared.

From 15.25 million carats produced in 2007, South African diamond production declined by 15.6% in 2008 and by another 51.8% in 2009. The year 2010 saw a sizeable increase in production of 222.6%, although the mass produced (8.9 million carats) was still well below the pre-recession volume. The years 2011 and 2012 saw a renewed slump in the local production of diamonds, with volumes declining by 20.7% in 2011 and by 11.5% during the first three quarters of 2012. The fourth quarter of 2012 experienced the first year-on-year rise in production in two years, with volumes rising by 35% year on year – bringing the total production in 2012 to 7 million carats.⁹³ Non-alluvial diamonds⁹⁴ accounted for 97.3% of this total – up from 91.5% in 2009 and 85% in the 1980s.

3.3.3 The exchange rate

The volatility displayed by the rand in the last decade has had a profound impact on export industries, including the mining industry. The weakening of the rand obviously benefits the mining industry, while the relatively strong rand has an adverse effect.⁹⁵ The exchange rate also affects the cost of production in dollar terms, with rapid fluctuations in the exchange rate making profitable production planning very difficult.

For the diamond processing and jewellery manufacturing subsectors, the volatility of the local currency is particularly problematic, as raw material is bought at international (dollar-denominated) prices and sold at a later stage. Thus, the risk of holding material and stock is

⁹³ Figures from the Department of Mineral Resources.

⁹⁴ Alluvial diamonds is the term used to describe diamonds that have been removed from the primary source (kimberlite) by natural erosive action over millions of years, and eventually deposited in a new environment, such as a river bed, an ocean floor or a shoreline. In contrast, non-alluvial diamonds are mined from rock formations below the earth's surface.

⁹⁵ Chamber of Mines. *Annual Report 2007/2008*.

high for these businesses, which are generally small in size.⁹⁶ Most of the global competitors address these fluctuations in part by creating competitive metals financing products, “gold loans” for the industry. No comparative facility currently exists in South Africa. Gold leasing would, for example, enable the manufacturer to build stock with minimal exposure to the exchange rate.

⁹⁶Human Sciences Research Council (HSRC) and Povey, Mulvenna and Associates. *A skills analysis of the jewellery manufacturing and gemstone processing industries in South Africa*. MQA and GTZ. Johannesburg, May 2003.

3.3.4 Government expenditure and infrastructure development

The impact of government's infrastructure development programmes on the MMS is twofold. On the one hand, the mining component of the MMS is dependent on infrastructure (specifically the transport infrastructure) for the distribution of its products. The industry therefore stands to benefit from the upgrading of the power supply, roads and rail networks.

On the other hand, the CLAS subsector, as a supplier, is a major contributor to the upgrading of the roads network, and tends to grow or contract as a result of public investment in infrastructure. This subsector saw substantial growth in the run-up to the 2010 Soccer World Cup as a result of the upgrading of the roads and rail networks and the building of stadiums.

Public sector real fixed capital formation saw some significant investment growth in the two years prior to the 2010 Soccer World Cup with growth of 22.7% and 8.4% in 2008 and 2009 respectively. Public sector real fixed capital formation receded by 4.6% in 2010, but picked up again in 2011 and 2012, rising by 4.3% and 8.8% respectively.

3.3.5 The demand for energy

In addition to the demand for electricity generated from the industrial sector in periods of economic growth, factors such as urbanisation trends, the building of Reconstruction and Development Plan (RDP) housing⁹⁷, and the formalisation of services to informal housing areas increase the demand for electricity from the national grid. Through the commissioning of the new coal-fired power stations, South Africa has committed itself to coal-based electricity generation for at least the next few decades. The head of Eskom operations stated in late 2009 that in response to the increased demand for coal for electricity, South Africa needs at least 40 new mines to prevent electricity shortages over the long term.⁹⁸

3.3.6 Technological advancements

Technological advancements that allow access to previously inaccessible metal or mineral deposits, which increase extraction levels from existing operations, or make extraction safer, easier or more cost effective, have a direct impact on the competitive supply of MMS products onto the market. Many of South Africa's metal deposits occur at great depth and will require ongoing advances in technology in order to be safely mined.⁹⁹¹⁰⁰ Technological advancements also make it feasible to rework old mining waste, such as mine dumps.¹⁰¹

⁹⁷Low-cost housing built by government according to the Reconstruction and Development Plan (RDP).

⁹⁸South Africa.info, South African needs 40 new coal mines, 12 August 2009, <http://www.southafrica.info/news/business/832012.htm>, accessed 14 November 2010.

⁹⁹Pickering RGB.1996, Deep-level mining and role of R&D. *The Journal of the South African Institute of Mining and Metallurgy*, September/October 1996, <http://www.saimm.co.za/Journal/v096n05p173.pdf>, accessed 14 November 2010.

¹⁰⁰Mining Weekly. S African miners 'going beyond limits of knowledge', new research urgent – Wits, <http://www.miningweekly.com/article/s-african-miners-going-beyond-limits-of-knowledge-new-research-urgent-wits-2010-08-19>, accessed 14 November 2010.

¹⁰¹ABC Money, S. African mine dumps turn to gold mines, 16 April 2007, <http://www.abcmoney.co.uk/news/12007156777.htm>, accessed 14 November 2010.

3.3.7 The availability of skills

The MMS is dependent on the availability of certain specific professional and technical skills in order to grow. Mine health and safety legislation and regulations set very strict competency requirements for certain positions and without people with the necessary competencies, mining operations cannot expand. The MMS has experienced severe shortages over the last number of years. These shortages are exacerbated by the lack of HDSAs with the requisite skills amid the drive for transformation referred to in Chapter 2 of this SSP. These shortages have constrained the growth of the sector.

3.3.8 Environmental conservation and rehabilitation

Environmental conservation and the rehabilitation of areas where mining or exploration has taken place are regulated through various acts and government policies. As indicated in the previous chapter, the MPRDA places the responsibility for rehabilitation on the holder of a prospecting permit or mining authorisation. In addition, the DMR has specific policies regarding financial provisions for rehabilitation upon the closure of a mining operation. At the same time, the Mining Charter places strong emphasis on sustainable development and environmental conservation and rehabilitation. Environmental management is weighted at 12% on the Mining Charter Scorecard. While critical for environmental preservation, the health and safety of the general population and the sustainable exploitation of our national resources, a change from the past practice of externalising the cost of conservation and rehabilitation efforts onto society towards internalising this cost as part of the production process needs to be factored into profitable production planning. Furthermore, this needs to be done from the outset and factored into the initial feasibility studies. In some instances, the balance between environmental considerations, growth of the sector and job creation or maintenance may be challenging to achieve. However, consideration of competing demands through the framework of integrated and sustainable development provides possibilities for achieving outcomes that go a long way towards meeting diverse stakeholder expectations.¹⁰²¹⁰³

3.3.9 The availability of mineral resources

Finally, a major factor in the future of the MMS is the availability of local mineral resources. It is well known that South Africa is richly endowed with mineral resources (South Africa's high world rankings in terms of both production and reserves of the various MMS products are outlined in Chapter 2). However, as mineral reserves are non-renewable, their depletion may lead to the contraction of the industry. This is specifically true of the gold mining industry. Annual gold production decreased by approximately 57% over the period 1994 to 2007¹⁰⁴ and is bound to continue on a downward path as most of the remaining gold reserves occur at depths underground that prohibit their economic mining. The economic mining of a

¹⁰²World Business Council for Sustainable Development. 2002. *Breaking New Ground - Final report of the Mining, Minerals and Sustainable Development Project*.

¹⁰³ Centre for Sustainability in the Mining Industry (CSMI). *The socioeconomic aspects of mine closure and sustainable development: Literature overview and lessons for the socioeconomic aspects of closure, Report 1 of 1, Coaltech Project 7.8.5*, January 2010.

¹⁰⁴Calculated from Chamber of Mines, South African Mining Industry – Statistical Tables 2008.

commodity is obviously also linked to other factors discussed above, such as available technology, the supply of electricity, the commodity price and the exchange rate.¹⁰⁵

While past global scares of mineral depletion resulted in increased exploration activities and in the discovery of new deposits, the reality remains that metals and minerals remain non-renewable resources and that mining activities will depend on their finite availability.

3.4 COMPOSITION OF AND CHANGES IN GROSS VALUE ADDED

3.4.1 Economic growth

With the exception of a single few years, growth in the mining sector (as measured by its gross value added) has underperformed the total economy since at least the early 1970s. More recently, during 2006 to 2009, the mining sector contracted by, on average, 2.9% per year, while the overall economy grew by 3.4% p.a. In 2010, the mining sector outperformed the overall economy by expanding by 5.7%, but this was again followed by two years of disappointing growth: 0.3% in 2011 and -4% in 2012. From a relatively low base and barring any additional widespread industrial action in 2013, the mining sector might expand by around 2.3% this year, which will be very similar to the growth of 2.2% expected for the economy as a whole.

In 2012, the mining sector's performance was hampered by a recession in Europe, weak commodity prices and industrial action, which caused significant production losses. Production in 2013 will be boosted by a much weaker rand, although the threats of further industrial action causing work stoppages and more mine and shaft closures are clouding the outlook. Our forecast for the period 2013 to 2020 is for the economy to grow by around 3.5% per year on average, while the growth rate for the mining sector is expected to continue underperforming that of the overall economy – growing by around 2.6% p.a.

¹⁰⁵ South Africa's underground gold resource base is estimated to be 45 000 tonnes. The Chamber of Mines developed some estimates of the future life of the gold mines in South Africa based on data from certain parts of the Witwatersrand basin where geological conditions are accounted for. According to its estimates of this area over the past decade, the average cut-off grade was 4 grams per tonne, which implies that some 35% of the ore body was uneconomic to mine. If this information is applied to the total resource base of about 45 000 tonnes and assuming that about 20 000 tonnes of gold are uneconomic to mine because they are beyond the technology frontier of the industry (which is currently at 4 000 metres below the surface), then the total resource base underground is really 25 000 tonnes of gold. Based on data for the past decade, some 65% was economically recoverable, which means that about 16 250 tonnes can be mined. Taking cognisance of ore depletion and assuming that no new mines are developed in the interim, at current rates of production, the defined ore reserve will last for about 40 years. However, the cut-off grades are directly linked to market conditions and increase with decreases in the gold price. Source: Chamber of Mines, Chamber's Memorandum to the National Treasury on the Draft Mineral and Petroleum Royalty Bill, www.bullion.org.za.

Figure 3.3 Changes in real GVA at basic prices for the total economy and mining sector

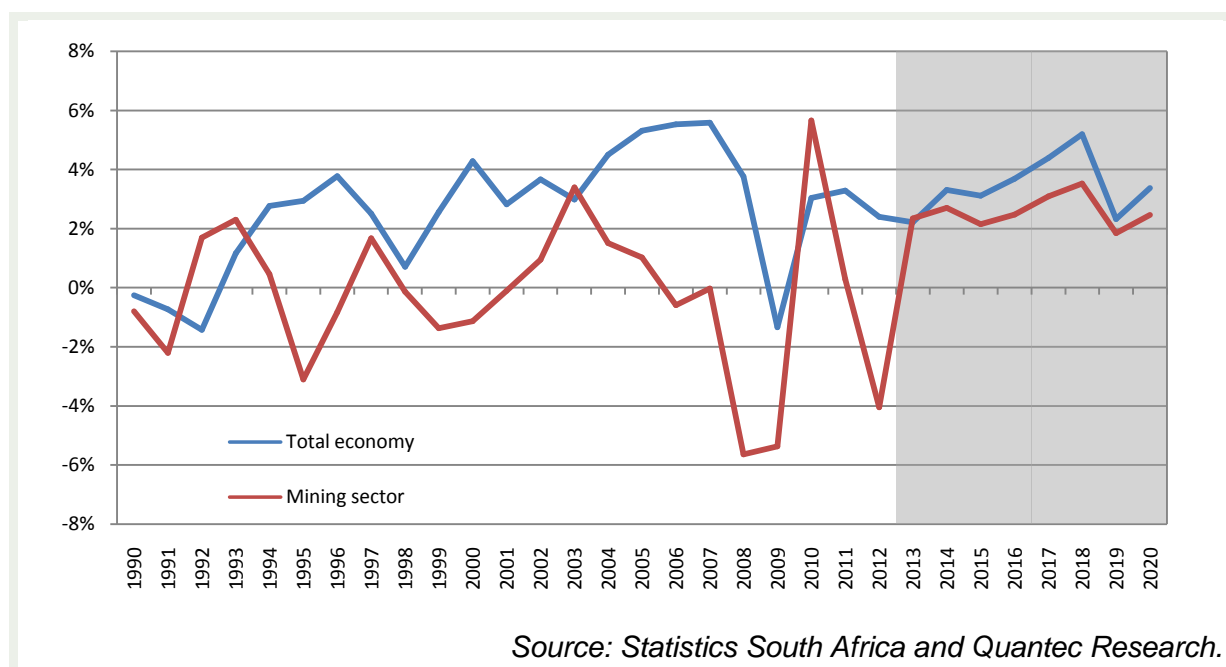


Figure 3.4 Changes in real GVA at basic prices for the mining sector (five-year average growth rates)

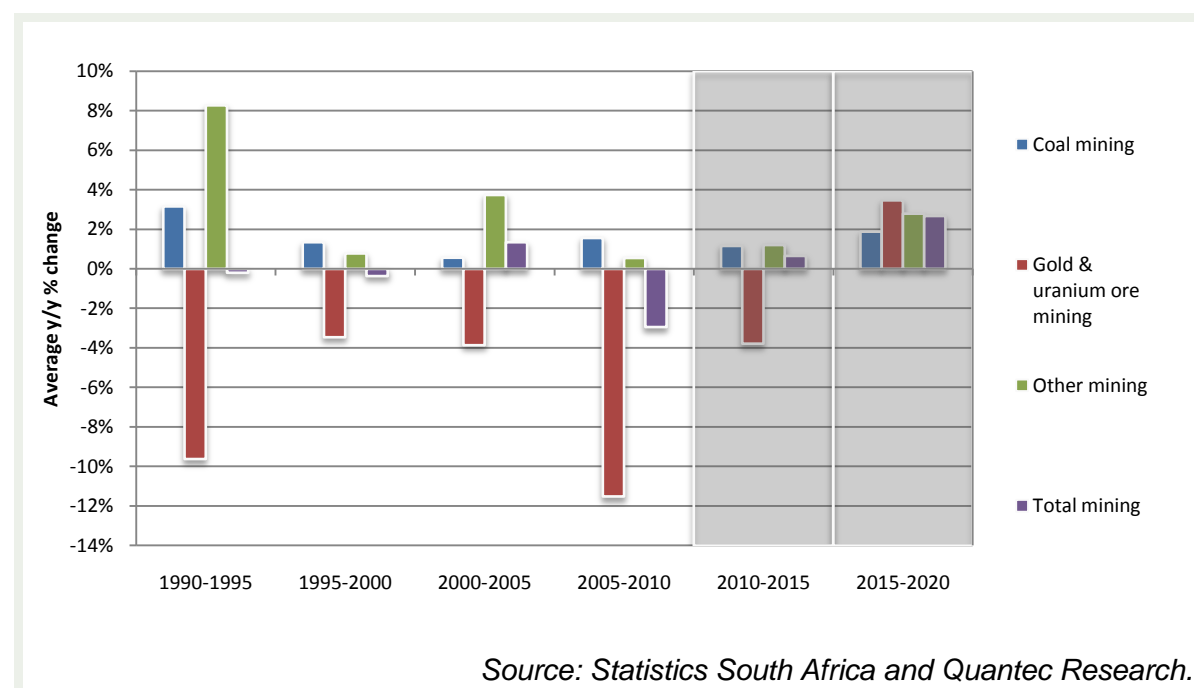


Figure 3.3 shows the growth in gross value added trends over five-year periods in gold mining, coal mining, and other mining (which includes PGM and diamond mining), while Figure 3.4 depicts the value added in constant prices over the period 1970 to 2012, with a forecast up to 2020. The economy's gross value added equals the gross domestic product, except that it excludes taxes less subsidies on products. The gross value added for the mining sector and the economy as a whole, is shown in Table 3.1.

Table 3.1 Growth value added by mining in 2012

Income component	Coal	Gold and uranium ore	Other mining	Total mining	Total economy	Mining / total
Compensation of employees	17	33 089	50	101	1 447 429	7.0%
Gross operating surplus	37	9 341	112	159	1 347 850	11.8%
...Net operating surplus	27	-7 184	93	114	942 904	12.1%
...Consumption of fixed capital	10	16 525	18	44	404 946	11.1%
.....Buildings and construction	6	12 979	9	28	192 872	14.6%
.....Transport equipment		417	1	2	45 104	5.5%
.....Machinery and other equipment	3	3 130	7	14	158 097	9.0%
.....Transfer costs		-			8 873	
Gross value added at factor	55	42 431	162	260	2 795 279	9.3%
Other taxes on production		870		2	54 166	4.2%
less: Other subsidies on production		-			14 358	0.8%
Gross value added at basic	56	43 300	162	262	2 835 087	9.3%

Source: Statistics South Africa and Quantec Research.

It is clear that the most severe decline was experienced in gold mining. Although the gross value add of the combined grouping of PGM mining, diamond mining and other mining increased up to 2007, it was not sufficient to compensate for the decline in output from the gold mining industry.

The steep decline in gross value added seen in 2008 and 2009 was the result of these factors, exacerbated by the global economic slow-down, which caused a decline in the demand for commodities.¹⁰⁶ The growth experienced in the industry in 2010 was the result of a steep increase in the demand for commodities and in the prices of commodities. The effect of the fluctuations in production on employment is discussed in Chapter 4.

3.5 CONTRIBUTION TO ECONOMIC ACTIVITY

Mining's contribution to the country's total economic activity can be seen in Table 3.2 and Figure 3.7. Whereas mining contributed 20.7% total economic gross value added in 1970, this ratio had declined to only 5.5% in 2012. The same trend was observable in output, labour remuneration and the gross operating surplus (an economic measure of profitability). Surprisingly, the relative decline in total employment was not as pronounced, while capital formation by the sector actually increased in relative terms over time.

The drop in total export revenue by the mining sector was very dramatic, with 63.4% of total export revenue in 1970 being attributable to the mining sector, compared with only 24% in 2012. The rising ratio of imports attributable to the mining sector was as a result of growing crude oil imports. Imports in this definition entail only direct imports and not imports of intermediate inputs or capital equipment.

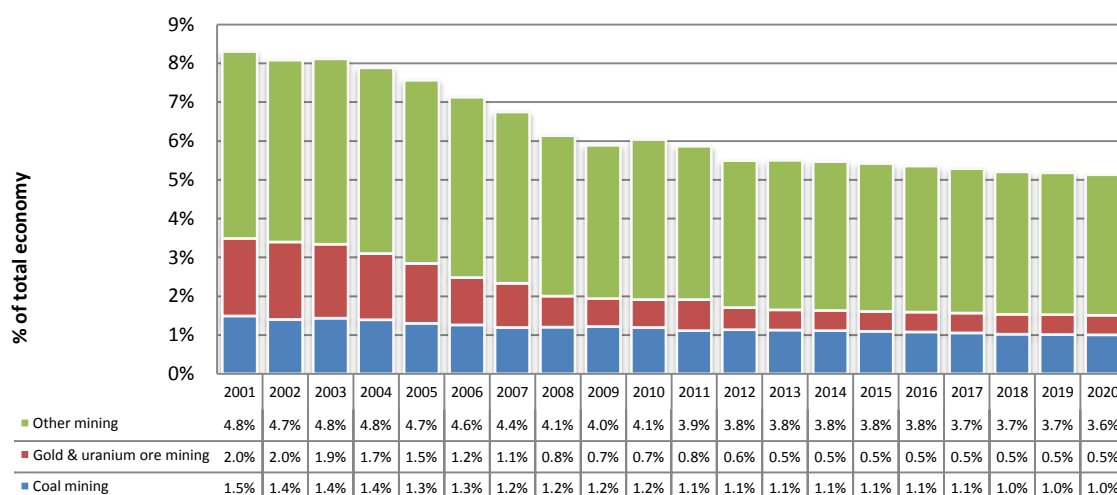
¹⁰⁶ Chamber of Mines. *Annual Report, 2008/2009*.

Table 3.2The mining sector's contribution to total GVA: 1970 to 2012

	1970	1980	1990	2000	2012
Imports of goods and services	6.8%	4.8%	11.4%	18.3%	11.4%
Exports of goods and services	63.4%	56.7%	49.3%	39.9%	24.0%
Output	12.8%	9.3%	7.1%	6.7%	4.5%
Gross value added at basic values	20.7%	13.2%	10.5%	8.5%	5.5%
Labour remuneration	16.4%	8.1%	10.3%	6.6%	4.7%
Gross operating surplus	26.8%	19.9%	11.3%	11.0%	6.3%
Gross Fixed Capital Formation	5.4%	10.5%	13.2%	10.3%	11.9%
Capital stock	6.1%	6.3%	8.6%	7.9%	8.9%
Formal employment	8.7%	8.5%	7.6%	4.2%	5.1%

Source: Statistics South Africa and Quantec Research.

Figure 3.5The mining sector's contribution to total GVA: 2001 to 2012 (and 2013–2020 – forecast)



Source: Statistics South Africa and Quantec Research.

3.6 SCENARIO MODELLING

Forecasts for mining sector performance are based on a base-case scenario econometric model with an associated input-output model that provided sectoral forecasts. However, a partial model was also employed to obtain two alternative scenarios, which would cause a higher and a lower mining growth environment, compared with the base case, over the next few years.¹⁰⁷ The differences in assumptions on the changes in the levels of the “driver variables” can be observed from Table 3.3.

¹⁰⁷ Statistical properties of the series regarded to have an important bearing on the global demand for mining commodities and value added potential of South African mining operations were utilised to obtain a high case and a low case scenario. Standard deviations from the historical mean percentage changes were calculated and a high case scenario was constructed where the levels of the economic drivers were adjusted upwards or downwards (depending on the impact of the particular driver) for each forecasting period. The low case scenario was constructed similarly with the levels adjusted in the opposite direction, compared to the high case scenario, for each driver.

Table 3.3 Assumptions for macroeconomic drivers: 2013 to 2020

	Base case	Low overall mining growth scenario	High overall mining growth scenario
World growth (year on year percentage change)	2.8	1.3	4.3
USD/ZAR exchange rate	11.8	6.6	15.2
International metal prices (year on year percentage)	2.5	-8.3	13.3
Gold price in dollar terms (year on year percentage)	-2.9	-16.1	10.3
SA producer price Inflation (year on year percentage)	5.5	10.3	0.7

Sources: International Monetary Fund (IMF), South African Reserve Bank, The Economist Intelligence Unit, Statistics South African, Ecoquant and Quantec Research.

Usually higher international gold and other metal prices, along with a weaker rand exchange rate, will benefit mining output and also the sector's operating surplus, gross value added and employment. However, changes will have to be sustained for a period of time and may affect the mining sector only with a delay.

Although higher world growth is usually beneficial for the demand for and prices of mining commodities, an inverse relationship may apply to gold mining since such a significant proportion of gold demand is derived from investment activity. Low global growth will therefore often cause investment demand for gold to rise because of increasing risks of lower returns on other investments. Higher input costs (approximated by the producer price inflation) will usually cause the gross value added by the mining sector to be adversely affected.

Changes in the gross value added by the mining sector for the different scenarios are depicted in Figure 3.6. With the exception of gold, negative growth rates for mining sectors were recorded in the low case scenario, while more than double the currently anticipated growth in mining value added could materialise the high case scenario.

Higher (or lower) value added growth in the mining sector, will logically be associated with higher (or lower) rates of employment growth in the sector as well. The overall changes in total employment growth over the period 2013 to 2020 are shown in Figure 3.7. It would appear that "other mining" would still experience a slight growth in employment even under a low case scenario, while the coal mining sector is expected to shed jobs regardless of whether global conditions change for the better or the worse. Employment in the gold/uranium ore mining sector will most likely only increase under highly favourable conditions.

Figure 3.6 Real GVA growth p.a. for different scenarios (2013-2020)

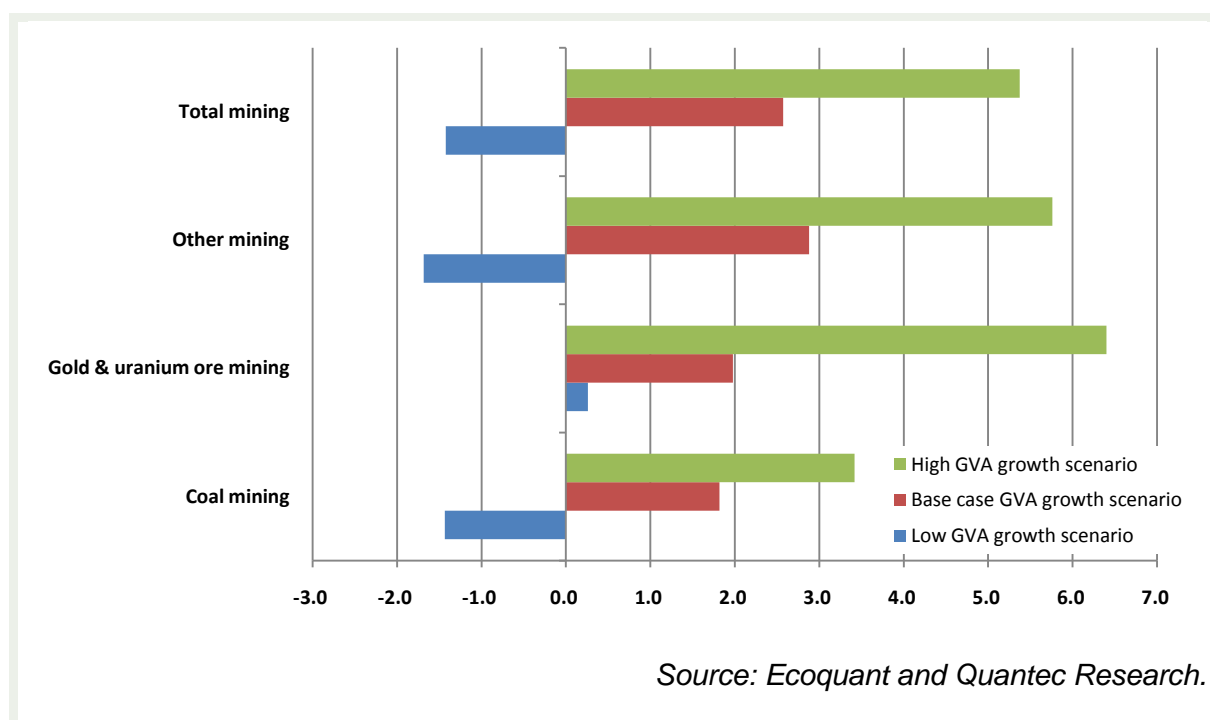


Figure 3.7 Total employment growth p.a. for different scenarios (2013 to 2020)

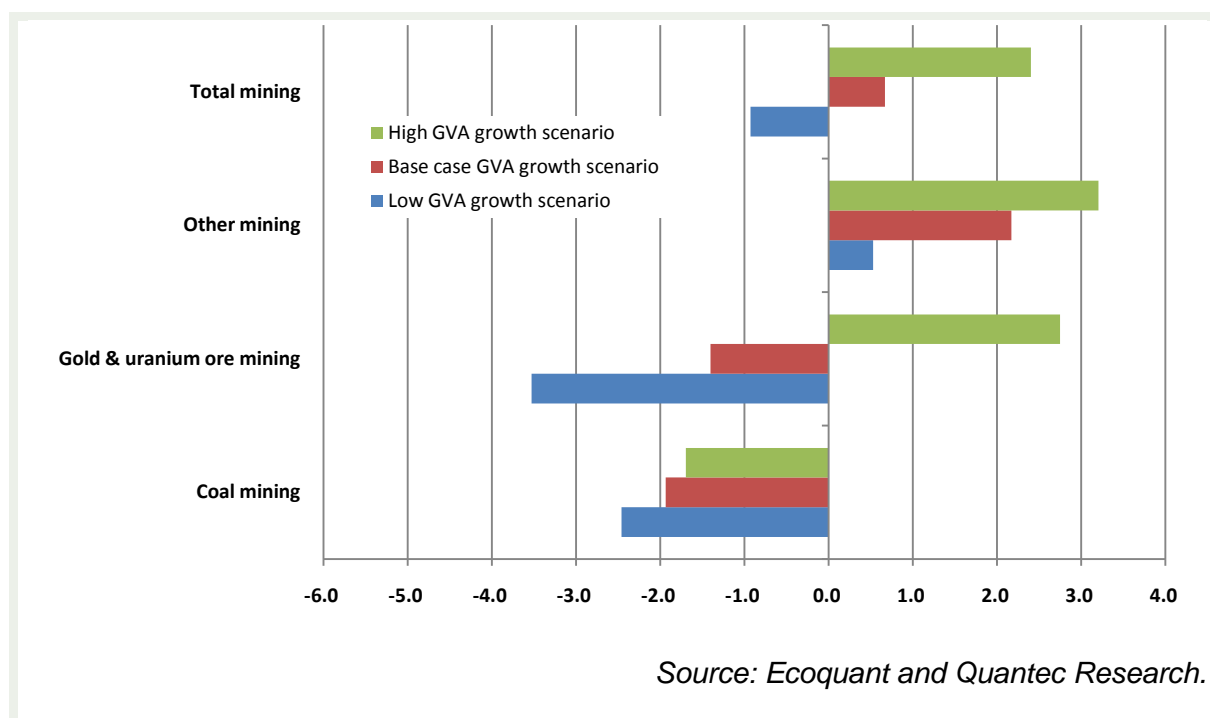


Table 3.4 Changes in mining sector total employment by skill level (2013 to 2020)

Mining sector	Skill level	Base case		Low overall mining growth scenario		High overall mining growth scenario	
		Average number p.a.	Average % p.a.	Average number p.a.	Average % p.a.	Average number p.a.	Average % p.a.
Coal mining	Highly skilled	174	3.2	141	2.7	189	3.5
	Skilled	500	2.5	382	1.9	556	2.7
	Semi-skilled and unskilled	-1 798	-4.2	-1 981	-4.8	-1 712	-4.0
Gold and uranium ore mining	Highly skilled	62	1.2	-49	-1.0	330	5.4
	Skilled	-546	-4.4	-745	-6.5	-60	-0.4
	Semi-skilled and unskilled	-1 835	-1.6	-4 026	-3.7	3 511	2.6
Other mining	Highly skilled	475	2.4	137	0.7	709	3.4
	Skilled	1 510	2.0	270	0.4	2 368	3.1
	Semi-skilled and unskilled	5 500	2.3	1 430	0.6	8 315	3.3
Total mining	Highly skilled	710	2.3	230	0.8	1 228	3.8
	Skilled	1 464	1.4	-94	-0.1	2 864	2.6
	Semi-skilled and unskilled	1 867	0.5	-4 576	-1.2	10 114	2.3

Source: Ecoquant and Quantec Research.

Table 3.4 shows the possible impact per year (over the period 2013 to 2010) on the various skill levels under the three scenarios. A low case scenario could see a small extra number of highly skilled persons being employed each year with few job losses among the skilled workers and extensive job losses among the semi-skilled and unskilled workers. The converse would apply in the high case scenario, where significant job gains would be possible among all skill levels.

3.7 INITIATIVES TO ENHANCE THE ECONOMIC PERFORMANCE OF THE SECTOR

In December 2008, the mining sector, in collaboration with tripartite stakeholders from government and organised labour, responded to the economic crisis by establishing the Mining Industry Growth, Development and Employment Task Team (MIGDETT). The task team focused on ways to manage the crisis in the short term, while looking to reposition the country for the next commodity up cycle in the long term. Innovative ways of helping companies to survive in the short term included proposals on reducing cost pressures, dealing with constraints affecting the sector and avoiding retrenchments where possible. In

areas where retrenchment became unavoidable, measures to alleviate the consequences of retrenchment were proposed by MIGDETT, including more effective use of social plans.¹⁰⁸ MIGDETT currently continues with its work and focuses on the sustainable growth and meaningful transformation of South Africa's mining sector.¹⁰⁹

In line with the principles of sustainable development, a key driver of increased sector performance is considered to be metals and minerals beneficiation (or value addition). A range of recent policy documents place a renewed focus on beneficiation or local value addition:

- The Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) (DMR)
- The Diamonds Amendment Act (Act No. 29 of 2005) (DMR)
- The Diamonds Second Amendment Act (Act No. 30 of 2005) (DMR)
- The Precious Metals Act (Act No. 37 of 2005) (DMR)
- The Metals Sector Development Strategy of 2006 (–the dti)
- The Beneficiation Strategy for the Minerals Industry of South Africa (June 2011) (DMR)
- The Industrial Policy Action Plan (2010) (the dti)
- The Amended Mining Charter
- The New Growth Path: The Framework (2010)
- The National Development Plan – Vision for 2030 (2011) (National Planning Commission)
- Draft Framework Agreement for a Sustainable Mining Industry (entered into by organised labour, organised business and government – 14 June 2013)

The MPRDA allows for 11% of the required 26% black economic empowerment (BEE) ownership in mining houses to be offset by facilitating local beneficiation. This prompted shareholding of AngloGold in Oro Africa and of Impala Platinum in Silplat, as a consequence. At the same time, the African Growth and Opportunity Act (AGOA) provided a 6% advantage to South Africa on jewellery exported to the USA. The current absence of a gold financing mechanism for the jewellery manufacturing subsector has, however, limited the impact of these incentives. The Jewellery Council of South Africa argues that if a viable gold financing mechanism could be developed, strong incentives will exist for foreign investment in local beneficiation.¹¹⁰

The South African Diamond and Precious Metals Regulator (SADPMR) was created in 2007 when the Diamonds Amendment Act, the Diamonds Second Amendment Act and the Precious Metals Act, that together widened the scope of the previous South African Diamond Board to include the regulations of precious metals, were promulgated. Among the objects of the regulator are to ensure that the diamond and precious metals resources of the country are exploited and developed in the best interest of the people of South Africa, and to

¹⁰⁸Chamber of Mines. *Annual Report 2008/2009*.

¹⁰⁹Department of Mineral Resources. <http://www.info.gov.za/speeches/2010/10012509251001.htm>, accessed 9 June 2010.

¹¹⁰Input from the Jewellery Council of South Africa.

promote equitable access to, and local beneficiation from, the country's diamonds and precious metals. While the South African Diamond Board had only a regulatory function, the SADPMR has a promotional role as well, which it admits will be a "challenge" to fulfil.¹¹¹

South Africa's State Diamond Trader (SDT), launched in February 2008,¹¹² was also established as a direct result of the Diamonds Amendment Act and the Diamonds Second Amendment Act. The SDT is mandated to purchase 10% of South Africa's rough diamond production at "market-related" prices and to sell these to local beneficiaries – cutters and polishers. Prior to 2008, De Beer's Diamdel subsidiary provided rough diamonds to smaller local cutting and polishing firms, which were not part of the group's main rough diamond sales system. When the SDT came into operation, De Beers closed Diamdel, with many of its employees being seconded to the SDT for a three-year period to lend their experience to the start-up phase and to transferring critical skills. Unfortunately, it appears as if the SDT has not fulfilled its mandate – focusing instead on legal compliance issues and issues around the operations of the government diamond valuator – with local cutters and polishers now struggling to get access to stones. Industry has even made calls for Diamdel to resume its operations.^{113 114}

The Metals Sector Development Strategy, approved in 2006 by the dti, is aimed at increasing downstream beneficiation in the metals sector, particularly at Stage 4, which involves the conversion of intermediate refined products into finished goods for market consumption. The strategy targets five priority metal industry groupings, including precious metals and jewellery. Weak linkages and import parity pricing by large capital intensive upstream metal producers (involved in Stage 2 and 3 beneficiation processes) are identified as significant challenges to downstream beneficiation activities, as are security of raw materials supply, the lack of affordable metal financing, and specialised skills and manufacturing capacity. While the strategy set goals for 2014 and related interventions,¹¹⁵ in reality the challenges and obstacles remain.

The Beneficiation Strategy for the Minerals Industry of South Africa, which was finalised by the DMR in June 2011, proposes a coordinated approach to encouraging the increase in the beneficiation of minerals. It is proposed that beneficiation should take place through the development of specific value chains. The value chains that are proposed in this strategy document are the following: energy generation, steel and stainless steel fabrication, pigments and super alloy production, and jewellery manufacturing. Identifying the jewellery manufacturing subsector as a value chain for support, the strategy proposes as key action plans the establishment of jewellery hubs across the country, the establishment of an effective metal advance scheme for the sector to promote access to raw materials, as well as a focus by the MQA on structured training in supporting these activities. The beneficiation

¹¹¹ South African Diamond and Precious Metals Regulator, www.sadpmr.co.za, accessed 17 November 2010.

¹¹² Mining Weekly, State Diamond Trader officially launched, www.miningweekly.com/article/state-diamond-trader-officially-launched-2008-02-29, accessed 12 November 2010.

¹¹³ Mining Weekly, Diamond Council slams South Africa's State Diamond Trader, www.miningweekly.com/article/diamond-council-slams-south-africas-state-diamond-trader-2009-11-27, accessed 12 November 2010.

¹¹⁴ MmegiOnline, De Beers criticises State Diamond Trader, www.mmegi.bw/index.php?sid=4&aid=710&dir=2010/March/Friday5, accessed 17 November 2010.

¹¹⁵ Department of Trade and Industry. 2005. Metals Sector Development Strategy.

strategy will be implemented under the Mineral and Petroleum Resources Development Act of 2002.¹¹⁶

The IPAP, which was finalised by the dti in February 2010, identifies the necessity to set minimum beneficiation levels for key commodity chains. These will be defined for ten selected commodities, with five being promoted through to Stage 4 levels of beneficiation. The target for the identification of commodities and beneficiation offset opportunities, as provided for by the MRDPA and the revised Mining Charter, is the end of 2012. The IPAP additionally proposes the establishment of a financing mechanism to enable jewellers to acquire gold at a competitive interest rate and stable prices. The target date for the finalisation of the architecture of the mechanism is the end of 2011, with the roll-out of the programme to industry to take place during 2013/14.¹¹⁷

As mentioned above, the revised Mining Charter promotes beneficiation through its BEE ownership off-set opportunity. One major challenge in the implementation is that, from industry's perspective, the issue of beneficiation remains clouded and ill-defined, with no standard formulas for calculating or measuring beneficiation activities. Furthermore, while the Charter refers to the "mineral beneficiation framework", no such document has been released.¹¹⁸

Overall, while there is widespread government acknowledgement of the importance of beneficiation as a primary means to promote the economic development of the MMS in South Africa, and a similarly widespread understanding of the factors that are currently limiting this, there appears at this stage to be little concrete progress towards promoting beneficiation, particularly within diamond processing and jewellery manufacturing. This may, however, change if an efficient gold financing mechanism can be established according to target dates, if the State Diamond Trader is able to perform its mandate, and if the New Growth Path can be effectively implemented as proposed.

For its part, the MQA is directing efforts towards focused relationships with industry representative bodies through the creation of beneficiation skills development steering committees and engaging all stakeholders of the MMS in identifying and focusing skills development interventions.

The New Growth Path: The Framework, presented by Minister Ebrahim Patel on 23 November 2010, contains a central focus on beneficiation. The document focuses on growing the economy in a way that supports job creation. The New Growth Path has identified six priority areas or sectors for job creation, of which mining is one. The New Growth Path document refers to employment projections of the Industrial Development Corporation (IDC) that state that it is possible for the mining industry to create an additional 140 000 direct jobs by 2020, and 200 000 direct jobs by 2030. The main areas where job creation is possible are identified as enhanced PGM and coal exports, and final manufacturing using base metal products. According to the New Growth Path, the main

¹¹⁶Department of Mineral Resources. 2011. A Beneficiation Strategy for the Minerals Industry of South Africa.

¹¹⁷Department of Trade and Industry. 2010. Industrial Policy Action Plan (IPAP).

¹¹⁸Mining Matters.Spring 2010. The revised Mining Charter 2010.

actions that need to be pursued in order to create these jobs are reviewing the mining regulatory framework, including measures around licensing and the potential for a state-owned mining company, developing a ten-year strategic plan for electricity, logistics and skills for mining, and focusing on Stage 4 metal and minerals beneficiation, as outlined in the Beneficiation Strategy for the Minerals Industry of South Africa.¹¹⁹ In February 2011, President Jacob Zuma launched a state-owned mining company, the African Exploration Mining and Finance Corporation (AEMFC), currently a subsidiary of the Central Energy Fund. The company will serve as the state-run mining firm, under which all state interests in mining will be consolidated. The government said it wants the AEMFC to focus on strategic minerals like coal and uranium to make sure of sufficient supplies to its power plants. All state interests in mining will be consolidated in this company.¹²⁰

Another initiative that follows on the announcement of the New Growth Path is the National Skills Accord, in which representatives of business, organised labour, community constituencies and government agreed on skills development actions in support of the New Growth Path. These undertakings are discussed in more detail in Chapter 7.

In June 2013, a draft framework agreement was entered into by organised labour, organised business and government for a sustainable mining industry. In the preamble to the document, the parties acknowledged that the mining industry played a central role in the economy and job creation. The parties also agreed that the rule of law and stability was a fundamental pillar of our democracy and necessary to ensure economic and social development. Government, labour and business committed themselves to working together to ensure the sustainability of the mining sector for the future of the country and its people.¹²¹

3.8 FUTURE ECONOMIC PERFORMANCE OF THE SECTOR

In the previous section, reference was made to the role of MIGDETT in relation to the sustainable growth of the mining sector. In February 2010, the MIGDETT agreed that it should develop a tripartite Strategy for the Sustainable Growth and Meaningful Transformation of the South African Mining Sector. The work was carried out in two streams: the one focusing on the competitiveness and growth of the sector and the other on the transformation of the sector. A task team dealing with the competitiveness and growth issues developed simulations that would determine the realistic growth potential of the South African mining industry in the absence of factors (some of which were highlighted in the previous section) that constrain the growth of the sector. Based on simulations and scenarios run for each mineral, it came to the conclusion that the total mining sector can achieve a growth rate of about 3% per year over the period 2010 to 2020. If gold mining is excluded, the sector can even sustain a growth rate of 3.9% per year. This growth could result in the creation of another 100 000 jobs by 2020. In another study conducted for the Chamber of Mines in 2009 (the McKinsey's Mining Competitiveness benchmarking study), it

¹¹⁹Republic of South Africa. The New Growth Path: The Framework, November 2010.

¹²⁰Rudd, M, Zuma launches state-owned mining company in South Africa, African Business Review, 27 February 2011.

¹²¹<http://www.sanews.gov.za/south-africa/draft-framework-agreement-sustainable-mining-industry-entered-organised-labour>, accessed on 10 August 2013.

was concluded that under the most favourable conditions, job creation in the sector can be as high as 200 000 by 2020.¹²²

In the MIGDETT process, the factors affecting the competitiveness of the South African mining industry were identified. Important for this SSP is that human capital constraints are identified as one of the factors that negatively impact on the competitiveness and on the growth potential of the mining sector.¹²³

3.9 CONCLUSION

This chapter has considered the economic performance of the MMS in South Africa. Using the framework of sustainable development, the various competing demands that are being placed on the sector by shareholders, consumers, governments, employees, communities, human rights activists and environmental organisations were outlined, highlighting the major challenges facing mining houses who seek to obtain a “social licence to operate”.

In addition to this, a wide range of factors also impacts directly on the economic performance of the sector, and therefore on its ability to operate profitably. While some of these have had a positive impact on the local demand for MMS products (such as the impact of the demand for electricity on coal production, and government’s infrastructure development programme on the demand for steel and products from the CLAS subsector), many factors (including those on the demand side and the supply side, as well as the regulatory framework) have over the past decade undermined the economic performance of the sector.

This pressure is evident in the fact that, from an economic perspective, the MMS in South Africa performed worse than the rest of the economy. This sector has been particularly hard hit by the economic crisis of 2008 and 2009 and it experienced the worst contraction in 2009, but started growing again in 2010. Global commodity prices rebounded again in the second quarter of 2009, and by 2010, the prices of most minerals had returned to pre-recession levels. The new record gold price and the increased demand for gold have also contributed to growth in the MMS.

Widespread industrial unrest in 2012 has carried over into 2013 and could have a significant impact on sectoral growth prospects for the foreseeable future – potentially signalling long-term change in the sector.

A range of recent policy documents place a renewed focus on beneficiation as a primary means of improving the economic performance of the sector. However, these have as yet been unable to successfully address the complex set of challenges that obstruct beneficiation within the local economy. The finalisation of the Beneficiation Strategy for the Minerals Industry of South Africa in June 2011 and its implementation may give impetus to beneficiation as a mechanism for growth in the MMS.

¹²²Chamber of Mines. *Annual Report 2009/2010*.

¹²³*Ibid.*

With the New Growth Path and subsequent National Development Plan, government aims to stimulate growth and job creation in the mining industry and refers to the potential of the sector to create some 140 000 new jobs. Studies undertaken for the Chamber of Mines and by MIGDETT confirm this growth and job creation potential of the sector, but only in the absence of constraining factors, of which human capital is one. The recent strikes will have a detrimental effect on the growth and job creation potential, although the real impact can only be quantified once the labour disputes have settled.

4. THE DEMAND FOR LABOUR

4.1 INTRODUCTION

This updated Sector Skills Plan (SSP) focuses on skills development solutions for the next five years. The demand for labour by the MMS is a central issue in this SSP and is discussed from different perspectives as outlined in this chapter. First, total employment and changes in the total demand for labour in the sector and in the respective subsectors is discussed. This is followed by an analysis of the MQA framework of occupations. The framework shows what specific skills are demanded in what quantities by the mining sector. Secondly, remuneration trends within the sector are discussed.

The third section presents a forecast of future demand derived from a labour demand projection model developed for the Mining and Minerals Sector (MMS). The demand projections span the period covered by the National Skills Development Strategy (NSDS) III – the period 2011 to 2016, but updated in terms of the revised horizon of 2013–2020. The final section considers the range of factors that are driving changes in the need for particular types of skills, as well as the overall levels of labour required by the sector. Insights gathered in the research period necessitated a brief review of developments in the external and operating environment, which will be discussed in paragraph 4.5.

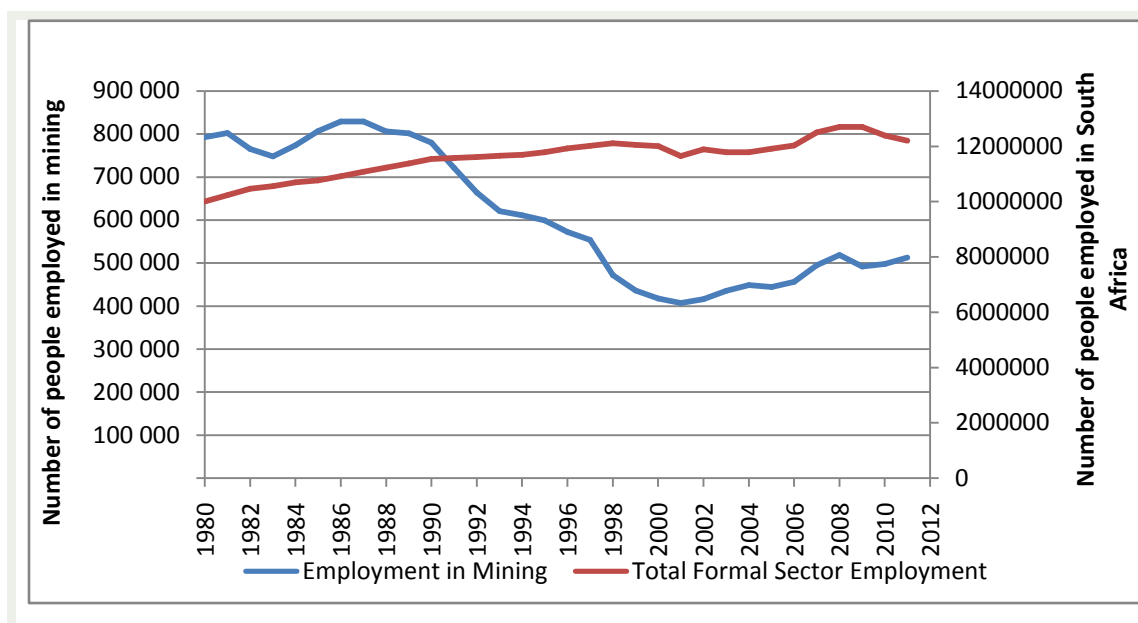
4.2 TRENDS IN EMPLOYMENT

4.2.1 Total employment

According to the latest available information, current employment totals 572 518, of which approximately 512 000 positions are in the formal mining sector. Totals per subsector are given in Figure 4.3. The long-term decline in employment is therefore clearly discernible. Figure 4.1 depicts trends in total employment in the South African mining component of the MMS, compared to employment in the total economy over the period 1980 to 2012.¹²⁴ Total employment in South Africa, which is shown on the right axis of the graph, increased from just over 10 million to just over 12 million across the total period. Employment in the mining industry (shown on the left axis) increased from approximately 790 000 in 1980 to almost 830 000 in 1986. It then fell to its lowest point of slightly more than 400 000 in 2001 and slowly increased again to over 500 000 in 2008. In 2009, mining employment dropped again to approximately 490 000, but then increased again to more than 500 000 in 2012.

¹²⁴This longitudinal analysis of employment trends is not possible for the whole MMS because information on the MMS as it is constituted for the purposes of the Skills Development Act has only been available since the inception of the SETA system.

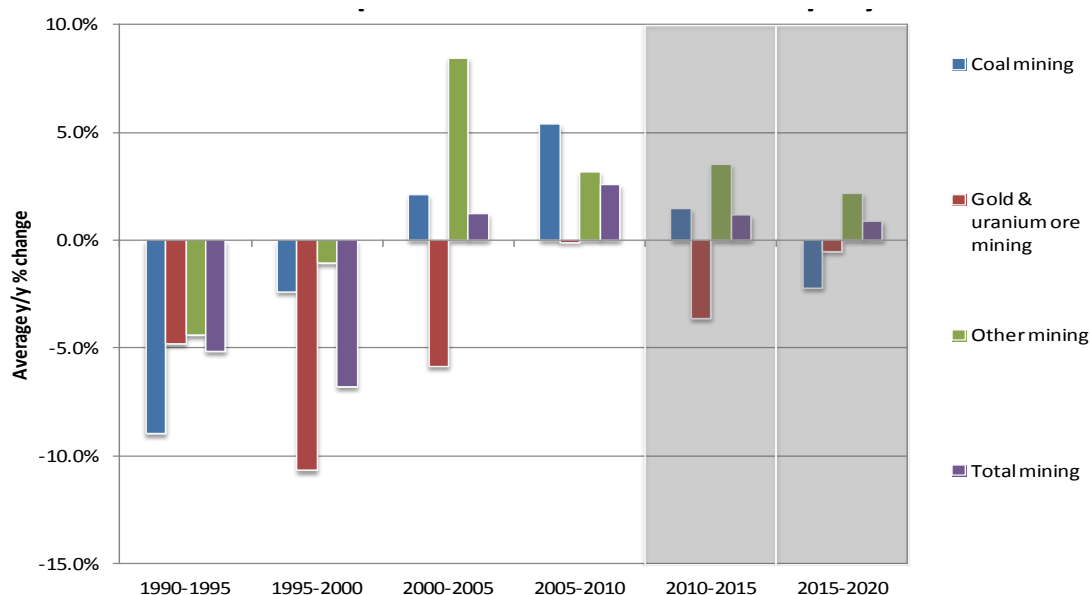
Figure 4.1 Total employment in mining and in South Africa: 1980–2012



Source: Department of Mineral Resources (employment in mining) and data series on total employment in the South African economy provided by Quantec, August 2013 research.¹²⁵

The growth of total employment projected up to 2020 per major subsector is set out in Figure 4.2.

Figure 4.2 Subsector growth in total employment



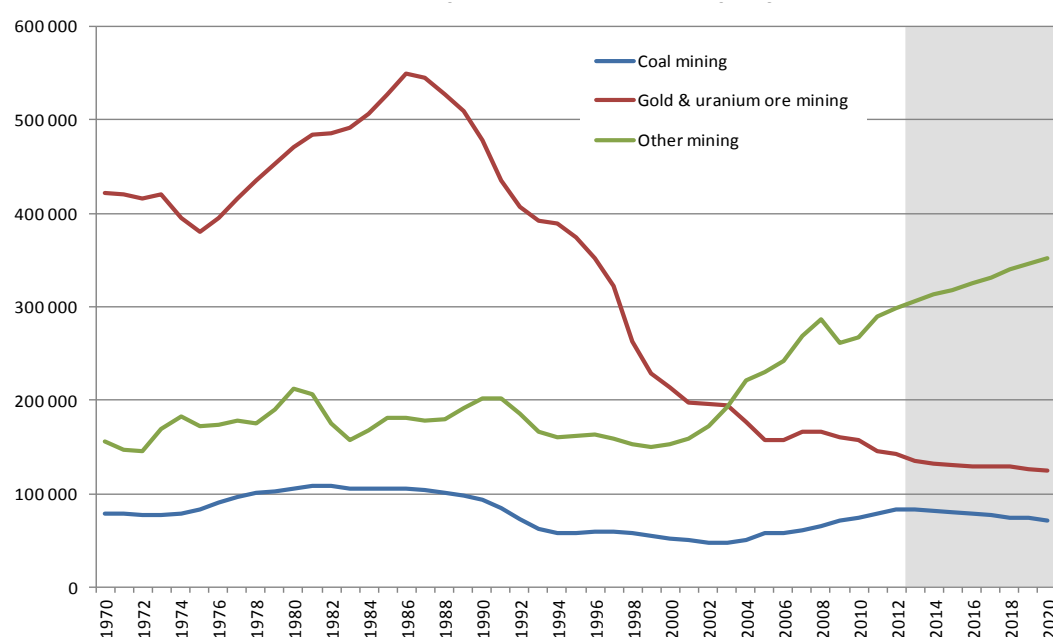
Source: Quantec, August 2013.

¹²⁵ This data series was compiled by Quantec, August 2013 research from various official sources, including manpower surveys, quarterly employment surveys, labour force surveys, household surveys and census data.

The declining trend of employment in gold and uranium mining is noticeable, while there is a significant increase in employment in other mining sectors. Employment in the coal mining industry is fairly constant and is expected to remain so with a slight decrease towards 2020.

A similar trend is noticeable if only formal employment is taken into account, as reflected in Figure 4.3.

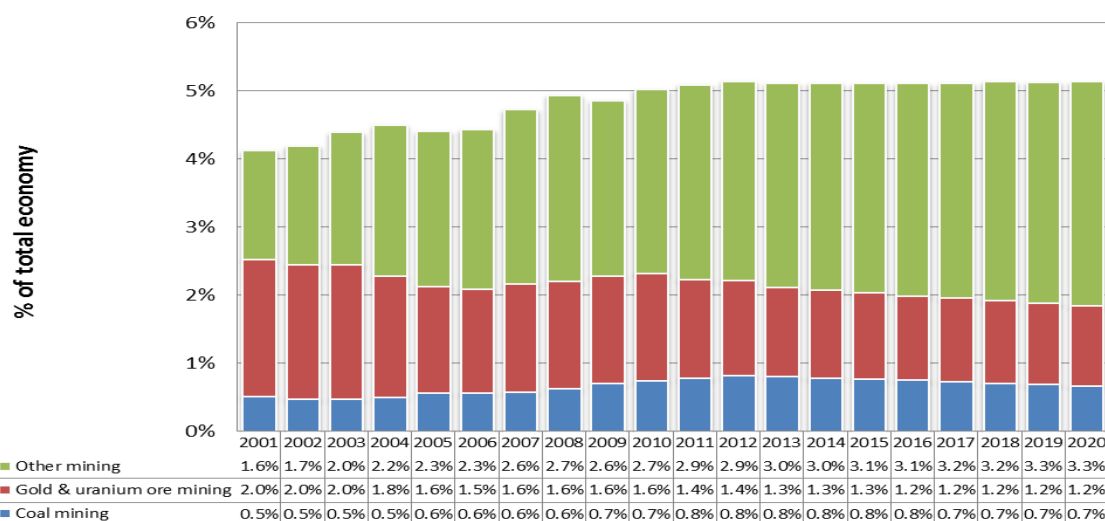
Figure 4.3 Subsector growth in formal employment



Source: Quantec, August 2013.

Figure 4.4 reflects formal employment in the mining sector as a percentage of the total economy.

Figure 4.4 Formal employment as a percentage of the total economy



Evaluate Source: Quantec, August 2013.

It is therefore proposed that members enhance their understanding of the skills development environment of the MMS.

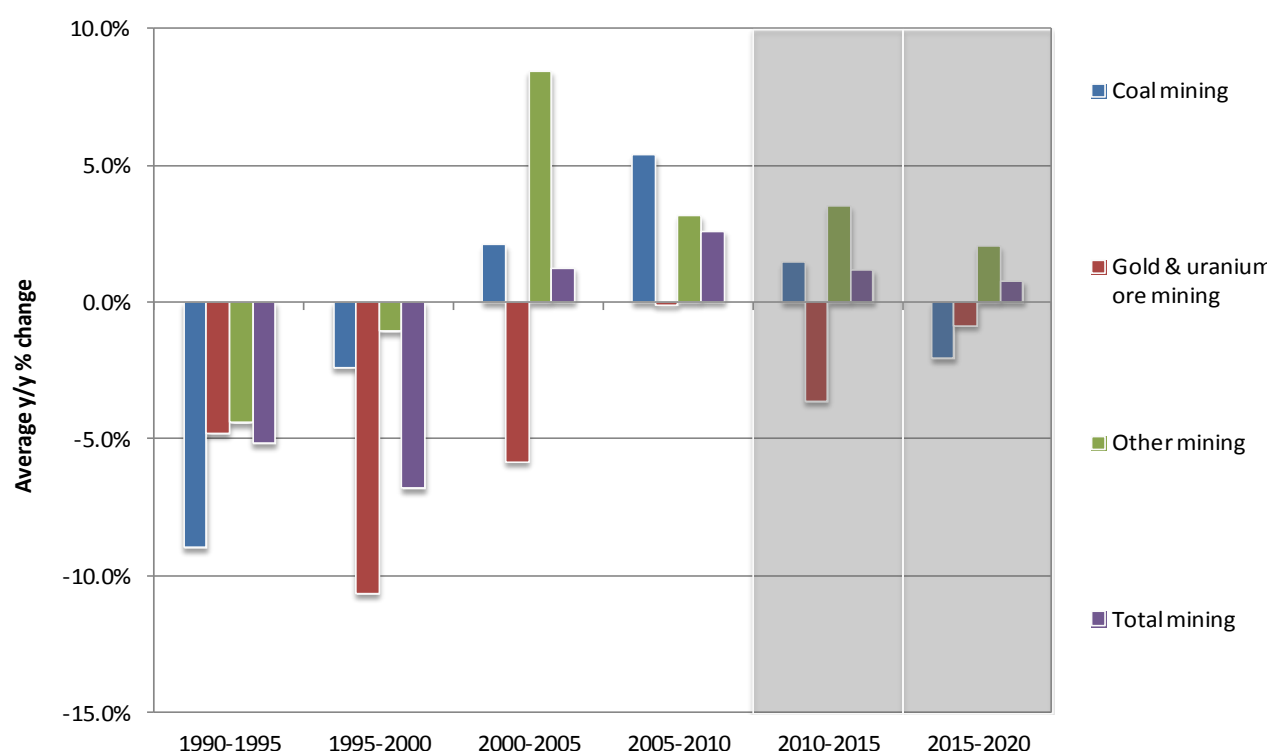
- **Skills development research**

Conduct relevant research into skills development-related issues in the MMS as per the annual research agenda.

- **Workplace skills plan/annual training report**

The above graph also reflects the same annual upward trend in formal employment in the other mining category, and a downward trend in the gold and uranium category. The coal mining category seems to have stabilised.

Figure 4.5 Subsector growth of formal employment as an average year-on-year change percentage



Source: Quantec, August 2013.

The above figures show that, over time, the diamond mining subsector was particularly hard hit by the recession. In 2008, this subsector employed almost 19 000 people, but from 2009 to 2012, this figure had shrunk to approximately 13 000.

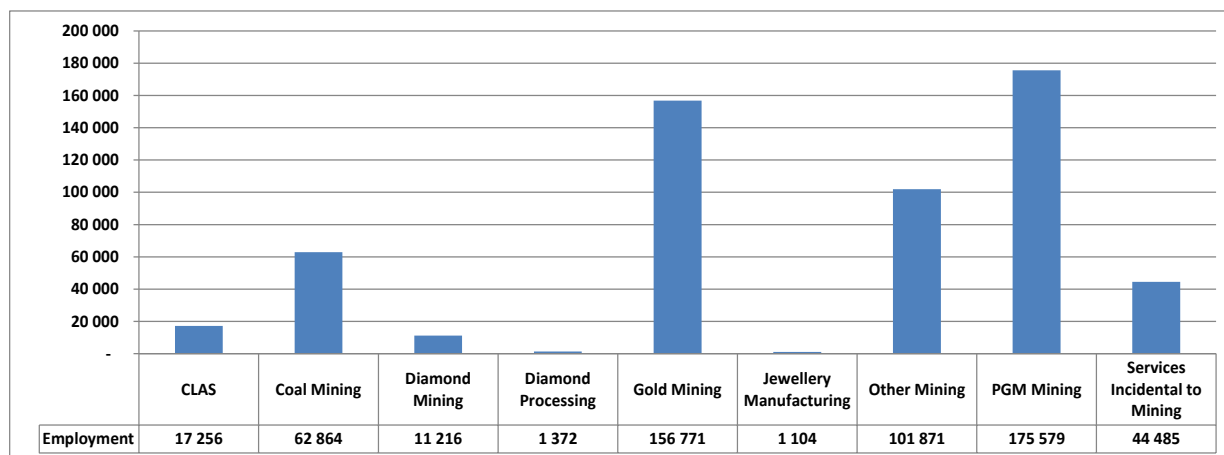
The other mining subsector also shed labour through the 1980s and 1990s. In 1980, this subsector employed just over 87 000 people. By 2000, this figure had dropped to less than 38 000. However, employment figures increased again, and by 2012, the subsector employed approximately 76 000 workers.

As indicated in Chapter 2, the MMS also includes three downstream manufacturing activities: diamond processing, jewellery manufacturing and cement manufacturing, as well

as the services incidental to mining subsector. In 2011, total employment in the sector was estimated to be approximately 628 000.

The total number of employees per subsector is summarised in Figure 4.6.

Figure 4.6 The total number of employees per subsector



Source: Calculated from MQA data system, August 2013.

Figure 4.6 shows that the subsectoral composition of the demand for labour has remained relatively stable since the inception of the Sector Education and Training Authority (SETA) system. The only exceptions are the decline in the labour demand of the gold mining subsector and the growth of labour demand by the PGM mining subsector referred to earlier in this section.

4.2.2 Occupational demand

The latest occupational composition of the MMS can be seen in Table 4.1. As mentioned above, the demand for highly skilled and skilled workers is limited compared to the need in the rest of the economy. Managers comprised approximately 2.6% and professionals 4.6% of total employment in 2012. In the recent update, these figures remained the same. Technicians and associate professionals formed 10.6% of the workforce and trade workers 6.5%.

Table 4.1 Occupational composition of the MMS

Occupational Group	Total	% Employment
1: Managers	14 677	2.6%
2: Professionals	26 379	4.6%
3: Technicians and Associate Professionals	60 864	10.6%
4: Clerical Support Workers	23 152	4.0%
5: Service and Sales Workers	6 322	1.1%
6: Skilled Craft and Related Trades Workers	36 985	6.5%
7: Plant and Machine Operators and Assemblers	244 335	42.7%
8: Elementary Occupations	150 614	26.3%
Grand Total	572 518	98.4%

As can be seen the occupation groups that demand the greatest number of skills are Plant and Machine operators, Elementary workers and Technicians and Associate professionals. Ordinarily this may lead one to believe that the MMS is a 'low skill' environment. However, this is not the case. While the majority of these occupations do not require much in the way of formal education, there are very specific industry related skills that are required. Therefore from a skills development point of view the sector is a lot more skills intensive that it appears on the surface. This is discussed in more detail under the Occupational Framework.

Also of note is that the sector demands over 25,000 professionals. In general these posts require not only high levels of technical education / training but also significant industry specific knowledge. Engineers are critical to the functioning of the sector and the supply of which are increasingly under pressure due to a rising demand from sectors other than the traditional engineering related fields. Table 4-2 provides a list of the different types of professional engineers employed in the MMS. The different engineering disciplines are mining, mechanical, industrial, metallurgical, electrical, civil, electronics, telecommunications, chemical, environmental and aeronautical. A number of quantity surveyors are also employed in the MMS. The total number of engineering professionals is 5 169 and they constitute 20% of all professionals employed in the MMS.. In terms of total employment they represent a small percentage of employees but the supply and demand thereof need to be closely monitored because of the key role they play within the sector.

Table 4.2 Engineering professionals employed according to race

Description	African	Coloured	Indian	White	Total	% Professionals
Mechanical Engineer	444	40	40	831	1 355	5.1%
Mechanical Engineering Technician	385	40	12	454	890	3.4%
Mining Engineer	373	15	29	437	853	3.2%
Electrical Engineering Technician	294	12	17	348	671	2.5%
Industrial Engineer	226	21	36	276	559	2.1%
Electrical Engineer	137	11	19	312	479	1.8%
Metallurgical Engineer	166	15	25	229	434	1.6%
Civil Engineer	54	7	13	152	227	0.9%
Electronics Engineering Technologist	75	16	2	111	204	0.8%
Industrial Engineering Technologist	60	7	13	79	160	0.6%
Civil Engineering Technician	77	5	2	58	143	0.5%
Rock Engineering Technician	67	5	4	53	128	0.5%
Electronics Engineer	28	1	4	80	112	0.4%
Mechanical Engineering Technologist	25	7	4	63	99	0.4%
Metallurgical Engineering Technologist	70	1	1	21	93	0.4%
Chemical Engineer	39	7	6	40	92	0.3%
Mining Engineering Technologist	24	-	1	65	91	0.3%
	2 544	209	230	3 608	6 591	25.0%

Source: Calculated from MQA data system, August 2013.

Top 12 Positions Breakdown per population and occupational group are indicated in table 4.3 below. Note must be taken that Engineering Managers occupy 17%, followed by Mining Managers at 11% of these management occupations.

Table 4.3: Managers employed according to race

OFO Code	Occupation	African	Coloured	Indian	White	Total	% Managers
132104	Engineering Manager	1 531	50	28	818	2 427	17%
132201	Production / Operations Manager (Mining)	523	50	28	1 026	1 626	11%
121101	Finance Manager	163	33	59	767	1 022	7%
132102	Production / Operations Manager (Manufacturing)	258	46	34	683	1 021	7%
132202	Mineral Resources Manager	271	27	28	575	900	6%
112101	Director (Enterprise / Organisation)	184	19	24	589	817	6%
121201	Personnel / Human Resource Manager	254	19	15	329	617	4%
121905	Programme or Project Manager	69	13	28	490	600	4%
121901	Corporate General Manager	90	16	27	397	529	4%
111402	Trade Union Representative	479	4	-	31	514	4%
132301	Construction Project Manager	88	-	5	299	392	3%
121206	Health and Safety Manager	96	23	13	231	363	2%
		4 005	299	288	6 235	10 826	74%

Source: Calculated from MQA data system, August 2013.

Table 4.4 provides information on the occupations in which most of the professionals are employed. The largest group of professionals are employed as Human Resource Advisors (11%), followed by safety, health, environment and quality (SHE&Q) practitioners (8%). Surveyors comprise 5% of the total number of professionals employed, geologists 4% and mining engineers also 3%. A steady shift from line functions to support functions is noticeable.

The number of professionals employed in the industry per population group is summarised in Table 4.4.

Table 4.4 Professionals employed according to race

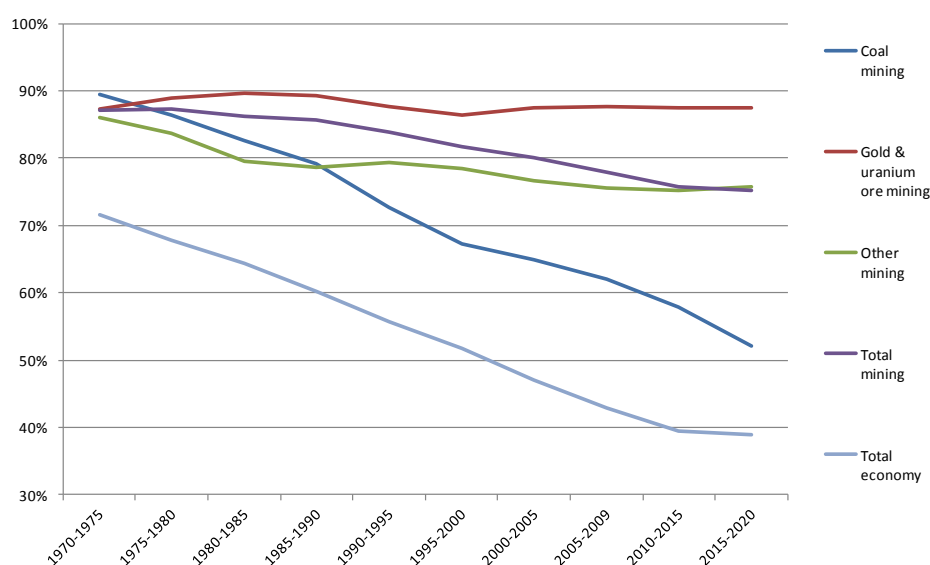
OFO Code	Occupation	African	Coloured	Indian	White	Total	% Professionals
242303	Human Resource Advisor	1 628	165	47	965	2 805	11%
226302	Safety, Health, Environment and Quality (SHE&Q) Practitioner	1 135	75	39	873	2 122	8%
242401	Training and Development Professional	1 014	94	17	719	1 844	7%
242402	Occupational Instructor / Trainer	1 233	21	1	171	1 425	5%
214401	Mechanical Engineer	444	40	40	831	1 355	5%
216502	Surveyor	737	25	6	541	1 309	5%
241101	Accountant (General)	410	69	73	619	1 171	4%
211401	Geologist	578	44	35	388	1 045	4%
214601	Mining Engineer	373	15	29	437	853	3%
214101	Industrial Engineer	226	21	36	276	559	2%
241102	Management Accountant	168	40	30	282	520	2%
242403	Assessment Practitioner	445	6	5	53	509	2%
		8 390	613	358	6 155	15 516	59%

Source: Calculated from MQA data system, August 2013.

Professionals are also employed in non-line function areas such as human resources (9.5%) and accountants (3%).

It is also important to evaluate the semi-skilled and unskilled labour intensity per subsector, as set out in Figure 4.7.

Figure 4.7 The semi-skilled and unskilled labour intensity per subsector

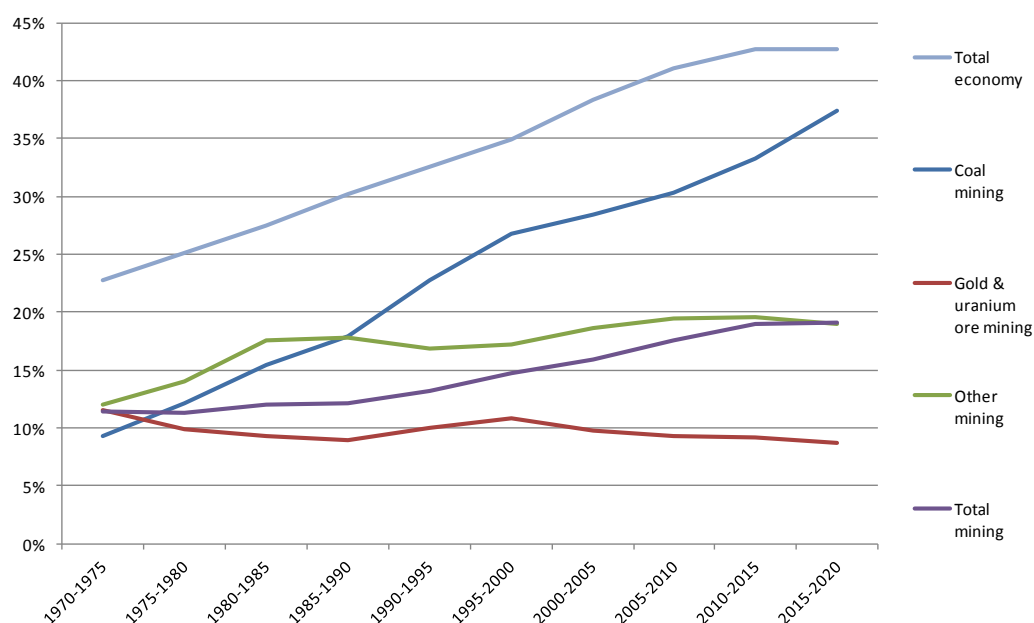


Source: Quantec, August 2013.

The gradual decline across subsectors corresponds with other employment patterns and can be coupled to the typical variables influencing this sector.

The skilled labour intensity per subsector can be summarised as follows:

Figure 4.8 The skilled labour intensity per subsector

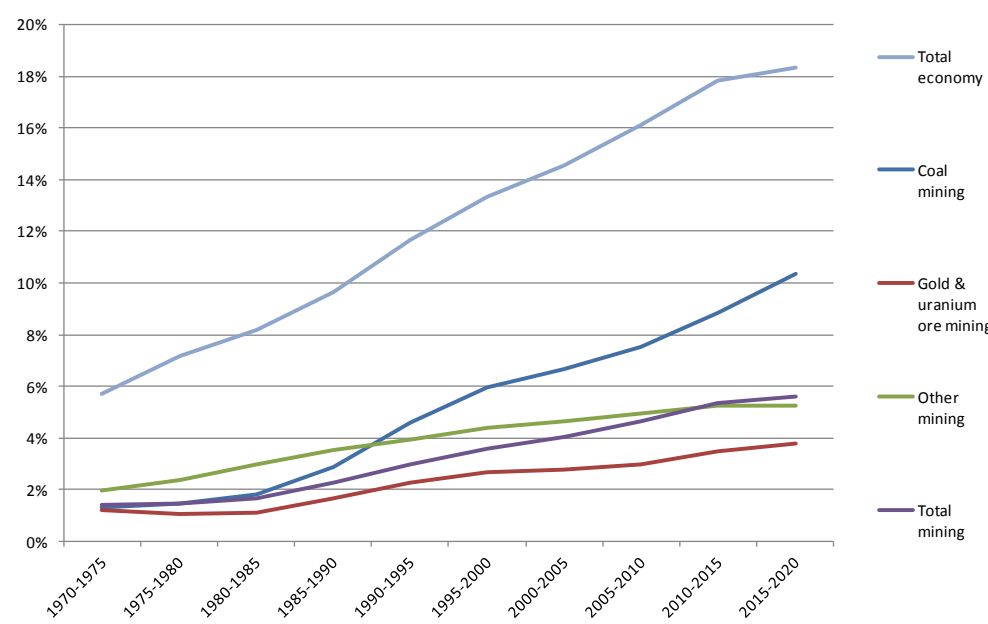


Source: Quantec, August 2013.

With the exception of the gold mining sector, there is an increase in skilled labour intensity. This increase calls for increased skills interventions to cater for future demand. Provision has

also been made for the highly skilled labour intensity per sector, which can be summarised as follows:

Figure 4.9 The highly skilled labour intensity per subsector



Source: Quantec, August 2013.

From the graph, it can be concluded that the increase in highly skilled labour intensity is also higher.

The majority of technicians and associate professionals working in the MMS are miners and production or operations supervisors (see Table 4.5). Other technicians or associate professionals include mining technicians, metal manufacturing process control technicians, chemistry technicians, mines safety inspectors, mineral beneficiation process controllers, physical science technicians, mechanical and electrical engineering technicians, and draughtsman. Technicians and associate professionals are also employed in non-line function areas such as office administrative practices (purchasing officers, office administrators and personal assistants).

Table 4.5 Technicians and associate professionals employed according to race

OFO Code	Occupation	African	Coloured	Indian	White	Total	% Tech & Ass Prof
312102	Miner	18 701	236	23	2 747	21 707	36%
312101	Production / Operations Supervisor (Mining)	8 158	570	92	8 516	17 336	28%
312201	Production / Operations Supervisor (Manufacturing)	1 091	152	25	715	1 984	3%
325707	Mines Safety Inspector	989	54	8	616	1 668	3%
332302	Purchasing Officer	590	94	51	711	1 447	2%
312202	Maintenance Planner	492	125	23	765	1 404	2%
311701	Mining Technician	480	30	16	519	1 045	2%
311101	Chemistry Technician	806	44	8	76	934	2%
311501	Mechanical Engineering Technician	385	40	12	454	890	1%
311801	Draughtsperson	116	36	18	716	887	1%
334302	Personal Assistant	259	50	22	510	841	1%
311702	Metallurgical or Materials Technician	508	22	10	177	716	1%
		32 576	1 453	308	16 521	50 859	84%

Source: Calculated from MQA data system, August 2013.

Trades workers include artisans. The artisan occupations that occur most frequently in the MMS are electricians, metal fabricators, diesel mechanics, millwrights, fitters and turners, riggers, automotive motor mechanics, welders, electronic instrument trades workers, industrial machinery mechanics, goldsmiths, precision instrument makers and repairers, automotive electricians and bricklayers. These workers are typically trained through further education and training (FET) institutions, and through apprenticeships and learnerships.

A breakdown per population group of trades workers is summarised in Table 4.6 below.

Table 4.6 Skilled agricultural, forestry, fishery, craft and related trades workers employed according to race

OFO Code	Occupation	African	Coloured	Indian	White	Total	% Skilled Trades
671101	Electrician	4 107	247	41	2 929	7 323	20%
651302	Boiler Maker	2 342	324	23	2 664	5 353	14%
652302	Fitter and Turner	1 764	196	35	2 082	4 077	11%
653303	Mechanical Fitter	2 107	156	46	1 683	3 992	11%
653306	Diesel Mechanic	1 981	241	19	1 501	3 743	10%
651501	Rigger	1 669	28	2	489	2 188	6%
671202	Millwright	1 020	88	16	936	2 060	6%
672105	Instrument Mechanician	585	31	30	374	1 021	3%
651401	Metal Fabricator	630	27	2	144	803	2%
651202	Welder	452	57	6	187	703	2%
652301	Metal Machinist	353	37	6	208	605	2%
651404	Structural Plater	129	82	2	273	487	1%
		17 141	1 514	230	13 469	32 355	87%

Source: Calculated from MQA data system, August 2013.

Service and sales workers can be summarised as follows per population group:

Table 4.7 Service and sales workers employed according to race

OFO Code	Occupation	African	Coloured	Indian	White	Total	% Service
541401	Security Officer	3 187	148	8	429	3 773	60%
512101	Cook	960	-	-	1	962	15%
513201	Bar Attendant	185	-	-	2	187	3%
524903	Sales Clerk / Officer	64	12	12	73	161	3%
515301	Caretaker	99	4	-	25	128	2%
532901	First Aid Attendant	126	-	-	-	126	2%
531106	Hostel Parent	117	-	-	1	119	2%
524501	Service Station Attendant	97	1	-	2	100	2%
513102	Cafe Worker	77	-	-	5	82	1%
522301	Sales Assistant (General)	23	11	-	41	75	1%
541101	Fire Fighter	59	-	-	5	64	1%
541402	Alarm, Security or Surveillance Monitor	39	1	-	19	59	1%
		5 035	177	21	605	5 837	92%

Source: Calculated from MQA data system, August 2013.

Other workers, namely agricultural, forestry, fishery, craft and related trades workers are summarised in the following table:

More than 75% of plant and machine operators are employed as mining operators, crane or hoist operators, drillers, train drivers, loader operators, mineral processing machine operators and bulldozer operators (see Table 4.8).

Table 4.8 Plant and machine operators employed according to race

OFO Code	Occupation	African	Coloured	Indian	White	Total	% Operator
711101	Mining Operator	53 328	1 080	19	803	55 230	23%
711302	Rock Drill Operator	41 703	96	-	77	41 876	17%
734301	Crane or Hoist Operator	39 194	76	1	1 426	40 698	17%
731101	Train Driver	20 802	25	6	187	21 021	9%
711301	Driller	13 786	85	1	410	14 282	6%
734206	Loader Operator	12 290	247	7	154	12 698	5%
711201	Mineral Processing Machine Operator	10 488	657	50	385	11 579	5%
734214	Dump Truck Operator (Off-road)	5 387	292	-	83	5 762	2%
733208	Mobile Mining Equipment Operator	5 122	168	1	137	5 428	2%
718905	Engineering Production Systems Worker	4 522	24	2	114	4 662	2%
734210	Scraper Operator	4 635	2	1	12	4 651	2%
733201	Truck Driver (General)	4 387	133	10	108	4 638	2%
		215 644	2 885	99	3 896	222 524	91%

Source: Calculated from MQA data system, August 2013.

Two thirds of elementary workers are employed as mining support workers. Other elementary workers employed in the MMS are metal engineering process workers, electrical or telecommunications trades assistants, builder's workers, surveyor's assistants, commercial cleaners, mineral beneficiation plant workers, driller's assistants, mechanic's assistants, store persons, handypersons and chemical plant workers.

Elementary occupations can be summarised as follows according to race:

Table 4.9 Percentage of people employed in elementary occupations according to race

OFO Code	Occupation	African	Coloured	Indian	White	Total	% Elementary
831101	Mining Support Worker	95 923	560	22	1 268	97 773	65%
832901	Metal Engineering Process Worker	10 612	189	11	462	11 274	7%
831301	Builder's Worker	6 235	282	12	525	7 053	5%
862918	Electrical or Telecommunications Trades Assistant	5 261	161	11	288	5 720	4%
831103	Mineral Beneficiation Plant Worker	4 784	230	1	75	5 090	3%
831102	Driller's Assistant	3 077	138	-	67	3 282	2%
831310	Surveyor's Assistant	2 841	44	1	102	2 988	2%
811201	Commercial Cleaner	2 901	58	1	22	2 982	2%
862202	Handyperson	1 700	133	2	138	1 973	1%
831302	Drainage, Sewerage and Storm Water Worker	1 925	2	-	12	1 939	1%
862919	Mechanic's Assistant	1 432	99	2	123	1 657	1%
833402	Store Person	1 104	30	5	51	1 190	1%
		137 795	1 926	69	3 132	142 922	95%

Source: Calculated from MQA data system, August 2013.

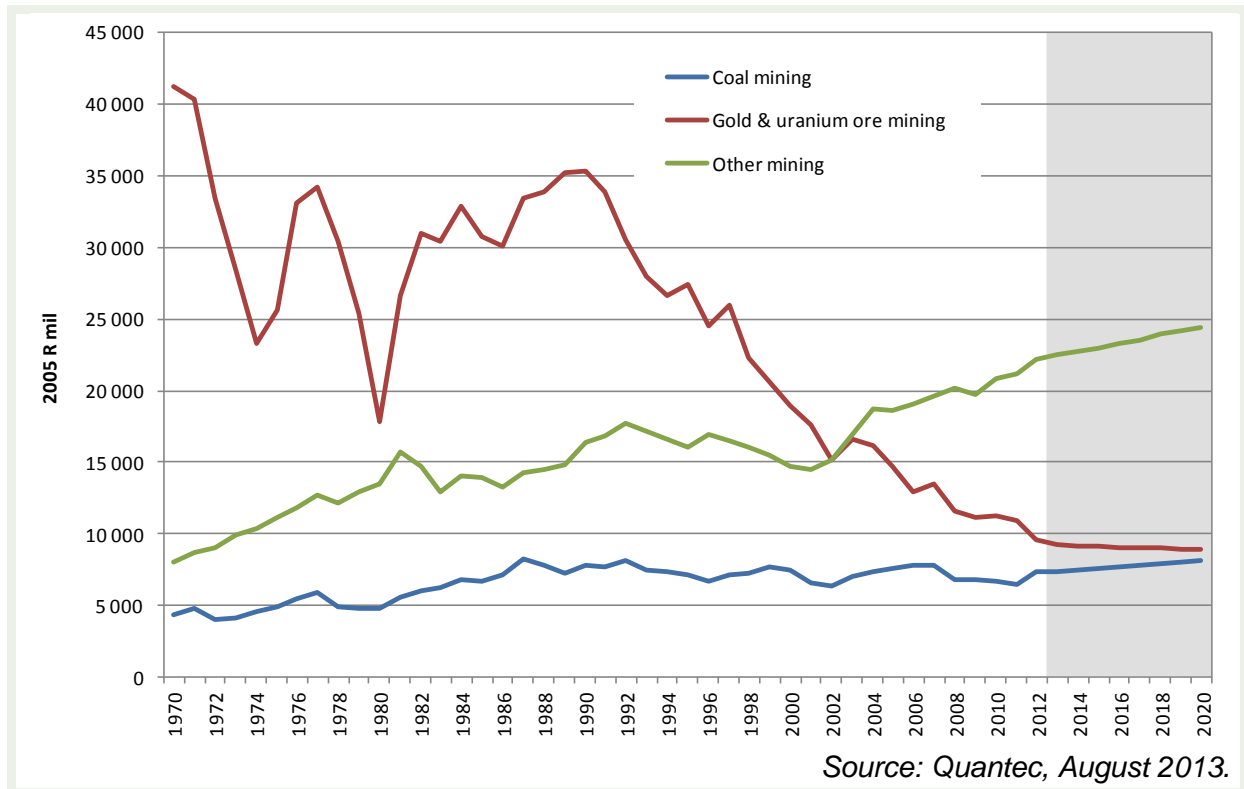
At this stage, it is not possible to determine the changes in the occupational structure of the MMS. These changes are normally gradual and can only be tracked through relatively long time series data. Although the MQA has been collecting occupational information over the last ten years, the occupational classification system was changed in 2008 from the Standard Occupational Classification (SOC) to the Organising Framework for Occupations (OFO). The OFO underwent substantial changes over the last few years, which affected the occupational categories, making it difficult to track changes in the occupational structure.

4.3 REMUNERATION TRENDS

As mentioned in Chapter 2, the MMS is largely unionised. Wage levels are to a large extent the result of collective bargaining processes and are therefore not indicative of market demand. Unfortunately, no sector-specific information is available on salary trends in particular occupations.

The latest information update reflects the following remuneration trends (Figure 4.10):

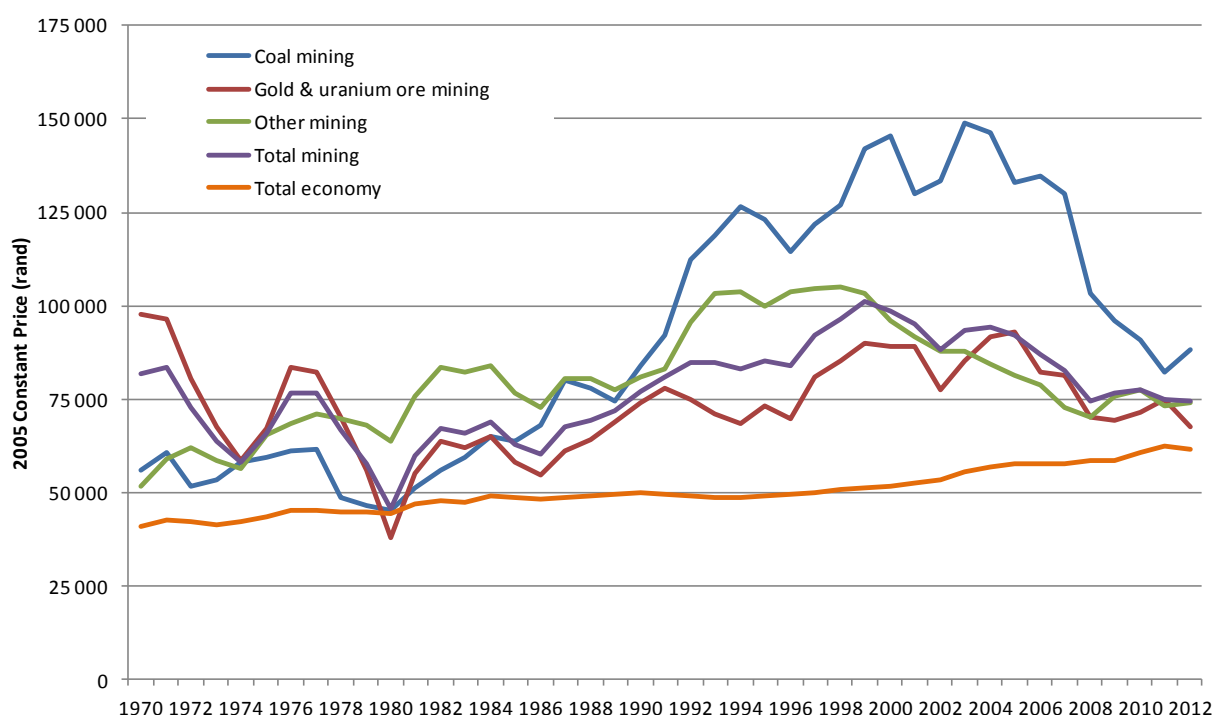
Figure 4.10 Comparative real labour remuneration per subsector



From the above graph, if compared to those depicted earlier in this chapter on employment trends, it is clear that there is a definite correlation that all role-players in the mining sector should consider.

Over the period 1981 to 1994, the average income earned by people working in the mining industry remained more or less the same – between R50 000 and R60 000 per year (at 2008 prices). However, from 1994 to 2009, real per capita income increased sharply and passed the R120 000 mark in 2009. The increase continued in 2010. Several factors could have contributed to the rise in real wages: an increase in the membership and bargaining power of the unions, an increase in the educational levels of the workers (see Section 2.4.3) and the Social and Labour Plan requirements that oblige employers to recruit locally, instead of using foreign migrant labour.

Figure 4.11 Comparative remuneration per employee per subsector



Source: Quantec, August 2013.

4.4 FUTURE DEMAND

One of the requirements of this SSP update is that it should provide some indication of the future demand for skills in the sector. To arrive at estimates of future demand, a labour demand projection model was developed for the MMS (LDPM). The National Development Plan (NDP) vision 2030, and National Development Plan (NDP) for Mining which depicts the following 3 employment growth scenario assumptions, were combined with that of the LDPM (optimistic scenario: 2.6% per annum):

- Mediocre minerals scenario (NDP): -0.5% per annum
- Solid minerals scenario (NDP): 1.3% per annum
- Diversified scenario (NDP): 1.98% per annum

It should be noted that future demand should also take note of the drivers of change set out in paragraphs 4.5 and 5.7.

4.4.1 Baseline employment

The baseline employment figures that are used in the projection model are given in Table 2.1 and Table 2.5 respectively, where the total populations are subdivided according to subsector and occupation level respectively.

The development of the demand projection model started with estimating the total number of employment opportunities available in the sector in each occupation and in each subsector. These figures were calculated by using the weighted employment figures and adding to that an estimate of long-term unfilled vacancies. The vacancy rates used for each occupational

group are those reported by employers in the 2012/13 WSP/ATR submission and can be seen in Table 4.10.

Table 4.10 Vacancy rate per OFO main groups' vacancy rates

Row Labels	Vacancy rate
Managers	1.86%
Professionals	2.99%
Technicians and Associate Professionals	0.84%
Clerical Support Workers	0.17%
Service and Sales Workers	0.05%
Skilled Agricultural, Forestry, Fishery, Craft and Related Trades Wo	3.18%
Plant and Machine Operators and Assemblers	0.58%
Elementary Occupations	0.01%

Source: Calculated from WSP/ATR submissions 2013.

It is clear that the highest vacancy rates exist in the following groups:

- Professionals (2.99%)
- Skilled agricultural, forestry, fishery and related trade workers (3.18%)
- Managers (1.86%)

Experience at other SETAs has shown that there is a continued increase in the employment subcategories of professionals, such as accountants and IT specialists. Due to the convergence of industries, job requirements of these specialists are not limited to one industry only.

For the purposes of the future SSP Projection Model, it was assumed that the above vacancy rates will persist throughout the projection period.

Table 4.11 Number of positions, according to occupational group: 2013

	Grand Total
Row Labels	
1: Managers	14 677
2: Professionals	26 379
3: Technicians and Associate Professionals	60 864
4: Clerical Support Workers	23 152
5: Service and Sales Workers	6 322
6: Skilled Agricultural, Forestry, Fishery, Craft and Related Trades Workers	36 985
7: Plant and Machine Operators and Assemblers	244 335
8: Elementary Occupations	150 614
Grand Total	572 518

Source: Calculated from MQA data system, August 2013.

Note: For the purposes of this projection model, the figures in the above table include vacant positions, as calculated from the vacancy rates in the preceding table. Hence, this table represents total available positions.

4.4.2 Assumptions used in the creation of the model

The labour demand projection model uses assumptions that relate to growth in employment or the creation of new job opportunities and assumptions that relate to replacement demand – i.e., mortality, retirement and people leaving the sector.

a) *Assumptions regarding the occupational structure of demand*

As mentioned earlier in this chapter, historical changes in the occupational structure of the MMS could not be tracked – not even the occupational group level – because of all the changes in the occupational classification system that SETAs have to use. In the absence of information on historical trends, the demand projection model assumes that the occupational distribution of positions in the sector will remain the same over the forecasting period. It should also be taken into account that new jobs that never existed before are continuously created due to technological innovation. Ideally, a demand projection model should take this and other trends into account. However, due to limited available data and uncertainty about how it may unfold in future, the assumptions above are used.

b) *Assumptions regarding production and employment growth*

In this SSP update, the model is used to determine the numbers of people that would be needed in specific occupations if the sector were to meet the employment growth objectives set by the New Growth Path. As mentioned in the previous chapter, the Mining Industry Growth, Development and Employment Task Team (MIGDETT) came to the conclusion that it would be possible to create 100 000 new jobs in the mining component of the MMS if the production of the sector as a whole grows by 3% per year over the period 2011 to 2020. However, the decline in gold production (with the use of current production methods) seems to be inevitable. The MIGDETT concluded that if gold is left out of the equation, the other mining subsectors should grow production by 3.9% per year in order to create 100 000 jobs. The growth in employment needed each year to reach that goal is 2.6%. In this labour demand model, it was assumed that all the subsectors in the MMS (with the exception of gold mining) would grow their production by 3.9% per year and that employment would grow by 2.6% per year. This implies an employment coefficient (production elasticity of employment) of 0.67, i.e., for each percentage point growth in production, employment will grow by 0.67%. This elasticity figure implies relatively labour-intensive production processes. Gold production and employment in the gold mining subsector were kept constant throughout the forecasting period. The employment growth figure of 2.6% was also used for the non-mining subsectors: services incidental to mining, diamond processing and jewellery manufacturing. It was argued that the services incidental to mining subsector will grow along with the mining subsectors. In Chapter 3 of this SSP, the factors that are constraining the two beneficiation subsectors were mentioned. A 2.6% growth in employment in these subsectors will only be possible if those factors are effectively dealt with by government and if the Minerals Beneficiation Strategy is implemented.

c) Assumptions regarding mortality

Mortality rates were calculated for each occupational group using the age distribution of people in each occupational group, mortality figures reported in Statistics South Africa's 2007 mortality report¹²⁶ and Statistics South Africa's 2007 mid-year population estimates.¹²⁷ It was assumed that crude mortality rate improvements of the South African population, as reported in the Statistics South Africa 2013 mid-year population estimates, apply uniformly across the mining sector occupational levels and subsectors for the period 2007 to 2013. This enabled the model to incorporate the previous mortality into the current model and also update it to reflect more recent rates. For the purposes of the future projection model, it was assumed that the above vacancy rates will persist throughout the projection period.

The assumed mortality rates used in the model can be seen in Table 4.12.

Table 4.12 Annual mortality rates per occupational group

Occupational group	Annual mortality rate
Managers	1.6%
Professionals	1.4%
Technicians and Associate Professionals	1.4%
Clerical Support Workers	1.3%
Service and Sales Workers	1.3%
Skilled Agricultural, Forestry, Fishery, Craft and Related Trades Workers	1.4%
Plant and Machine Operators and Assemblers	1.5%
Elementary Occupations	1.3%

Sources: As described in the text, together with Statistics South Africa's 2013 Mid-year Report.

Note: Due to mortality improvements, as reflected in Statistics South Africa's 2013 Mid-year Report, the mortality rates were adjusted accordingly.

d) Assumptions regarding retirement

Calculation of retirement rates was based on the age distribution of people in each occupational group. Retirement age was taken as 60. The retirement rates used for the respective occupational groups are shown in Table 4.13 below.

¹²⁶Statistics South Africa. *Mortality and causes of death in South Africa, 2007: Findings from death notification*. Statistical release PO0309.3. This was the most recent mortality report available at the time of writing this report.

¹²⁷Statistics South Africa. 2007. *Mid-year population estimates*. Statistical release PO302.

Table 4.13 Number of retirees per OFO major groups

OFO Major Group	Not Retire (<60)	Retire (>=60)	Total	% over 60
Managers	13971	1144	15115	8%
Professionals	24199	1232	25432	5%
Technicians and Associate Professionals	60738	2552	63290	4%
Clerical Support Workers	20996	815	21811	4%
Service and Sales Workers	6503	239	6742	4%
Skilled Agricultural, Forestry, Fishery, Craft and Related Trades Workers	33531	1125	34656	3%
Plant and Machine Operators and Assemblers	215820	6569	222389	3%
Elementary Occupations	142651	4147	146798	3%

Source: Calculated from MQA data system, August 2013.

Note: For the purposes of the future projection model, it was assumed that the above vacancy rates would persist throughout the projection period.

e) Assumptions regarding people leaving the sector

There are various reasons for people leaving the labour market or leaving the sector, including illness or permanent disability, emigration, or to find employment elsewhere in the economy. In the absence of any statistical information on these movements, estimates were made for each occupational group. The percentage of professionals and technicians, and trades workers leaving the sector was taken to be higher than in the other occupational groups because of the high demand for these types of skills in the economy in general and even in the rest of the world (Table 4.14).

Table 4.14 People leaving the mining sector annually as per OFO major group

OFO Major Group	People leaving the sector each year
Managers	3%
Professionals	4%
Technicians and Associate Professionals	4%
Clerical Support Workers	2%
Service and Sales Workers	2%
Skilled Agricultural, Forestry, Fishery, Craft and Related Trades Workers	4%
Plant and Machine Operators and Assemblers	1%
Elementary Occupations	1%

Source: Calculated from MQA data system, August 2013.

As stated earlier, more professionals migrate between industries due to the impact of technological innovation.

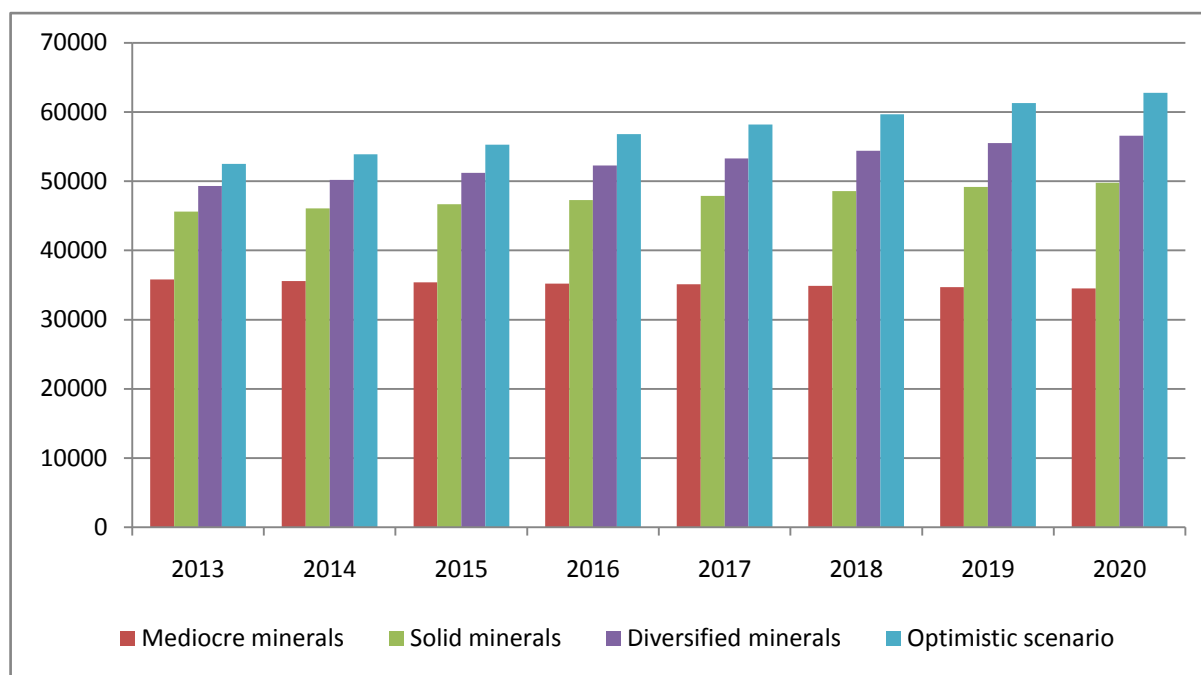
4.4.3 Interaction between the demand and supply sides of the labour market

The model looks at the demand side of the labour market only and it assumes that there will be no supply-side constraints. However, if the supply-side of the market cannot keep up with demand, various coping mechanisms may be used, rendering some of the assumptions used in the model invalid. For example: Employers may increase the workload of certain categories of workers – even if they have to pay more to retain their services. This will change the occupational structure of the sector. Similarly, if severe shortages are experienced, people may be enticed to remain economically active beyond the age of 60 and the assumption of retirement at the age of 60 will then be incorrect.

4.4.4 Results of 4 scenarios: MQA Demand Projection Model (NDPL), National Development Plan (NDP) vision 2030, and National Development Plan (NDP) for Mining

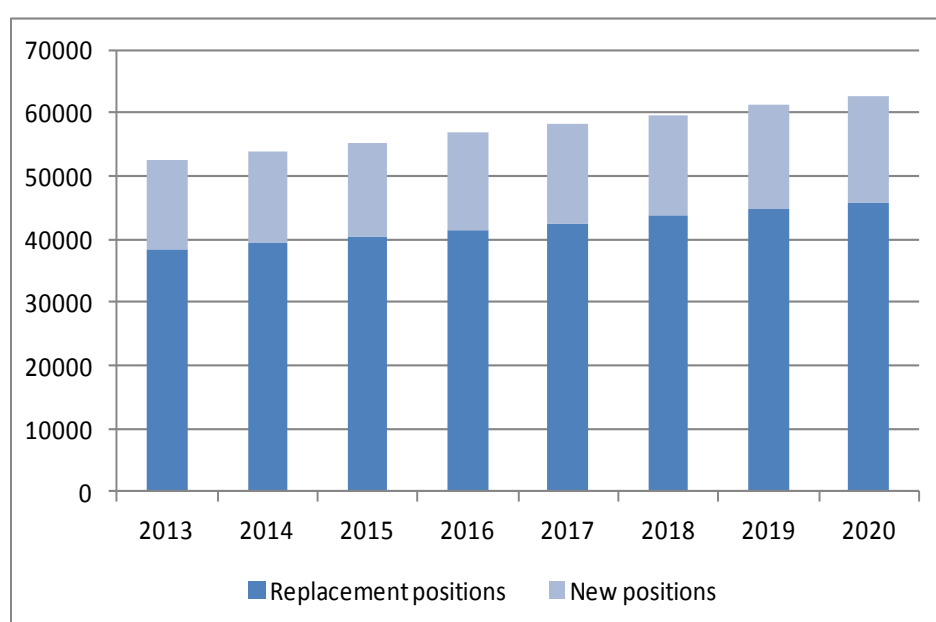
The outcome of the 4 scenarios approach relevant to the number of positions that need to be filled by 2020 is as follows:

Figure 4.12 Four Scenarios: Total number of positions to be filled by 2020



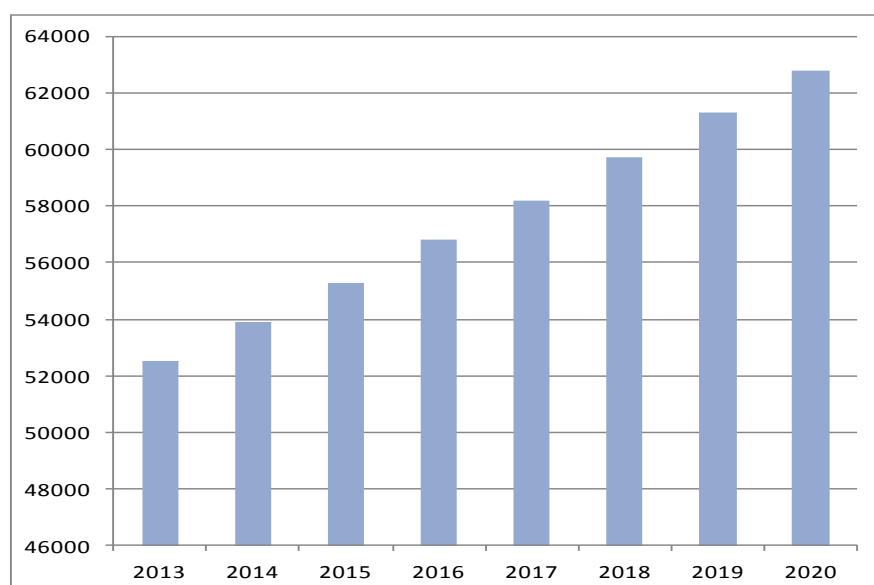
Projections for future demand relevant to new and replacement demand for the period 2013-2020 is as follows:

Figure 4.13 Projections for future demand: new and replacement demand 2013-2020



Given the assumptions described above, the total number of people needed each year to take up positions in the MMS starts with 52 500 in 2013 and increases to 62 800 in 2020.

Figure 4.14 Positions to be filled as per OFO major group



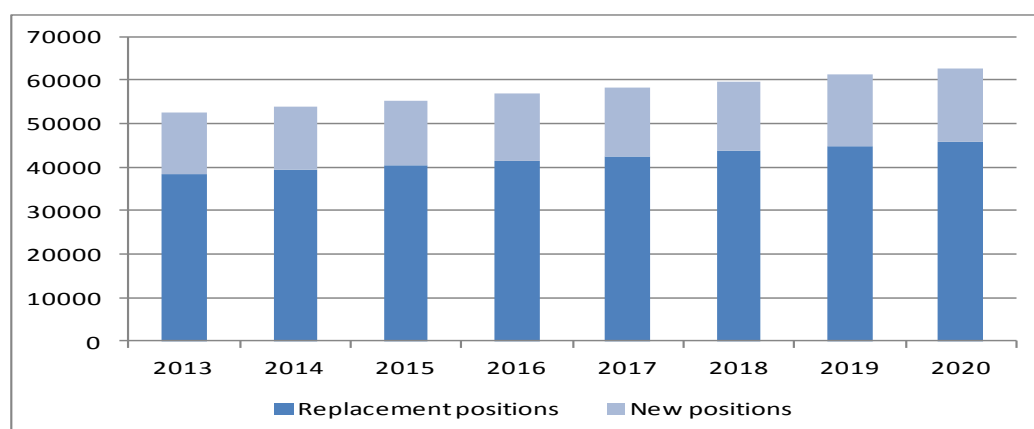
Source: Information and assumptions as stated in this section, together with calculations from MQA data system, August 2013.

Note: Figures rounded to nearest 100.

From Figure 4.14, it can be seen that the model projects a typical linear increase in new employees needed over the projection period.

In order to attain the 2.6% employment growth, the MMS will have to create 12 300 new jobs in 2011. This figure will increase gradually every year and by 2020 it will have to create 15 500 new employment opportunities (Figure 4.15).

Figure 4.15 Sector replacement positions compared to new positions



Source: Information and assumptions as stated in this section, together with calculations from MQA data system, August 2013.

Note: Figures rounded to the nearest 100.

Please note that the 2020 horizon is more appropriate as a planning period than the SETAs' five-year planning period. Skills that will be need by 2020 need to be developed as soon as possible.

Table 4.15 Total number of employees per OFO occupational group

OFO Major Occupational Group	2013	2014	2015	2016	2017	2018	2019	2020
Managers	2470	2540	2600	2670	2740	2810	2880	2960
Professionals	3990	4100	4210	4310	4430	4540	4660	4780
Technicians and Associate Professionals	8000	8210	8420	8640	8870	9100	9340	9580
Clerical Support Workers	2110	2170	2230	2280	2340	2400	2470	2530
Service and Sales Workers	630	650	670	680	700	720	740	760
Skilled Agricultural, Forestry, Fishery, Craft and Related Trades Workers	4990	5120	5250	5390	5530	5670	5820	5970
Plant and Machine Operators and Assemblers	19020	19520	20020	20540	21080	21630	22190	22770
Elementary Occupations	11290	11580	11880	12190	12510	12840	13170	13510
Totals:	52500	53890	55280	56700	58200	59710	61270	62860

Source: Information and assumptions as stated in this section, together with calculations from MQA data system, August 2013.

Figures were rounded to the nearest 10. Rounding may cause slight discrepancies between projected values in the various tables.

One of the most important questions the labour demand projection model attempts to answer is how many new professionals, technicians and artisans should the sector train in order to fulfil its own needs. These figures should assist with the setting of numerical targets for the MQA – especially in the areas where training periods are long. Error! Reference source not found. The table only shows a selection of the engineering occupations that occur most frequently in the sector. The same information for associate professionals and technicians is shown in Error! Reference source not found.

Table 4.16 Projected annual number of additional engineering professionals needed in the sector: 2013–2020

Description	2013	2014	2015	2016	2017	2018	2019	2020
Mechanical Engineer	95	95	95	95	95	95	95	95
Mining Engineer	90	90	90	90	90	90	90	90
Industrial Engineer	51	51	51	51	51	51	51	51
Metallurgical Engineer	30	30	30	30	30	30	30	30
Electrical Engineer	26	26	26	26	26	26	26	26
Mechanical Engineering Technologist	24	24	24	24	24	24	24	24
Industrial Engineering Technologist	18	18	18	18	18	18	18	18
Civil Engineer	14	14	14	14	14	14	14	14
Metallurgical Engineering Technologist	10	10	10	10	10	10	10	10
Mining Engineering Technologist	9	9	9	9	9	9	9	9
Electronics Engineering Technologist	8	8	8	8	8	8	8	8
Chemical Engineer	6	6	6	6	6	6	6	6
Electronics Engineer	6	6	6	6	6	6	6	6
Civil Engineering Technologist	6	6	6	6	6	6	6	6

Source: Information and assumptions as stated in this section, together with calculations from MQA data system, August 2013.

Note: Due to rounding, all the figures appear the same – indicating that the figures do not increase rapidly over time. The figures in the table represent the additional employees needed per category per year. For example, approximately 100 new mechanicals engineers will be needed every year over the projection period. Due to rounding, as well as the fact that the projection model gives an approximately linear trend, the figures appear the same – confirming that the figures do not increase rapidly over time.

Similar considerations apply to the next two tables.

Table 4.17 Projected annual number of additional technicians and associate professionals needed in the sector: 2013-2020 (selected occupations)

Description	2013	2014	2015	2016	2017	2018	2019	2020
Miner	3 840	3 840	3 840	3 840	3 840	3 840	3 840	3 840
Production / Operations Supervisor (Mining)	2 620	2 620	2 620	2 620	2 620	2 620	2 620	2 620
Production / Operations Supervisor (Manufacturing)	270	270	270	270	270	270	270	270
Purchasing Officer	220	220	220	220	220	220	220	220
Chemistry Technician	200	200	200	200	200	200	200	200
Mining Technician	190	190	190	190	190	190	190	190
Maintenance Planner	180	180	180	180	180	180	180	180
Mines Safety Inspector	170	170	170	170	170	170	170	170
Personal Assistant	130	130	130	130	130	130	130	130
Mechanical Engineering Technician	130	130	130	130	130	130	130	130
Electrical Engineering Technician	130	130	130	130	130	130	130	130
Chemical Plant Controller	110	110	110	110	110	110	110	110

Source: Information and assumptions as stated in this section, together with calculations from MQA data system, August 2013.

Note: Due to rounding, all the figures appear the same – indicating that the figures do not increase rapidly over time.

Those for a selection of artisan occupations are shown in Error! Reference source not found. Table 4.18 Projected annual number of additional skilled agricultural, forestry, fishery, craft and related trades workers in the sector: 2013–2020 (selected occupations)

Description	2013	2014	2015	2016	2017	2018	2019	2020
Electrician	690	690	690	690	690	690	690	690
Fitter and Turner	460	460	460	460	460	460	460	460
Boilermaker	430	430	430	430	430	430	430	430
Mechanical Fitter	350	350	350	350	350	350	350	350
Structural Plater	320	320	320	320	320	320	320	320
Metal Fabricator	120	120	120	120	120	120	120	120
Automotive Motor Mechanic	120	120	120	120	120	120	120	120

Note: Due to rounding, all the figures appear the same – indicating that the figures do not increase rapidly over time.

Source: Information and assumptions as stated in this section, together with calculations from MQA data system, August 2013.

4.5 NEW DEVELOPMENTS IN THE MINING AND MINERALS SECTOR THAT WILL IMPACT ON SKILLS DEMAND

4.5.1 Overview

This SSP update also briefly explores new developments beyond the planning horizon to determine possible new developments that could have an impact on future skills required. This longer term view is of critical importance, especially from a critical skills perspective. The following question needs to be answered in this SSP: What skills will be required to empower the mining and mineral sectors at all levels?

Based on extensive research experience with SETAs, it was found that the skills planning period should look beyond the prescribed five-year planning period. It should therefore be considered to take 2020 as a broad longer term planning horizon for continuous SSP updates.

Drivers of change are normally classified as industry-specific and non-industry-specific. For example, policy imperatives such as employment equity and HIV/AIDS are normally non-industry-specific, since all sectors are implied.

The development of drivers of change towards 2020, with specific reference to items that will be discussed below, as necessary to direct skills development over the longer term, should probably be included at a later stage. The 2020 landscape should be exploited in general with specific focus on the mining and minerals industry-sensitive parameter, such as the green agenda. The MQA is aware of the fact that all new directions and areas of exploitation should be consulted with key stakeholders, such as organised labour and government.

The remainder of this section will focus on possible new challenges that could have an impact on the demand and supply of skills required by the mining and minerals sector. The Mineral Resources Strategic Plan 2010/2011–2012/2014 of the Department of Mineral Resources was studied as a basis to understand the future landscape of the minerals industry. In addition, up to date industry information was sourced. As far as the mining industry is concerned, up to date information from various sources was obtained.

All policies that have an impact on the SSP, such as the New Growth Path, the Skills Accord and the National Skills Development Strategy (NSDS) should be considered in detail to further contextualise future challenges and opportunities.

Drivers of change that are normally significant include the following:

- Industry convergence will have a major impact on technology, especially information technology.
- The growing middle class, with sufficient income, should be viewed as an opportunity for most industries.
- An ageing population will also have an impact on various industries. Older customers have different preferences.
- Social media has never been included in previous SSPs, but ample evidence exists to indicate the growing importance of these media on the mining industry. Social networks are a huge source of consumer data that can be used effectively, but these sources have been underutilised so far.
- The growing importance of the green agenda should be carefully monitored from a mining and minerals perspective. Greater emphasis needs to be placed on sustainability and environmental protection and appropriate skills need to be developed.

4.5.2 Technology

Rapid changes in technology have an impact on most sectors, and the mining sector in particular. Continuous SSP updates should always focus on its impact on future skills needs and strategies to develop these skills. Clearly, technological developments do not have a uniform effect on the demand for labour. On the one hand, the mechanisation and computerisation of processes may reduce the demand for labour. On the other hand, technology also saves jobs, for example, by improving exploration, facilitating mining at deeper levels, and lengthening the lifespan of mines. At the same time, technological changes are the biggest drivers of skills demand in the industry and all levels of workers have to continuously upgrade their skills if they are to keep up with technological changes.

4.5.3 Growing middle class

Various credible sources identified a growing middle class worldwide. In South Africa, this trend should be exploited from a mining and minerals perspective, especially in view of the fact that the “middle class” can be considered the “consumer class”, and therefore society’s economic driver. Subsectors such as the jewellery industry should also target the aged, which is a significant client base, since they will be the consumers with the spending money. South Africa is witnessing a rapid rise of a black middle class that was held back by years of apartheid. A growing black middle class has seen increased participation of black people in the economy.

The growing black middle class is a product of the South African government's black economic empowerment (BEE) programme that kicked off in post-1994 after the end of the apartheid era. These people form around 10% of the 22 million over-18-year-old black South Africans and contribute up to 40% of the spending in this group. This segment is growing rapidly. Figures at the end of 2008 show that this group's numbers were growing at 15%.

4.5.4 Declining birth rates and ageing population

The declining birth rates in the world have the following impact:

- The global population has experienced an unprecedented reduction in birth rates over the past few decades.
- People in rich and poor countries alike are having fewer babies, which demographers warn will lead to a worsening problem of global ageing.
- By 2047, more people will be older than 60 than younger than 60.
- There will be more retired and less economically active people.
- There will be an increased dependency ratio.
- A greater tax burden will be placed on economically active people.
- Changes in demand for labour will occur.

Source: Wholesale and Retail SETA SSP 2011–2016.

The ageing situation in South Africa can be described as follows: "Concern about population in Africa traditionally has focused on relatively high rates of fertility and mortality, expansion of basic health programmes, and, more recently, on the devastation resulting from the HIV/AIDS pandemic. Overlooked in the face of these pressing issues is the fact that most African populations are ageing, albeit at slower rates than in much of the developing world." Although the situation is not yet so severe in South Africa, the mining industry should closely monitor the global trend. It was found that older customers should be approached in another way, since they have different tastes and preferences.

4.5.5 Social media

Relative few industries (as demarcated by SETAs) have assessed the need for empowerment of their organisations in relationship with their employees on the aspect of social media. "Is social media commentary going to change the way mining companies around the world do business? Can industry participating in a blog or forum discussions affect their bottom line or share pricing? These are just some of the questions today's mining companies need to answer." (Grouch 2013)

Sector organisations should assess the value of using social media as part of their long-term strategy, in which the MQA can play a significant role relevant to skills development and the communication thereof to the youth as potential employees in the sector.

4.5.6 Black empowerment and affirmative action

The most important political driver is the changing political landscape in South Africa and the importance of accelerated Broad-based black economic empowerment (B-BBEE). There are

political imperatives that would seek to address this imbalance. Black economic and state administrative empowerment has become an important aspect of the political terrain and is a major driving force in South African society.

It is imperative that skills development includes measures to address the representivity of black people in senior management positions. Measures must therefore be put in place to equip black people to perform at this level. The MQA should set specific targets on B-BBEE in its skills development strategy.

4.5.7 SMME development

Accelerated development of small, medium and micro enterprises (SMMEs) is high on the agenda of all sectors of the economy. The mining and minerals industry needs to carefully consider an acceleration of the SMME sector. Appropriate skills solutions should be included in this SSP

4.5.8 Social drivers of change

The major social drivers are unemployment and the requirement to create decent work, as well as HIV/AIDS and crime. An important driver that relates to South Africa's skewed income distribution is the unemployed and the number of people surviving below the poverty line. An unemployment rate above 20% is deemed to pose excessive political risk for most economies, but especially for South Africa, where the populace has been conditioned into believing that things would get better with a new government. The African ethnic group is also the group that bears the burden of this income inequality.

It is essential that HIV programmes be included in skills programmes and learnerships.

4.6 CONCLUSION

This chapter analysed the demand for labour in the MMS from different perspectives, based on the latest available data. First it looked at total employment and found that the mining industry's employment plummeted from almost 830 000 in 1985 to just over 400 000 in 2001. However, despite the poor economic performance of the sector described in Chapter 3, employment increased by over 100 000 workers between 2000 and 2008. In 2008 and 2009, the contraction of the industry due to the impact of the global economic crisis became evident in the employment figures, with around 27 000 job losses reported. Job losses continued in 2010 and by March 2010, some 45 000 unemployed mine workers were reported in the Labour Force Survey (LFS). This figure decreased to 41 000 in March 2011.

The analysis of labour demand further shows that mining in South Africa is relatively labour intensive and is likely to remain so in the near future. However, technological advancements have brought about changes in the skills required of people in the industry and will continue to drive skills needs into the medium- to longer-term future.

This chapter includes projections of the demand for labour over the period 2011 to 2020. For the first time, after the 2011/12 WSP submissions, the MQA had enough detailed information on employment in the sector to develop a demand projection model that can project demand at the detailed occupational level. The demand projections presented in this SSP update look specifically at the skills that will be needed if the mining sector were to reach the

employment creation potential identified by the MIGDETT on the competitiveness of the mining industry, i.e., the creation of another 100 000 jobs by 2020, as well as fulfilling the replacement demand caused by the natural attrition of skills from the sector. Demand projections are given in terms of total employment, occupational groups and the selection of specific occupations. The model itself contains projections for each of approximately 700 occupations found in the MMS.

Overall, it is clear that replacement demand exceeds new demand by far – even under the very optimistic growth scenario on which the projections are based. Therefore, even if the production growth required for the specified employment growth cannot be met, the sector still needs to train relatively large numbers of people in order to replace workers who leave the sector and to contain skills shortages.

The challenge for the MQA is to balance out the prevailing market forces influencing the sector (local and international, political, social, economical and humanitarian) with the achievement of the MQA's proposed strategic objectives in job creation and skills development in the South African mining sector and create a waterfall effect to the rest of the African continental states. It is therefore a reality that the MQA should, in cooperation with the mining sector tripartite system, advance the efforts of the government to create massive job opportunities for the youth of South Africa.

The demand for skills has been proved without a doubt in the foregoing discussions through effective statistical analysis of various relevant criteria. All that must be done is to take advantage of this opportunity.

This effort will demand commitment from every role-player in the mining sector to make beneficiation work in view of creating a self-help kind of industry. Such an achievement will be recognised worldwide.

The rightful advancement of females in all of the MQA's occupation groupings should be a priority as the view is held that this is still a massive untapped resource that can benefit the sector tremendously.

5. THE SUPPLY OF SKILLS TO THE SECTOR

5.1. INTRODUCTION

The main aim of this chapter is to describe the supply of skills to the Mining and Minerals Sector (MMS) as per updated information. The supply of skills is viewed from different perspectives.

Of particular importance is the education and training of professionals, technicians and artisans. In many instances, the training of these occupational groups takes place before the learners take up permanent employment in the sector. It is therefore necessary to ensure that bursary schemes and other incentive schemes are sufficient to provide an adequate flow of learners through the educational system and into the MMS, which is in competition with other sectors for these skills.

It was indicated in Chapter 4 that professional people in particular are recruited and employed by all sectors due to the fact that specialists such as IT and accounting specialists no longer need as much industry knowledge as earlier.

A third aspect of skills supply that is dealt with in this chapter is the development of skills among those who are already in the workplace. This is also the area where the effects of training interventions add the most immediate value. The profile of the sector sketched in previous chapters clearly indicates the predominance of the occupational categories of machinery operators and drivers, and elementary workers in the sector. These categories of workers are typically trained for their specific positions after entering into employment contracts. Their training thus becomes the primary responsibility of employers. This applies equally to clerical and administrative and sales workers. At the same time, it is critical that all categories of workers stay abreast of changes in the work environment and of health and safety regulations. Consequently, in-service training is a large and important aspect of the supply of skills to the MMS.

From a skills supply perspective, the following MQA commitment is viewed as important: The MQA should ensure a system to maintain the quality of registered unit standards, qualifications and learning provision, including learnerships. Quality assurance is a process aimed, inter alia, at the following:

- Accrediting training providers
- Registering assessors and moderators
- Auditing the quality of learning provision and assessment
- Certificating learners

Training providers in the MMS are required to implement the ISO 9001:2008 Quality Management System together with other requirements stated by the South African Qualifications Authority (SAQA) to become accredited as training providers. Details of these requirements can be found in the accreditation of providers section.

Assessors, who do assessment of any mining and minerals registered unit standards, are required, by law, to be registered with the MQA as assessors. Requirements for assessor registration can be found in the assessor registration section.

When learners have successfully been assessed against all the unit standards of competence, the MQA is responsible for issuing a certificate for that learner. This certificate will only be issued for qualifications registered on the National Qualifications Framework (NQF).¹²⁸

The final sections of this chapter consider the MQA's interventions to alleviate skills shortages within the sector, as well as the issue of perceptions of inadequate quality of training for the sector.

5.2. CURRENT SUPPLY

5.2.1 Current employment

The stock of skills available to the sector consists of the people currently employed, as well as those that are unemployed but available for work. The previous chapters gave an overview of the people currently employed in the MMS. According to Table 2.3 above, the majority of the employees in the Sector have a lower educational level as opposed to the minority with a higher educational level. Therefore the skills-mix in the Sector gravitates towards lower skills levels.

Another aspect of the educational profile of the current workforce that needs to be mentioned is the fact that many workers have attained certain skills and literacy levels that are not reflected in their educational qualifications. For this reason recognition of prior learning (RPL) is very important – especially at times when mines are reducing worker numbers and workers have to find employment elsewhere.

5.2.2 Unemployment

The decline in employment that took place over the last two decades created excess capacity in the labour market and left large numbers of previous employees of the MMS unemployed. The March 2001 Labour Force Survey (LFS) recorded almost 140 000 unemployed mineworkers/ex-mineworkers.¹²⁹ As employment increased, the number of unemployed mine workers decreased, and in March 2008, the LFS reported only 30 000 mine workers that were unemployed.

One of the possible reasons why the reduction in employment is not directly reflected in the unemployment statistics is that mines tend to first reduce the number of contractors that they employ, many of whom are foreign nationals who may return to their countries of origin after termination of their contracts.

Figure 5.1 summarises the number of unemployed/ex mineworkers from 2001 to 2013. For the purposes of interpreting the graph, an “unemployed/ex mineworker” is someone who is

¹²⁸ <http://www.mqa.org.za/>

¹²⁹ The term “unemployed mineworker” refers to a person who is currently unemployed, but whose previous work was in the mining industry. The expanded definition of unemployment was used to determine unemployment figures among workers previously employed in this industry. This means that people who were not working and who were available for work, but who were not actively looking for employment in the four weeks preceding the survey (i.e., discouraged work seekers), were included in the definition.

currently employed and whose previous employment was in the mining sector. In March 2013, the LFS reported 39 000 unemployed/ex mine workers, 18 000 more than the March 2012 figure, but about 2 000 less than the March 2011 figure.

Figure 5.1 Unemployed/Ex mine workers: 2001–2013

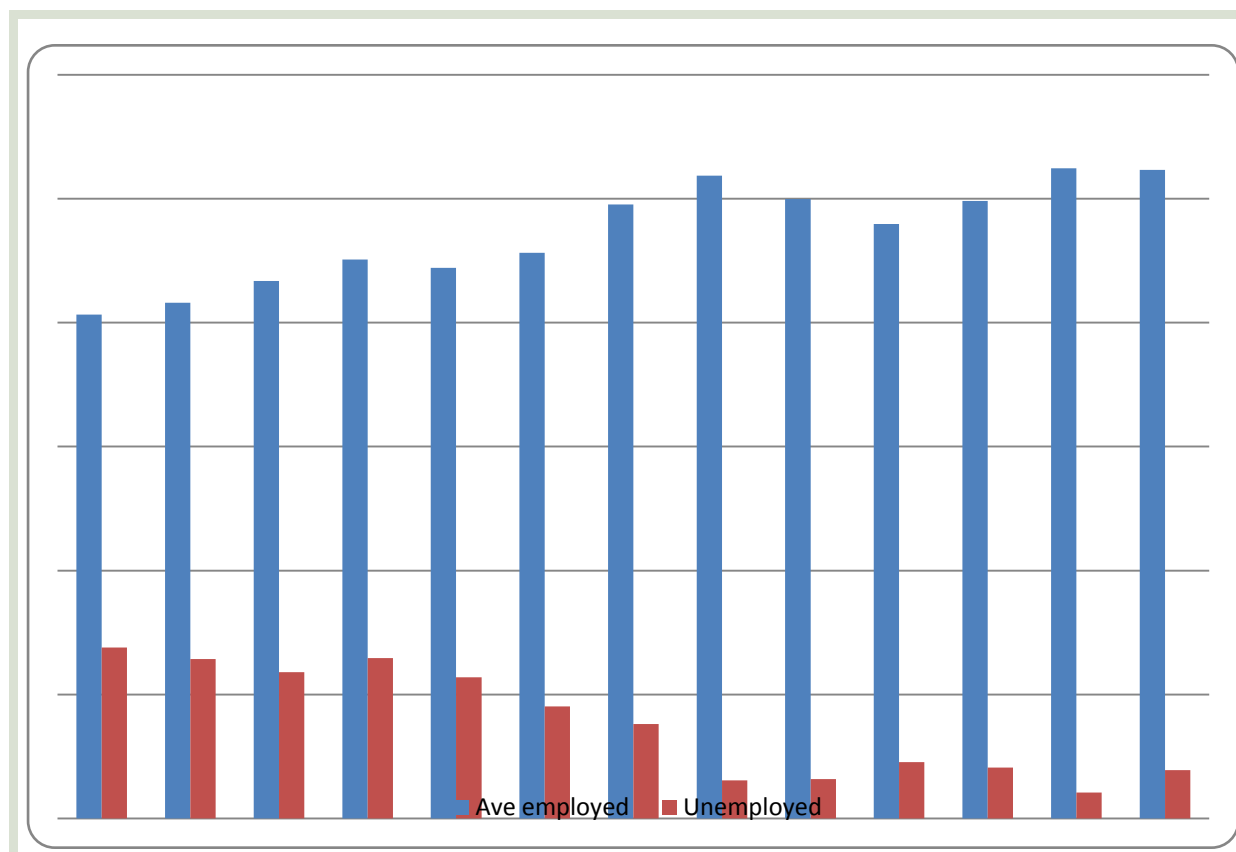


Table 5.1 Unemployed/Ex mine workers: 2001–2013

	March '01	March '02	March '03	March '04	March '05	March '06	March '07	March '08	March '09	March '10	March '11	March '12	March '13
Ave employed	406650	416150	433700	450990	444130	456330	495470	518570	499710	479510	498140	524630	523177
Unemployed	137820	128730	118130	129300	114020	90423	76231	30672	31789	45429	41176	21000	39000

Sources for Figure 5.1 and Table 5.1: Unemployment of mine workers calculated from Statistics South Africa, LFSs of February/March 2001 to 2008 and the quarterly LFSs of March 2001 and 2013.

Note: Employment figures in mining provided by the Department of Mineral Resources (DMR) – average number of workers employed per year. The March 2009 figure is the average number of workers employed in the first three months of 2009.

5.3. THE SUPPLY OF NEW SKILLS TO THE SECTOR

5.3.1 Higher education and training

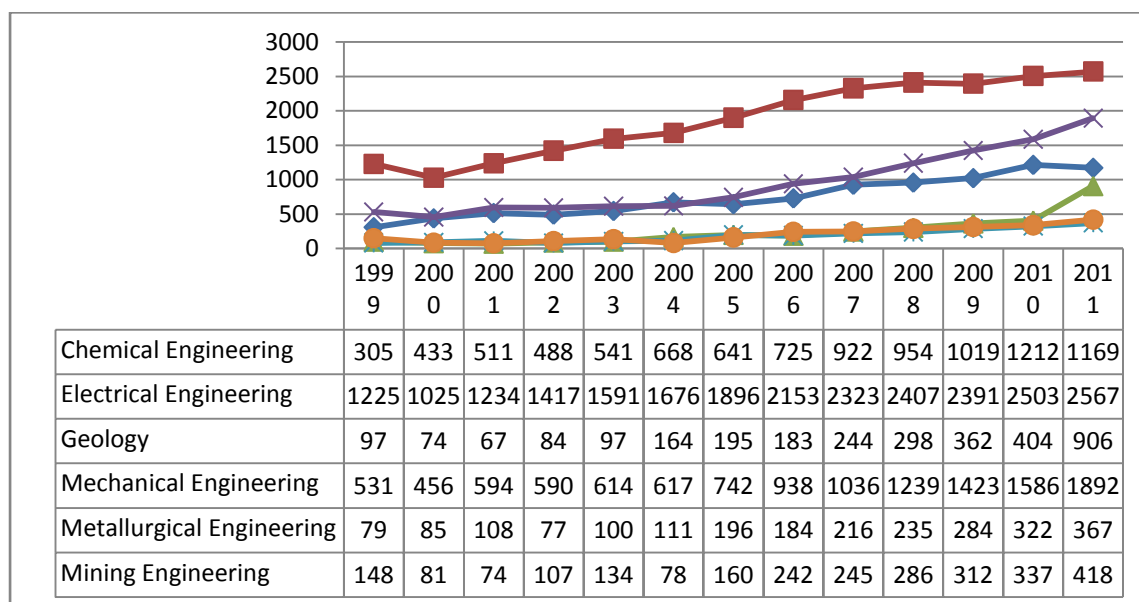
The fields of study relevant to this sector have been identified in Chapter 2 as mining engineering, metallurgy, chemical engineering, geology, electrical engineering, mechanical engineering, analytical chemistry, environmental management, mine surveying, and

jewellery design and manufacturing. (Computer-aided Design (CAD) is a component of many qualifications in these study areas.) Further information on these speciality areas was also discussed in Chapter 4.

Mining engineering is offered at the University of the Witwatersrand, the University of Pretoria, the University of Johannesburg and the University of South Africa. Mine surveying is offered at the University of Johannesburg. The student output in entry-level engineering qualifications (three-year diplomas and first degrees) over the period 1999 to 2010 can be seen in Figure 5.3.

Output, over the past decade, increased substantially in all fields of study, which is viewed as a very positive trend. Table XX shows that in terms of absolute numbers, the output of higher education institutions has grown tremendously and is much better placed to fulfil the demand of the MMS. However, according to Adcorp Holdings in its Annual Labour Report of June 2013, reports of difficulty to fill posts remain. Two key points need to be highlighted in this regard. Firstly, the supply pipeline in terms of the amount of experience required for a graduate to become productive is significant and so many of these reports are likely for engineers with a certain level of industry specific experience and knowledge. Secondly, there is a growing demand for engineers in other sectors of the economy and the relative attractiveness of the MMS (competing against other sectors) and the South African MMS (competing against global employers) as an employer is also a factor. Anecdotal evidence suggests that a difficult working environment and the rural location of the mines are key drivers in this regard. However, since the rural agenda is high on the government agenda, rural development could be viewed as an opportunity.

Figure 5.2 Entry-level qualifications awarded in the relevant fields of study: 1999–2011



Source: Department of Higher Education and Training (DHET), Higher Education Management Information System (HEMIS), Table 2.13, 1999 to 2011.¹³⁰

Table 5.2 The supply and demand of engineering occupations 1999 and current

	Current Employment	Output 1999	Output 2011
Chemical Engineering	80	305	1169
Electrical Engineering	347	1225	2567
Geology	1160	97	906
Mechanical Engineering	1251	531	1892
Metallurgical Engineering	393	79	367
Mining Engineering	1184	148	418

Source: MQA data system and Department of Higher Education and Training (DHET), Higher Education Management Information System (HEMIS), Table 2.13, 2012

In the MMS, the racial and gender representation among new entrants and the transformation of the occupational fields has changed over time, albeit more slowly from a gender perspective and in some occupations. Figure 5.4 below illustrates the population group composition of the graduates who qualified from universities and universities of technology in the relevant fields in 2011. In all fields of study, the majority of graduates were black (African, Coloured and Indian) representing 58% of graduates (Mechanical Engineering) to 91% of graduates (Metallurgical Engineering). Across all 6 occupations 73% of all graduates were Black.

¹³⁰Note that the 2011 HEMIS data is the latest available data, i.e., the above figure represents the most recent information.

Figure 5.3 Population Group Composition of 2011 graduates

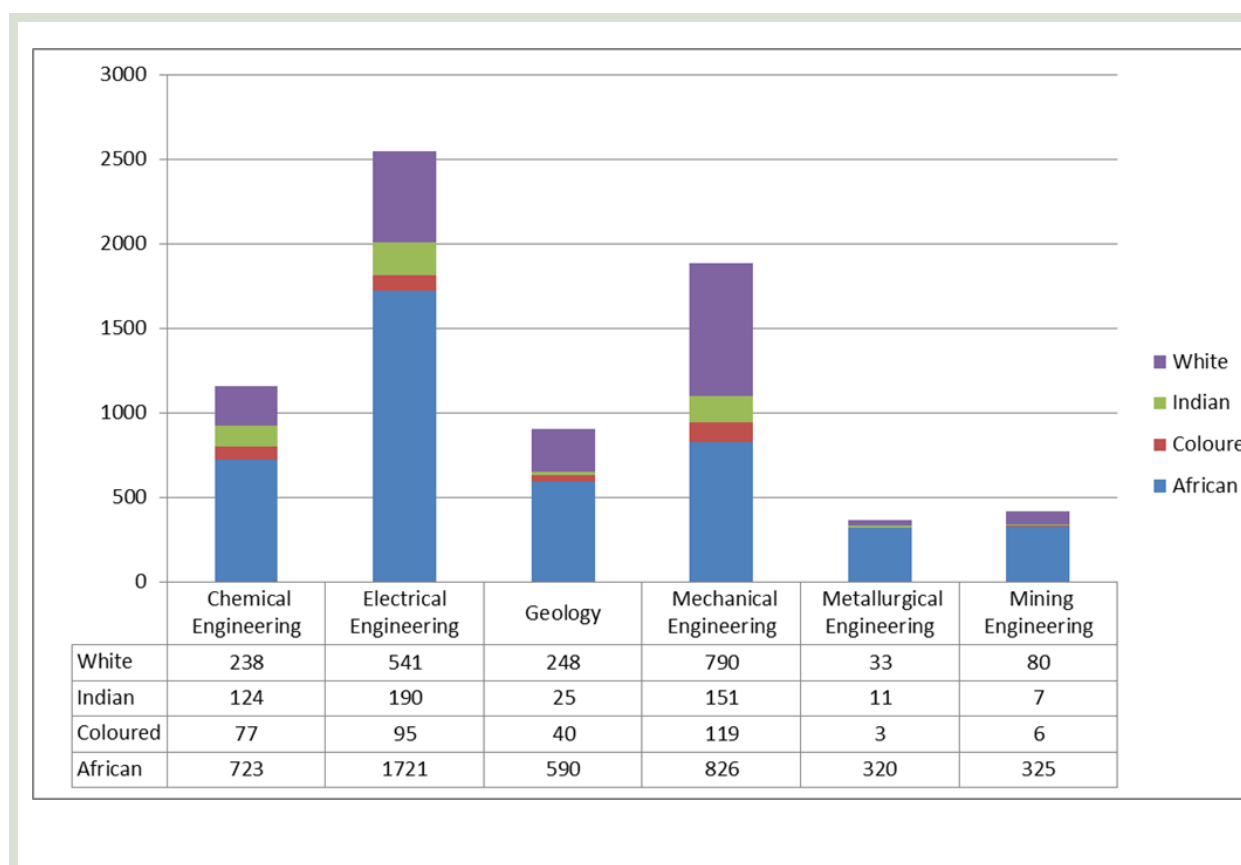
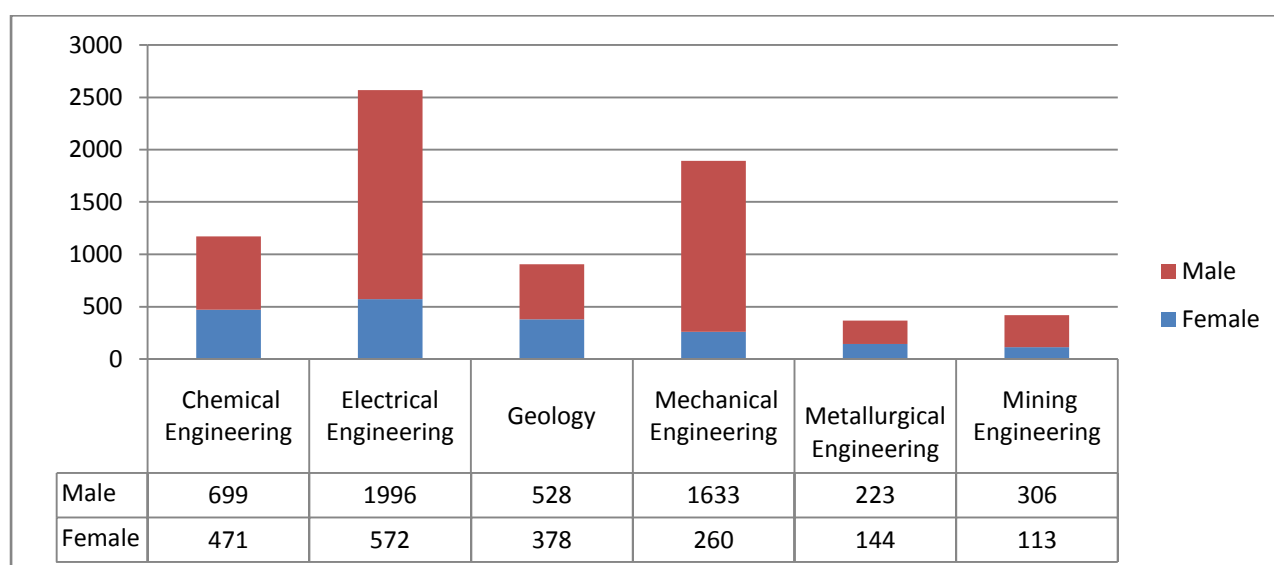


Figure 5.4 shows the gender distribution of the 2011 graduates. In some of the fields of study, women formed a substantial percentage. In chemical engineering, geology and metallurgical engineering, women formed around 40%. Substantial numbers of women are also qualifying in electrical engineering (27%) and mining engineering (22%).

Figure 5.4 Gender distribution of graduates* according to field of study: 2011 (percentages)



Source: Calculated from DHET, HEMIS, Table 2.13, 2011.

In the MMS-specific disciplines of mining and metallurgical engineering, both the number of black and female graduates increased steadily over the period 2003 to 2011.

Black and women graduates in mining engineering showed the highest annual growth rates over the period – 32.8% and 43% respectively as evidenced in Table 5.3 below.

Table 5.3 Racial and gender distribution of graduates* according to field of study: 2003–2011

Discipline		2003	2004	2005	2006	2007	2008	2009	2010	2011	Average annual growth (%)
Chemical Engineering	Black	450	560	525	591	711	793	823	876	723	7%
	Female	221	309	276	311	364	353	418	477	471	11%
Electrical Engineering	Black	1000	1149	1297	1583	1732	1865	1882	2038	1721	8%
	Female	237	305	333	390	501	517	520	583	572	12%
Geology	Black	109	107	129	129	182	240	305	354	590	25%
	Female	60	65	96	80	105	127	161	198	378	29%
Mechanical Engineering	Black	295	332	442	553	625	752	858	981	826	15%
	Female	43	57	70	114	125	179	160	223	260	27%
Metallurgical Engineering	Black	74	93	167	159	198	211	252	260	320	22%
	Female	39	28	62	63	74	97	96	113	144	23%
Mining Engineering	Black	47	53	124	165	194	243	244	297	325	32%
	Female	8	17	29	32	51	62	69	86	113	43%

Source: Calculated from DHET, HEMIS, Table 2.13, 2003 to 2012.

The reported shortage of engineering skills in the South African labour market is aggravated by the large numbers of engineers leaving South Africa for better career prospects elsewhere. Government's Joint Initiative on Priority Skills (JIPSA) (now incorporated into the Human Resources Development Strategy) identified engineering as one of its five priority skills areas, working with engineering faculties at institutions of higher education to increase the number of engineering graduates in the country.

A study undertaken by the Human Sciences Research Council (HSRC) found that the engineering skills development pipeline is long and is being negatively impacted on by a number of factors. Fundamental to the challenge of growing the national pool of engineers is the country's poor quality schooling system, with low enrolment and pass rates, combined with low quality teaching, in the critical subject areas of Mathematics and Physical Science. Engineering faculties also compete with other faculties for enrolments from a small pool of eligible school-leavers, whose demographics are not yet reflective of the country's population. Poor school preparation, together with other issues, such as increased class sizes, the difficulty some students have in accessing study finance and limited workplace

training opportunities that are compulsory for students from the universities of technology to graduate, all contribute to poor engineering throughput rates.¹³¹

Besides changing the funding formula to tertiary institutions to promote the education of engineers, government's New Growth Path aims to strengthen measures that promote a greater and more equitable access to Physical Science and Mathematics education at secondary school level and expand bridging programmes to tertiary courses as the primary means to train at least 30 000 additional engineers for the national labour force by 2014.¹³²

The South African mining sector competes for engineering skills, not only with other sectors in the national economy, but also with the global mining industry. While the percentage of mining engineering graduates that join the industry is 75% for the USA and 80% for Australia, only 15% of South African mining engineers remain in the industry for a long-term career, choosing instead to move to the higher remuneration options of financial services companies or becoming consultants, contractors or equipment service providers to the industry.¹³³ South Africa also continuously loses general and mining engineering skills to other countries like Australia and Canada who are active recruiters. While the country produces more mining engineers than all other English-speaking countries combined, the supply pipeline is too small and the output still insufficient to counter international losses and at the same time replace the aging engineering and artisan population. This places the industry at a severe disadvantage in respect of future growth.

Engineering graduates are also a primary feeder into mining management positions. Graduates require up to 15 years of work in the sector before they are sufficiently experienced to serve in any basic managerial capacity. Given this situation, it is increasingly important that the MMS takes a long-term view of the training and development of engineers – not only to meet the direct need for their professional skills in the short- to medium-term, but also to meet the demand for their skills in a managerial capacity in the longer term.¹³⁴

In addition to the above, the Graduate Development Programme should also be mentioned as a skills intervention.

“In the process of forging ahead with skills development initiatives and the transformation of the MMS, the MQA established a Graduate Development Programme in 2005.

The MQA Graduate Development Programme is aimed at increasing the number of technical graduates with the necessary training and qualifications required for professional employment in the MMS.

¹³¹Du Toit, R & Roodt, J. 2009. *Engineers in a developing Country: The profession and professional education of engineers in South Africa*, HSRC Press, Pretoria.

¹³²Republic of South Africa. The New Growth Path: The Framework, November 2010.

¹³³ “A combination of factors contributes to engineering professionals leaving the technical environment. The adaptability of engineering skills in many environments, insufficient incentives, appointment policies, lack of opportunities to get the required experience, lack of continuing professional development, insufficient career paths, underutilisation of engineers (because of too few technicians and artisans available) in some environments, and under-qualified engineering staff in other environments, such as at local government level because of a shortage in engineers, all contribute to the migration of technical skills to more lucrative environments.” Du Toit, R & Roodt, J. 2009. *Engineers in a developing Country: The profession and professional education of engineers in South Africa*, HSRC Press, Pretoria, 2009, p. 16.

¹³⁴Landelahni Business Leaders, Fast Facts. *Mining Research Report, 2010: Local mining industry mirrors global skills crisis*, http://www.landelahni.co.za/industry_reports/Mining%20Research%20Summary%20Report%202010.pdf, accessed 18 November 2010.

The target group for the programme is young unemployed historically disadvantaged South Africans (HDSAs) who have completed degrees or diplomas in the scarce skills disciplines as identified in the MQA SSP. These include mechanical engineering, electrical engineering, electromechanical engineering, mining engineering, jewellery design and manufacturing, metallurgical engineering, chemical engineering and mineral processing, analytical chemistry, geology, environmental management, mine survey and industrial engineering.

In the interest of presenting a good product to the sector, the MQA put together a task team of industry experts, including experts from the Department of Mineral Resources and organised labour to develop programme requirements for each discipline (i.e., exit requirements, outcomes and the assessment criteria for each discipline).

Candidates are required to complete two years structured with an industry host employer. To date, 110 candidates are placed with different companies in the sector undergoing training. A grant of R165 000 per candidate per annum over the two-year period is made available to the host employer to cover the costs for training, allowances, travel, accommodation, medical cover, unemployment insurance fund, insurance, personal protective clothing, etc. The grant is paid out in advance by the MQA on a quarterly basis provided that:

- A tripartite contract between the MQA, the employer and the candidate is signed
- Quarterly progress reports are submitted to the MQA signed by both the candidate and the employer¹³⁵

On completion of the programme, candidates are required to find employment in the sector and work for a period that is not less than the period of training. If they cannot find employment within six months of completion, they are released from their contractual obligations.

Bursaries

The MQA has a bursary scheme for tertiary studies. The MQA Bursary Scheme applies to the following:

- Students entering their first year of study who possess a South African matriculation certificate (or an evaluated equivalent qualification) in the subjects and with subject grades that are required by the academic institution (or such equivalent qualification as that the institution may determine) for undergraduate studies.
- Bursars entering their second or third year of study, who meet the requirements as specified under the bursary continuation, suspension and reinstatement principles contained in this policy.
- In addition to the above, students who meet any other entrance criteria as prescribed by the academic institution.
- Students studying towards a university or university of technology qualification (degree, diploma and BTech).

¹³⁵ <http://www.mqa.org.za>

The bursaries awarded over the period 2002 to 2012 in the respective fields of study can be seen below in Table 5.4 Bursaries awarded by the MQA: 2002–2012. The figures refer to the number of awards made per year for studies in that particular year. The total number of awards made over the total period was 2 600. The bursary scheme was discontinued in 2006 and 2007, but re-introduced in 2008.

Table 5.4 Bursaries awarded by the MQA: 2002–2012

Discipline	2002	2003	2004	2005	2006	2008	2009	2010	2011	2012
Analytical Chemistry	9	3	9	43	1	3	1		2	15
Geology and Mining Geology	15	6	27	51	4	140	8	62	23	105
Electrical Engineering	12	10	24	77		91	5	4	4	74
Mechanical Engineering	18	14	16	60	1	63	14	7	17	126
Metallurgical Engineering							85	17	43	89
Metallurgy	10	19	13	23	1	50				15
Jewellery Design	32	6	15	11		28	16	8	2	18
Electromechanical	0	1	2	7					1	74
Mining Engineering	24	25	34	19		38	109	23	65	225
Industrial Engineering				14					4	20
Chemical Engineering									24	89
Mechatronics										
Mine Surveying			1	1			6		6	89
Environmental Engineering			1	11					1	18
Engineering Related Design						16				57
Other		1	1			1			1	
Total	120	85	143	317	7	430	244	121	193	940

Source: Statistics from 2002 to 2005 provided by Career Wise, an institution contracted to administer the MQA's bursary scheme at that time and, from 2006 onwards, the MQA data system, August 2012.

Many employers in the MMS provide bursaries to their own employees, as well as to students who are not in their employ. These bursaries are viewed as a positive skills development practice.

Workplace experience

In addition to the bursary scheme, the MQA has programmes in place that provide work experience for students (the 12-month P1 and P2 practical programmes) that is required by the universities of technology for graduation. The scheme aims to facilitate the provision of P1 and P2 training to students of universities of technology and the provision of vacation work projects for university students. Students have specific requirements which should be fulfilled in terms of meeting certain training objectives on site before they are able to graduate.

The MQA provides a grant of R12 000 per student hosted per month directly to host companies that they then use for the provision of training. The scheme not only allows students to graduate once they have fulfilled all the requirements, but it also allows companies to receive and host students for up to one year at little or no cost while they assess these learners for potential employment after completion of their training.

The MQA Work Experience Scheme has been in place since 2005. During this time, the scheme has grown considerably as more hosts have joined. This scheme provides an excellent window period, where companies can employ and provide experience to trainees at very little expense with a view to taking them on as employees after graduation. It essentially closes the gap between unemployed graduates and companies facing a skills shortage by allowing the learners to be trained and continually assessed for a full year with no obligation to employ them.

Table 5.5 Work experience opportunities facilitated by the MQA: 2006–2012

Discipline	2006	2008	2009	2010	2011	2012
Analytical Chemistry	13	12	13	13	6	24
Geology and Mining Geology				6	6	50
Electrical Engineering	20	24	33	77	42	86
Mechanical Engineering	19	37	46	50	56	65
Metallurgical Engineering						
Metallurgy	9	25	26	70	81	80
Jewellery Design						
Electromechanical				1		72
Mining Engineering	8	22	29	62	43	115
Industrial Engineering	1					12
Chemical Engineering	13	28	73	95	27	65
Mechatronics					15	24
Mine Surveying	3			7	6	22
Environmental Engineering				2		20
Engineering-related Design						27
Other				3	4	
Total	86	150	220	384	286	662

Internships

The MQA also supports the Work-integrated Learning (WIL) that is required for university qualification achievement through an internship project.

The MQA internship is aimed at providing structured on-the-job training to unemployed graduates who have completed degrees from universities and diplomas from universities of technology. The Internship Programme was established to increase the number of technical graduates with the necessary training and qualifications required for professional employment in the scarce skills areas of the MMS.

The selection process for the Internship Programme is aimed at identifying graduates in the disciplines considered as scarce skills in the sector, those who are interested in working in the industry, but who have been unable to secure employment, and those who are unable to complete their training due to lack of experience.

In addition to the above, companies that host these graduates should have adequate infrastructure, be financially viable, and have sufficient and qualified coaches and mentors in the relevant disciplines to deliver the programme in line with the MQA's Internship Programme guidelines. Host companies must have their own sites for the practical exposure of learners.

Table 5.6 Interns placed in host companies by the MQA: 2005-2012

Discipline	2005	2006	2008	2009	2010	2011	2012
Analytical Chemistry		4	14	7	7	1	14
Geology and Mining Geology	4	15	26	20	22	43	53
Electrical Engineering	4	4	24	2	2	9	40
Mechanical Engineering	5	10	15	5	3	6	15
Metallurgical Engineering	3	4	11	9	7	28	56
Metallurgy					4		12
Jewellery Design	1	6	11	28	38	36	53
Electromechanical			1				
Mining Engineering	3	8	21	1	3	19	40
Industrial Engineering		2	6				
Chemical Engineering	1	5	23	3	2	10	38
Methatronics					1		
Mine Surveying			1			2	17
Environmental Engineering	1		6	6	5	9	45
Engineering-related Design							23
Other	4	3		1			
Total	30	61	159	82	94	163	406

MQA data system, August 2013

5.3.3 FET colleges

FET college programmes in engineering have traditionally been very limited and narrow in content as they were designed to meet the demands of manual low-skills, low-wages industries. Because of this, there have been challenges for universities and universities of technology in recognising these qualifications for articulation purposes. Furthermore, as the work experience component of the training cannot be enforced, the uptake of students by employers has been very low.¹³⁶

In response to the demand of the Engineering Council of South Africa (ECSA) that the FET college engineering education curriculum should be reviewed, the MQA has entered into collaboration with FET colleges with the aim to do the following:¹³⁷

- Review national certificate vocation (NCV) courses to align them with the mining and minerals industry needs.
- Provide national technical education (NATED) programmes' theory to support apprenticeships' delivery mode and access to trade testing.
- Map the NCV with the MQA's trade qualifications for horizontal articulation and learning pathways.
- Add other relevant MQA programmes to the NCV as additional subjects.
- Collaborate jointly on the curriculum assessment specifications development for occupational qualifications.
- Consider a form of RPL for learners with NATED trade qualifications, but without language subjects.
- Deliver foundational learning.

Thus, while the contribution of FET colleges to skills supply for the MMS has been limited, a multi-pronged strategy by the Department of Higher Education and Training (DHET) is afoot to make FET colleges achieve their renewed objectives and function as high-quality institutions that produce critical middle-level skills and are integrated with the NQF.

Having identified weaknesses in this sector at systemic and institutional levels, immediate-impact interventions have been launched to turn colleges around. Other tactics are planned to take effect in the medium and longer terms.

FET colleges are well positioned to provide the theoretical qualification component of artisan, as well as other occupational training requirements.

The shift of FET college management from regional to national government, as well as a set of multi-pronged initiatives that will ultimately see the 50 public FET colleges spread across South Africa do the following:

- Offer full qualifications.
- Align programme offerings with local and regional industry needs.
- Ensure effective articulation with both general and higher education.
- Improve programme quality.

¹³⁶Du Toit, R & Roodt, J. 2009. *Engineers in a developing Country: The profession and professional education of engineers in South Africa*, HSRC Press, Pretoria.

¹³⁷ Information supplied by the MQA.

- Increase the enrolment of youths and adults.
- Develop and attract qualified, full-time teaching staff.
- Create positive perceptions about colleges as institutions of choice for vocational post-school learning.

Similarly, arrangements for articulation between higher education institutions and FET colleges have been poor, with few learners on vocational programmes progressing directly to higher education. When these proposed changes are fully implemented, the negative perceptions about FET colleges will be a thing of the past.

MQA's collaboration with FET colleges is covered in more detail in chapters 7 and 8.

5.4. TRAINING AND DEVELOPMENT OF THE CURRENT WORKFORCE

Companies in the MMS are involved in a range of training and development initiatives that focus on developing the skills of their current workforce. These initiatives both supplement and build on the training that supplies new skills to the sector, and are a critical source of skills supply, particularly for the mining industry. In chapter 4 the key occupations as identified in the Qualifications Framework were listed and the appropriate qualifications discussed. In this section, the intensity of training on these key occupations are shown for each major occupational group on the OFO.

In terms of the specific skills and qualifications demanded by the mining sector, the WSP/ATR data was compared against the MQA Qualifications framework in order to identify the key occupations in the sector, how many people are required and what skills / qualifications need to be obtained in order to qualify.

The MQA is responsible for developing and reviewing the framework for registered and envisaged qualifications, learnerships and skills programmes for the MMS. The qualifications framework is a guideline that presents the range of qualifications, skills programmes and possible learnerships identified by the sector to meet the competency needs in various fields and levels. This qualifications framework represents the efforts of the MQA to integrate education and training into a unified structure of recognised qualifications that encourage life-long learning.

Purpose

The purpose of the framework is to do the following:

- Define various recognition needs at sectoral level within the national framework.
- Provide a quality specification and a basis for the formal recognition of individual ability.
- Provide a common currency for learners, providers and other users, and provide a consistent and transparent basis for comparison of qualifications to ensure that the integrity of the NQF is maintained.

This framework is intended to ensure that the various training and development needs of the sector are addressed at the required levels. The framework will guide the sector on the requirements and opportunities available to learners and workers, and for career planning

purposes. The framework will also assist in the planning of skills programmes and learnerships for the sector.¹³⁸

This is shown in Table 5-7 below:

Table 5.7 Skills framework

OFO 10	Occupation	Number of Employees	Qualification	Learnership
132104	Engineering Manager	2427	NC Certificated Engineering (120 Credits, Stage 2)	
132201	Production / Operations Manager Mining	1626	FETC Mining Operations Non-blasted Operations FETC Mining Operations Small Scale Mining FETC Mining Operations Surface Excavations Blasting Operations FETC Mining Operations Underground Coal FETC Mining Operations Underground Hardrock NC Certificated Engineering Stage 2 NHC Mining Practice Surface Excavations NHC Mining Practice Underground Coal NHC Mining Practice Underground Hardrock	16Q160149291604 16Q160150301624 16Q160156311634
214602	Mining Engineering Technologist	91	PrEng Technologist Stage 2	

¹³⁸ <http://www.mqa.org.za>.

226302	Safety, Health, Environment and Quality SHE & Q Practitioner	2122	FETC Occupational Hygiene and Safety NC Occupational Hygiene and Safety NC Occupational Hygiene and Safety Occupational Hygiene NC Occupational Hygiene and Safety - Occupational Safety NC Occupational Safety ND Occupational Safety Mining and Minerals	16Q160068541443 16Q160070381454
241101	Accountant (General)	1171	NC Associate General Accountant NC Chartered Accountant Financial Management	01Q010002004807 01Q010003003606
311101	Chemistry Technician	934	FETC Laboratory Analysis NC Construction Materials Testing NC Laboratory Practice NC Laboratory Practice Coal NC Laboratory Practice General NC Laboratory Practice Precious Metal SP Fire Assay SP Basic Construction Materials Testing SP Determine the Physical Properties of a Coal Sample in a Laboratory SP Handling of Chemicals Version 1 SP Primary sample preparation in an Analytical Laboratory SP Primary Sample Preparation in an analytical laboratory Analytical Services SP Secondary sample preparation in an Analytical Laboratory	16Q160144541202 16Q160145541202 16Q160146541202

			SP Secondary sample preparation in an Analytical Laboratory Analytical Services SP Separation of Precious Metals by means of the Fire Assay Technique SP Water Analysis in a Laboratory	
311701	Mining Technician	1045	FETC Minerals Surveying NC Mining Technical Support Sampling NC Mining Technical Support - Surveying FETC Mine Ventilation NC Mine Ventilation NHC Mine Ventilation	16Q160069441484
312101	Production / Operations Manager Mining	17336	FETC Generic Management FETC Management FETC New Venture Creation SMME NC Generic Management Mining Management NC Management NC New Venture Creation SMME SP Advanced Generic Management SP Basic Generic Supervision SP Generic Management for Middle Managers in the South African Mining and Minerals Sector	
312102	Miner + Production / Operations Supervisor Mining	21707	See table XX	23Q230028561404 23Q230033341525 23Q23006381382 23Q230065381382 23Q230074261504
312201	Production / Operations Supervisor Manufacturing	1984	SP Intermediate Generic Management	16Q160125221625
325707	Mines Safety Inspector	1668	FETC Radiation Protection NC Radiation Monitoring	

			NC Radiation Protection	
411101	General Clerk	7624	FETC Business Administration Services	23Q230032541404
651501	Rigger	2188	FETC Mechanical Handling Rigging Mining and Minerals NC Mechanical Handling Rigging NC Mechanical Handling Rigging NC Rigging Ropesman Surface/ Underground Rigging Ropesman Opencast SP Lifting and moving of a load in Surface Operations	03Q030078301272 16Q160009001273 16Q160010001273
652302	Fitter and Turner	4077	NC Fitting and Turning Metalliferous NC Fitting and Turning Opencast Coal NC Fitting and Turning Surface Coal NC Fitting and Turning Surface Diamonds NC Fitting and Turning Underground Coal NC Fitting and Turning Underground Diamonds NC Fitting including Machining Hardrock Metalliferous NC Fitting including Machining Surface Diamonds NC Fitting including Machining Opencast NC Fitting including Machining Surface Coal NC Fitting, including Machining Underground Coal NC Fitting, including Machining Underground Diamonds NC Mechanical Engineering Fitting and Machining	16Q160023001273 16Q160024001533 16Q160025001283 16Q160026002443 16Q160027001203 16Q160032001593 16Q160033001853 16Q160034001463 16Q160035002763 16Q160036001403 16Q160053001463 16Q160054001463

653303	Mechanical Fitter	3992	FETC Mechanical Engineering Fitting Mining and Minerals Mechanical Engineering NC Mechanical Engineering Fitting SP Fabrication and Repair Equipment in Surface Operations	03Q030082351302
653306	Diesel Mechanic	3743	FETC Diesel Electric and Electric Fitting NC Diesel Elec and Elec Fitting, Locomotive NC Diesel Electric and Electric Fitting NC Diesel Mechanic Coal NC Diesel Mechanic Metalliferous NC Diesel Mechanic Opencast NC Diesel Mechanic Surface Diamonds NC Diesel Mechanic Underground Diamonds	16Q160011001303 16Q160012001623 16Q160013001493 16Q160014001373 16Q160052001463
671101	Electrician	7323	FETC Electrical Engineering NC Electrical Engineering NC Electrical Engineering Electrical Construction NC Electrical Engineering Mining Marine NC Electrical Engineering Transmission NC Electrical Metalliferous NC Electrical Surface Coal NC Electrical Surface Diamonds NC Electrical Underground Coal NC Electrical Underground Diamonds NC Electrical Opencast SP Operation and Maintenance of Medium Volt Switchgear and	08Q080031321562 08Q080044371632 16Q160037003134 16Q160038003494 16Q160039003444 16Q160040003294 16Q160041003404 16Q160042003014 16Q160137391402 16Q160138381333 16Q160139421304

			Distribution Networks	
671202	Millwright	2060	FETC Electro-Mechanics Mining and Minerals NC Electro-Mechanics NC Electro-Mechanics Mining and Minerals NC Millwright Coal NC Millwright Diamonds NC Millwright Metalliferous NC Millwright Opencast	16Q160028003394 16Q160029004094 16Q160030004444 16Q160031003814 16Q160077471413 16Q160083471662 16Q160084441413 16Q160085291714
672105	Instrument Mechanician	1021	FETC Measurement, Control and Instrumentation Mining and Minerals NC Instrumentation Mechanician NC Measurement, Control and Instrumentation NC Measurement, Control and Instrumentation Mining and Minerals NC Measurement, Control and Instrumentation Mining and Minerals	08Q080034281392 08Q080035251503 16Q160008001764 16Q160119211344 16Q160120211203 16Q160121321332
711101	Mining Operator	55230	Skills Programme in: Operate Mining Machinery in an Underground Coal Mine: Cut a coalface using an arc wall type coal cutter in an underground coal mine SP Gathering Arm Loader Operation in an Underground Coal Mine SP Operate Mining Machinery in an Underground Coal Mine SP Operate mining machinery in an underground coal mine: Cut a coalface using a universal type coal cutter in an underground coal mine	

			<p>SP Operate mining machinery in an underground coal mine: Cut and load coal surface using a continuous miner in an underground coal mine</p> <p>SP Operate mining machinery in an underground coal mine: Deliver compressed air using a mobile compressor in an underground coal mine</p> <p>SP Operate mining machinery in an underground coal mine: Feed and break coal using a feeder breaker in an underground coal mine</p> <p>SP Operate mining machinery in an underground coal mine: Pump water using pumping equipment in an underground coal mine</p> <p>SP Operate mining machinery in an underground coal mine: Transport coal using shuttle mining equipment in an underground coal mine</p> <p>SP Operate mobile machinery in an underground coal mine: Place and operate and auxiliary fan in an underground coal mine</p> <p>SP Operating Mobile Equipment for Surface Excavation Operations</p>	
711201	Mineral Processing Machine Operator	11579	<p>NC Chemical Operations</p> <p>NC Chemical Operations Mineral Extraction and Refining</p> <p>NC Chemical Operations Mining and Minerals</p> <p>NC Chemical Operations</p>	<p>16Q160061611632</p> <p>16Q160062611632</p> <p>16Q160063611632</p> <p>16Q160064611632</p>

		Sulphuric Acid	
		NC Diamond Processing Polisher Crossworker	16Q160071421243
		NC Iron and Steel manufacturing	16Q160093561292
		NC Lump Ore Beneficiation	16Q160094641292
		NC Lump Ore Beneficiation Dense Medium Separation Diamonds	16Q160095671292
		NC Lump Ore Beneficiation Dense Medium Separation Coal	16Q160096591292
		NC Lump Ore Beneficiation Dense Medium Separation Heavy Minerals	16Q160108331303
		NC Lump Ore Beneficiation Dense Medium Separation Jig Concentration	16Q160109401303
		NC Metals Production	16Q160110381303
		NC Mineral Processing	16Q160111481303
		NC Mineral Processing Base Metal	16Q160112541303
		NC Mineral Processing Gold	16Q160113311303
		NC Mineral Processing Gold Extraction	16Q160115261203
		NC Mineral Processing Lump ore	16Q160122311352
		NC Mineral Processing Mineral Sand	16Q160123321203
		NC Mineral Processing Platinum	16Q160124391203
		NC Mineral Processing Uranium	16Q160152291292
		SP Diamond Recovery	
		SP Electro winning	
		SP Gold Elution and Carbon Regeneration	
		SP Water Reticulation	
		SP Adsorption of Gold onto Activated Carbon	
		CIP/CIL/CIS Processes V2	
		SP Crushing and Screening	
		SP Crushing V2	
		SP Crushing Version 1	

			SP Dense Medium Separation SP Flotation SP in Crushing Version 2 SP Milling of Material SP Milling Operations Dry Process SP Monitor and Operate Plant and Equipment SP Ore Reception SP Platinum Group Metals Separation Process Operations SP Scrubbing and Screening SP Scrubbing and Screening V2 SP Slimes Reclamation SP Solvent Extraction V1 SP Solvent Extraction V2	
711301	Driller	14282	SP Drilling Operations SP Operate mining machinery in an underground coal mine: Drill a coalface using mobile drilling equipment in an underground coal mine SP Operating Mobile Equipment for Surface Excavation Operations	
711302	Rock Drill Operator	41876	SP Operate mining machinery in an underground coal mine: Drill a coalface using a hand held drilling equipment in an underground coal mine SP Operate mining machinery in an underground coal mine: Drill holes using a hand held rock drill in an underground coal mine SP Rock Drill Operator in Underground Hardrock Mines	

718906	Bulk Materials Handling Plant Operator	769	SP Operate mining machinery in an underground coal mine: Operate a belt conveyor unit to convey coal in an underground coal mine	
731101	Train Driver	21021	SP Operate mining machinery in an underground coal mine: Operate a diesel locomotive underground	
733201	Truck Driver General	4638	NC Professional Driving	26Q260009212053 26Q260042441223
733208	Mobile Mining Equipment Operator	5428	SP Operate mining machinery in an underground coal mine: Apply stone dust using stone dusting equipment in an underground coal mine SP Operate mining machinery in an underground coal mine: Transport personnel, material or equipment using flameproof diesel machines in an underground coal mine	
734203	Bulldozer Driver	3086	SP Dozing Operations SP Operating Mobile Equipment for Surface Excavation Operations	
734204	Excavator Operator	2087	SP Operating Mobile Equipment for Surface Excavation Operations	
734206	Load-haul-dump (LHD) Operator	12698	SP Operate mining machinery in an underground coal mine: Transport material and equipment using a load haul dumper in an underground coal mine	
734214	Dump Truck Operator Off-road	5762	SP Operating Mobile Equipment for Surface Excavation Operations	
734301	Crane, Hoist or Lift	40698	NC Winding Engine Driving	16Q160007351763

	Operator		SP Transportation of men, material and ore to and from an Underground Workplace Onsetter SP Transportation of men, material and ore to and from an Underground Workplace Onsetter/ Banksman	
831101	Mining Support Worker	97773	Flame proofing in Underground Fiery Coal Mines GETC Mining and Minerals Processes Mining NC Introduction to Mining and Minerals sector SP Gas Testing Operations in Underground Coal Mines SP Gasbay Attendant SP Gases and Gas Testing in Underground Fiery Coal Mines SP Lamproom Assistant SP Lamproom Equipment Repairer SP Lamproom Shift Supervisor	
831103	Mineral Beneficiation Plant Worker	5090	GETC Chemical Operations Mining and Minerals GETC Mining and Minerals Processes Metallurgy GETC Mining and Minerals Processes - Cement, Lime, Aggregates and Sand GETC Mining and Minerals Processes - Diamond Processing SP Adsorption of Gold onto activated carbon Version 2 SP Gold Leaching SP Grading Room Operator SP Handling of Chemicals SP Preparation of Slimes for Backfilling SP Thickening of a Slurry	

			V2 SP Thickening of a Slurry V3	
831301	Builder's Worker	7053	NC Community House Building Entrepreneurial	05Q050061251552
831310	Surveyor's Assistant	2988	NC Mining Technical Support Surveying	16Q160117321252
			NC Mining Technical Support Geology	16Q160118321252
			NC Mining Technical Support Sampling	16Q160142361252

According to the WSP / ATR database, there are 751 occupations demanded by the sector. The table above shows 37 key occupations representing 75% of all employees. The key point that needs to be noted is that the occupations are well covered by mining specific qualifications. Of particular note are:

Managers:

- There are 2 management occupations highlighted in the framework of occupations namely Engineering Managers (1,100) and Production / Operations Managers (1626). Again it is important to note that in addition to the generic occupation related training there are many specific courses that are ideally required for an effective incumbent.

Professionals and technicians

- In addition to the engineering occupations, the following professional occupations are considered key. With safety always of the highest importance within the sector, Safety, Health, Environment and Quality SHE&Q Practitioners play a vital role. Currently there are 2122 employees demanding a number of qualifications surrounding health, hygiene and safety in the mining sector. Mine safety inspectors (1668) are also key.
- Accountants have been identified as a key occupation demanding 1171 employees
- Chemical and Mining Technicians are important and the sector currently demands 1287 and 1045 employees respectively. The qualifications revolve around laboratory testing, sampling, testing and ventilation (mining).

Mining Specific

- Miners, Supervisors, Mining Operators, Drillers, Rock Drill Operators and mining support workers account for 232852 or 40% of all employees. Since these occupations are fundamental to the operations of the sector combined with the fact that the MMS is the sole employer for these occupations, they are obviously a point of focus in terms of developing suitable qualifications and learnerships. This is evidenced by the large number of industry specific and even subsector specific qualifications. Miners alone have 74 qualifications in the occupational framework.

- Processing Operators and various Plant Operators account for a further 17438 (2.6%) employees with qualifications surrounding the operational elements of processing and beneficiation of minerals.

Artisans play a key role in the MMS with a grand total of 14,495 people or 3.0% of employment. Most notable are:

- Rigger (2188)
- Fitter / Turner (4823)
- Mechanical Fitter (3992)
- Millwright (1268)
- Diesel Mechanic (3417)

5.4.1 Managers and Professionals

There are 5 occupations that were highlighted in Chapter 4. Table 5-10 below shows the number of managers and professionals in the sector and the number of programmes that were completed in 2011. Note, while the figure will include individuals that received multiple interventions, the overall figure does give an indication of the training intensity within the sector. For the purposes of this document, intensity is defined as the number of training programmes per full time employees.

As can be seen there is a massive amount of training being conducted in the sector. With the exception of Accountants, the key managerial and professional occupations as per the Framework receive on average between 2 and 6 programmes each per year. These programmes are predominantly:

- Other (49%)
- Short Course (21%)
- Refresher / Ex Leave Training + Induction (17%)
- Certificate (6%)
- Operator Licence Renewal (2%)

Table 5.8 Number of Managers and Professional and Programmes Completed in 2011

OFO Code	Occupation	Number of programmes	Number of employees	Intensity
132104	Engineering Manager	2 915	2 427	120%
132201	Production / Operations Manager (Mining)	2 212	1 626	136%
214602	Mining Engineering Technologist	154	91	169%
226302	Safety, Health, Environment and Quality (SHE&Q) Practitioner	3 243	2 122	153%
241101	Accountant (General)	1 219	1 171	104%

5.4.2 Technicians

There were 5 occupations highlighted in the framework that fall under the 3rd major OFO group. Again training intensity was high with the number of programmes more than doubling the number of employees. Within this group, the most active training types were:

- Refresher / Ex Leave Training + Induction (34%)
- Short Course (33%)
- Other (16%)
- Skills Programme (4%)
- Operator Licence Renewal (4%)

Table 5.9 Number of Technicians and Programmes Completed in 2011

OFO Code	Occupation	Number of programmes	Number of employees	Intensity
311101	Chemistry Technician	1 378	934	148%
311701	Mining Technician	1 407	1 045	135%
312102	Miner	36 968	21 707	170%
312201	Production / Operations Supervisor (Manufacturing)	3 493	1 984	176%
325707	Mines Safety Inspector	2 713	1 668	163%

5.4.3 Clerical and Support Workers

There was only 1 occupation identified in the frameworks and that was a General Clerk. Currently there are 6,590 clerks employed in the MMS who received a total of 10,405 programmes equating to a training intensity of 158%. These courses were predominantly:

- Short courses (40%)
- Refresher / Ex Leave Training + Induction (31%)
- Other (16%)

5.4.4 Trades workers

Seven occupations were identified under the 6th OFO major category. Combined they represent 22,577 employees and receive much attention in terms of training and development. On average, each employee accesses at least 2 – 3 programmes. These programmes are made up by:

- Short Courses (42%)
- Refresher / Ex Leave Training + Induction (30%)
- Operator License Renewal (8%)
- Skills Programmes + Job specific development programme (4%)
- Certificate (2%)
- MQA Learnerships (1%)

Table 5.10 Number of Trades Workers and Programmes Completed in 2012

OFO Code	Occupation	Number of programmes	Number of employees	Intensity
651501	Rigger	3 962	2 188	181%
652302	Fitter and Turner	6 590	4 077	162%
653303	Mechanical Fitter	8 055	3 992	202%
653306	Diesel Mechanic	7 468	3 743	200%
671101	Electrician	14 256	7 323	195%
671202	Millwright	5 325	2 060	258%
672105	Instrument Mechanician	2 061	1 021	202%

5.4.5 Plant and Machine Operators

This occupational group is the single biggest contributor to the employment in the MMS. The 13 occupations listed in the framework contribute nearly 200,000 employees to the sector. There is a criticism in many sectors of the economy that companies tend to focus training away from the lower skilled occupational groups. This however is not the case in the MMS with 477 159 programmes being given to the 13 plant and machine operator occupations. The training intensity ranges from 127% to 358%. The main training types in this group are:

- Short Courses (32%)
- Refresher / Ex Leave Training (20%)
- Induction (16%)
- Other (16%)
- Operator License Renewal (6%)
- Skills Programmes (4%)

Table 5.11 Number of Plant and Machine Operators and Programmes Completed in 2011

OFO	Occupation	Number of programmes	Number of employees	Intensity
711101	Mining Operator	99 681	55 230	180%
711201	Mineral Processing Machine Operator	22 187	11 579	192%
711301	Driller	31 322	14 282	219%
711302	Rock Drill Operator	50 001	41 876	119%
718906	Bulk Materials Handling Plant Operator	1 342	769	174%
731101	Train Driver	34 671	21 021	165%
733201	Truck Driver (General)	7 122	4 638	154%
733208	Mobile Mining Equipment Operator	9 422	5 428	174%
734203	Bulldozer Operator	5 495	3 086	178%
734204	Excavator Operator	4 016	2 087	192%
734206	Loader Operator	24 356	12 698	192%
734214	Dump Truck Operator (Off-road)	10 370	5 762	180%
734301	Crane or Hoist Operator	52 031	40 698	128%

5.4.6 Elementary Occupations

Finally the elementary occupations receive a similarly intense level of training with an average of more than two programmes per employees. The focus of the training tends towards the initial skills required to do a specific job, induction and first aid training. The most common training types for elementary occupations are:

- Short Courses (32%)
- Refresher / Ex Leave Training (20%)
- Induction (23%)
- Other (15%)
- Operator License Renewal (3%)
- Skills Programmes (3%)
- Certificates (2%)

Table 5.12 Number of Elementary Workers and Programmes Completed in 2011

OFO	Occupation	Number of programmes	Number of employees	Intensity
831101	Mining Support Worker	131 786	97 773	135%
831103	Mineral Beneficiation Plant Worker	7 442	5 090	146%
831301	Builder's Worker	12 364	7 053	175%
831310	Surveyor's Assistant	3 979	2 988	133%

In summary, the MMS conducts a significant amount of training. The type of training tends towards initial skills development, induction training and other short courses. That is not to say that more long term programmes are not being supported but rather the number is relatively low when compared with the high number of employees requiring shorter courses. For example there were 165 employees receiving higher education from First Degree to

Doctorate and another 726 employees receiving a Diploma, Higher Diploma, National Higher Certificate or Further Diploma.

Similarly, while the absolute number are relatively low when compared with the total volume of training provided, ABET programmes, workplace experience, internship and learnerships are very important to development of the sector and are discussed in more detail below. Mining overall is a highly regulated sector, and this extends to its training activities. Skills competencies are required by law for practice in many occupations and professions in the sector, with formal qualifications representing competency. Over time, the old mining certification system has been incorporated into the new system of qualifications developed by the MQA.

These qualifications, which are attained through either learnerships or skills programmes, which are comprised of a group of registered unit standards, have been specifically developed by the MQA to support requirements that emanate from the regulations of the Mine Health and Safety Act (MHSA), which prescribes the competency requirements of people in certain positions in the mining industry.

5.4.7 ABET

It should be stated that the MQA fully supports the objectives and aims of ABET. Adult basic education and training is the general conceptual foundation towards lifelong learning and development, comprising of knowledge, skills and attitudes required for social, economic and political participation and transformation applicable to a range of contexts. ABET is flexible, developmental and targeted at the specific needs of particular audiences and ideally, provides access to nationally recognised certificates.¹³⁹

The need for ABET in the MMS has been stated in earlier chapters of this report. In 2009, the educational profile indicated that almost half of the workers in the sector are at qualification levels lower than ABET Level 4. These workers could benefit from ABET programmes.

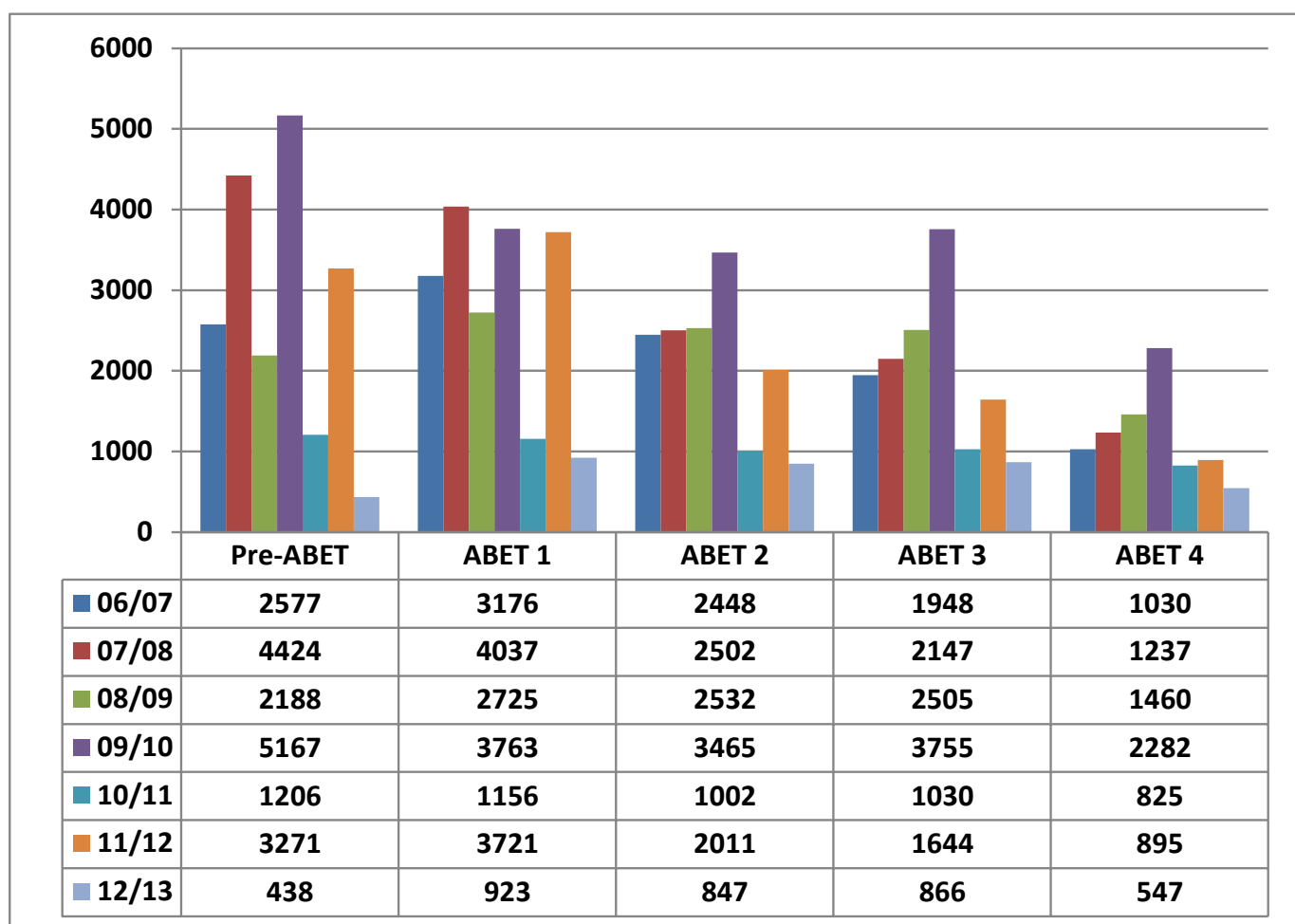
Employers reported that, in 2010, more than 5 129 workers had completed ABET programmes (at different levels) in that year. This figure is much lower than for 2009. The MQA is currently using a more robust method than in the past to obtain data of this nature. In 2011, employers submitted individual employee records with all the demographic variables used in the construction of the sector profile, as well as information on the training that those individuals received. This may explain the difference in the ABET figures between 2009 and 2010.

For 2012, employers reported that more than 11 500 workers completed ABET programmes. This is still lower than the 2009 figure, but more than double the reported figures for 2011. Over the longer term, as literacy and basic education improves, the overall number of ABET completions can be expected to decrease. This is indeed confirmed by the downward trend that is clear from Figure 5.8.

¹³⁹abet.co.za.

Figure 5.5 shows the numbers of ABET learners who completed programmes between 2006/07 and 2011/13

Figure 5.5 Employees who completed ABET: 2006/07 to 2011/13



Source: MQA Source Data 2012

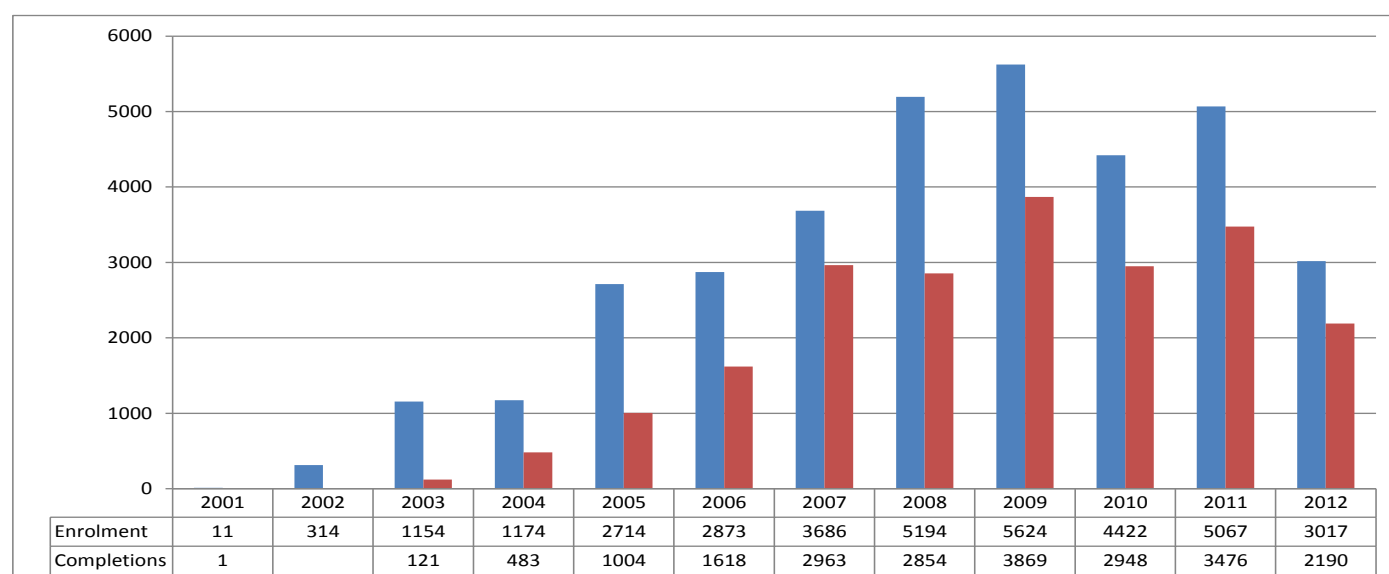
5.4.8 Learnerships

The MQA's learnerships span National Qualifications Framework (NQF) levels 2 to 4, and are mostly presented by private training providers, which include training centres on the mines. While some learnerships (such as those at Level 2 and 3 for underground hardrock mining, which have essentially replaced the old Blasting Certificate for Scheduled Mines) are targeted at employed miners, a significant proportion of learnerships, especially those focused on artisan training, are targeted at unemployed learners. Learnerships thus provide an important mechanism for the training of new entrants to the MMS.

Figure 5.9 shows the number of learnership enrolments and completions from 2001 to 2012. For the period 2001 to 2008 there is a marked annual increase in the number of enrolments and completions. From 2008 onwards the numbers fluctuate from year to year, with the 2012

information showing that enrolments are down approximately 17%, with a significantly higher drop in completions.¹⁴⁰

Figure 5.6 Learnership enrolments and completions: 2001 to 2012



Source: MQA data system, August 2013.

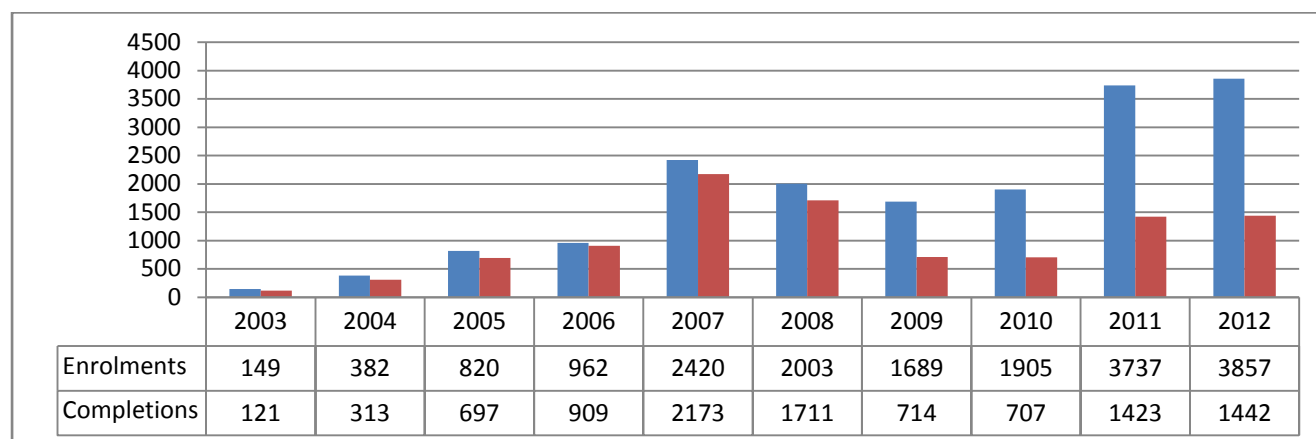
A relatively large proportion of learnerships in the MMS are aimed at the training of artisans, another skills area of critical importance for technical and engineering-based industries, and a target of JIPSA interventions, the NSDS III and the National Skills Accord.

In the Skills Development Amendment Act, a learnership is equated with an apprenticeship. The MQA has embraced the concept of learnerships and has registered learnerships for all the engineering trade qualifications. An attempt has been made by the MQA to discontinue its apprenticeship contracts and to put these learners onto the related learnership agreements, which is seen as an improvement on the contract.

Figure 5.7 and Table 5.13 show the number of learners who qualified on trade-related learnerships over the period 2003 to 2012. In 2012, 3 857 learners enrolled on learnerships, while 1 442 learners qualified. This represents a modest increase from the 2011 figures. It should, however, be noted that part of the overall increase in completion figures can be partly ascribed to the fact that these are multi-year learnerships and the learners can potentially remain in the system for several years.

¹⁴⁰ Information obtained from the MQA's data system, August 2012.

Figure 5.7 Learners who qualified on trade-related learnerships over the period 2003 to 2012



Source: MQA data system, August 2013.

Table 5.13 below summarises the number of learner registrations and completions on trade-related learnerships:

Table 5.13 Number of learner registrations and completions on trade-related learnerships: 2003–2012

QUALIFICATION		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
National Certificate Diesel Mechanic	E	6	25	89	120	292	223	116	212	444	294	1821
	C	4	19	76	114	269	206	53	53	175	76	1045
National Certificate Electrical	E	18	67	188	264	712	650	296	545	1062	777	4579
	C	7	47	162	247	656	571	159	202	405	278	2734
National Certificate Engineering Maintenance for Underground Hard Rock (Metalliferous)	E		13	96	79	224	215	565	185	108	193	1678
	C	0	12	61	76	195	188	140	122	27	139	960
National Certificate Fitting (including Machining)	E	8	34	97	196	417	404	217	363	794	369	2899
	C	4	27	93	186	370	349	138	143	303	118	1727
National Certificate Fitting and Turning	E	4	6	48	28	128	76	164	104	135	135	828
	C	4	4	46	27	107	57	19	28	48	47	379
National Certificate Millwright	E	58	93	111	99	254	125	79	137	337	181	1474
	C	53	80	105	96	230	82	36	32	200	41	955
National Certificate Rigger Ropesman - Opencast	E	0	3	12	19	49	41	29	42	88	65	348
	C	0	2	12	19	46	37	23	10	30	12	191
National Certificate: Instrumentation	E	5	12	25	46	97	91	87	81	229	147	820
	C	4	9	21	45	92	81	54	30	68	30	434
National Certificate: Plater/Boilermaker	E	23	33	59	8	115	74	87	98	192	209	898
	C	19	26	41	8	100	52	60	41	57	45	449
National Certificate: Plater/Welder	E	27	96	95	103	132	104	49	138	348	112	1204
	C	26	87	80	91	108	88	32	46	110	30	698
Total	E	149	382	820	962	2 420	2 003	1 689	1 905	3 737	2 482	8 532
	C	121	313	697	909	2 173	1 711	714	707	1 417	816	7 405

Source: MQA data system, August 2013.

While these learnerships are multi-year learnerships, with significant numbers of learners still in the system and therefore not reflected in the completion figures given in the table above,

low trade test pass rates present a major challenge to achieving the various targets set in terms of artisan training.

5.4.9 Certificates of competency

5.4.9.1 Chamber of Mines certificates

In addition to the qualifications developed by the MQA, both the Chamber of Mines and the DMR issue certificates of competency to specific categories of workers, which essentially serve as a licence to practise. The training for and assessment of the Chamber of Mines certificates are administrated by the University of South Africa (Unisa). The number of certificates awarded over the period 2010 to 2013 can be seen in Table 5.14 below. The total number of certificates awarded grew substantially from 2006 to 2009, but the figure dropped in 2010 and increased again in 2011.

Table 5.14 Chamber of Mines certificates awarded: 2010-2013

Name of Certificate	Jul-10	Jul-11	Jul-12	Jul-13
Advanced Mine Surveying	29	57	70	58
Advanced Mine Valuation	41	88	102	66
Advanced Mineral Evaluation	0	0	0	0
Advanced Rock Engineering	3	1	11	3
Basic Mine Sampling	272	125	141	63
Basic Mine Surveying	163	134	130	142
Elementary Mine Sampling	126	100	90	73
Elementary Mine Surveying	150	114	130	88
Mine Environmental Control	87	18	32	48
Mine Environmental Control	16	71	19	8
Mine Survey Draughting	26	31	22	40
Radiation Protection Monitoring Screening	260	70	125	109
Rock Mechanics	11	10	27	25
Strata Control	55	49	79	64
Total	1239	868	978	787

Source: Chamber of Mines, August 2013

5.4.9.2 DMR certificates

The certificates issued by the DMR are generally referred to as government certificates of competency and are prerequisites for the performance of certain functions in mines. These certificates therefore play a very important role in the supply of skills to the MMS. The number of certificates issued from 2000/01 to 2012/13 can be seen in Appendix 6 of this document. The numbers are quite small and did not increase significantly over the time period. The 2012/13 year shows a decrease in the number of certificates issued for both males and female candidates. A major concern for the industry is still the extremely high drop-out rate and failure rate in the assessment of these certificates, which represents a severe constraint to the supply of these critical high-level skills to the sector.

5.4.10 Management and supervisory development

Managers and supervisors in the MMS need a combination of industry-specific knowledge and understanding, i.e., technical knowledge of and skills in the functional area to be managed, as well as supervisory and management skills. In most instances, managers and supervisors are drawn from the workforce (and therefore already have technical and functional knowledge) and are developed through combinations of formal training programmes such as MBA programmes, short courses, and in-service training. The following consolidated table (5.15) below demonstrates certification for the period 2000/01 to 2012/13 (Appendix 6 provides detail):

Table 5.15 Consolidated table: Engineering certificates issued from 2000/2001-2012/2013

CONSOLIDATED TABLE: ENGINEERING CERTIFICATES ISSUED FROM 2000/2001-2012/2013																			
MINE ENGINEERS (ELECTRICAL AND MECHANICAL)				MINE MANAGERS (COAL AND METAL)				MINE OVERSEERS (COAL AND METAL)				MINE SURVEYORS				WINDING ENGINE DRIVERS			
YEAR	NUMBER ISSUED	MALES	FEMALES	YEAR	NUMBER ISSUED	MALES	FEMALES	YEAR	NUMBER ISSUED	MALES	FEMALES	YEAR	NUMBER ISSUED	MALES	FEMALES	YEAR	NUMBER ISSUED	MALES	FEMALES
2000-2001	52	51	1	2000-2001	123	123	0	2000-2001	173	173	0	2000-2001	9	9	0	2000-2001	37	31	6
2001-2002	75	74	1	2001-2002	68	68	0	2001-2002	149	149	0	2001-2002	8	8	0	2001-2002	37	32	5
2002-2003	52	52	0	2002-2003	81	80	1	2002-2003	135	135	0	2002-2003	11	11	0	2002-2003	36	27	9
2003-2004	40	39	1	2003-2004	73	72	1	2003-2004	262	262	0	2003-2004	3	3	0	2003-2004	55	50	5
2004-2005	43	41	2	2004-2005	42	42	0	2004-2005	188	188	0	2004-2005	4	4	0	2004-2005	87	72	15
2005-2006	49	48	1	2005-2006	86	85	1	2005-2006	205	205	0	2005-2006	9	9	0	2005-2006	58	44	14
2006-2007	56	54	2	2006-2007	96	91	5	2006-2007	220	220	0	2006-2007	6	6	0	2006-2007	26	21	5
2007-2008	75	73	2	2007-2008	28	25	3	2007-2008	197	194	3	2007-2008	10	10	0	2007-2008	69	44	25
2008-2009	50	47	3	2008-2009	123	116	7	2008-2009	213	210	3	2008-2009	13	13	0	2008-2009	51	33	18
2009-2010	51	50	1	2009-2010	96	93	3	2009-2010	217	210	7	2009-2010	13	9	4	2009-2010	51	42	9
2010-2011	141	133	8	2010-2011	104	87	17	2010-2011	154	147	7	2010-2011	10	10	0	2010-2011	22	14	8
2011-2012	61	56	5	2011-2012	100	85	15	2011-2012	187	176	11	2011-2012	8	8	0	2011-2012	31	24	7
2012-2013	71	70	1	2012-2013	62	49	13	2012-2013	158	152	6	2012-2013	14	14	0	2012-2013	18	14	4
TOTAL	816	788	28	TOTAL	1082	1016	66	TOTAL	2458	2421	37	TOTAL	118	114	4	TOTAL	578	448	130

5.4.11 Development of mining communities

MMS organisations, particularly mines, support skills development programmes in the community, generally as part of the corporate social investment programme or their Social and Labour Plan Local Economic Development (LED) commitments.

Information from the WSP/ATR submissions show that in the 2009/10 financial year, 90 organisations in the sector provided support to 482 skills development projects or programmes. The largest number of interventions supported post-schooling education, schools and learners at school level, small

business development, and early childhood development and jewellery projects. Interventions to support HIV/AIDS awareness, home-based care and environmental awareness were also reported.¹⁴¹ Many of these programmes formed part of organisations' Social and Labour Plan contributions.

5.4.12 In-service training

Finally, in-service training also forms a very important component of skills development in the MMS. In-service training spans a wide array of skills areas and skills needs, and takes place through a variety of training methods that range from structured courses offered in classroom-type environments to informal on-the-job training. In-service training is generally not linked to formal qualifications.

5.5. THE MQA'S INTERVENTIONS TO ALLEVIATE SKILLS SHORTAGES

Since its inception (i.e., prior to the development of the SETA system) the MQA has deliberately intervened to alleviate skills shortages in the MMS. The specific interventions into the occupations that were most often cited by employers in terms of skills shortages and the type of training interventions that received financial and other support from the MQA are listed below.

Apart from bursaries and grants, the MQA has ensured that the necessary qualifications and learnerships were registered. It also has accredited providers, supports the training and registration of assessors and moderators, verifies assessments and awards qualifications. The MQA has also supported the development of learning material in some instances. The publication by the MQA of a career guide, in which scarce skills are flagged, was developed to stimulate the supply-side of the market.

5.6. THE QUALITY OF TRAINING

While the volume of training within the MMS is positive, there is currently great concern in the sector about the quality of training on offer. Quality concerns span a wide range of issues, including the quality of training material and classroom offerings, the qualifications and actual competence of mentors and assessors, the language(s) of instruction and assessment, low throughput rates in critical areas, such as the government certificates of competence, and the high drop-out rates in ABET. These concerns do not only relate to private providers, but also to the public FET colleges, which are set to play an increasingly important role in artisan and other technical training.¹⁴² These concerns need to be addressed by the MQA and are reflected in the current MQA Strategic Plan.

¹⁴¹EE Research Focus, Analysis of the WSP and ATRs submitted to the MQA Year 2010/11.

¹⁴² Viewpoints raised in most of the workshops conducted in preparation of this SSP.

5.7. OTHER FACTORS THAT WILL IMPACT ON SKILLS SUPPLY

5.7.4 Rationale

As outlined in paragraph 4.5 of the previous chapter, drivers of change will have an impact on skills demand. It is also important to note that skills supply should be monitored against the supply of skills, especially from a curriculum and training content perspective. It is possible to do a search function to see if key emerging themes are addressed in unit standards and qualifications. As stated, there is a need to extend the skills planning horizon to 2020 and to research drivers of change that will have an impact on required skills.

It is important to note that certain critical skills will be needed to successfully address future challenges in the mining and minerals sectors. Firstly, it is deemed necessary to assess the impact of the Medium-term Strategic Framework (MTSF) that is discussed in Chapter 7 on skills supply. From a policy perspective, the MTSF is viewed as a highly focused policy document that has a major impact on skills supply.

5.7.5 Impact of MTSF on skills supply

Table 5.16 Impact of the MTSF on skills development in the MMS

Priority	Impact on skills supply
1. Speed up growth and transform the economy to create decent work and sustainable livelihoods.	This priority should be pursued in the best interest of all stakeholders. Innovative solutions will be required to position the industry to meet this objective. Unemployment in the sector should be taken into account and effectively managed, since it has an impact on decent work due to the fact that unemployed people generally do not receive sufficient training.
1. Implement a massive programme to build economic and social infrastructure.	Economic and social infrastructure should be part of the mining and minerals industry's agenda and it cannot be ignored.
2. Implement a comprehensive rural development strategy linked to land and agrarian reform and food security.	The mining and minerals sectors have activity in the rural areas on South Africa that should be viewed as an opportunity to be further exploited. Increased skills supply in these areas will have a major impact on the industry.
3. Strengthen the skills and human resource base.	The primary focus of this SSP is aligned to achieving this priority in the sectors in accordance with the changing landscape outlined in this chapter. This priority is, in fact, the basic responsibility of all SETAs to provide quality SSPs to guide the skills development process.

Priority	Impact on skills supply
4. Improve the health profile of all South Africans.	Most efforts should be aligned with focused health initiatives, especially pertaining to pandemics such as HIV/AIDS.
5. Intensify the fight against crime and corruption	The mining and minerals industry is sensitive to crime and corruption and appropriate skills interventions can make a major impact in achieving this objective.
6. Build cohesive, caring and sustainable communities.	The industry should also focus on community development through the services it renders. Further contributions can be made through cooperation with NGOs.
7. Pursue African advancement and enhanced international cooperation.	Aspects such as B-BBEE should receive priority attention.
8. Manage and use resources sustainably.	Resource optimisation is of critical importance in the industry, especially from a labour perspective. Addressing the scarce skills requirements should be viewed as a key solution.
9. Build a developmental state, including the improvement of public services and strengthening democratic institutions.	The successful implementation of the entire SSP should support the realisation of this priority.

Secondly, it is advisable that assumptions be made on the anticipated future environment, to assess their impact on skills supply and to assess possible solutions for inclusion in Chapter 7.

5.7.6 Assumptions, impact and solutions

Table 5.17 Assumptions, their impact on skills development and possible solutions

1. Technology

Assumption	Impact on skills supply	Possible solutions
Technological innovation will become increasingly important in the mining and minerals industry to ensure effective service delivery.	Skills development should focus on creative ICT solutions that extend beyond current needs.	Empower more people with regard to computer literacy. Stimulate innovation in the industry.
Global forces could result in reduced jobs in the industry due	People will have to be multi-skilled. However, reduced job	Create a truly South African solution by

Assumption	Impact on skills supply	Possible solutions
to technological innovations.	creation is completely against South African policy and innovative solutions will be required.	complying with both landscapes through collaboration with the key stakeholders.
Internet access will improve in rural areas.	More people in rural areas will need to be empowered.	Introduce more client-focused training programmes in rural areas.
Technological advances will continue throughout and most probably increase during the planning period.	Related staff and especially decision-makers will require new skills.	All learning material needs to be adapted where required.
Changes to jobs will be unavoidable during the period up to 2020. For example, certain jobs will require green (environmental), social media and specialised technology components.	New sets of skills that will differ from the status quo will be required. People will, in general, be required to do more work that was not part of their past or present jobs.	The creation of a future awareness is required, especially at decision-maker level. A multi-skilling approach is required to cater for new critical skills that will emerge as a result of the drivers of change.

2. The client

Assumption	Impact on skills supply	Possible solutions
Clients will become more demanding in terms of quality and service.	More customer skills will be required at most levels in the sector.	Update existing learning material and accelerate training delivery.
Client relationships will increase in importance as competitive advantage does.	All staff will require more focused customer relations skills.	Conduct skills audits, special programmes and individual development programmes.

3. Economic

Assumption	Impact on skills supply	Possible solutions
Fluctuations in economic cycles will have an impact on the industry.	Pressure to further reduce staff structures could be placed on the sector.	Empower decision-makers on the impact of the longer-term external landscape in which the mining and minerals sector operates.

4. New venture creation

Assumption	Impact on skills supply	Possible solutions
All sectors of the economy will have to accelerate the creation of new ventures to sustain economic growth and meet political objectives.	People, especially formerly disadvantaged South Africans, need to be empowered with regard to entrepreneurial skills.	Introduce an accelerated new venture creation programme for the mining and minerals industry. Implement programmes to grow small businesses into medium and large businesses where possible.

5. Gender imperatives

Assumption	Impact on skills supply	Possible solutions
Emphasis will remain high on gender equality.	More focus should be placed on gender equality.	Will be determined in collaboration with stakeholders. Existing initiatives, such as women empowerment in the industry, should receive priority attention.
Company employment equity plans will have to comply with charters and will have a significant impact on company compliance challenges.	More focus should be placed on the training and development of women, disabled people and other groups that were discriminated against.	Since current figures for groups like the disabled are generally below requirements, more focus should be placed on recruiting affected people.

6. Empowerment of historically disadvantaged individuals (HDI)

Assumption	Impact on skills supply	Possible solutions
HDI empowerment will have to accelerate during the SSP planning period and beyond.	People without the required skills due to historically driven realities should be empowered.	<ul style="list-style-type: none"> • Introduce a new HDI Empowerment Strategy based on current and future skills requirements. • Set specific targets

Assumption	Impact on skills supply	Possible solutions
		for middle and top management positions. <ul style="list-style-type: none"> • Consider individual programmes for people with managerial abilities.
Large numbers of people are qualified for jobs, but do not have qualifications.	The need for RPL will increase.	Identify RPL needs throughout the mining and minerals sector.

7. Social imperatives

Assumption	Impact on skills supply	Possible solutions
The need to address social inequalities will remain high.	More focus will need to be placed on non-sector empowerment issues.	Identify and implement programmes aimed at addressing social needs.
The need to implement effective TB and HIV/AIDS programmes will remain high.	Productivity will be threatened throughout the planning period.	HIV/AIDS training should be an integral part of all training offerings.
Social media will become increasingly important in the mining and minerals industry.	More people who can optimise the usage of social media technology will be required.	<ul style="list-style-type: none"> • Include social media in all relevant future training curricula. • Include social media strategies in strategic plans.

8. Future mindset

Assumption	Impact on skills supply	Possible solutions
The mining and minerals industry will need to continue to innovate to be competitive.	Decision-makers need to have a future-orientated mindset.	Introduce programmes to orientate decision-makers on the impact of the convergence of technologies and industries.

9. SMMEs

Assumption	Impact on skills supply	Possible solutions
The pressure to create new ventures will pose various challenges to the mining and	Existing training and development actions focusing on SMMEs should be increased	Customise existing learning material for the mining and minerals

minerals sector, especially in rural areas.	and the focus should be placed on limitations identified during research.	environment and challenges. Develop an SMME toolkit and make it available to all existing and prospective SMMEs. Existing SMME initiatives should be further customised where required.
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Note is taken of the SMME assistance already in place. The South African mining industry has shed as many as 300 000 jobs over the last decade. The MQA has set aside funds to support 13 district municipalities in former labour-sending areas to the mining industry for skills development training for former mine workers and their communities. The training programmes are in line with the social plan initiatives and are linked to the district municipalities' LED programmes. Existing and innovative strategies need to be expanded to provide former mine workers (some of whom are disabled) with needs-driven skills that include ABET and small business development (SMMEs)

The MQA has identified the provision of ABET programmes and business skills training and support to former mine workers as a priority in supporting the Social Plan because of its direct linkage with government's integrated rural development strategy and its wider reach across all provinces of South Africa. An awareness programme on HIV/AIDS would also be integrated into the training programme.

The MQA has successfully implemented the District Municipalities Partnership Project with NSF funding. During the 2002–2005 financial years, R145 million was spent

OBJECTIVE

The District Municipalities Partnership Project is intended to support the LED programmes in the district municipalities by providing skills development and support to former mine workers in South Africa. The initiative sought to provide economic growth, poverty reduction and job creation through skills development.¹⁴³

5.7.7 Assessment of learning material

Based on the above assessments it would be necessary to assess existing qualifications and learning material for compliance with the anticipated future environment. This could be completed according to the following stepwise process:

Step	Activity	Rationale
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¹⁴³<http://www.mqa.org.za>.

Step	Activity	Rationale
1	<p>Determine key words that will reflect required future learning material based on an updated drivers of change assessment, such as the following:</p> <ul style="list-style-type: none"> • Technological innovation • Industry convergence • Growing middle class • Ageing population • Beneficiation • ICT innovations 	<p>It is clear that, due to rapid changes in the mining and minerals environment, the future will have specific challenges that will require new skills sets.</p>
2	<p>Get agreement among key stakeholders which learning materials need to be assessed for compliance, such as the following:</p> <ul style="list-style-type: none"> • All mining qualifications • All relevant unit standards • Non-ABET learning material 	<p>It is essential that all new challenges should be reflected in learning materials. Key stakeholders, such as employers, labour and experts, should be consulted to guide the process.</p>
3	<p>Do a key word search process for each of the selected learning materials.</p>	<p>Compliance with future needs can only be determined by assessing whether new key concepts form part of the learning material.</p>
4	<p>Summarise assessment data in terms of the following:</p> <ul style="list-style-type: none"> • Each qualification, skills programme, unit standard, etc. • Jobs that require the training • Other key aspects determined 	<p>Any sensible solution will only be possible if the total impact of the search function has been assessed.</p>
5	<p>Do an assessment whether existing learning material just needs to be updated or completely rewritten.</p>	<p>Some areas might be suitable for merely updating. In certain new areas, for example, social media, very little appropriate learning material is available, which implies completely new material.</p>
6	<p>Schedule an update programme and allocate resources.</p>	<p>This will really be an ambitious step due to reasons such as the</p>

Step	Activity	Rationale
		<p>following:</p> <ul style="list-style-type: none"> • New unit standards will have to developed, which is a lengthy process. • The Quality Council for Trades and Occupations (QCTOO will have to be involved. • Funding will be required and all sources should be considered, such as existing grants, NSF funds, etc.
7	Align to critical skills per position.	In addition to scarce skills assessments, it is very important to focus specifically on critical skills required to deal with the new environment.
8	Identify top-up skills per position.	Most critical skills are viewed to be suitable to top-up at specific levels and positions. For example, social media skills might be critical in certain positions and the existing skills base of staff members can be successfully topped up.
9	Make this skills assessment exercise an SSP priority	A key focus of a successful SSP is the delivery of required future skills and it is therefore essential that this intervention be prioritised in the SSP
10	Make the new learning material available in an e-learning format.	Due to various reasons, fewer staff members are readily available to attend classroom training. It is

Step	Activity	Rationale
		therefore essential that e-learning be optimised. Expected increased and improved Internet access in rural areas will make e-learning a more viable option to reach staff members in these areas
11	Develop a toolkit to empower staff members to comply with e-learning and new curricula.	Toolkits are viewed as powerful tools to accelerate learning. These toolkits should be based on the “how to” principle and should provide the learner with all the inputs and solutions to learn effectively
12	Reassess all curricula in the mining and minerals sectors.	It is anticipated that this intervention could have major changes on the future learning landscape and it might be necessary to reassess all curricula of both sectors.

5.8. CONCLUSION

The downsizing that occurred in the MMS up to 2001, left more than 100 000 workers unemployed. However, most of them were re-absorbed into the industry and, by 2009, the number of unemployed mine workers dropped to approximately 30 000. Retrenchments started to occur again in the first two quarters of 2009, and in March 2010, it was reported that approximately 45 000 mine workers were unemployed. This figure dropped to 41 000 in March 2011.

The number of new graduates in the fields of study relevant to the MMS grew substantially between 1999 and 2010. The transformation of the higher education sector is also visible in the educational statistics. By 2010, the majority of graduates in all the relevant fields were black. Substantial numbers of women are also graduating in fields of study that have historically been male dominated. It will, however, take time for this transformation to have a significant effect on the pool of professionals available in the labour market.

The skills development provision of the MMS is comprehensive and covers many aspects. The MQA has registered a wide spectrum of learnerships and the uptake of these learnerships is significant. Another important training offering is skills programmes. These programmes provide workers (especially those at lower educational levels) with the

opportunity to obtain recognition for some of the skills attained in the work environment. Skills programmes are also important vehicles for training in terms of health and safety requirements.

The most significant challenges facing the improved supply of currently scarce artisan and professional skills to the MMS include the poor quality of secondary schooling, particularly in the areas of Mathematics and Physical Science, the poor image of the sector that does not attract high-quality school leavers, the poor articulation of the FET programme with other qualifications, the difficulties that many HDSA students face in accessing study financing, the difficulties that university of technology students face in accessing the workplace-based training necessary for graduation, the low throughput rates for both artisan learnerships and engineering qualifications, and the extremely high drop-out rates and low pass rates for the DMR certificates of competency. MQA interventions aimed at addressing these challenges span ABET-level training in the workplace, formal collaboration with FET colleges, the development and delivery of the FLC programme, the focus of artisan learnerships on unemployed learners, the provision of bursaries for higher education qualifications, and the development of a career guide for the sector. These interventions will be ongoing throughout the period covered by this SSP. Finally, the MQA acknowledges the challenges faced by the sector in respect of the variable quality of training providers.

Long-term skills requirements need to be further researched to ensure that existing curricula and learning content address these requirements. It is assumed that existing curricula and learning material are not suitable to develop future skills needs and more attention to this sensitive matter is required.

A great opportunity exists for the MQA to ensure quality service standardisation of training providers. It is suggested that the MQA should investigate a position of setting and applying specific criteria to service providers by means of direct assessment, even on a sampling basis. The success with which the service providers succeed will be a reflection of the value that their learners add to the industry. Maybe an approach of internship should be considered, as this will get more commitment from the employer towards such learning programmes.

6. SKILLS NEEDS OF THE MMS

6.1 INTRODUCTION

It is widely believed that the development of skilled human resources and the strengthening of the technological infrastructure are two of the key factors in improving the competitiveness of the Mining and Minerals Sector (MMS). It can be argued that the general availability of quality education and the equitable access to new technology are necessary, but not sufficient to enable a South African mining and minerals sector to become and stay competitive in the global market. There is a need to enhance the capacity and effectiveness of the human capital of the sector. There are a number of elements that affect the capacity and effectiveness of the human capital in the MMS. These are education, skills development, training, governance, management capacity, financial resources, service delivery, human resources, and the promotion of knowledge and skills required by the sector to acquire greater prosperity. From a macroeconomic viewpoint, human capacity development is required for better management of the industry, including the ability to mobilise, allocate and utilise human and material resources in a productive manner across different institutions, organisations or companies in the sector. At a micro level, human capacity is very important for different activities across segments of the mining value chain (such as mineral extraction, processing, beneficiation, project management and administration). It is important to take cognisance of these issues in the assessment of skills needs.¹⁴⁴

Chapter 4 described the demand for labour in the MMS, while Chapter 5 provided an overview of the supply of skills to the sector. This chapter seeks to bring the discussion of skills demand and supply together in a more structured manner.

The first section summarises the skills needs of the sector according to broad categories, as these emerge from the discussions of the previous chapters of this Sector Skills Plan (SSP). These broad categories include core skills (the basic skills necessary for safe and efficient production within the sector), mine health and safety skills, HIV/AIDS awareness and prevention, adult basic education and training (ABET), recognition of prior learning (RPL), scarce skills, historically disadvantaged South African (HDSA) managers, environmental skills, training of retrenched employees, the development of mining communities and communities in labour-sending areas, supporting the development of beneficiation in local areas through skills development, and strengthening government capacity. This section provides a context and framework for the more detailed discussions of the specific skills shortages within the MMS, which is the subject of the second section.

While it is not currently possible to make direct quantitative comparisons between future demand and supply of skills within the MMS, the final section of this chapter presents a qualitative comparison of skills demand and skills supply according to the seven primary occupational groups in the sector. Scarce skill occupations are included for each group, as

¹⁴⁴Economic Commission for Africa, 2009.

well as the reasons for imbalances in the marketplace, any special factors influencing the demand for these skills, the main sources of education and training, factors relating to the responsiveness of supply to demand, and any problems related to skills supply that require ongoing attention.

6.2 BROAD CATEGORIES OF SKILLS DEVELOPMENT NEEDS

6.2.1 Core skills

Core skills refer to the skills that are essential for the basic functioning of the sector. These include the skills that new entrants to the sector need in order to safely and efficiently support sector production. Core skills also include the additional skills that workers in the sector need in order to stay abreast of changes, for example the impact of new technology developments. Covering all the basic mining skills, core skill requirements form the bulk of skills needs in the MMS. Depending on the nature of the occupation, these skills can be developed through short courses, learnerships or higher education. Chapter 5 highlighted the efforts of the MQA and the industry to develop the suitable skills required for the sector. The current gaps as highlighted by employers in the WSP submission is listed under the Scarce Skills section.

6.2.2 Mine health and safety

Part of the core sector skills, but requiring special focus, is the issue of incorporating mine health and safety into every aspect of job content and skills training in all job categories. This is the only way that the hazards and risks involved in mine work is to be managed in line with the Mine Health and Safety Act (MHSA), other legislation and in support of other tripartite members. Normally, health and safety training includes induction and refresher training, as well as training towards qualifications required for specific positions in the sector. This remains a huge focus for the MMS. As was discussed in the previous chapter, over a third of all training conducted in the sector has to do with induction and refresher training.

The training of mine health and safety officers, health and safety representatives, as well as mine inspectors, is critical, but proved not to be the total solution to accidents and incidents in the mining industry. Attention is required to the terms of Article 22, Chapter 2 of MHSA:

Every employee at a mine, while at that mine, must do the following:

- a) Take reasonable care to protect their own health and safety.
- b) Take reasonable care to protect the health and safety of other persons who may be affected by any act or omission of that employee.
- c) Use and take proper care of protective clothing, and other health and safety facilities and equipment provided for the protection, health or safety of that employee and other employees.

- d) Report promptly to their immediate supervisor any situation which the employee believes presents a risk to the health or safety of that employee or any other person, and with which the employee cannot properly deal.
- e) Cooperate with any person to permit compliance with the duties and responsibilities placed on that person in terms of this Act.
- f) Comply with prescribed health and safety measures.¹⁴⁵

This legal requirement opens up a unique opportunity for the incorporation of occupational health and safety in the MQA's skills development programme. This will require some "thinking outside the box", which can add huge value to achieve the "zero tolerance" objective on accidents and incidents in the mining sector.

6.2.3 HIV/AIDS awareness and prevention

Although organisations in the sector have instituted various interventions to curb the spread of HIV infections and to treat HIV-positive and AIDS-sick workers, infection rates remain very high and therefore the sector, with some assistance from the MQA, needs to continue with HIV/AIDS awareness and prevention programmes.

6.2.4 Adult basic education and training (ABET)

Increasing the sector's basic educational levels also forms part of the sector's focus to improve its core skills, and is to a large extent the result of ongoing ABET (as shown in Chapter 5). Through the Mining Charter commitments and the Social and Labour Plan requirements, role-players in the MMS remain committed to the improvement of the educational levels of the workers, with ABET remaining high on the list of skills needs.

6.2.5 Recognition of prior learning (RPL)

Although many of the workers in the MMS have very little formal schooling and few formal qualifications, most of them have many years of work experience and skills acquired in the work situation. These skills have not yet been assessed in the context of awarding formal recognition of skills.

Although the assessment of the skills of all individual workers is essential for skills development, there are numerous challenges in implementing such initiatives, especially on the scale required in the MMS. Despite these challenges, RPL remains imperative to the sector and ways of addressing the difficulties need to be found and implemented.

6.2.6 Scarce skills

As the sector's skills development intermediary, the MQA has two key responsibilities in respect of identifying and reporting scarce and critical skills across the sector. The first is to

¹⁴⁵ Mine Health and Safety Act 1993

provide a reliable set of skill shortage signals to the sector. The second is to direct strategic interventions and activities to address these shortages.

In respect of the second, the MQA is contemplating a set of support strategies in place to support the development of skills against the identified MMS scarce skills which include the following:

- Development and registration of unit standards and qualifications
- Development and registration of learnerships and skills programmes for the registered qualifications and unit standards
- Development and availability of learning materials
- Training and registration of assessors and moderators able to assess and grant credit to learners against the registered unit standards and qualifications
- Accreditation of training providers
- Information management system and database to issue certificates of achievement to successful learners
- Incentivising delivery of and participation in learnerships and ABET through discretionary grants
- Supporting targeted programmes including bursaries, graduate development programmes, etc.

For more details about these strategy issues, please follow the discussion in Chapter 7 of this document.

While small in relation to the overall size of the workforce, skills shortages do exist within the MMS, specifically in the professional, associate professional, and technician and trades worker categories. These shortages are not only the result of general shortages in the labour market (i.e., absolute shortages), but are often related to factors specific to the industry that deter people with these skills from taking up employment in the sector (i.e., relative shortages). These factors include the relative unattractiveness of the mining industry in relation to other industries in the economy, the fact that many mining operations are situated in remote rural areas, and the generally limited supply of HDSAs with the requisite skills necessary to meet employment equity targets. The Mining Charter stresses the need for the development and operational exposure of HDSAs in core and critical skills areas. More often than not, these skills areas coincide with areas in which skills shortages are experienced. Therefore, the MQA's skills development interventions aimed at the alleviation of skills shortages will focus mainly on the development of HDSAs.

6.2.7 The development of HDSA managers

The Mining Charter stresses the need for the development and operational exposure of HDSAs in core and critical skills areas. More often than not, these skills areas coincide with areas in which skills shortages are experienced. Therefore, the MQA's skills development interventions aimed at the alleviation of skills shortages will focus mainly on the development of HDSAs. Related to the above, the Mining Charter Review, and the emphasis that the amended Mining Charter and the Charter Scorecard place on HDSAs in management, underscores the need for the development of HDSA managers in the MMS. Management development entails the development of the technical competencies required in

management positions (and thus places a focus on the development of professional skills), as well as the subsequent development of managerial skills.

6.2.8 Environmental skills

The importance of skills that will support sustainable natural resource use and environmental conservation and rehabilitation was emphasised in Chapter 2 and Chapter 4. As these skills are likely to become increasingly important in the future, they need to be incorporated into the skills development priorities and interventions of the MQA now.

6.2.9 Training and development of retrenched employees

The training of employees who have already been retrenched or who stand to be retrenched is also a priority for the MMS. It is important to start the training for positions outside the MMS as early as possible before retrenchment, while the workers are still in employment. The main aim would be to provide these employees with skills for life beyond mining, which are in demand in other sectors, and with entrepreneurial skills. In terms of the Social and Labour Plan, employers have a responsibility in this regard. A more realistic approach might be to assist such employees in the MMS as it will save the industry millions in retraining and other related employee costs.

6.2.10 Development of mining communities and communities in labour-sending areas

In line with its broader social mandate and in support of sustainable development, it is a priority for the MMS to support the economic and social development of those communities where mining takes place and those based in the main labour-sending areas of the country. In Chapter 2, the close relationship between mining companies and the surrounding communities was explained. By stimulating other economic activities through skills development in the mining communities and in communities from which migrant workers originate, the potential for job creation is enhanced, as well as the potential for absorbing retrenched mine workers into the local labour markets. The opportunities discussed regarding beneficiation should be targeted as a priority in this regard.

6.2.11 Supporting beneficiation in local areas through skills development

The relatively low levels of beneficiation and the fact that most of our mineral production is exported remain a concern to the MMS. Although the bulk of beneficiation activities would fall outside the MMS – for example in the Manufacturing Sector – the MMS needs to support skills development in terms of beneficiation in general and specifically where it ties in with local community development and job creation for retrenched workers of the MMS. The components of beneficiation that fall within the MMS – jewellery manufacturing, diamond processing and aspects of the cement, lime, aggregates and sand (CLAS) subsector – need special attention. Please see the discussion and diagram under the same heading in Chapter 2.

6.2.12 Strengthening government capacity

The DMR is important to the MMS through the various aspects of regulation in which it is involved. In the consultative workshops, the need for a well-resourced and effective department was emphasised repeatedly, while stakeholders requested that urgent attention be given to the skills shortages experienced by the DMR. The DMR itself participated in the SSP development process and outlined its skills needs to the MQA. These skills needs are and will continue to be addressed in the planning period covered by this SSP.

6.3 SCARCE SKILLS

There are a number of key drivers of scarcity that have been identified and all data from the WSP submissions reflect one of these drivers as the main reason why a given employers reports difficulty in fulfilling a post. These drivers are:

6.3.1 Absolute scarcity (suitably skilled people are not available in the labour market)

Typical examples, in which a single or combination of the factors can make up absolute scarcity, include the following:

- A new or emerging occupation, i.e., there are few, if any, people in the country with the requisite skills (qualification and experience) and education, and training providers have yet to develop learning programmes to meet the skills requirements.
- Firms, sectors and even the country are unable to implement planned growth strategies and experience productivity, service delivery and quality problems directly attributable to a lack of skilled people.
- Replacement demand would reflect an absolute scarcity where there are no people enrolled or engaged in the process of acquiring the skills that need to be replaced.

6.3.2 Relative scarcity (suitably skilled people available but do not meet other employment criteria)

Typical examples, in which a single or combination of the factors can make up relative scarcity, include the following:

- Geographical location, i.e., people are unwilling to work outside of urban areas.
- Industry attractiveness, i.e., suitably skilled people are unwilling to work in particular industries because they perceive that industry to be in decline, unsafe or otherwise unattractive.
- Equity considerations, i.e., there are candidates with the requisite skills (qualifications and experience) from specific groups available to meet the skills requirements of firms and enterprises.
- Replacement demand would reflect a relative scarcity if there are people in education and training (formal and workplace) who are in the process of acquiring the necessary skills (qualification and experience), but where the lead time will mean that they are not available in the short term to meet replacement demand. This may also reflect employer demand for qualified and experienced people to fill occupations, i.e., people with suitable qualifications are available to enter occupations, but performance at the employment level requires a certain amount of work experience, which such graduates have not yet acquired.

Employers are asked as part of the WSP process to identify occupations in which they experienced difficulty in filling. They identified the driver as detailed above and how many posts are affected by the scarcity. Furthermore employers were requested to identify what type of learning interventions they were planning to use to address the skills shortage and at what National Qualifications Framework (NQF) level the interventions would be. Lastly, employers were asked to indicate if they were planning to import the skills from outside South Africa and, if so, the number of people they would bring into the country.

The 2013 WSP submission identified 149 occupations that are experiencing shortages affecting 3,054 posts. The list was then narrowed down to a list of the top 25 scarce occupations based on the following 2 criteria.

1. Total Scarcity (the sum of all vacancies identified in the WSP submission for a given occupation). The underlying principle here is that the higher the reported vacancies that are difficult to fill, the greater the scarcity. However, this is dependent on point 2 below.
2. Scarce Intensity: The number of scarce skills identified as a % of total employment within the occupation. Rock Drill Operators had one of the highest number of vacancies at 208. However, since there are over 41,000 rock drill operators in the sector, the reported vacancies represent only 0.5% of total employment. Therefore this particular reported scarcity is unlikely to have a significant impact on the sector. Heavy Equipment Mechanics (Earth Moving Mechanics) on the other hand had only 25 reported vacancies. The difference is that the total employment in the sector is only 183 which means that 14% of posts is reported vacant and difficult to fill. Finally, there are instances where a specific subset of an occupation was experiencing scarcity but not the occupation as a whole. In these cases, the intensity of the scarce skills was not calculated since the number of employees in the specific subset is not known. For example, there is no shortage within the broader occupation of Mining Support Worker (OFO 831101) but there is a reported shortage on Battery Bay Attendant/ Battery and Lamp Repairer.

The top 25 occupations and the identified drivers are shown in the table below order from highest to lowest on Total Scarcity. Furthermore the list below and the full list (Appendix 3) differs from the submitted DHET list in relation to-intensity and the reasons underpinning the scarcity.

Table 6.1 Absolute and Relative scarcity

OFO	Occupation	Absolute Scarcity				Relative Scarcity				Total Scar	Total Empl	Intensity	Broader Occupation Title
		Lack of Sk	New or En	Replacem	EE	Location	Industry A	Replacem	Other				
214601	Mining Engineer	23	4	1	-	4	2	27	-	60	853	7.1%	
214601	Rock Engineer	23	-	-	2	-	-	6	4	35	853	4.1%	
216502	Surveyor	17	-	-	1	1	2	5	8	35	1 309	2.7%	
211401	Geologist	1	-	1	1	2	5	11	-	22	1 045	2.1%	
214401	Mechanical Engineer (Mines)	5	4	-	-	1	4	5	-	18			Mechanical Engineer
311501	Mechanical Instrument Technician	-	-	1	-	-	-	36	-	37	890	4.2%	Mechanical Engineering Technician
312202	Mine Equipment Planner / Coordinator	-	-	-	-	-	-	24	-	24			Maintenance Planner
432105	Lampman	-	57	-	-	-	-	-	-	57	445	12.8%	
653306	Diesel Mechanic	58	-	15	-	5	22	58	24	181	3 743	4.8%	
652302	Fitter and Turner	74	-	2	-	8	6	16	25	132	4 077	3.2%	
651501	Rigger Ropesman	13	-	4	2	-	2	24	4	50			Rigger
672105	Instrument Mechanician	22	-	-	1	-	5	13	4	45	1 021	4.4%	
642701	Air Conditioning Equipment Mechanic	-	-	36	-	-	-	-	-	36	10	375.0%	
671208	Auto Electrician	18	-	-	-	-	-	13	5	36	408	8.9%	
652301	Fitter-machinist	10	-	-	-	-	13	7	-	30	605	5.0%	
642702	Electrical Mechanic	27	-	-	-	-	-	-	-	27			Refrigeration Mechanic
653307	Earthmoving Equipment Mechanic	25	-	-	-	-	-	-	-	25			Heavy Equipment Mechanic
671101	Electrician (Engineering)	22	-	-	1	-	1	-	-	24			Electrician
653304	Diesel Fitter	18	-	-	-	-	-	-	-	18	67	27.3%	
733208	Mobile Mining Equipment Operator	-	-	-	-	-	-	168	82	250	5 428	4.6%	
734301	Winch Operator	-	-	-	-	-	-	-	121	121			Crane or Hoist Operator
711101	Continuous Miner Operator	-	-	-	-	-	-	37	-	37			Mining Operator
711101	Roof Bolter (Mining)	-	-	-	-	-	7	24	-	31			Mining Operator
734211	Dragline Operator	17	-	2	-	-	-	2	2	24	254	9.5%	
831101	Battery Bay Attendant/ Battery and Lamp Repairer	-	137	-	-	-	-	-	-	137			Mining Support Worker

Managers and Professionals

There are no managerial occupations identified in the top 25 but there are 5 that fall within the Professionals major grouping of the OFO. They are Geologists, Mining Engineer, Rock Engineer, Mechanical Engineer (mines), and Surveyor.

The reasons given by employers focus around:

- Lack of experienced candidates. Therefore the shortage is not merely related to the number of candidates but with the required experience levels. Often this will include specific sub-sector experience such as Diamond Exploration, Open Cast Mining or Underground Mining.
- Lack of specific skills within the occupation. For example mining engineers with explosives experience, shaft geologists, Section Engineers with GCC qualification
- High levels of attrition and turnover. This is largely a symptom of the scarcity rather than a driver but worthy of mention. Where specific skills are in a state of under-supply, the market creates incentives to move around.

Technicians and Associate Professionals / Clerical and Support Worker

There are 2 identified Technicians and Associate Professionals as well as 1 Support Worker identified in the top 25. They are: Mechanical Instrument Technician, Mine Equipment Planner and Coordinator and Lampman.

- Industry attractiveness was not a reported driver. Instead the focus was on replacement demand
- Lampman is a new occupation with a newly registered qualification and therefore there is an identified shortage
- The main driver seems to be related to relevant experience. Examples of reasons given include:
 - A lack of practical experience in qualifications
 - Specific mining experience

Skilled craft and related trades workers

Eleven of the top 25 scarce occupations come from the sixth major OFO group. They are: Diesel Mechanic, Air-conditioning Equipment Mechanic, Electrical Mechanic (Refrigeration), Rigger (notably Ropesman Rigger), Fitter Machinist, fitter / Turner, Diesel Fitter, Diesel Mechanic, Earth Moving Equipment Mechanic, Auto-electrician and Instrument Mechanician.

- Although 47% of vacancies are due to a reported absolute lack of skilled people with only 8% related to industry attractiveness, there is a shortage of mining specific skills within the broader trade occupations. For example: riggers with mining experience, mechanics on mining equipment and large earth moving equipment. A possible intervention would be to consider the career planning and guidance in partnership with schools and FET colleges. This would increase the number of entrants with a base level of knowledge and experience which should in turn create a large pool from which the sector can draw on.
- Staff turnover, poaching and market forces are discussed at length by employers but again these are symptoms rather than underlying causes.

Plant and Machine Operators and Assemblers / Elementary Occupation

There are 5 identified scarce occupations within the plant and machine operators and 1 from the elementary occupations. They are: Continuous mining operator, roof bolter (both of which fall under OFO 711101: Mining Operator), Mobile Mining Equipment Operator, Dragline Operator, Winch Operator and Battery Bay Attendant/ Battery and Lamp Repairer (OFO 831101: Mining Support Worker)

- Battery Bay Attendant/ Battery and Lamp Repairer is a new occupation with a newly registered formal qualification
- Within OFO 733208 (Mobile Mining Equipment Operator), there are a number of specialised occupations that were identified. This included:
 - Trackless Mobile Machine Operator
 - Roof Bolter Operator
- Shortage of experience candidates especially when related to specific machinery. SA draglines are different in South Africa and therefore there are supply difficulties for Dragline Operators.
- Shortage of specific skills including Drill & Blast engineers, Reverse circulation percussion drillers, Marine specific skills and Operator Roof Bolter Rig
- Again attrition, turnover and competition in the labour market were mentioned.

6.4 COMPARING SKILLS DEMAND TO SKILLS SUPPLY

Although the demand projections presented in Chapter 4 are made at the detailed occupational level, a direct quantitative comparison between future demand and supply of skills in the MMS is not possible. In the occupational group “professionals” and to some extent in the group “associate professionals and technicians”, the main source of new supply is the public higher education system. The MMS shares this supply with the rest of the economy. As an alternative, this section presents a qualitative comparative discussion, bringing together the key issues of the demand and supply situations in the main occupational groups as they emerge from the rest of this SSP.

6.4.1 Occupational group: Managers

In the current period, there have been no managerial occupations identified in the top 25 scarce skills. This is to be taken as a good sign because in previous WSP submissions, managerial occupations such as Engineering Managers were identified as scarce. This does not mean however that focus should be removed from this area lest there be scarcity in the future. Instead focus should remain on developing a suitable pipeline of skills into the key managerial occupations.

In previous periods the identified drivers of scarcity were

- high replacement demand due to retirement and;
- the need for greater transformation at top management levels

Therefore MQA can continue its focus on tertiary education (including postgraduate management courses), accelerated management development courses and special executive training programmes. In general, training opportunities for the development of

managers are sufficient with a possible obstacle that there is limited sector specific training available.

6.4.2 Occupational group: Professionals

In 2013, 4 of the top 25 scarce occupations were considered scarce.

It is important to note that the supply of skills chapter shows that there are a fair number of graduates emerging from HEI institutions. On the face of it, it may appear that there should be more than enough of the professionals mentioned. However, there are 2 key forces acting on the supply:

1. Anecdotal evidence suggests a perceived “unattractiveness” of the local mining sector relative to international mining opportunities as well as other sectors of the economy.

There is often a disjuncture between the level of experience in the available candidates and the posts where scarcity is being felt. Therefore the current supply of professional skills may need to be supported by a more structured mentoring / coaching programme where the pipeline of professionals are being developed from graduate to experienced expert. It also needs to be noted that poor scholastic performance results in the limitation of the availability of professionals for the MMS both in terms of their quantity and their quality. This emphasises the two points discussed above.

6.4.3 Occupational group: Technicians and associate professionals

The technicians and associate professionals follow a similar sort of pattern as the professional occupations. The numbers under the Professional group is focused on “Absolute Scarcity – Lack of Skilled People” whereas the scarcity under the Technicians focus on “Relative Scarcity – Replacement Demand”. The underlying driver however based on the qualitative feedback is that the scarcity is due to a shortage of specific experience that is relevant to the function of that particular job. The exception here is that of Lampsman which it is an entirely new occupation.

6.4.2 Occupational group: Clerical support workers

The impact of shortages in occupations within the group clerical and administrative staff is not really relevant as this is the easiest demand to fulfil. Sector- and company-specific training for those employed within the clerical support category is generally achieved through in-service training.

6.4.3 Occupational group: Service and sales workers

The demand for service and sales workers in the MMS is also generally met by people with a matric qualification, of which there is an oversupply in the general labour market. Additional in-service training provides the necessary sector- and company-specific training that is required for competence in the workplace.

6.4.4 Occupational group: Skilled agricultural, forestry, fishery, craft and related trades workers

This occupational group includes artisans and as mentioned in the previous section includes 11 of the top 25 scarce occupations. What is most notable is that the primary reason for the scarcity is given as an absolute shortage of skills. This implies an insufficient supply of graduates from training institutions. This however seems inconsistent with what one might expect given the focus placed on artisan training by DHET and other interested stakeholders. Therefore if one digs deeper into the reasons given by employers it again seems more related to a shortage of a specific skill or level of experience within the broader occupation. In this case:

- Rigger Ropesman and Riggers with Mining Experience
- Mechanics for Mining Equipment

Based on the information on hand, there perhaps is a need for additional qualifications to be designed for these specialised mining skills or the possibility that the existing qualifications are inadequate.

6.4.5 Air Conditioning Equipment Mechanic

This is a very small occupation within the MMS and it is not clear what is driving the reported scarcity. It is hypothesised that since it is traditionally not a core skill, it may have been outsourced. Therefore if an employer was to begin bringing the skill back in house, they may have trouble attracting those skills thus resulting in a replacement demand greater than the total number of current employees. Occupational group: Plant and machine operators and assemblers.

The occupations in this group tend to be very technical (rather than generic) and the skills tend to relate to a specific operation or piece of equipment. Some of these skills will be commonly used across the MMS and some will be unique to a given operation. In the case of the former, formalised qualifications as a means to supply the required skill is feasible. Dragline Operators for example is a scarce occupation and while there is a level of specialisation required within South Africa (as opposed to an international standard), additional focus on supply will have an effect on the scarcity. That latter on the other hand relies almost solely on in house training and continuous development.

There are occupations in the 2013 submissions where the scarcity is actually being experienced in a subset of the 6 digit OFO occupation. For example there is no real shortage within Crane / Hoist Operators but employers did identify “Winch Operator” as a scarce skill. This is an important point because there might be sufficient supply of the general skills for an occupation but insufficient supply of a certain speciality within that occupation. Therefore skills planning (even at the 6th digit OFO level) may not always present the optimal findings in terms of matching supply and demand. This would become more clear through a skills audit process where individual occupations and skills profiles are mapped and measured. Other examples of this include Continuous Miner Operator and Roof Bolter (Mining) as part of OFO 711101 (Mining Operator) and Battery Bay Attendant/ Battery and Lamp Repairer as part of OFO 831101 (Mining Support Worker).

Higher levels of literacy are considered necessary to improve the overall health and safety of this group, with education and training initiatives focusing on learnerships, skills programmes, in-service training and ABET. Skills programmes, in particular, are well suited to the needs of the sector as they address necessary technical skills, and health and safety skills in a work environment that in reality provides little time for training. There has thus been a large uptake of skills programmes concurrent with large-scale involvement in ABET across the sector. Despite this, ABET suffers from high drop-out rates and the impact of ABET is still slow. Finally, the critical need to formally assess and recognise informally acquired knowledge (through RPL) remains.

6.4.6 Occupational group: Elementary workers

Skills programmes, in-service training, and ABET are the primary means through which an increase in literacy levels is sought, with the sector involved in these initiatives on a relatively large scale. It needs to be noted that even though the category implies predominantly unskilled work, there are occupations that require specific mining competencies. The supply of these skills will mostly be generated in house but there is scope for formal training as well. For example, in the 2013 WSP submission, Battery Bay Attendant / Battery and Lamp Repairer was identified as a new occupation with a newly registered formal qualification.

6.5 CONCLUSION

While data and other constraints prohibit a direct quantitative comparison of the future demand for skills within the MMS to the future supply of such skills, a qualitative analysis does, however, provide useful and directive information.

There were clear trends emerging from the 2013 scarce skills submissions. They are:

- Scarcity as highlighted in the 2013 WSP submissions is rarely related to an absolute shortage of available people with a given qualification but rather due to a specific skill or experience that is lacking in the labour market. This includes mining specific versions of certain skills
- Scarcity can be felt in an occupation where there is more than enough candidates (over supply) but a subset or specialisation has not been adequately addressed by the labour market.
- The lack of experience is a key driver of scarcity. Therefore initiatives to transfer skills within the workforce and expose graduates to relevant work will develop a pipeline of skills within the identified occupations.
- High turnover and poaching is often cited as a driver of scarcity rather than a symptom.

It needs to be made clear that these trends are derived from feedback to the scarce skills requests in the WSP and do not necessarily translate to the broader labour pool for skills in the MMS. Having said that however, it is possible, that future research including a skills audit to be conducted by the MQA will further unpack these hypotheses.

7. STRATEGIC OBJECTIVES

7.1 INTRODUCTION

The MQA is expected to facilitate the delivery of sector-specific skills interventions that help achieve the goals of the National Skills Development Strategy (NSDS) III, address employer demand and deliver results. Following the release of the NSDS III in January 2011, numerous important developments have taken place to give effect to enhancing skills development in the country. The Green Paper for Post-school Education and Training, released in April 2012, outlines a vision for the post-school system and proposes measures to improve further education and training (FET) colleges, higher education and training (HET) institutions, work-based learning, state institutions and the regulatory environment. The occupational learning system is progressing with the Quality Council for Trades and Occupations (QCTO) having published various policies, including policies on development quality partners (DQPs), assessment quality partners (AQPs) and curriculum and assessment. The implementation of these policies is unfolding. Various Skills Development Act and Skills Development Levies Act regulations, such as those on grant regulations, learning programme regulations and the listing of occupations as trades, are in the process of being revised or have already been updated. As new developments unfold, the MQA is making the necessary adjustments.

This chapter represents the core of this SSP: In essence it presents the action plan for the MQA in respect of skills development in the Mining and Minerals Sector (MMS) over the period 2011–2017, but with specific reference to the strategic objectives set for the 2012/13 financial year. Considerable attention is also dedicated in this chapter to linking the MQA's planned interventions with various national policies and strategies. The ways in which this Sector Skills Plan (SSP) will contribute to the national skills development agenda are also highlighted.

Section 7.2 presents the MQA's strategic objectives. The skills development priorities set out in the SSP that was submitted to the Department of Higher Education and Training (DHET) in February 2011 were revised and are now referred to as strategic objectives. The strategic objectives emerged as the culmination of the analysis presented in chapters 2 to 6 and stakeholder engagement that took place during the development of this SSP update. These strategic objectives are also set out in the Strategic Plan of the MQA (for implementation in the 2013/14 financial year), of which this SSP is an annexure. Notably, the MQA's strategic objectives have been aligned with the current Mining Charter, the NSDS III and the National Skills Accord.

In particular, the MQA will focus on skills development interventions related to the following elements of the Mining Charter:

- Employment equity through support for programmes for the development of managers and core skills in the sector

- Human resources development through support for core skills programmes in the sector, including support for research programmes
- Mine community development through support for a customised mining community capacity-building programme aligned with municipal local economic development (LED) plans, as well as support for small-scale mining
- Sustainable growth and development through support for programmes that improve environmental management, as well as health and safety in the sector
- Beneficiation through the support of minerals beneficiation programmes, in particular related to the diamond processing and jewellery manufacturing industries

The MQA will further support the Mining Charter by continuing to align workplace skills planning and reporting processes with Social and Labour Plan reporting processes in collaboration with the Department of Mineral Resources (DMR).

The contribution of the MMS (through this SSP) to the strategic areas of focus for the NSDS III is the subject of Section 7.3. This section needs to be read with the strategic plan for 2013/14, which contains more detail and specific targets.

Section 7.4 deals with the MMS's contribution to the President's outcomes approach to planning government's work. Section 7.5 highlights the ways in which this SSP supports government's Medium-term Strategic Framework (MTSF) policy objectives, while section 7.6 links this SSP to the objectives and action plans of government's Industrial Policy Action Plan (IPAP) 2010/11, which places a high focus on the issue of precious metals beneficiation as a means to improve the sustainable development of the sector and the national economy. Section 7.7 refers to the New Growth Path (NGP) announced by government in 2010 and the National Skills Accord in which stakeholders agreed to skills development actions in support of the NGP. Section 7.8 refers to the Beneficiation Strategy for South Africa. Section 7.9 refers to the National Development Plan: Vision 2030, and Section 7.10 to government's Strategic Infrastructure Projects.

Importantly, this chapter assumes that the reader is intimately familiar with the first six chapters of this SSP (although internal references are made where applicable) and the MQA's strategic plan, and is at least moderately familiar with the NSDS III, the MTSF, the IPAP and the NGP.

7.2MQA STRATEGIC OBJECTIVES

The MQA's strategic objectives refer to the strategic objectives set out in the MQA's strategic plan for 2013/14. The first objective is cross-cutting and will, apart from specific interventions, also be reflected in all the work of the MQA. The sequence of the other objectives more or less ties in with the process flow of the MQA.

7.2.1 Strategic Objective 1: Support transformation of the sector through skills development

The importance of the Mining Charter and other sectoral policies aimed at the transformation of the MMS has been stressed previously in this SSP. Throughout the planning period covered by this SSP, the MQA will support the objectives of the Charter and it will focus

specifically on support for Charter Element 2.4 – Employment Equity, which requires a minimum of 40% historically disadvantaged South Africans (HDSA) demographic representation by 2014 at the levels of executive, senior management, core and critical skills, middle management and junior management. In support of Charter Element 2.4, the MQA will implement a specific project to support the development and implementation of programmes for HDSA managers in the sector. The Charter will also be supported through the execution of a skills audit in the MMS that will lay the basis for more targeted learning opportunities in the mining industry. The first cycle of the Skills Audit Project was undertaken in 2011/12 and this will be continued. The development of HDSAs will be prioritised in all other skills development programmes and interventions.

In order to achieve the strategic objective, MQA will undertake the following during the planning period:

- **Lecturer support**
Increase the number of HDSA lecturers in mining-related disciplines (such as mining engineering, mine surveying and geology) at HET institutions.
- **Artisan aides**
Artisan aides are trained to access artisan development qualifications.
- **Recognition of prior learning (RPL)**
Increase the number of learners in different learning programmes through RPL.

In addition, the MQA will incentivise the training of women in the MMS. The MQA aims to increase the number of women trained in mining skills in the MMS and target that at least 10% of all learners in programmes should be women.

7.2.2 Strategic Objective 2: Support objective decision-making for skills development through research in the sector

The MQA is in the process of growing its research capacity and it revises its research agenda on an annual basis. Research into skills development in the sector is a core strategic function of the MQA that will continue during the planning period. The research that the MQA undertakes focuses on the skills needs of the sector and ties in with and augments the work of other institutions such as the Mine Health and Safety Council (MHSC). In the planning period of this SSP, the MQA envisages the strengthening and improvement of its research function to support decision-making regarding skills development in the sector. The MQA also envisages the strengthening of its research network and aims to establish stronger links with other research institutions in the sector and with the DMR, as this will directly support Mining Charter Element 2.5, which is human resources development. Human resources development includes support for South African-based research and development initiatives intended to develop solutions in exploration, mining, processing, technology efficiency, beneficiation, and environmental management. Strategic decision-making should be based on high-quality research and all changes to the qualifications framework should be research-based. All programmes developed and implemented by the MQA are continually verified against the prevailing qualifications framework.

In order to achieve the strategic objective, MQA will undertake the following during the planning period:

- **SDF support and capacity building**
Build the capacity of skills development facilitators (SDFs) and skills development committee workplace skills plans (WSPs)/annual training reports (ATRs).
- **Skills audits**
Support organisations in the MMS to conduct skills audits within their organisations.
- **Collaboration on research**
Collaborate more closely with higher education institutions regarding skills development and research in the MMS.
- **Research capacity-building**
Support postgraduate students who undertake studies in MMS-related research topics.

7.2.3 Strategic Objective 3: Enhance information management for skills development in the sector

It has become a critical strategic priority to continuously track and monitor labour market trends, learner achievements and the career progression of individuals through a well-designed and fully operational management information system (MIS). This is crucial for the functioning of the MQA and all related parties within the sector that work with skills development processes, in particular skills development facilitators and training centres/providers. It is equally important that this MIS should effectively interface with other sectoral and national databases in order to support national policy and decision-making processes. The MQA has experienced many challenges with regard to its MIS in recent years – to the extent that the design and implementation have become critical imperatives. For this reason, the development of an MIS is seen as a strategic objective for the NSDS III period.¹⁴⁶ At such a time as a new system is implemented, the current system (MQA I-Share) will be phased out. Apart from implementing a new system, the MQA will take ownership of its own data and will strive to continuously improve the quality and accessibility of its data.

This objective is, however, not limited to the development of an internal MIS; it also includes the development of a more comprehensive and integrated skills development information system for the entire sector. Such a system should provide for easy access to and data sharing between the different organisations that collect statistical information on skills development in the MMS.

The MQA will furthermore streamline its operations through improved information management. MQA processes, policies and governance frameworks will be reviewed along with the MIS, and the MIS will be designed and continuously adapted to suit the needs of the organisation and of stakeholders.

¹⁴⁶ MIS systems, and the control and security of data on such systems, has also been recently included as a key element of good corporate governance in the King III Report on Governance. The MQA Board carries fiduciary responsibility to have a good and well-controlled MIS.

In order to achieve the strategic objective, the MQA will undertake the following during the planning period:

- Establish and maintain an integrated, fully functional MIS that meets the needs of the stakeholders.

7.2.4 Strategic Objective 4: Facilitate and support the development and implementation of core skills development programmes aligned with the sector qualifications framework

Core sector skills development programmes refers to programmes that are essential for the functioning of the sector. These include programmes that prepare new entrants for the labour market, as well as programmes designed to improve the skills base of the existing workforce.

Due to the changing skills development landscape in the country, the establishment of the QCTO has implications for operational MQA activities in so far as the development of the curriculum, assessment specifications and external assessment instruments need to occur. This process for the improved effectiveness of training provision and assessment is envisaged as enhancing the quality of human resource development.

The MQA is also, in terms of its Board-approved funding policy, obliged to spend most of its funding in occupational programmes supporting core MMS skills. Currently, more than 80% of the discretionary funds are spent on this type of training. This is expected to continue in the planning period.

In order to achieve this strategic objective, the MQA will undertake the following during the planning period:

- Support grades 10, 11 and 12 learners to successfully complete Mathematics and Physical Science.
- Increase awareness of mining and minerals sector-related careers.
- Encourage learners to achieve AET programmes to progressively increase levels of literacy in the MMS.
- Train employees to complete occupational health and safety (OHS) representatives' programmes.
- Encourage learners to achieve the foundational learning competency (FLC) programme to progressively increase levels of literacy in the sector.
- Support FET college lecturers to be responsive to sector skills needs and priorities.
- Support FET college learners to be responsive to sector skills needs and priorities.
- Support the registration of learners on artisan programmes.
- Support learners to successfully complete artisan programmes.
- Provide bursaries to undergraduates enrolled in MMS-related disciplines.
- Assist undergraduates with the P1 and P2 work experience in order to attain their undergraduate qualifications.
- Facilitate access for graduates in MMS core and related skills.
- Facilitate and support skills development activities for diamond processing and jewellery manufacturing.
- Develop learners in core learnerships for the MMS.

- Support the annual International Literacy Week with events and activities that will demonstrate the MQA's commitment to the eradication of illiteracy in South Africa.
- Support standards setting for FET and HET programmes.
- Support learning material development.

The ABET Practitioner Programme will be discontinued after the 2013/14 financial year.

7.2.5 Strategic Objective 5: Enhance the monitoring, evaluation and review of the delivery capacity and quality of skills development in the sector

In Chapter 5, it was stated that the sector has serious concerns regarding the capacity and quality of the training on offer. Element 2.5 of the Mining Charter requires the industry to increase its spending on training over the next few years from 3% of payroll in 2010 to 5% of payroll in 2014, over and above the 1% of payroll paid in the form of the Skills Development Levy (SDL). At the same time, the quality assurance system for occupational qualifications is in the process of changing under the new QCTO dispensation. Under the new dispensation, quality assurance is set to shift away from accreditation towards monitoring, evaluation and assessment. The role of the sector education and training authorities (SETAs) with regard to quality assurance is expected to change in keeping with the development of the QCTO.

Element 2.8 of the Mining Charter (sustainable development and growth) also requires the ongoing monitoring and evaluation of the implementation of environmental management, and health and safety in the industry through the monitoring of the implementation of the tripartite action plan. The MQA will need to support these processes by monitoring the capacity and quality of delivery of programmes relevant to environmental management as well as to health and safety.

In the period covered by this SSP, the MQA will focus strongly on the strengthening and development of existing private and public training capacity, including the development of trainers, mentors and assessors.

More specifically, in the planning period the MQA will do the following:

- Monitor and evaluate the quality of the delivery and assessment of learning within the MMS. The aim is that 100% of accredited providers and approved workplaces should maintain the required status.
- Support the sector to develop sufficient training and development capacity and continuously improve the delivery of quality programmes.

7.2.6 Strategic Objective 6: To run an efficient, effective and transparent corporate governance system within the legislative framework

The aim is to streamline the internal business processes to meet the MQA's strategic objectives. This includes the following:

- Support stakeholder engagement.
- Ensure presence in all the provinces.
- Ensure full compliance.
- Ensure the sustainability of the organisation.

- Review policies and procedures.
- Ensure that the monitoring and evaluation of all programmes are aligned to National Treasury's monitoring framework. Indicators and impact measures will be built into all projects and grants and they will be monitored and evaluated accordingly.

7.2.7 2014-2015 Budget and Targets of programmes as per the MQA strategic plan

The proposed strategic objectives of the MQA are foreseen to be financed as set out in Table 7.1:

Table 7.1 Detailed breakdown of discretionary grants

PROGRAMME REF & NAME	TARGETS	BUDGETS	COMMITMENTS RAISED	
	2014-2015	2014-2015	2015-2016	2016-2017
		R'000	R'000	R'000
A001-Lecturer (HET)	27 existing lecturers	10,520	11,362	-
A002-Bursaries	750 existing learners	43,750	-	-
A003-Work Experience	600 new students	43,200	-	-
A004-Standard Setting	Existing Qualifications development, ratification of learning material	3,500	-	-
A005-Learning Materials Development	100 LM packs	4,000	-	-
A006-Internships (GDP)	400 existing Learners	69,700	450	-
A007-Non Artisan Learnerships	2781 existing learners	54,523	597	-
	3500 new learners	41,600	66,200	-
A008-Skills Development Facilitator Support	550 skills development facilitators	1,000	-	-
A009-ABET	2000 new learners	10,000	-	-
A010-OHS Rep Development	5000 new learners	12,500	-	-
A011-NSF 2 - Artisan Development	0 new learners	290	-	-
A012-UIF 1 Learnerships Artisan	0 new learners	17,165	2,545	-
A013-MQA Artisan Development	4049 existing learners	75,130	197,660	4,190
	2200 new learners	153,285	76,642	76,642

A014-RPL / Artisan Aides - Employed	597 existing learners	7,305	450	-
	500 new learners	6,000	1,500	-
A015-FET College Support	20 lecturers	720	-	-
	250 NCV learners	7,500	15,000	-
A016-Maths & Science	1000 new learners	10,000	-	-
A017-External Assessment Tools Development	For 2 qualifications	200	-	-
A018-FLC Grant Incentive	250 new learners	1,250	-	-
A019-Mpumalanga FET Artisan	220 existing learners	9,000	4,338	-
TOTALS		582,138	376,744	80,832
TOTAL COMMITMENTS			457,576	

Source: MQA, 2013.

7.2.8 Public HET collaboration

The MQA intends to initiate and establish partnerships and relations with the following South African public HET institutions around identified learning programmes (forming part of the intervention column below) within the MTSF period starting from 2012/13):

Table 7.2 Partnership matrix HET Institutions

No	Name	Province	Programmes offered	Identified MQA intervention
1.	Nelson Mandela Metropolitan University	Eastern Cape	MMS-related	Bursaries
2.	Rhodes University	Eastern Cape	Geology	Lecturer Support Project Bursaries Lecturer development
3.	University of Fort Hare	Eastern Cape	Geology	Lecturer Support Project Bursaries Lecturer development
4.	Walter Sisulu University of Technology	Eastern Cape	MMS- related	Bursaries
5.	Central University of Technology	Free State	MMS-related	Bursaries
6.	University of the Free State	Free State	MMS-related	Bursaries

7.	University of Pretoria	Gauteng	Mining Engineering	Lecturer Support Project Bursaries Lecturer development Learning material support (Rock Engineering) Possible research partnership Research bursary
8.	University of South Africa	Gauteng	Electrical, Mechanical and Mining Engineering	Lecturer Support Project Learning material support (Rock Engineering) Bursaries Programme development (Mine Survey) Lecture Development
9.	Tshwane University of Technology	Gauteng	MMS-related	Bursaries
10.	University of the Witwatersrand	Gauteng	Mine Surveying and Mining Engineering	Lecturer Support Project, Learning material support (Rock Engineering) Bursaries, Mine inspector development Possible research partnership Research Lecture Development
11.	Vaal University of Technology	Gauteng	MMS-related	Bursaries
12.	University of Johannesburg	Gauteng	Mining	Lecturer Support Project Learning material support (Rock Engineering) Bursaries Programme development (Mine Survey) Possible research partnership Research bursary

				Lecture Development
13.	Durban University of Technology	KwaZulu-Natal	Jewellery and beneficiation-related	Bursaries
14.	University of KwaZulu-Natal	KwaZulu-Natal	MMS-related	Bursaries
15.	Mangosuthu Technikon	KwaZulu-Natal	MMS-related	Bursaries
16.	University of Zululand	KwaZulu-Natal	MMS-related	Bursaries
17.	University of Limpopo	Limpopo	MMS-related	Bursaries
18.	University of Venda	Limpopo	Mining and Environmental programmes and Geology	Lecturer Support Project Lecture Development
19.	North West University (Potchefstroom)	North West	MMS-related	Bursaries Possible research partnership Research bursary
20.	University of Stellenbosch	Western Cape	MMS-related	Bursaries
21.	University of the Western Cape	Western Cape	MMS-related	Bursaries
22.	Cape Peninsula University of Technology	Western Cape	Jewellery and beneficiation-related	Bursaries

7.2.9 NSF funds for the skills development in the MMS

The NSDS III Framework issued by the DHET in April 2010 included the following section on possible additional funding for SETAs from the National Skills Fund (NSF):

“Minister Nzimande has referred to the National Skills Fund as a ‘catalytic’ fund – enabling the state to drive key skill strategies, as well as to meet the training needs of the unemployed and vulnerable. The National Skills Fund is therefore a national resource, which can be used to both initiate and respond to national skill priorities. It can be used to target gaps and complement resource shortages for national priorities. Some of the ways in which it might *respond* to targeted needs are considered below, but in addition to being responsive, it can itself trigger interventions needed to meet national strategic goals. The National Skills Fund would assess sectoral plans against national goals and use the fund portion of the skills levy to strengthen the overall achievement of the NSDS III.

For the NSF to play a responsive, catalytic role, it is envisaged that SETAs, in their approved SSPs, could highlight priority skill interventions that they would like to make, but for which they do not have the required resources. These could be submitted together with their SSPs and would enable them to secure NSDS-long commitments from the NSF for

supplementary funding. This would assist those SETAs with a currently low levy income to secure additional resources to meet strategic skill priorities into the future.”¹⁴⁷

In considering the requirements for additional funding from the NSF in the form of catalytic grants, the medium- to long-term skills development needs of the MMS are influenced in particular by two tables from Chapter 4 of the SSP on the supply of labour.

The first is Table 2.3, which reflects the huge demand in the sector for fundamental learning. This implies a need for catalytic grants, especially for ABET.

The second is shown below, which reflects the new positions and replacement demand in the core occupational groups in the sector for the period 2011–2017 if the sector were to attain the projected growth projected until 2020 under the Labour Demand Projection Model. This implies a need for NSF funds for bursaries, work experience learning, and internships, artisans and non-artisan learnerships, effectively for programmes of the professional, vocational, technical and academic learning (PIVOTAL) type.

Table 7.3 Total number of positions to be filled: 2013–2017

OFO Major Group	2013	2014	2015	2016	2017
Managers	2470	2540	2600	2670	2740
Professionals	3990	4100	4210	4310	4430
Technicians and Associate Professionals	8000	8210	8420	8640	8870
Clerical Support Workers	2110	2170	2230	2280	2340
Service and Sales Workers	630	650	670	680	700
Skilled Agricultural, Forestry, Fishery, Craft and Related Trades Workers	4990	5120	5250	5390	5530
Plant and Machine Operators and Assemblers	19020	19520	20020	20540	21080
Elementary Occupations	11290	11580	11880	12190	12510
Total	52500	53890	55280	56700	58200

Source: MQA Labour Demand Projection Model, 2012.

The actual value of the NSF application for the MMS will only be calculated and submitted to the DHET once the guidelines and requirements for these applications have been released.

A top-up for artisan grants is being considered by the NSF.

7.2.10 Professional, vocational, technical and academic learning (PIVOTAL) programmes

The MQA understands PIVOTAL programmes to mean professional, vocational, technical and/or academic learning programmes that result in occupational qualifications that are quality-assured by a quality council (QC) and may include a knowledge component that is normally delivered at a university, a university of technology or a further education and training (FET) college.

¹⁴⁷ Department of Higher Education and Training, Framework for the National Skills Development Strategy 2011/12 – 2015-16, p. 22.

PIVOTAL should cover all NQF levels, so should refer to quality councils not just the QCTO. MQA is considering allocating a PIVOTAL grant to an employer for a learning programme to fund learners on PIVOTAL programmes, inclusive of but not limited to funding of university students, university of technology students, FET college graduates and learners studying with professional bodies towards professional qualifications, subject to verification by the SETA to a maximum of 10% of total levies paid by the employer. Current skills programmes registered with the SETA are not catered for until the QCTO process unfolds. They would then be recognised as occupational awards. Strategic and critical occupations in the mining and mineral sector, such as Occupational Health and Safety Representatives which are regulated and supported by a structured learning programme (now a skills programme but in future an award) should be permitted as PIVOTAL programmes. MQA's approach to PIVOTAL programmes is under consideration and awaiting the Grant Regulations.

7.2.11 SETA grant regulations

In December 2012, the DHET published the SETA grant regulations regarding monies received by a SETA and related matters. This also applies to the MQA and is implemented accordingly.

The intent of the regulations is to do the following:¹⁴⁸

- Regulate the proportion of funds available for skills development that is spent on administration.
- Provide for SETAs to contribute to the cost of the work of the QCTO.
- Discourage the accumulation of surpluses and the carry-over of unspent funds at the end of the financial year.
- Improve the quantity and quality of labour market information received by SETAs in the form of WSP, ATR and PIVOTAL training reports, to inform planning.
- Promote the NQF-registered and quality-assured PIVOTAL programmes that address priority scarce and critical skills needs identified in SSPs.
- Create a framework within which expanded use is made of public education and training providers for the provision of skills development programmes.

Administration costs

The SETAs are limited to 10.5% of the total levies paid by employers to use for administration costs. As from 1 April 2013, all SETAs will transfer an amount not exceeding 0.5% of the total levy paid to the QCTO. The purpose of this amount is to ensure quality assurance. The percentage that has to be transferred will be determined by the Minister of Higher Education and Training by 31 July of each year.

¹⁴⁸ Government Gazette, 3 December 2012.

SETA finances

Each SETA has to transfer unclaimed mandatory funds and interest earned thereon into the Discretionary Grant Fund and this has to be completed by 15 August each year. Any administrative funds and interest earned on these funds that are not spent must be moved into the Discretionary Fund by 31 March of each year. The amounts in the Discretionary Fund on 1 April every year and the money received from discretionary levies every month must be spent within the following 12 months.

Every SETA must allocate 80% of its discretionary grants within a financial year to PIVOTAL programmes that address scarce and critical skills. SETAs will only be allowed to carry over 5% of uncommitted funds to the next financial year and, by implication, have to have spent 95% of their discretionary funds by 31 March each year. Any surplus discretionary funds will be paid to the NSF by 1 October of each year.

Mandatory grants

Employers have to submit the WSP and ATR for the 2012/13 reporting year by 30 June 2013, but as of 1 April 2014, the submission deadline will be 30 April of each year. The period for data compilation for submission is therefore effectively reduced to a one-month period. Proper recordkeeping of all training, copies of certificates and proof of payment will have to be kept up to date throughout the reporting period to ensure timeously reporting. The mandatory grant will be reduced to 20% of an employer's 1% skills levy. The reduction is significant and employers will have to utilise the discretionary grant applications. Mandatory grants will continue to be paid at least quarterly. Any mandatory grants not claimed will be transferred into the SETAs Discretionary Fund by 15 August each year. A SETA will only pay out an employer's mandatory grant if the eligibility criteria for payment of mandatory grants are met.

The levy paying employer has to meet the following criteria:

- Be registered with the Commissioner in terms of the Skills Development Levies Act.
- Have paid the levies to the Commissioner as required by the SDLA.
- Ensure that all levy payments are up to date at the time of the approval and for the reporting period.
- Ensure that the WSPs and ATRs are submitted by the required deadline.
- As from 1 April 2013, have submitted the WSP for the previous reporting period and implemented it according to the prescriptions for implementation by the particular SETA.
- Any employer who has a recognition agreement with a trade union or has any union in place will have to provide proof that the WSP and ATR have been subject to consultation with recognised trade unions and that the WSP and ATR are signed off by the labour representative appointed by the recognised trade union, unless an explanation is provided.

The above will therefore require employers to plan training that will be implemented, and the employer will have to ensure that all training meets the criteria set out by the relevant SETA. The employer will have to check that statutory training like First Aid training is included and ensure that all training is accredited.

Discretionary Grant

The allocation of discretionary grants will be directly related to each SETAs Scarce Skills Plan and will be guided by an approved Discretionary Grant Policy. SETAs will have to ensure that the distribution of grant applications and project proposal forms are done in a way that enables national access and allows various individuals or institutions to be able to apply for them. SETAs are required to focus on addressing scarce skills and critical skills through programmes designed to address skills needs and would include integrated learning. In order to obtain discretionary funding for PIVOTAL programmes, the employer or legal person must complete and submit a PIVOTAL training plan and report using the documents provided in the regulations published in December 2012. The regulations in the SETA Grant Regulations document became effective on 1 April 2013. The most significant changes are the reduction in the Mandatory Grant percentage from 50% to 20% and the strict control and criteria to be met in terms of a company's previous period WSP submitted to the SETA. Each SETA will require planned and implemented training to meet specific criteria. Another significant change is that the submission date for the WSP and ATR is moved forward to 30 April 2014. Employers will have to focus on proper recordkeeping throughout the year to avoid not being able to provide all the correct and required information between the end of the reporting period on 31 March each year and the submission deadline of 30 April.

Employers will have to start implementing PIVOTAL grants to ensure that they have access to the skills levy they pay. The purpose of PIVOTAL grants is to provide students with the opportunity to complete a practical part of their qualification. This is usually the last leg that they need to complete in order to obtain their qualifications. Many students cannot complete their qualifications due to the fact that they do not have the opportunity to complete their practical training. The PIVOTAL grant will allow students to complete their training, and also gain valuable work and industry experience, which will make them more employable. The NSDS provides information on the scarce and critical skills in our country.

The changes in the grant regulations will require employers to actively plan, source and fund training. A trained workforce is a motivated and productive workforce and will ultimately increase a company's Employment Equity Profile, as well as the company's black economic empowerment (BEE) scorecard.

Current skills programmes registered with the SETA are catered for and recognised as occupational awards. Strategic and critical occupations in the MMS, such as occupational health and safety representatives which are regulated and supported by a structured learning programme, are now permitted as PIVOTAL programmes.

7.3 SECTORAL CONTRIBUTION TO STRATEGIC AREAS OF FOCUS FOR NSDS III¹⁴⁹

¹⁴⁹ The comments and targets stated in this section are referenced to the detailed MQA Strategic Plan Implementation Schedules as reflected on pages 12 to 17 of the MQA Strategic Plan for 2011-2012.

This section focuses on the contribution of the MMS (through this SSP) to the strategic areas of focus for the NSDS III. The section starts with the seven key developmental and transformational imperatives that will guide the NSDS and against which the NSDS will be measured. The way in which the MMS will focus on and the contribution that the MQA will make with regard to these imperatives are first discussed. This is followed by a tabular alignment of the MQA's goals and objectives, as reflected in the Strategic Plan, to the NSDS III goals, outcomes and outputs.

7.3.1 Key developmental and transformation imperatives

a) *Race*

As mentioned in previous parts of this SSP, the correction of racial imbalances is an important component of the Mining Charter and the integrated transformation processes that are currently implemented in the MMS. In support of these initiatives, the MQA programmes and projects will have a strong focus on the training of HDSAs – especially in the occupational categories in which they are underrepresented (such as managers). The MQA records and reports on its learners in terms of the racial categories prescribed by employment equity legislation.

b) *Class*

The MMS is one of the largest providers of employment to people with low levels of formal education. The huge emphasis that is placed on ABET and the development of core industry skills should provide access to education and training to people who were previously excluded from such opportunities. It is suggested that this sector's contribution in terms of this aspect of equity should be measured and reported on in terms of the level of education of the employees in the sector, as well as the numbers of workers within each occupational category as defined by the Organising Framework for Occupations (OFO).¹⁵⁰

c) *Gender*

Another imperative set in the Mining Charter is the increased numbers of women in mining. The sector profile presented in Chapter 2 clearly shows the progress made in this regard. The MQA has in the past supported women's entry into the sector and will continue to do so in the planning period. It will also report on its learners in terms of their gender. The MQA will strive to ensure that at least 10% of all learners on MQA programmes are women, as this is consistent with the targets set by the MMS.

d) *Geography*

The NSDS III places special emphasis on skills development that will support the economic development of rural areas. As mines are generally situated in rural areas (labour-sending areas as well as mining areas), the MMS is intensely involved in rural development. Conversely, mine closures or the downscaling of operations has a profound negative effect on rural development and on unemployment in rural areas. It is for this reason that mining

¹⁵⁰It may also be useful to monitor wage differentials in the sector. However, at this stage, such information is not available.

companies are bound to the submission of a Social and Labour Plan to the DMR. As indicated in Chapter 2, these plans have to include local economic development programmes that focus on how the mine or production operation will address the socioeconomic needs of the area within which it operates and the area from where it sources its workforce. The plans also have to include processes to address situations that may negatively affect the employment of workers – i.e., processes that will mitigate the effect of possible downscaling or job losses at the operation. The MQA's role is to provide access to, information on and general support regarding learning programmes to be utilised in these processes.

An increased focus is on skills for rural development to support government's prioritisation of rural development. The MQA will support the process for mine community development through support for a customised mining community capacity-building programme aligned with municipal LED plans. In addition, the MQA will support learners in rural mining community schools with additional Mathematics and Physical Science tuition so that acceptable results are obtained in their matric year. This will contribute to an acceptable pipeline for careers within the industry and the nation at large. The MQA Board, at its sitting in February 2012, gave an in-principle approval to establish a provincial presence in five identified provinces: Limpopo, Free State, North West, Northern Cape and Mpumalanga. Inroads have been made in the following areas in terms of engagements and investigation: Northern Cape (Kgalakgadi), North West (Brits/Rustenburg/Modikwa), Free State (Goldfields in Welkom) and Mpumalanga (Siyabuswa in Nkangala District).

The physical presence of the MQA in these mining provinces will also be aligned to the strategy of government, which requires SETAs to be located at public FET colleges.

The MQA has provided for offices in the following provinces:

- North West – Orbit FET College, Mankwe
- Free State – Goldfields FET College
- Mpumalanga – Nkangala FET College
- Northern Cape – Kathu FET College
- Limpopo – Sekhukune FET College
- Eastern Cape – King Hintcha FET College

e) Age

Most of the learning programmes supported by the MQA focus on the youth. Learners' ages are recorded by the MQA and reporting can take place in terms of the ages of learners.

f) *Youth assistance with employment*

The MQA is currently using all its funded learnerships (artisan and non-artisan), workplace experience and work-integrated learning programmes, bursaries and internships to assist the youth with placement at mining companies. The placement of learners with host employers is inextricably interwoven into all MQA programmes. All MQA-funded graduates exit the learning programmes with workplace components embedded in all their programmes. The unemployed MQA graduates are further assisted through an internship programme to acquire competences and skills legislated in the schedule of competencies

under the MHSA to sit successfully for specified government certificates of competence (GCC).

The MQA's strategy with regard to supporting youth development in order to contribute towards reduced levels of unemployment will focus on the following:

- All unemployed learners for artisan learnerships, non-artisan learnerships, bursaries, internships and HET work placements for graduates will be supported through the MQA's discretionary funding mechanisms.

Labour Appeal Court president, Judge Basheer Waglay, highlighted the issue of youth unemployment and raised concern that South African youths found it very difficult to secure employment of any kind. He noted that a joint attempt by youth organisations, government, business and labour would be required to tackle the issue. The partnership would have to work towards improving the skills of youth, improving their work exposure through internships, apprenticeships and open days, and creating jobs. "The Youth Employment Accord provides for businesses and government to set aside jobs for young people and to give a substantial number of all new jobs created to the youth. This is one initiative I hope will be thoroughly supported," Judge Waglay said. While there had been a small increase in employment in the first quarter of 2013, the number of unemployed people has increased even more. There were 4.6 million unemployed persons in the South African labour market and, of these, about 2.3 million were discouraged work seekers. At the end of March, unemployment in South Africa was at 25.2%, while youth unemployment was at 41%. The International Labour Organisation's Global Employment Report of 2012 indicated that 400 million jobs would be needed over the next decade to avoid a further increase in global unemployment.¹⁵¹ The MQA is committed to its role of job creation in South Africa.

g) Disability

It is acknowledged that the MMS, because of the nature of the work, high accident rates and high prevalence of occupational diseases, contributes to disability in the country. However, the sector is committed to the reduction of accidents that cause injury and mortality and the reduction in the prevalence of occupational disease such as tuberculosis, silicosis and noise-induced hearing loss. This commitment was formalised and reiterated at the various health and safety summits held by stakeholders over the past decade.

The retention and retraining of people who become disabled for their original occupations through exposure to the work environment also remains an important objective for the sector. The MQA reports on all learners with disabilities in all of its programmes.

h) HIV and AIDS

The MMS is aware of the high HIV-infection rate in the sector and the fact that it is an above-average contributor to the national infection rate. As mentioned in Chapter 2, many of the mines have instituted HIV-awareness programmes and testing and antiretroviral

¹⁵¹ Mining Weekly, 16 August 2013.

treatment programmes that enable workers to continue to work and to remain economically active. HIV and AIDS awareness will remain part of the educational agenda of the MMS. The MQA will analyse and report on the number of programmes on the MMS Qualifications Framework for the sector, which includes HIV- and AIDS-awareness learning material. Furthermore, the MQA will encourage the inclusion of programmes that support HIV- and AIDS-awareness and prevention in its qualifications.

An additional national imperative is recognition of prior learning (RPL).

i) Recognition of prior learning (RPL)

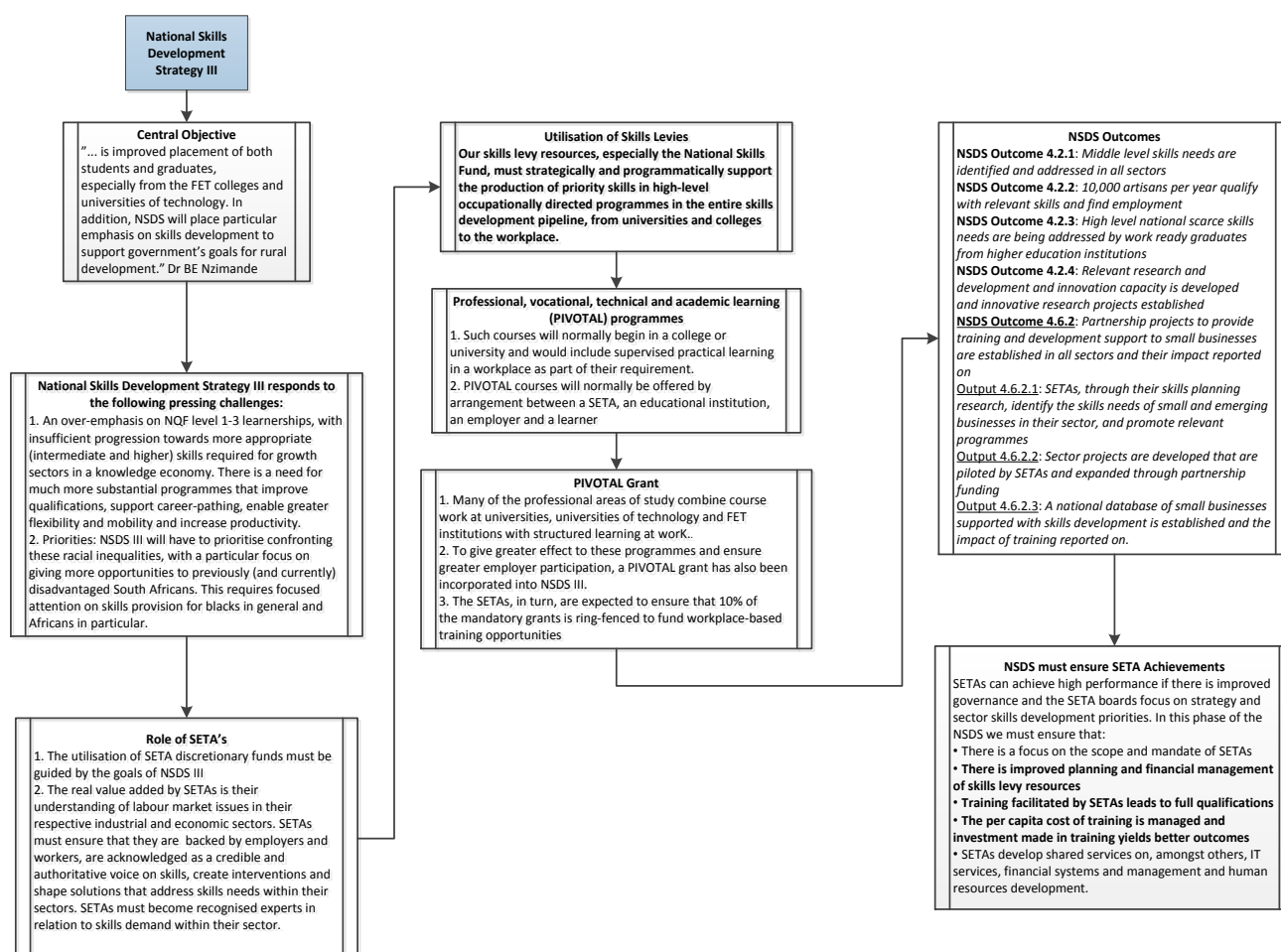
The MQA has identified RPL as a strategic initiative to fast-track artisan development within the MMS. The MQA Education and Training Quality Assurance (ETQA) Committee has approved an RPL Implementation Framework for the MMS. In order to pilot the implementation of RPL in the mining industry, the MQA commissioned a pilot RPL study for artisan or engineering aides with five mining companies to collectively register a total of 100 artisan aides on mining-designated engineering programmes. The pilot has revealed that the training of artisan aides in the mining industry is competency- and assessment-based and not time-based. Secondly, there are no formalised OFO codes and definitions for artisan aides in the mining industry. Different mining companies use their own internal or in-house programmes to train the artisan aides. Learners who complete these programmes successfully are awarded an internal company certificate which is equivalent to NQF Level 1. Successful learners are then registered on a formalised National Certificate in Engineering Maintenance, at NQF Level 2. Companies require that learners obtain the requisite N2 certificate from an FET College in order for qualifying learners to be registered on the relevant MQA artisan learnership at NQF levels 3 and 4. The MMS Standards Generating Body (SGB) has approved the Seven-step Artisan Development Process, which includes RPL for the training of artisans in the mining industry, and the necessary alignment is taking place.

Based on the results of the pilot, the MQA Board approved an Artisan Aides/RPL Project for employed engineering workers in the mining industry. An estimated target of 500 has been set for the 2013/14 financial year. The MQA reviewed the artisan aides' data in line with the WSP/ATR submissions that were due on 30 June 2012 to determine the appropriate and accurate target setting. Through the pilot study, three programmes have been identified, namely the Artisan Aides programme (NQF Level 1), Maintenance Operator (NQF Level 2) and Artisan Learnerships (NQF levels 3 and 4), including RPL.

7.3.2 NSDS III Goals

The following diagram represents the NSDS III contents:

Figure 7.1 NSDS III goals



The above diagram also specifies what NSDS III SETA achievements must be achieved and measured.

In Table 7.4, the alignment of the MQA's skills development priorities and its objectives and qualitative targets to the NSDS III goals are summarised. Column A in the table describes the NSDS III outcomes relating to each of the goals. Column B describes the outputs related to each outcome. Column C refers to the MQA strategic objective that addresses the NSDS output, and Column D refers to the specific parts of Section 7.2 above, in which the relevant MQA skills development priorities and strategies are discussed. The comments in Column E summarise the MQA's response to the specific NSDS III outputs.

Table 7.4 Alignment of MQA strategic objectives with NSDS III

A	B	C	D
Outcome	Output	Strategic objective	Comments
4.1 Establishing a credible institutional mechanism for skills planning			
4.1.1: National need in relation to skills development is researched, documented and communicated to enable effective planning across all economic sectors.	4.1.1.1: Capacity is established within the DHET to coordinate research and skills planning.		MQA participates fully in DHET processes if and when required.
	4.1.1.2: Sector skills plans are professionally researched, provide a sound analysis of the sector and articulate an agreed sector strategy to address skills needs.	2	Development of research capability will support skills planning.
	4.1.1.3: Sector and nationally commissioned research and data are analysed, validated and captured in an integrated database that is accessible to stakeholders.	2	Research information is held in the MQA database. Where possible, research data will be made available for inclusion in national system.
4.2 Increasing access to occupationally-directed programmes			
4.2.1: Middle-level skills needs are identified and addressed in all sectors.	4.2.1.1: SETAs research and identify middle level skills needs in their sectors and put in place strategies to address them, particularly through the use of the public FET colleges and universities of technology working in partnership with employers providing workplace-based training.	2	Research and monitoring will include middle-level skills needs. The MQA's Qualifications Framework is to be adapted continuously, based on research.
		4	Learnerships focus on middle-level skills needs. Existing partnerships will continue.
	4.2.1.2: Projects are established to address middle-level skills in	4	Artisan and non-artisan learnerships.

A Outcome	B Output	C Strategic objective	D Comments
	each sector.		
4.2.2: 10 000 artisans per year qualify with relevant skills and find employment.	4.2.2.1: SETAs establish projects and partnerships to enable the relevant number of artisans for their sector to be trained, to qualify and become work ready.	4	Artisan learnerships.
	4.2.2.2: The national Artisan Development Project developed by JIPSA, and now located in the DHET and M&E Framework, is planned, managed and reported on, with interventions made where blockages occur.	4	MQA participates in artisan development forums and processes.
4.2.3: High-level national scarce skills needs are being addressed by work- ready graduates from higher education institutions.	4.2.3.1: Sector skills plans identify the supply challenges in relation to high-level scarce skills gaps and set out strategies for addressing them.		Some challenges and strategies have been identified, which will be elaborated on further in the future SSP annual updates. For example, scarce skills may be due to the unattractiveness of the location of the mine as opposed to a skills shortage.
	4.2.3.2: Agreements are entered into between SETAs, university faculties and other stakeholders on appropriate interventions to support improved entry to priority programmes, increased work experience and experiential learning for students and access to postgraduate work.	4	High-level scarce skills to be addressed through bursaries, workplace experiential learning and internships.
4.2.4: Relevant research and	4.2.4.1: SSPs identify the focal areas for research, innovation and	2	Areas to be identified in SSP updates.

A	B	C	D
Outcome	Output	Strategic objective	Comments
development and innovation capacity is developed and innovative research projects are established	development. 4.2.4.2: Agreements are entered into between SETAs, university faculties and other stakeholders on flagship research projects linked to sector development in a knowledge economy. 4.2.4.3: Programmes are put in place that focus on the skills needed to produce research that will be relevant and have an impact on the achievement of economic and skills development goals.		
		2	Exploration of opportunities for collaboration in progress, including postgraduate bursaries to support relevant MMS research.
		2	MQA is already involved in programmes that build the academic profession. Further engagement will focus specifically on the development of research capabilities in higher education institutions.
4.3 Promoting the growth of a public FET college system that is responsive to sector, local, regional and national skills needs and priorities			
4.3.1: The National Certificate (Vocational) and N-courses are recognised by employers as important base qualifications through which young people obtain additional vocational skills and work experience, entering the labour market with marketable	4.3.1.1: The NCV is reviewed with inputs from stakeholders and the curriculum is revised to ensure that it provides a sound foundational basis for building labour market-relevant skills. 4.3.1.2: The programmes offered to meet industry needs, including those supporting apprenticeships and N-courses, are reviewed, updated and made	4	The MQA will continue and possibly expand its relationships with FET colleges and assist with the revision of programmes relevant to the sector.
		4	

A	B	C	D
Outcome	Output	Strategic objective	Comments
skills, and obtaining employment.	available to and accessed by employers.		
4.3.2: Partnerships between DHET, SETAs, employers, private providers and public FET colleges are creating increased capacity to meet industry needs throughout the country.	4.3.2.1: The capacity of FET colleges to provide quality vocational training is reviewed. Each college has a strategic plan in place to build capacity and engage in skills development programmes, including programmes offered in partnership with employers. 4.3.2.2: SETAs identify FET colleges with relevant programmes and put in place partnerships to offer vocational courses and work experience for college learners.	4	The MQA will participate fully if and when required. The MQA will continue and possibly expand its relationships with FET colleges and assist with the revision of programmes relevant to the sector, support lecturer development and engage on partnership agreements with employers. FET lecturers will be supported in gaining workplace experience.
4.3.3: The academic staff at colleges are able to offer the relevant education and training of the required quality.	4.3.3.1: The capacity of college educators to deliver programmes is reviewed. Skills development programmes, including work placement opportunities, are devised to meet the needs of the college educators.	4	
4.4 Addressing the low level of youth and adult language and numeracy skills to enable additional training			
4.4.1: A national strategy is in place to provide all	4.4.1.1: A DHET-led process, including stakeholders, develops a strategy supported by all stakeholders.		The MQA will participate in the DHET-led process to develop strategy, and track

A	B	C	D
Outcome	Output	Strategic objective	Comments
young people leaving school with an opportunity to engage in training or work experience, and improve their employability.	4.4.1.2: A national database tracks training and work opportunities, and reports on the implementation of the strategy.		learners in the sector.
	4.4.1.3: The DHET partners and stakeholders in the youth sector will put in place training and work experience projects for young people.		The MQA has in place training and work experience for youth. The MQA will participate in DHET and other processes and discussions.
4.5 Encouraging better use of workplace-based skills development			
4.5.1: Training of employed workers addresses critical skills, enabling improved productivity, economic growth and the ability of the workforce to adapt to change in the labour market.	4.5.1.1: SETA stakeholders agree on the provision of substantial quality programmes for employed workers and report on the impact of the training.	4	Skills programmes form part of the MQA's Qualifications Framework, which is continuously researched and updated.
	4.5.1.2: Sector projects are put in place to address specific sector skills gaps.	4	Skills programmes address critical skills needs of the sector.
	4.5.1.3: Cross-sectoral projects are established to address skills needs along local supply chains aimed at supporting local economic development.		Cross-sectoral collaboration is sought in areas of overlap with other sectors, e.g. mineral beneficiation, including jewellery manufacturing.
4.6 Encouraging and supporting cooperatives, small enterprises, worker initiated, NGO and community training initiatives			
4.6.1: Cooperatives supported with skills training and development expand and contribute to	4.6.1.1: SETAs identify established and emergent cooperatives and their skills needs in their skills planning research.	2	The MQA has completed research into training needs of small enterprises. Research initiatives will be repeated when necessary.
	4.6.1.2: Sector projects are established by sector	4	Small-scale mining projects address, inter alia, the needs of

A	B	C	D
Outcome	Output	Strategic objective	Comments
the sector's economic and employment growth.	stakeholders and supported by the NSF.		cooperatives in the sector.
	4.6.1.3: A national database of cooperatives supported with skills development is established and the impact of training is reported on.	3	MQA-supported cooperatives will be recorded in the MIS.
4.6.2: Partnership projects to provide training and development support to small businesses are established in all sectors and their impact is reported on.	4.6.2.1: SETAs identify the skills needs of small and emerging businesses in their sector, and promote relevant programmes through their skills planning research.	2	The MQA has completed research into training needs of small enterprises. Research initiatives will be repeated when necessary.
	4.6.2.2: Sector projects are developed that are piloted by SETAs and expanded through partnership funding.	4	Small enterprises are included in all core skills development projects and programmes.
	4.6.2.3: A national database of small businesses supported with skills development is established and the impact of training reported on.	3	Small business information is included in the MIS.
4.6.3: Worker, NGO and community-based education programmes are supported and their impact measured and reported on.	4.6.3.1: SETAs engage with trade unions, NGOs and community-based organisations in their sector and identify skills needs and strategies to address needs.		The MQA runs capacity-building workshops for labour representatives on a regular basis. A labour coordinator is funded from the administrative budget of the MQA. Research into the skills needs of non-governmental organisations (NGOs) and community-based organisations (CBOs) in the sector has been conducted in the NSDS II period. Currently these needs are catered for in various projects – including the projects aimed at skills
	4.6.3.2: SETAs establish quality pilot projects.		
	4.6.3.3: Stakeholders expand successful projects with support from the NSF.		

A	B	C	D
Outcome	Output	Strategic objective	Comments
			development of small-scale miners.
4.7 Increasing public sector capacity for improved service delivery and supporting the building of a developmental state			
Outcome 4.7.1: A thorough analysis and reflection is conducted on the provision of education and training by the public sector and the contributions of the various role-players.	4.7.1.1: SETAs with responsibility for public sector training conduct analysis and reflection on achievements and challenges. 4.7.1.2: DHET leads a discussion on factors impacting on provision and publishes proposals on improving the institutional framework for public sector education and training.		The DMR identified specific training needs in the SSP development process, which are being and will continue to be addressed.
4.7.2: Education and training plans for the public sector are revised and programmes are implemented to build capacity.	4.7.2.1: SSPs set out the capacity needs of relevant departments and entities. 4.7.2.2: Plans and funding arrangements are agreed upon between the relevant departments/entities and the SETAs, and are reported on.	4	The MQA will participate fully if and when required.
		4	Capacity needs of the DMR are referred to in Chapter 6. Projects are underway to support DMR's skills needs. The MQA is committed to the training of mine inspectors and the support of DMR bursars.
4.8 Building career and vocational guidance			
Outcome 4.8.1: Career paths are mapped to qualifications in all sectors	4.8.1.1: Career guides are developed with labour market information from SETAs, addressing subsectors in their sectors.	4	The MQA has developed a career guide and other career guidance materials. It will continue with their revision and regularly participate in career guidance interventions.

A Outcome	B Output	C Strategic objective	D Comments
and subsectors, and communicated effectively, contributing to improved relevance of training and greater mobility and progression.	4.8.1.2: Sector stakeholders are engaged and programmes are adjusted to meet the skills and qualification needs to promote comprehensive career development.	4	The MQA's Qualifications Framework is revised on an ongoing basis with the active involvement of stakeholders.

7.4 SECTORAL CONTRIBUTION TO THE PRESIDENT'S OUTCOMES APPROACH TO PLANNING GOVERNMENT'S WORK

The MQA fully supports and endorses the President's outcomes approach to planning government's work, as is evidenced by the detailed Strategic Plan and Annual Performance Plan of the MQA. Although there is no skills implications and role for the MQA for the implementation of the President's Outcomes, the MQA management and Board continuously monitor and report on progress against the MQA's Strategic Plan.

Through the implementation of the Strategic Plan, the MQA will contribute directly to the Presidential outcomes for the Minister of Mineral Resources and the Minister of Higher Education and Training.

7.4.1 MQA's contribution to Presidential outcomes for the Minister of Mineral Resources

The MQA will (albeit indirectly) contribute to the outcomes of the Minister of Mineral Resources. The specific contributions will be outlined once more detail regarding these outcomes is made available to the MQA.

The following Presidential priorities, among other issues, need to be kept in mind when stakeholders formulate strategic decisions.

Creating decent jobs

The Department of Labour seeks to register 600 000 work seekers by 2013 using the Public Employment Services (PES). The Department plans to procure a set of buses that will roam the country to register job seekers. This will form part of a campaign to ramp up and keep up-to-date national data of job seekers. The Minister of Labour, Mrs Mildred Oliphant, introduced the concept of a Jobs Fair as a first step towards building a working relationship with social partners and providing a link between job seekers and potential job opportunities.

The Mid-term Review Report, released on 1 June 2012, indicates that although government has not created sufficient jobs to meet the demand, significant advances have been made in the coordination of growth strategies, the New Growth Path and stakeholder agreements. Government has made progress with labour, absorbing industrial development strategies into manufacturing, mineral products, procurement reform and the Jobs Fund.

Budget for jobs

Job creation remains a central priority of government, Minister of Finance, Pravin Gordhan, said in the Budget Speech for 2012. He provided an additional R4.8 billion over the 2012 MTEF period for the Expanded Public Works Programme (EPWP), bringing its allocations to a total of R77.8 billion.

- The community work programme received an additional R3.5 billion, which gives it a total of R6.2 billion, enabling the number of people employed to increase to 332 000 in 2014/15 from 90 000 in March 2011.

- Working for Water and Working on Fire received an additional R1.1 billion (a total of R7.7 billion), providing for a total of 135 000 jobs over the medium term.
- The non-state sector programme received an additional R345 million (a total of R1.1 billion).
- The National Rural Youth Service Corps received an additional R200 million (a total of R900 million) over the next three years.
- An amount of R300 million was added to the arts and culture sector for job creation.

Looking back on 2011 in his State of the Nation Address on 9 February 2012, President Jacob Zuma said that the results of the jobs drive were encouraging, although South Africa was not out of the woods yet, given the global economic situation.

In *Government's Year of Delivery 2011/12*, produced to coincide with the State of the Nation Address, government looks back at the achievements regarding job creation.

The National Development Plan, released in August 2012, proposes the creation of 11 million more jobs by 2030, among others, by expanding the Public Works Programme, lowering the cost of doing business and costs for households, and helping to match unemployed workers to jobs.

In the mid-year Lekgotla of 26 to 28 July 2011, Cabinet adopted a 12-point Implementation Plan on job creation, within the ambit of the New Growth Path. This does not mean that other programmes will be halted. These areas are being singled out because they are urgent and effective.

The drive to create jobs

President Zuma announced in the State of the Nation Address for 2011 that all government departments will align their programmes with the job creation imperative. The provincial and local government spheres were requested to do the same, and 2011 was declared a year of job creation through meaningful economic transformation and inclusive growth.

The 2011 Budget proposed a range of measures to accelerate employment creation over the period ahead, including R9 billion that was set aside over the next three years for a Jobs Fund to co-finance innovative public and private sector employment projects.

The Presidential Job Summit on 18 March 2011 created an opportunity to explore the role that the business sector can play in achieving key deliverables of government's job creation plans.

This was followed by a Presidential Labour Summit on job creation on 19 April 2011. The parties involved agreed to take these issues forward. In the first phase of discussions, the focus was on immediate deliverables that can be rapidly implemented, and laying the foundation for deeper dialogue on the systemic and structural issues that would need to be addressed to achieve the goal of five million new jobs by 2020.

In the State of the Nation Address for 2011, President Zuma said that research had indicated that jobs could be created in six priority areas:

- Infrastructure development
- Agriculture

- Mining and beneficiation
- Manufacturing
- The green economy
- Tourism

Improve the quality of basic education

“Our intensive focus on education is paying off,” President Jacob Zuma said in his State of the Nation Address of 2012.

A major achievement in 2011 was the doubling of Grade R enrolment, from 300 000 in 2003 to 705 000. President Zuma said South Africa appeared poised to meet the target of 100% coverage for Grade R by 2014. Per capita spending on Grade R increased from R2 158 in 2008/09 to R3 109 in 2009/10.

Government’s Year of Delivery 2011/12 details the achievements in education in 2011/12.

Despite challenges, there is progress in education. The system is more equitable and pro-poor than it was before 1994, Minister of Basic Education, Angie Motshekga, said at a media briefing on 17 February 2012.

South Africa has a relatively stable schooling system that has extended the right to basic education to over 12 million learners in about 24 365 public schools by employing no less than 365 447 educators.

Achievements for 2011/12 include the fact that, in less than three years ahead of the 2015 target, the Department of Basic Education (DBE) is set to fulfil the Millennium Development Goals on expanding access to education.

Minister Motshekga set out the focus in basic education for 2011 as Triple T: Teachers, Textbooks and Time. In the State of the Nation Address of 2011, President Zuma reiterated the call that teachers must be at school, in class, on time, teaching for at least seven hours a day. The administration must ensure that every child has a textbook on time, and that teachers are assisted to create the right working environment for quality teaching to take place.

To track progress, annual national assessments in Literacy and Numeracy, that are internationally benchmarked, are set for grades 3, 6 and 9.

Teacher training, especially in Mathematics and Physical Science, is another goal. The DBE is strengthening the campaign to attract young people to the teaching profession through the Funza Lushaka bursary programme.

The Department is committed to improving the literacy and numeracy skills of all learners, with specific targets set from now until 2014. A key part of this strategy is the introduction of workbooks for every learner. In 2011, around six million learners received high-quality workbooks. Some 24 million books were provided in all South African languages and in 2012

the National Workbook Programme was extended from grades 1 to 6 to grades 7, 8, and 9. 5.3 million books are distributed to learners, free of charge.

The School Governing Body elections from 1 to 31 March 2012 provided an opportunity for parents to get involved in the schooling of their children.

Create a skilled and capable workforce to support an inclusive growth path

The focus of higher education is on expanding access, especially for children of the poor. This includes the conversion of loans into bursaries for qualifying final-year students.

The DHET has launched a campaign – Kheta Apply Now! – to encourage the matrics to apply to the post-school institution of their choice early to make sure that they are placed.

Significant progress has been made in turning around South Africa's adult education system with enrolment figures reaching 233 000 in 2012. The Mid-term Review Report, released on 1 June 2012, also notes that the DHET had increased access to higher education programmes by expanding spaces and options available at FET colleges and universities.

In his 2012/13 Budget Vote Speech, Minister Blade Nzimande announced that an amount of R499 million had been allocated to all universities for teaching development grants to assist in improving graduate outputs, and R194 million for foundation programmes to improve the success rates of students from disadvantaged educational backgrounds.

Over the next two years, R3.8 billion has been earmarked for universities' overall infrastructure development, prioritising historically disadvantaged institutions. Two new universities are envisaged for Mpumalanga and the Northern Cape.

FET colleges are at the centre of skills delivery to drive the South African economy, thereby reducing unemployment and improving the livelihoods of millions of South Africans. Government has invested resources in public FET colleges to ensure that they deliver quality higher education and become institutions of choice for learners, parents and employers.

The Green Paper on Post-school Education and Training was published for public comment and consultation early in 2012. The Green Paper provides a vision for the post-school education and training system, and sets the foundation for building a coherent system and a broad policy for the following:

- Expanding post-school provision to improve access
- Strengthening institutions to improve quality
- Setting out a vision and pathways for achieving a coherent post-school system with articulation, collaboration and coordination between the different components, as well as alignment between education and training institutions and the labour market
- Establishing a post-school education and training system that is equitable, accessible and affordable to all sections of the population, including free education and training for the poor

The National Development Plan, released on 11 November 2011, proposes, among others, to do the following:

- Increase the number of university graduates and the number of people doing their doctorates
- Build two new universities in Mpumalanga and the Northern Cape
- Build a new medical school in Limpopo and a number of new academic hospitals
- Extend the length of first degrees to four years on a voluntary basis
- Provide full funding assistance covering tuition, books, accommodation and living allowance (in the form of loans and bursaries) to deserving students
- Grant seven-year work permits to all foreigners who graduate from a registered South African university

National Health

In his State of the Nation Address of 2012, President Zuma identified projects in the health sector aimed at laying the basis for the National Health Insurance (NHI) system, such as the refurbishment of hospitals and nurses' homes.

The Mid-term Review Report lists the successes in the health sector since 2009. One is the stabilisation of HIV prevalence (the number of people living with HIV), after rising since the 1990s, as indicated by antenatal surveys. This turnaround has also had a positive effect on child survival.

The Department of Health has introduced various initiatives since 2009 that are aimed at raising awareness about ways in which the burden of non-communicable diseases can be reduced. These initiatives include emphasising a healthy lifestyle, promoting physical activity, reducing salt intake, regulating trans-fatty acids in food, reducing alcohol abuse and smoking, and early screening for cancers.

In his Budget Vote speech for 2012/13, Minister of Health, Aaron Motsoledi, said the Department would work on the following four outputs in its quest to deliver a long and healthy life for all South Africans:

- Improving the life expectancy of all South Africans
- Decreasing maternal and child mortality
- Dealing with the scourge of HIV and AIDS and TB
- Improving the efficiency and effectiveness of the healthcare system

Minister Motsoaledi announced the ten pilot districts for the NHI system on 22 March 2012. He released a Green Paper on National Health Insurance on 12 August 2011. It is seen as a 14-year project and the first five years will be a process of building and preparation. Dr Motsoaledi emphasises that the cornerstone of the proposed system of NHI is universal coverage.

Minister of Finance, Pravin Gordhan, identified medium-term priorities in health spending in his 2012 Budget as hospital infrastructure, the comprehensive HIV and AIDS treatment and

prevention programme, and expanding health professional training. Progress in these areas will strengthen the public health system, paving the way for the introduction of national health insurance.

The health sector was allocated an additional R12.3 billion over the next three years. An amount of R1 billion is allocated for national health insurance pilot projects and increasing primary healthcare visits. To improve health infrastructure, R450 million has been provided to upgrade about 30 nursing colleges. A further R426 million is allocated for the initial work on rebuilding five major tertiary hospitals. To accommodate the provision of antiretroviral treatment at the CD4 threshold of 350, an additional R968 million has been made available over the medium term.

In their State of the Province addresses, the premiers of the nine provinces spelled out how they planned to spend the money allocated to them to improve health services in their provinces.

The state of provincial healthcare

Government's Year of Delivery 2011/12 details the achievements of the area of healthcare in 2011/12.

The National Development Plan proposes the following, among others:

- Broadening coverage of antiretroviral treatment to all HIV-positive people
- Speeding up the training of community specialists in medicine and surgery, including anaesthetics, obstetrics, paediatrics and psychiatry
- Recruiting, training and deploying between 700 000 and 1.3 million community health workers to implement community-based healthcare
- Setting minimum qualifications for hospital managers and ensuring that all managers have the necessary qualifications
- Implementing national health insurance in a phased manner
- Promoting active lifestyles and balanced diets and controlling alcohol abuse to reduce non-communicable diseases

Fighting crime

The crime statistics for the period 1 April 2011 to 31 March 2012 indicates a mixed bag with marginal downward trends in some of the crime categories, said Minister Radebe at a media briefing. "Where government succeeds, we will continue to draw from the lessons and replicate these in other areas. Where government is not pleased, we will recommit ourselves to creating a safer South Africa. When it comes to our commitment in fighting crime – we remain unshaken," he said.

Government has identified the fight against crime as one of its top five priorities since 2007. In the State of the Nation Address for 2012, President Zuma said the crime statistics for the period 2010/11 indicated that our country had witnessed a decline of 5% in the number of reported serious crimes compared to the previous year.

Government's Year of Delivery 2011/12 details the achievements of the fight against crime and corruption in 2011/12.

Fundamental in the reduction of crime is the spirit of partnership, which speaks to our community participation philosophy. More and more South Africans are joining the fight against crime and government calls on the nation to play its part in anti-crime campaigns.

For 2012, government has committed to the following:

- Ongoing training, the equitable distribution of policing resources, and the creation of a professional police service
- The review of 10111 operations to ensure the efficiency of the system
- Paying more attention to increase the case finalisation rate at all court levels in conjunction with all role-players
- Continuing to fight corruption
- Continuing to strengthen borderline security by deploying personnel of the South African National Defence Force

Rural development: Building vibrant, equitable and sustainable rural communities with food security for all

President Zuma announced in the State of the Nation Address of 2011 that government will develop infrastructure that will boost our agricultural sector, while also helping to create jobs.

According to the Mid-term Review Report, between 1994 and December 2011, the Department of Rural Development and Land Reform (DRDLR) redistributed 3.9 million hectares of land through the Land Acquisition and Redistribution Programme, which is 15.6% of the target of 24.5 million hectares to be in black hands by 2014. From 2009 to December 2011, 823 300 hectares of land was acquired and allocated to 20 290 beneficiaries. This is an improvement over previous years, and indicates that our systems are improving. Nevertheless, there is still a need to further accelerate this programme. The report also looks at the Comprehensive Rural Development Programme and rural job creation.

The Minister of Rural Development and Land Reform and MECs have signed delivery agreements based on Outcome 7: Vibrant, equitable and sustainable rural communities with food security for all. This outcome lists the following standards against which performance is measured:

- The establishment of programmes and initiatives to support rural development and land reform.
- Government will spend R2.6 billion on water services in 2011/12, especially in Limpopo, KwaZulu-Natal and the Eastern Cape, where there are still high numbers of people without safe drinking water.
- Water reservoirs, windmills and irrigation schemes will be rehabilitated. Crops, livestock and grazing will be protected with the installation of fences. These projects will enhance food security and create job opportunities for many, especially women in rural areas.

- The Comprehensive Rural Development Programme is directed at reviving land reform projects and irrigation schemes in the former homelands, as well as distressed farms owned by individuals.
- Government has developed the National Rural Youth Service Corps Programme to assist the youth in rural areas. More than 7 000 young people have been employed in the programme, which includes training in disaster management, construction and information management.
- The construction of the Nelson Rolihlahla Mandela Legacy Bridge on the Mbhashe River in the Eastern Cape will join two districts, OR Tambo to the east, and Amathole to the west, and cut by at least 50 minutes the distance between Mvezo Village, and its closest town, Dutywa. It is also expected to generate several spinoffs for the Eastern Cape in terms of tourism and job creation.
- Land redistribution helps qualifying beneficiaries acquire land for agricultural purposes. At the end of February 2011, a cumulative figure of 823 300 hectares had been acquired and redistributed since 2009. Of this, 7 000 hectares has been allocated to provide the core estate for the Cradock Bio-ethanol project in the Eastern Cape that will be implemented in partnership with the departments of Trade and Industry, Economic Development, Rural Development and Land Reform, Agriculture, Forestry and Fisheries, Energy and the Eastern Cape Department of Agriculture. A total of 1.14 million hectares of state land has been surveyed.
- The Comprehensive Agricultural Support Programme is focused on enabling rural people to take control of their destiny, with support from government, thereby dealing effectively with rural poverty through the optimal use and management of natural resources. The agricultural sector contributed 7 092 jobs in 2011, of which 1 105 were permanent.
- The Household Food Production Programme cushions the burden of rising food prices on poor households.
- The War on Poverty Programme aims to have a positive impact on people's lives, addressing poverty and hunger and ensuring that people take control of their destinies.
- The EPWP created 540 423 work opportunities and 137 525 permanent jobs. Of these, 66 355 were in the Community Works Programme. The use of local labour in housing and infrastructure development contributed significantly to job creation and skills development.
- Initiatives to improve employment opportunities and economic livelihoods include the implementation of the aquaculture programme and the Inland Fisheries Programme that was launched in 2012.
- The Department of Agriculture, Forestry and Fisheries is introducing a Complementary Agro processing Strategy.
- In order to revitalise and resuscitate land reform farms in distress and defunct irrigation schemes in the former homelands, the DRDLR introduced the Recapitalisation and Development Programme. By the end of September 2011, 595 farms were at various stages of development. Good progress recorded includes sugar cane in KwaZulu-Natal, red meat in the Free State, North West and the Northern Cape, poultry in North West, Gauteng and Mpumalanga, and citrus in the Eastern Cape, Limpopo and the Western Cape.

- Smallholder support programmes are being reviewed and a smallholder plan developed in line with National Growth Plan targets. These plans are supported by a diverse array of agro-processing programmes under IPAP, including support for the soya bean processing, canning, biofuels, furniture and food processing industries, as well as small-scale maize milling in rural areas.

Youth Development

Government has established a range of support programmes and strategies to empower the youth in the various sectors, such as the following:

- The Minister of Arts and Culture, Paul Mashatile, reported in his budget vote speech for 2012/13 that as part of the Mzansi Golden Economy Strategy, a number of high impact programmes targeting youth and women in the arts have been identified. These include the following:
 - The Indoni, My Heritage My Pride programme, which aims to provide young people with life skills training, education and encouragement in appreciating who they are, their heritage and their culture.
 - The Trendsetter Initiative, through which the Department encourages youths to participate in the arts and thus contribute to the development of their communities.
 - The Public Art Programme, skilling young people and employing them to beautify their communities using their artistic abilities.
 - The Emerging Creative programmes, providing an opportunity for 40 young designers to showcase their designs alongside established designers at the Design Indaba in Cape Town.
- An EPWP initiative sees young people involved in the refurbishment, rehabilitation and maintenance of community infrastructure across the country.

The following learnerships and internships are focused on raising the skills capacity of young people through SETAs:

- The National Rural Youth Service Corps Programme aims to enhance skills development by providing unemployed youths in the rural areas with opportunities to work in their communities and to be trained to provide the necessary services for local socioeconomic development. A total of 7 398 youths were enrolled in the programme in 2010. The enrolment number will gradually increase by recruiting a further 5 000 youths during 2011/12, and a further 10 000 during 2012/13.
- The Western Cape Provincial Government has several initiatives for young people.
- The Gauteng Provincial Government announced the following youth employment programmes for 2012: a Youth Placement Programme, Township Enterprise Hubs and a Youth Entrepreneurship Development Programme (Y-Age).

National Youth Development Agency

The National Youth Development Agency (NYDA) is a government agency, whose role it is to initiate, facilitate, implement, coordinate and monitor youth development interventions aimed at reducing youth unemployment and promoting social cohesion.

The NYDA's mandate is to do the following:

- Advance youth development through guidance and support to initiatives across all sectors of society and spheres of government.
- Embark on initiatives that seek to advance the economic development of young people.
- Develop and coordinate the implementation of the Integrated Youth Development Strategy for the country.

Government services for the youth

Government has a number of services that benefit the youth.

- Youth camps: In its effort to launch projects that provide the South African youth with opportunities for experiential learning, the National Youth Camps Project took place from 29 September to 5 October 2012.
- Personal identification: It is essential to have an identity document when you want to register for writing the matric exams or getting a drivers licence. Youths are therefore encouraged to apply for an identity document and to get citizenship by descent.
- Voting: Youths can register on the national voter's roll when they are 16, but may only vote once they have turned 18. Youths are therefore encouraged to register to vote.
- Driving: Youths can get a drivers' licence at 18. They are therefore encouraged to get a learner's license, and then a driver's license.

Tertiary education

Tertiary education is becoming more important. Government supports students who cannot afford the fees. Youths are therefore encouraged to enter to study and apply for funding, to register with a tertiary institution, to apply for financial assistance with the National Student Financial Aid Scheme (NSFAS) or to apply for the Funza Lushaka Bursary scheme.

Employment

Once youths have completed their education, they need to start looking for a job. They can find information on employment opportunities and vacancies in government, get an application form for a position in government, find information on other employment opportunities, apply for a work permit or visa for South Africa, write a winning CV, look for opportunities on a job seekers' database, and apply for an internship.

Tax

With a job comes the responsibility to pay tax: Citizens are encouraged to register as taxpayer and to submit tax returns online.

7.4.2 MQA's contribution to Presidential outcomes for the Minister of Higher Education and Training

The Minister of Higher Education and Training is accountable for Outcome 5: A skilled and capable workforce to support an inclusive growth path, which has the following five outputs and measures:

Establish a credible institutional mechanism for skills planning

- Develop a standardised framework for the assessment of skills shortages and vacancies in the country.

In support of Output 1, the MQA has submitted an SSP to the DHET that is well-researched and supported by stakeholders, including government's line department. Furthermore, the MQA has included research and information management in its Strategic Plan, which will link to the national DHET system. Finally, the MQA has contributed directly to the development of the NSDS III.

Increase access to programmes leading to intermediate and high-level learning

- Provide young people and adults with foundational learning qualifications and increase ABET Level 4 entrants from a baseline of 269 229 to 300 000 per year.
- Improve National Certificate (Vocation) (NCV) success rates, prior to massification of the programme. NCV enrolments across Levels 2 and 3 were 122 921 in 2009, of which 8.9% achieved certification at Level 2, 9.9% at Level 3 and 21.5% at Level 4.
- Create "second-chance" bridging programmes (leading to a matric equivalent) for youths who do not hold a senior certificate.
- Provide a range of learning options to meet the demand of those with matric, but who do not meet requirements for university entrance.

In support of Output 2, the MQA will continue to support ABET training in the sector, improve the quality of ABET by supporting the training of ABET practitioners, support the delivery of Foundational Learning Competency (FLC) by training FLC facilitators and providing grants to MMS organisations to train FLC learners. Details, including targets, are contained in the Strategic Plan 2013/14.

Increase access to occupationally directed programmes in needed areas and thereby expand the availability of intermediate-level skills (with a special focus on artisan skills)

- Increase the number of learnerships to at least 20 000 annually by 2014.
- Produce at least 10 000 artisans annually by 2014.
- Put in place measures to improve the trade test pass rate from its 2009 level of 46% to 60% by 2014.

- Increase the placement rate of learners from learnership and apprenticeship programmes, as well as learners from NCV programmes, who require workplace experience before being able to take trade tests or other summative assessments. At least 70% of learners should be placed every year.
- By 2011, establish a system to distinguish between learnerships up to and including Level 6 and above.
- Increase the proportion of unemployed people, as compared to employed people, entering learnerships from the current level of 60% to 70%.

In support of Output 3, the MQA continues to support learnerships/apprenticeships for artisans and learnerships for non-artisans. Details, including targets, are contained in the Strategic Plan 2013/14.

Increase access to high-level occupationally directed programmes in needed areas

- Increase the graduate output in engineering sciences to 15 000 per year by 2014.
- Increase the graduate output in animal and human health to over 15 000 per year by 2014.
- Increase the graduate output in natural and physical sciences to 8 000 annually by 2014.
- Increase the graduate output in teacher education to 12 000 per year by 2014.

In support of Output 4, the MQA continues to support bursaries at public HET institutions with mining- and mineral-related faculties, workplace experiential learning linked to public HET diplomas, and internships linked to public HET degrees.

Research, development and innovation in human capital for a growing knowledge economy

- Increase the output of:
 - Honours graduates to 20 000 annually by 2014
 - Research master's degrees to 4 500 annually by 2014
 - Doctoral graduates to 1 350 annually by 2014
 - Postdoctoral graduates to 100 annually by 2014
- Provide increased support to industry/university partnerships.
- Increase investment in research and development, especially in the science, engineering and technology sector.

Firstly, through the MQA bursary scheme, the MQA will fund postgraduate studies in rock engineering and support postgraduate students who undertake MMS-related research topics. Secondly, the MQA is in the process of developing learning materials for postgraduate rock engineering qualifications. Thirdly, the MQA has developed and implemented a public HET institution support programme to develop university lecturers from historically disadvantaged backgrounds to work at institutions that have mining- and minerals-related faculties. Furthermore, the MQA has, over the years, built strong

partnerships with HET institutions, FET colleges and private providers for the delivery of education and training for the sector.

7.5 SUPPORT OF GOVERNMENT'S MTSF OBJECTIVES

This section highlights the ways in which this SSP supports government's MTSF policy objectives, by discussing its contribution to each of the ten objectives listed in the policy document.

7.5.1 Speeding up growth and transforming the economy to create decent work and sustainable livelihoods

The MMS is a large contributor to the South African economy but, as indicated in Chapter 3, it has contracted over a relatively long period of time as a result of a number of factors – many of which are outside the control of the sector itself. One of the constraining factors is, however, the shortage of skills. By focusing on skills areas where shortages are experienced and by stimulating, facilitating and supporting skills development for and in the sector, the MQA will endeavour to reduce the impact of this particular factor on the growth of the sector and contribute to the growth of the total economy in this way.

Similarly, the support for the transformation of the sector mentioned in Section 7.2.1 will ultimately impact on the transformation of the economy and the broader participation of HDSAs in the economy.

7.5.2 Massive programme to build economic and social infrastructure

The MMS, and specifically the CLAS subsector, plays a pivotal role in the provision of raw materials for the infrastructural development of the country. The operations that provide cement, lime, aggregates and sand are relatively small and are scattered across the country. In cooperation with the Aggregates and Sand Producers Association of Southern Africa (ASPASA), the MQA has identified the specific needs of these operations and will support skills development for and in them.

In Chapter 2, it was stressed that most mining operations are located in rural areas and that they attract labour from rural areas across the country. Many of the mining companies are extensively involved with their surrounding communities and contribute to their development. The Social and Labour Plan also binds mining operations to involvement with their local communities. The MQA supports skills development in this regard through continuously engaging with communities that live and work in rural mining areas.

7.5.3 Strengthen the skills and human resources base

All the work undertaken in the planning period will focus on strengthening the skills and human resources base of the sector and ultimately that of the country.

7.5.4 Improve the health profile of all South Africans

As mentioned above, the MMS is committed to the containment and reduction of HIV infection in the industry and the reduction of occupational diseases that are currently undermining the health of the workforce. In the planning period, the MQA will, in

collaboration with the MHSC, the DMR and other stakeholders, explore ways in which it can actively contribute to these sectoral imperatives.

7.5.5 Intensify the fight against crime and corruption

Unfortunately crime has also permeated the mining sector. Illegal mining poses huge economic, environmental and safety problems to mining operations. Many of the small-scale mining operations start off informally without the necessary licensing and compliance with DMR regulations. In the MQA's training programmes designed for small-scale mining, special attention will be given to the legal requirements and to assisting new entrants to the sector to become compliant.

7.5.6 Build cohesive, caring and sustainable communities

The MQA, in partnership with the Department of Environmental Affairs (DEA) and other role players, will explore possible ways in which to support communities living on the fringes of poverty and unemployment. This could include DEA input into the proposed MQA Mine Community Capacity-Building Programme.

The MQA currently only operates within the borders of South Africa, although many stakeholder organisations supported by the MQA operate within the Southern African Development Community (SADC) region. Foreign workers that are employed by the MMS are, however, entitled to the same training opportunities as local workers, with the development of their skills contributing to African advancement.

7.5.7 Sustainable resource management and use

This is a critically important area for the MMS, given the need to protect the environment and conserve non-renewable resources. Section 2.8 of the amended Mining Charter states that: "Mineral resources are non-renewable in nature, (and that) forthwith, exploitation of such resources must emphasise the importance of balancing concomitant economic benefits with social and environmental needs without compromising future generations, in line with Constitutional provisions for ecological, sustainable development and use of natural resources".

The MQA supports the training and development of learners on environmentally-related programmes and will engage with the Environmental Sector Skills Plan of the DEA in this regard.

7.5.8 Build a developmental state, including improvement of public services and the strengthening of democratic institutions

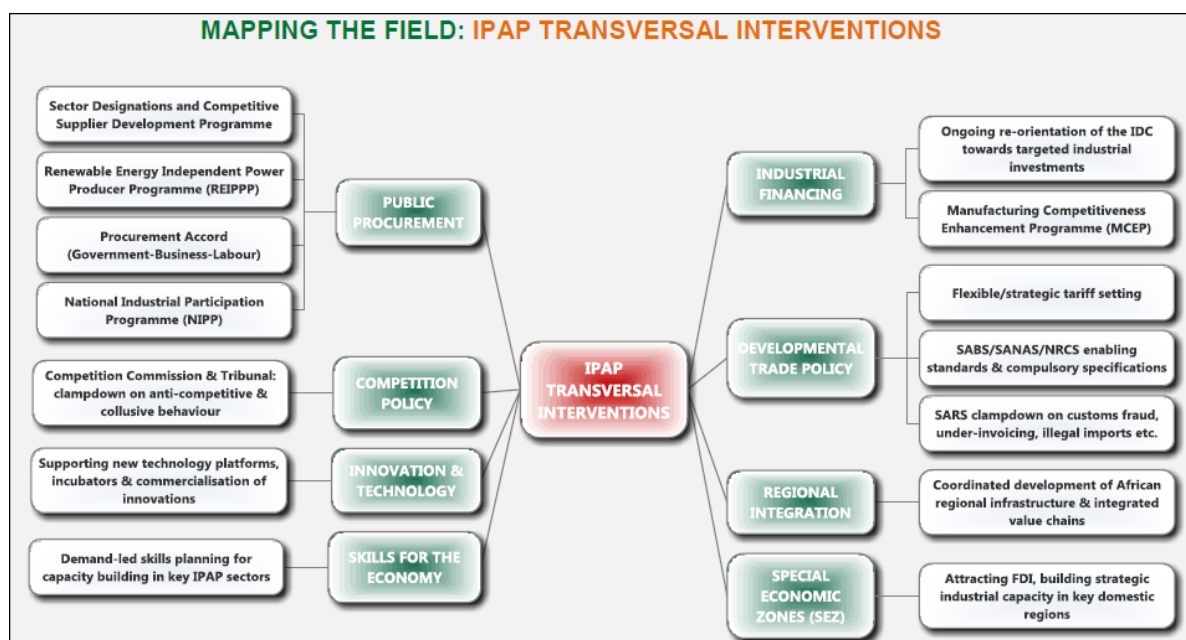
The DMR plays a crucial role in the regulation and the advancement of the MMS. During the development of this SSP, the capacity constraints of the Department and the negative effect of these on the sector were highlighted by various stakeholders. The DMR also participated in this process and identified skills needs in and in support of its work. These needs will receive support from the MQA during the planning period.

7.6 SUPPORT OF GOVERNMENT'S INDUSTRIAL POLICY ACTION PLAN (IPAP)

In support of the IPAP's focus on downstream metals beneficiation (see Section 3.6), the MQA will continue to support beneficiation that falls within the scope of the MQA. The Beneficiation Subcommittee will guide the activities, which support IPAP's key action plans.

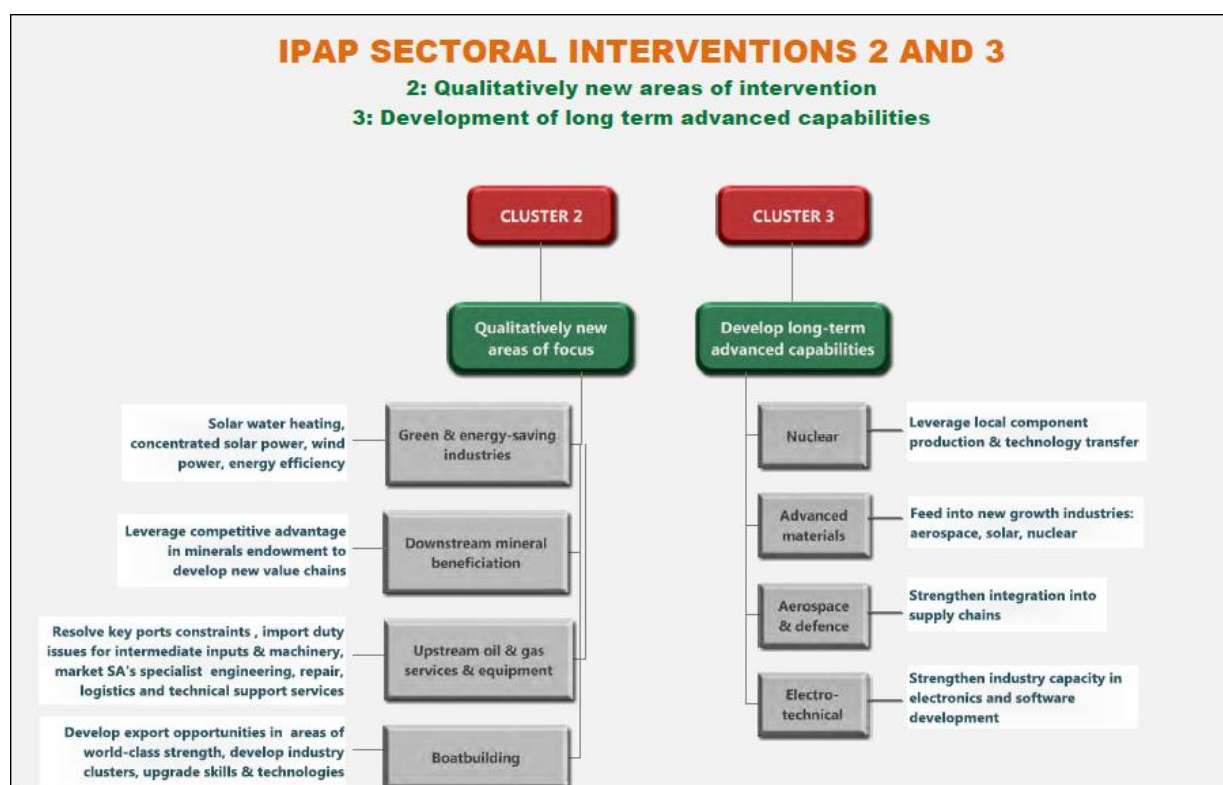
IPAP's transversal interventions are depicted in the following diagram:

Figure 7.2 Mapping the field: IPAP transversal interventions



IPAP's sectoral interventions 2 and 3 are as follows:

Figure 7.3 IPAP sectoral interventions 2 and 3

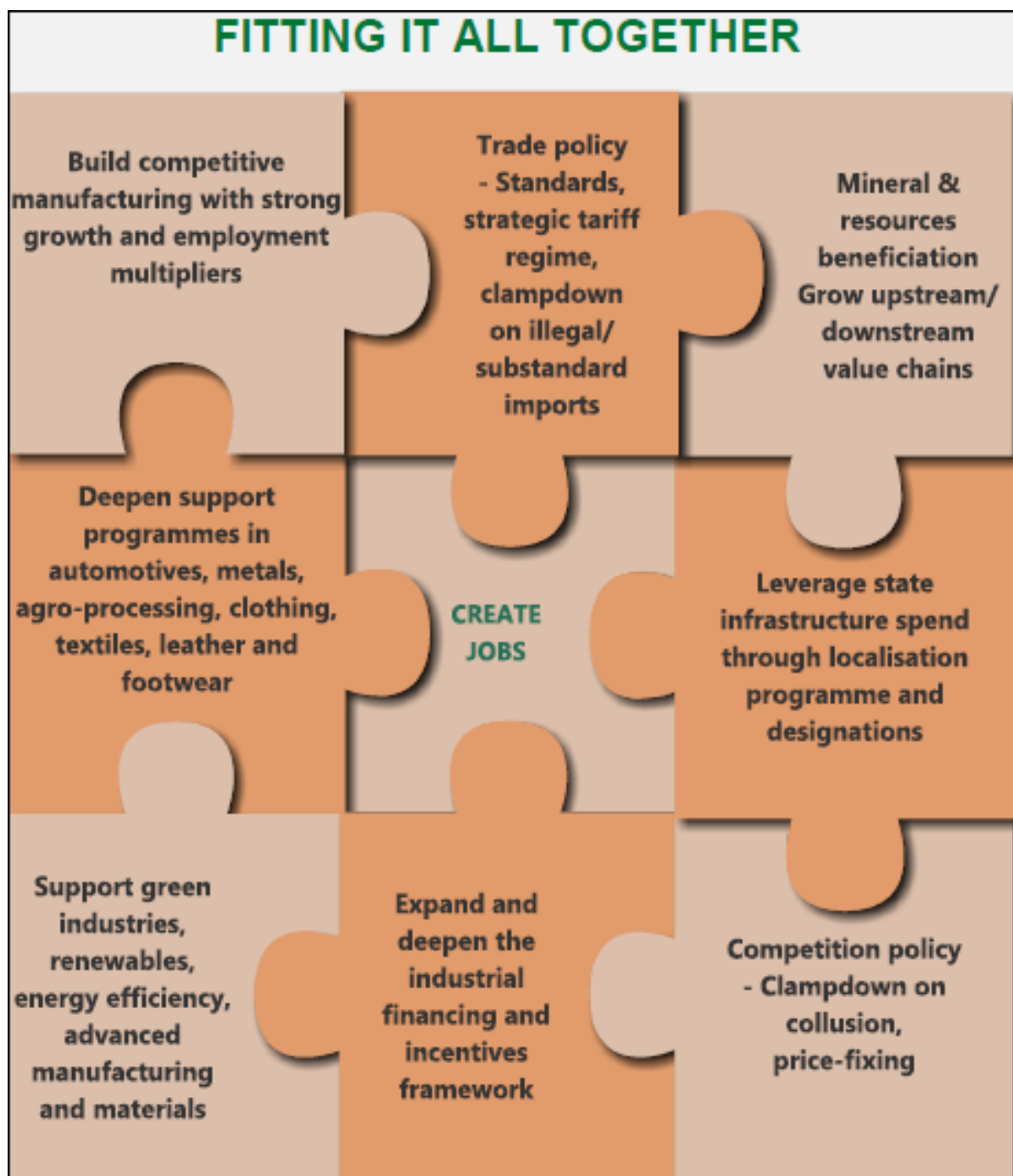


An important aspect for the MQA is the IPAP Key Action Programme relevant to downstream mineral beneficiation. This set out in the following case studies:

<p>Downstream Mineral Beneficiation</p>  <p>Mineral Beneficiation is an area of work that presents untapped opportunity, but has lagged in policy development and implementation. Although South Africa is endowed with exceptional mineral resources, further downstream and upstream beneficiation has not fully reached its economic potential, mainly due to structural conditions within key value-chains.</p> <p>the dti has, therefore, launched a comprehensive research project that will develop a strategy and action plan to advance backward and forward beneficiation in key value-chains of the following selected groups of minerals:</p> <ol style="list-style-type: none"> 1) Ferrous (iron ore, ferro-alloys, steel and specialty steels); 2) The Platinum Group Metals (PGMs); 3) Titanium and pigments; 4) Polymers (from coal, gas and oil); 5) Mining inputs: the research will also assess strategies to realise upstream beneficiation manufacturing opportunities, comprising the inputs into the extraction and processing of the above minerals. 	<p>Key Action Programmes</p> <p>1. The Mineral Value-Chains Strategy (MVS)</p> <p>The MVS will significantly strengthen and be aligned with the range of sector-specific and transversal interventions currently deployed, and with the employment creation and industrial financing packages available from the Development Finance Institutions (DFIs). It is envisaged that the outcomes of this work will constitute one of the central pillars of industrial policy in the years to come.</p> <p>Nature of the intervention</p> <p>The research project will develop proposals on the following:</p> <ol style="list-style-type: none"> 1) Strategies to increase the forward value-addition of the four mineral groups for the supply of critical feedstocks into manufacturing, including the development of concrete action plans for the four value-chains. 1) Strategies to increase the backward value-addition (local content) of the minerals sector (from exploration, through mining, concentration, smelting and refining to beneficiation). 2) Identifying the key sub-sectors/products of South Africa's minerals capital goods (plant, equipment and after-market) that can be grown/developed to take advantage of the mining and processing sectors' procurements – i.e. high-level sectoral mapping. 3) Identifying the ways in which offset provisions could be incorporated into the Minerals and Petroleum Resources Development Act (MPRDA) and Mining Charter to promote access to raw materials (including competitive pricing) to unlock downstream industrial projects and facilitate greater local content in mining/processing (input industries). 4) Determining how to productively use producer power, if applicable, to facilitate the industrial linkages.
<p>2013/14 Q1: <i>Mining Inputs Industries Report</i>, focusing on the current South African situation, the international context, upstream mapping (including challenges, obstacles and constraints), upstream opportunities for South Africa and upstream strategies (options).</p> <p><i>Final Report</i> (summary of proposals/options from the four value-chains reports)</p> <p>Lead departments/agencies: the dti and the IDC</p> <p>Supporting departments/agencies: the dti, the DMR, DST, National Treasury and IDC</p> <p>2. The Iron and Steel Value Chain</p> <p>A second area of interlocking shorter-term interventions arises from the work of the Inter-Departmental Task Team on Iron Ore and Steel (IDTT) whose recommendations have been endorsed by Cabinet. The IDTT was established to give effect to government's efforts to secure a developmental iron ore and steel price in support of downstream industries.</p> <p>Nature of the Intervention</p> <ul style="list-style-type: none"> • A set of inter-related policy instruments to ensure the long term viability of the iron ore and steel value chain in support of increased levels of value addition to create a competitive advantage for manufacturing in South Africa. • The amendment of the Minerals and Petroleum Resources Development Act (MPRDA) which will enable the Minister of Mineral Resources to invoke the relevant provisions of the mining legislation to secure supply and developmental pricing by determining the percentage and the price in respect of such a percentage as maybe required for local beneficiation; and to provide for every producer to offer local beneficiaries a certain percentage as prescribed. In the case of the steel value chain this action will be a function of the national steel production targets. 	<ul style="list-style-type: none"> • An IDC-led process to establish a new steel production facility, involving an international investor(s) - with strong conditionalities to ensure that a developmental iron ore price is passed on as a developmental steel price. • The strengthening of the Competition Act so as to provide for improved price monitoring, regulation and action against collusive and anti-competitive behaviour in the sector. • Finally, the introduction of a price preference system (in terms of section 6 of the International Trade Administration Act) to strengthen current export control measures and safeguard the supply of affordable scrap metal to domestic mini-mills. <p>Economic rationale</p> <p>Steel is the single most important input into the manufacturing sector. Notwithstanding South Africa's huge iron ore reserves and the relatively low cost of reductants, steel prices have remained in the highest global quartile. The cost plus 3% agreement between Kumba Iron Ore and Arcelor Mittal reached at the time of the unbundling of Iscor has not translated into a developmental steel price being passed on to the manufacturing sector. High international prices have fuelled a massive expansion of scrap metal exports, which has negatively impacted upon supply to domestic mills and is associated with cable and metal theft and the masking of illegal exports of precious metals.</p> <p>Key milestones</p> <p>2013/14 Q1: Amendment of the MPRDA to enable the deployment of its provisions. the dti to finalise the steel production targets and developmental pricing modalities for both iron ore and steel to support the national industrialisation programme.</p> <p>2013/14 Q2: The Minister of Economic Development to gazette the necessary Regulations and establish the appropriate processes under the terms and conditions of the International Trade Administration Act.</p>

The MQA is committed to the central objective of IPAP to create jobs, as symbolised below:

Figure 7.4 Fitting it all together

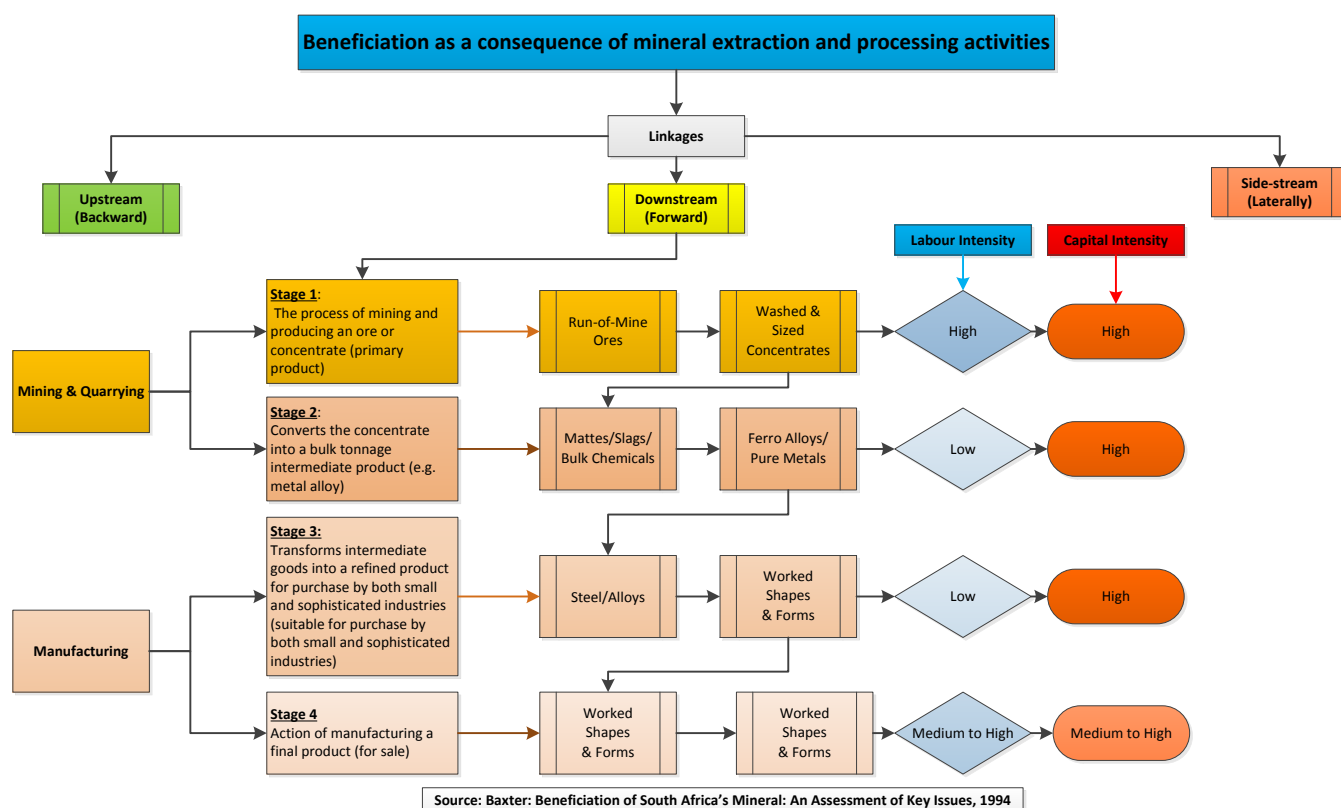


7.7 SUPPORT OF NATIONAL BENEFICIATION STRATEGY FOR SOUTH AFRICA

The Beneficiation Strategy for South Africa is aligned with IPAP and the NGP, which identifies mineral beneficiation as one of the priority growth nodes for job creation. It aims to develop sustainable final-stage beneficiation level for 10 minerals for five value chains,

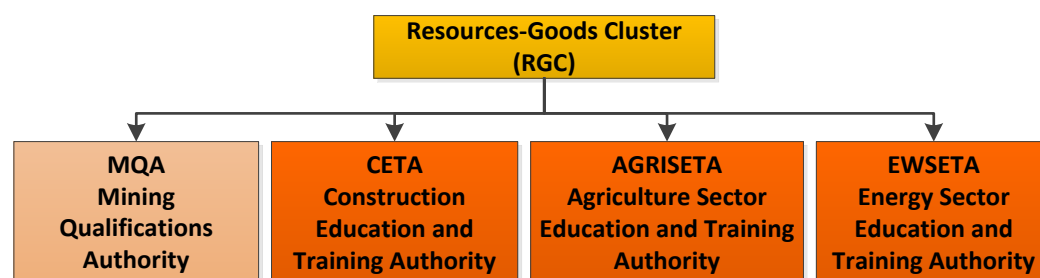
namely security of energy, industrial minerals (e.g. steel and stainless steel), advanced metal (e.g. Ti pigment production), auto-catalyst and diesel particulate, and jewellery fabrication. It is envisioned that the MQA will focus on the following approach in skills needs assessment and development relevant to downstream beneficiation in support of IPAP:

Figure 7.5 Beneficiation as a consequence of mineral extraction and processing activities



The MQA's scope is presently aligned with the jewellery fabrication scope value chain only. Activities will include the development of structured beneficiation programmes supporting diamond processing and jewellery manufacturing, small and micro enterprise development and jewellery hubs. The following diagram depicts the cluster placement of the MQA relevant to beneficiation:

Figure 7.6 The SETA landscape 2011–2016



The Resources Goods Cluster is, for obvious reasons, inter-dependent on the following clusters:

Figure 7.7 The Manufacturing Cluster

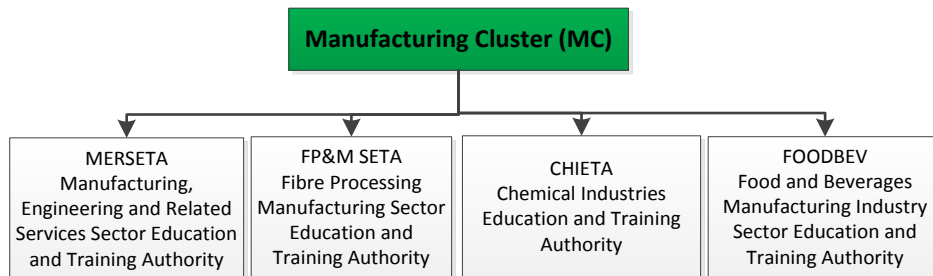


Figure 7.8 The Services Cluster

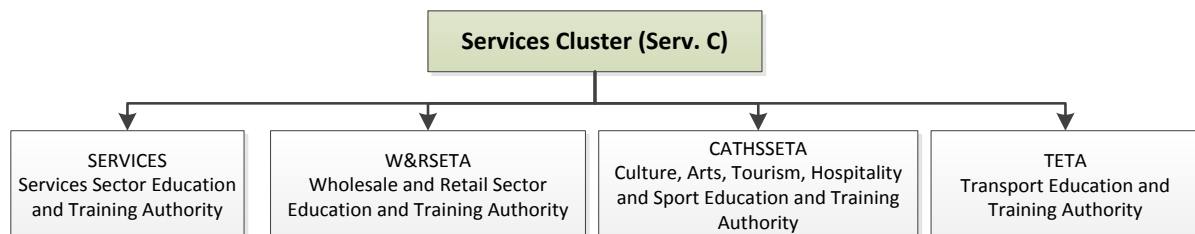


Figure 7.9 The Financial Cluster

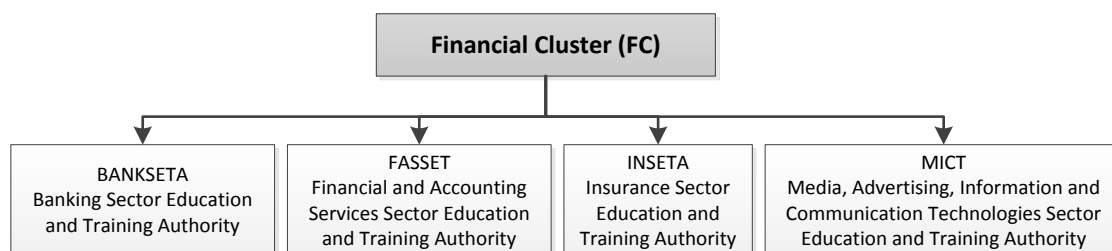
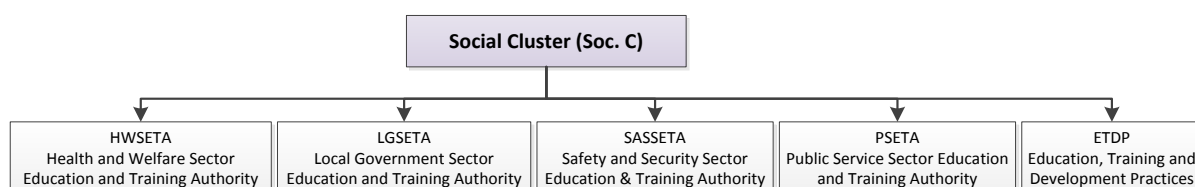


Figure 7.10 The Social Cluster



7.8 SUPPORT OF THE NEW GROWTH PATH AND THE NATIONAL SKILLS ACCORD

The National Skills Accord¹⁵² is one of the first outcomes of social dialogue on the New Growth Path. This accord was entered into between government, business, labour and civil

¹⁵²The New Growth Path: Accord 1 National Skills Accord.

society, and was signed in July 2011. The accord consists of the following eight commitments and includes inter-SETA cooperation:

- 1) Expand the level of training using existing facilities more fully.
- 2) Make internship and placement opportunities available within workplaces.
- 3) Set guidelines of ratios of trainees: artisans, as well as across the technical vocations, in order to improve the level of training.
- 4) Improve the funding of training and the use of funds available for training and incentives for companies to train.
- 5) Set annual targets for training in state-owned enterprises.
- 6) Improve SETA governance and financial management, as well as stakeholder involvement.
- 7) Align training with the New Growth Path and improve SSPs.
- 8) Improve the role and performance of FET colleges.

Not all the commitments have a direct bearing on the skills planning of the sector – Commitment 5 sets targets for training in state-owned enterprises. Those that are relevant to this SSP are discussed in more detail below:

7.8.1 Commitment 1: Expand the level of training using existing facilities more fully

Under this commitment, the stakeholders agreed that 30 000 new artisan learners will enter training in this financial year. About 56% (16 800) of these should come from the private sector. The MQA has set an artisan learnership target of 2 500 per year (2 000 employed and unemployed plus 500 artisan aides, including RPL), and therefore aims to contribute 15% of the new artisan learners.

7.8.2 Commitment 2: Make internship and placement opportunities available within workplaces

According to this commitment, companies will annually make 12 000 placements/internship spaces available for students who complete their certificates at FET colleges, 5 000 internships for third-year students at universities of technology who need the work experience as part of their qualifications. These companies will provide opportunities for training exposure in a work environment to at least 16 000 lecturers at FET colleges. This will be phased in, with 20% of the target to be achieved in 2011, 50% in 2012 and 100% from 2013. The parties also agree to work together to improve both the capacity and quality of FET colleges.

As indicated in this SSP, the MQA has already taken the initiative to work together with a number of FET colleges to strengthen their capacity and enable them to deliver on the skills development needs of the MMS. The steps taken so far include the following:

- The revision of NCV courses to align them with mining and minerals industry needs
- The provision of National Technical Education (NATED) programmes' theory to support apprenticeships' delivery mode and access to trade testing

- Mapping the NCV with MQA trade qualifications for horizontal articulation and learning pathways
- Adding other relevant MQA programmes to the NCV as additional subjects
- Collaborating jointly on the curriculum assessment specifications development for occupational qualifications
- Considering a form of RPL for learners with NATED trade qualifications but without language subjects
- Delivering foundational learning

7.8.3 Commitment 3: Set guidelines of ratios of trainees: artisans, as well as across the technical vocations, in order to improve the level of training

Under this commitment, SETAs should set targets of the ratios of trainees: qualified personnel for coaching/mentoring purposes.

The MQA will develop a guideline on the ratio of trainees: coaches/mentors.

7.8.4 Commitment 4: Improve the funding of training and the use of funds available for training and incentives on companies to train

This commitment includes various provisions, the most relevant of which is business's commitment to improve spending on training that companies undertake beyond the 1% compulsory training levy. Business will urge companies to spend between 3% and 5% of their payroll (total salary bill) on training, with as many companies as possible at the high end of this range.

Companies in the MMS have already committed to such an increase in training spent under the Mining Charter. As indicated in that section of the SSP update, the MQA's role in this regard is to ensure that the necessary programmes are in place, that there is a sufficient supply of accredited training providers and that good quality training takes place.

7.8.5 Commitment 6: Improve SETA governance and financial management, as well as stakeholder involvement

The improvement of SETA governance is one of the strategic objectives of the MQA.

7.8.6 Commitment 7: Align training with the New Growth Path and improve SSPs

The stakeholders came to seven undertakings pertaining to the SSPs and their linkages to the New Growth Path. These undertakings are listed in the table below, along with commentary on how this SSP conforms to the respective undertakings.

Table 7.5 Seven undertakings pertaining to SSP's

Undertaking	Conformation of current SSP update
The framework of all SSPs will be aligned with the NGP and its manufacturing-driver,	This SSP update looks specifically at the skills requirements if the

Undertaking	Conformation of current SSP update
IPAP II.	sector had to increase job creation in line with the expectations set out in the NGP.
<p>The SSPs should support growth and jobs in the sectors by ensuring that relevant skills are developed, and by significantly stepping up production of key skills. Quantitative targets will be set for training particularly for scarce and key skills to improve industrial and workplace performance. This will also include clear targets on the number of apprentices to be enrolled in each sector and systems to track progress against targets.</p>	<p>Clear targets for the development of core skills have been set under Strategic Objective 4.</p>
<p>Business and labour commit to ensuring that the funding of New Growth Path: Accord 1.1.4 training through the SDL is directed towards the training that meets the skills needs of the economy, including the training of professionals and training programmes leading to a qualification.</p>	<p>The training of professionals is covered in the provision of core skills as set out in Chapter 7 of this SSP.</p>
<p>Workplace skills plan requirements will be incorporated into the SSPs to ensure that these are aligned with the national goals set out herein and that training practices are transformed in South Africa's workplaces.</p>	<p>The SSP uses the information obtained through the WSPs/ATRs extensively. Notably, the development of core skills for the sector takes into account the scarce skills reported annually through the WSPs/ATRs.</p>
<p>A funding plan will be developed to support the targets set out in SSPs and WSPs.</p>	<p>The MQA's budget forms part of the strategic documentation handed in with this SSP. The way in which additional funding from the NSF can be accessed is not clear yet.</p>
<p>Structures that exist should be used where possible and parties will work closely with relevant government</p>	<p>Government, represented by the DMR, forms part of the tripartite structure of the MQA. The DMR</p>

Undertaking	Conformation of current SSP update
departments, including the departments of Higher Education, Economic Development, Trade and Industry, Mineral Resources, Agriculture, Forestry and Fisheries, and Labour.	also formed part of the task team responsible for the development and revision of this SSP. Other departments' inputs were utilised in the development of the SSP.
Sectors will develop these new SSPs by September 2011 for submission to the DHET by 30 September 2011 for consideration by the Minister of Higher Education and Training.	The previous SSP update was submitted to the DHET on 30 November 2012.

7.8.7 Commitment 8: Improve the role and performance of the FET colleges

The MQA's contribution in this regard has been discussed under Commitment 2 above. More detailed information is available in section 7.2.7.

7.9 SUPPORT OF THE NATIONAL DEVELOPMENT PLAN: VISION 2030

The President of South Africa appointed the National Planning Commission (NPC) in 2010 to draft a vision and a plan for the country. The National Planning Commission Diagnostic Report, released in June 2011, sets out South Africa's achievements, shortcomings since 1994, and elements of a vision statement. Subsequently, the NPC released the vision statement and plan for consideration and approval by Cabinet.

The core focus of the National Development Plan Vision for 2030, 11 November 2011, is to eliminate poverty and reduce inequality. The overall targets of the plan are as follows:

- By 2030, the number of households living below R418 a month (in 2009 rands) should fall from 39% to zero.
- The level of inequality as measured by the Gini coefficient should fall from 0.7 in 2009 to 0.6 in 2030.

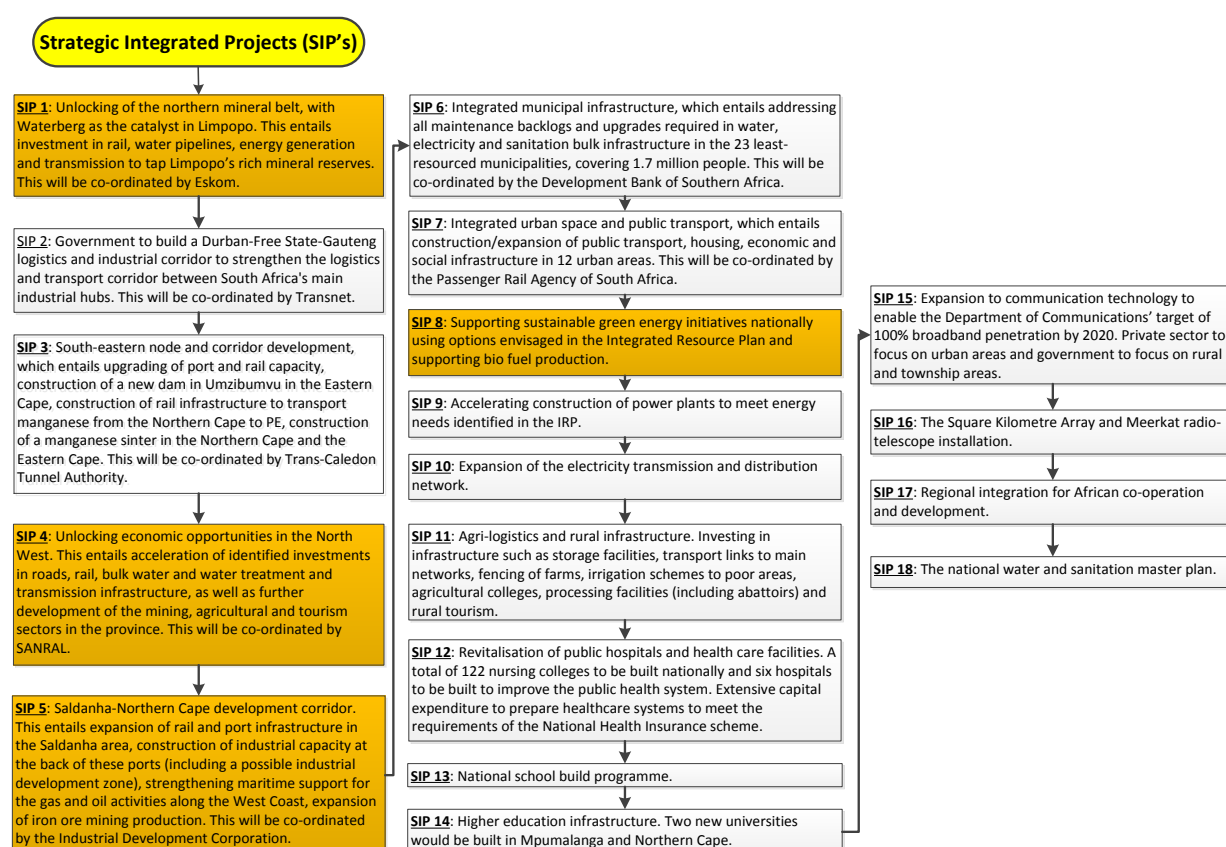
The plan covers priority areas, key targets and implementable actions, including those pertaining to the MMS. Once approved by Cabinet, the MQA will give further consideration to the plan and its implications for the MMS and skills development.

7.10 SUPPORT OF THE GOVERNMENT'S INFRASTRUCTURE PLAN AND STRATEGIC INTEGRATED PROJECTS

The Presidential Infrastructure Coordinating Commission assessed the infrastructure gaps in the country through spatial mapping, which analyses future population growth, projected economic growth and areas of the country that are not served by water, electricity, roads, sanitation and communication. Based on this work, a common infrastructure plan has been developed with 18 Strategic Integrated Projects (SIPs) to support economic development

and address service delivery in the poorest provinces. A typical layout of the 18 SIPs is as follows:

Figure 7.11 The Strategic Integrated Projects



The following SIPs are of significant importance to MQA in relation to both mining and beneficiation:

SIP 1: Unlocking of the northern mineral belt, with Waterberg as the catalyst in Limpopo

This entails investment in rail, water pipelines, energy generation and transmission to tap Limpopo's rich mineral reserves.

SIP 4: Unlocking economic opportunities in the North West

This entails acceleration of identified investments in roads, rail, bulk water and water treatment, and transmission infrastructure, as well as further development of the mining, agricultural and tourism sectors in the province.

SIP 5: Saldanha-Northern Cape Development Corridor

This entails the expansion of the rail and port infrastructure in the Saldanha area, construction of industrial capacity at the back of these ports (including a possible industrial development zone), strengthening maritime support for the gas and oil activities along the West Coast, and expansion of iron ore mining production.

SIP 6: Supporting sustainable green energy initiatives nationally using options envisaged in the Integrated Resource Plan and supporting biofuel production

The work is now being aligned with cross-cutting areas, including human settlement planning and skills development planning. The MQA will participate in the relevant SIP processes aimed at aligning skills development requirements as they unfold.

7.11 CONCLUSION

The six strategic objectives described in the first part of this chapter represent the culmination of the sector analysis and stakeholder consultation process, and are intended to guide the MQA's functioning over the next five years. In essence, this chapter presents the action plan that the MQA will seek to implement over the NSDS III period.

The six strategic objectives are as follows:

- **Strategic Objective 1:** Support transformation of the sector through skills development.
- **Strategic Objective 2:** Support objective decision-making for skills development through research in the sector.
- **Strategic Objective 3:** Enhance information management for skills development in the sector.
- **Strategic Objective 4:** Facilitate and support the development and implementation of core skills development programmes aligned with the Sector Qualifications Framework.
- **Strategic Objective 5:** Enhance the monitoring, evaluation and review of the delivery capacity and quality of skills development in the sector.
- **Strategic Objective 6:** Run an efficient, effective and transparent corporate governance system within the legislative framework.

These strategic objectives have been developed for and aligned with the amendment to the Broad-based Socioeconomic Empowerment Charter for the South African Mining and Minerals Industry (the Mining Charter), released by the Minister of Mineral Resources in September 2010, which has a number of elements relevant to skills development interventions. These include the following:

- Employment equity through support for programmes for the development of executives, managers and core skills in the sector.
- Human resources development through support for core skills programmes in the sector, including support for research programmes.
- Mine community development through support for a customised mining community capacity-building programme aligned with municipal LED plans, as well as support for small-scale mining.
- Sustainable growth and development through support for programmes that improve environmental management, as well as health and safety in the sector.
- Beneficiation through the support of minerals beneficiation programmes, in particular related to the diamond processing and jewellery manufacturing industries.

Finally, although the MQA formulated its strategic objectives within a framework that suits the needs of the sector, the priorities were also formulated with due consideration of the

requirements set out in NSDS III, with evidence presented of the ways in which this SSP supports each of eight strategic focus areas of NSDS III. Finally, due consideration was given to government's MTSF and IPAP policy documents, as well as the Beneficiation Strategy of South Africa, with this SSP directly supporting the wider programme of sustainable economic and social development that these policies seek to implement.

This SSP update took full view of the employment growth expectations posed by the NGP and the National Skills Accord that followed on government's release of the NGP. This chapter shows the SSP's alignment with the National Skills Accord. Furthermore, the National Development Plan Vision 2030 and the Infrastructure Plan will be given further consideration regarding the implications for skills development in the MMS.

To further improve the quality of the MQA's SSP, the following additional research projects are recommended:

Table 7.6 Additional recommended research projects

Research required	Essence of the proposed research project	Time frame
1. Understanding the 2020 operating environment of the mining and mineral industries	Although drivers of change indicate major changes in learning content, further research is required to estimate what skills will be required by whom.	To be done as soon as possible since it will lay a solid foundation for other research projects and skills development initiatives.
2. Updating curricula	Chapter 4 and 5 of the updated SSP clearly identified a need to update curricula and learning material to be aligned with future requirements. Drivers of change clearly indicate specific skills clusters that will be required in areas such as social media, marketing, multiskilling and the Green Agenda. These themes do not form part of existing curricula and learning material, or are not sufficiently addressed.	Due to the time required to develop new learning material, it is essential that the research commences as soon as possible, within the next three to six months.
3. SMME research	Although research has been done on SMMEs in the MMS, further research will be required to include rural areas. If SMME empowerment can be successfully extended to rural areas, two government policies are addressed simultaneously. Rural development should be viewed as an opportunity due to the fact that there are mining and mineral activities in these areas.	6 months to 1 year
4. Toolkit for SMME	Sufficient classroom training is not always	3 to 6 months

Research required	Essence of the proposed research project	Time frame
operators	possible to attract SMMEs. A toolkit based on the “how to” principle, for example, how to develop a business plan, how to budget, will make a substantial contribution. The toolkit should have templates for all activities, such as a strategic plan, appointment letter, etc.	
5 Develop a toolkit to empower staff members to comply with e-learning and new curricula	It is anticipated that this intervention could result in major changes on the future learning landscape and it might be necessary to reassess all curricula of both sectors. Further research into e-learning as an alternative to face-to-face instruction may be required to offset the process. This research should address the need for alternatives to classroom training due to the difficulty for learners to attend formal training due to work responsibilities, transport, etc.	As soon as possible, since e-learning is viewed as the ideal solution, especially to empower people in the rural areas.
6. Research to accelerate B-BBEE	Acceleration of B-BBEE is essential in view of most government policies implemented after 1994. A research project is proposed where historically disadvantaged citizens are identified and placed on individual development programmes that include education, training courses, job exposure and practical assignments that are controlled by means of a log book.	As soon as possible, but preferably within the next two to three months.
7 RPL	Since RPL has made slow progress across industries, the MQA can play a leading role in researching the most viable intervention to ensure that people who can do the work are credited with appropriate qualifications.	Preferably before the next SSP update.

8. PROGRESS ON SKILLS DEVELOPMENT PRIORITIES

8.1 INTRODUCTION

This chapter provides information on the progress made towards meeting the targets set out for the five skills development priorities of the MQA as described in Chapter 7 of the Sector Skills Plan (SSP) 2012–2017 and the Strategic Plan 2012/13. In this SSP update (Chapter 7), the MQA no longer refers to skills development priorities, but to strategic objectives. The main headings of the first five strategic objectives are the same as those of the skills development priorities set out in the SSP that was submitted to the DHET in February 2012.

The NSDS III period commenced on 1 April 2011 and therefore this chapter provides mainly narrative information on the actions taken by the MQA to deliver on its skills development priorities in the 2012/13 financial year.

In 2010/11, the MQA embarked on a process of re-engineering all its business processes and systems with the aim of having a user-friendly, well-maintained and well-resourced management information system. (This process is the first step towards the objectives set out under Priority 3: Enhance information management for skills development in the sector.)

In this chapter, each priority area is described in terms of its goal, objective, strategy and planned project activities. The targets set for each priority area include quantitative, qualitative, cost benefit and impact targets. Although it is not possible at this early stage to comment fully on the achievement of targets, progress is reflected as far as possible, and concerns or aspects for further consideration are flagged where applicable. Most of the MQA projects are multi-year projects and the detailed breakdown is depicted in Appendix 7 attached hereto.

8.2 SKILLS DEVELOPMENT PRIORITY 1: SUPPORT TRANSFORMATION OF THE SECTOR THROUGH SKILLS DEVELOPMENT

8.2.1 Goal and objective

The goal of Priority 1 is to support the Mining Charter to increase the pool of historically disadvantaged South Africans (HDSAs) with the relevant skills required to fill managerial positions.

8.2.2 Targets and progress

The project is aimed at developing the skills of employees in the mining sector through management development programmes (MDPs) to assume roles in supervisory and managerial positions within their companies. It was envisaged that after undergoing the programme, mining organisations would afford their HDSA employees opportunities to demonstrate their newly acquired management skills within a two-year period of completing the MDP.

In 2012/13, a total of 135 employees (an excess of 85 over the target of 50) were successfully trained in numerous MDP programmes. Five organisations who participated in

these programmes in the sector have created a pool of potential managerial staff members.

For the 2013/14 financial year, the target of learners has been set at 130. The new intake for 2013/14 will commence in the second quarter.

8.3 SKILLS DEVELOPMENT PRIORITY 2: SUPPORT OBJECTIVE DECISION-MAKING FOR SKILLS DEVELOPMENT THROUGH RESEARCH IN THE SECTOR

8.3.1 Goal and objective

The goal of Priority 2 is to continually improve skills development planning and decision-making through research. The objective of Priority 2 is to contribute to the body of skills development knowledge within the sector and nationally through the dissemination of research reports and collaboration with relevant partners.

8.3.2 Targets and progress

The research strategy of the MQA relates to the NSDS III requirement of ensuring that skills development data is accurate and usable. The strategy refers to an ongoing process of continuous improvement of information.

Research needs for 2012/13 and 2013/14 were identified and the research agenda was adopted by the responsible standing committee of the MQA Board (the Skills Research and Planning Committee). Progress reports on research activities are submitted to the committee and the Board quarterly.

The MQA has, from the onset, acknowledged the importance of the WSP/ATR submissions and designed WSPs/ATRs that go beyond the minimum compliance requirements. Firstly, the WSP/ATR serves as a mandatory grant release mechanism if the MQA's criteria are met. Secondly, it encourages good skills planning and reporting within organisations. Thirdly, it provides a valuable source of data annually to the MQA for skills planning and reporting purposes.

Organisations were required to submit their WSPs/ATRs to the MQA by 30 June 2012 and, in the case of approved extensions, by 31 July 2012. Submission and approval of WSPs/ATRs decreased for 2012/13, with only 583 submissions, compared to the 653 submissions received in 2011/12. A possible reason for this decrease was the decrease in the MQA's contracted skills development facilitators (SDFs) from 15 to four, who offered support to 98 organisations for the MQA. In terms of submission for 2013/14, the MQA has received 591 submissions, which still need to be approved. The MQA did not use the services of SDFs for 2013/14. The organisations could register and prepare WSPs/ATRs for their sites under the SDL number. The source data submissions provided more detailed information on employees and actual training undertaken. This was useful in enabling a better analysis of current employment within the sector, together with more accurate labour-demand projections and skills needs identification (including scarce skills). Furthermore, a general improvement in the quality of data received in the submissions was evident.

In order to support SDFs and Skills Development Committees (SDCs) in the sector in their skills planning and reporting role, the MQA provided the following material: Organising Framework for Occupations (OFO) toolkit (the latest version of the OFO, mapping tables, OFO Guide booklet) and a WSP/ATR Requirements booklet (including guidelines for SDCs). Further support was provided in the form of two national SDF forums, workshops on OFO and WSP/ATR capacity-building workshops for organisations.

In addition to the research undertaken for the SSP update, the MQA has commissioned a systematic annual analysis of the WSPs and ATRs every year since 2002 (available in individual reports annually). This allowed for the development of time series data on the profile of the sector and skills development initiatives in the sector. It also formed an important source of information for the development and the updating of the SSP. The 11-year trend analyses have just been completed as well as the 12-year analyses of WSPs and ATRs. The 12- and 13-year trend analyses and 13-year WSP/ATR analyses are envisaged to be completed in 2013/14.

The occupational profiling done in the 2011/12 financial year enabled the MQA to produce an occupational profile dictionary, primarily of occupations that fall within the scope of the MQA. The dictionary, which will be updated annually, aims to support future skills audits, as well as the Quality Council for Trades and Occupations (QCTO)-aligned qualifications development process in the sector. In 2013/14, the MQA will be undertaking an occupational profiling and skills audit exercise among MMS companies. Other research projects that are planned as part of the 2013/14 research agenda are an impact assessment framework, that will be employing this framework to conduct four impact assessments (recognition of prior learning (RPL), adult basic education and training (ABET), learnerships and occupational health and safety representatives). Furthermore, research into the skills requirements of the Mineral Beneficiation Strategy needs to be completed.

The MQA aims to prioritise and implement the recommendations from research projects. After completion of each research project, the reports are sent to the Board's Standing Committee, the Skills Research and Planning Committee. This committee approves the final reports, reviews the recommendations and makes proposals regarding the implementation of the research, if applicable. One of the MQA's recent research projects, Language policy implementation and implications in the MMS with specific reference to the role of Fanakalo, is informing the current review of the MQA's language policy on skills development. Monitoring the progress of the projects on the research agenda is an ongoing process. The research information is used for decision-making regarding skills development issues in the sector. The MQA has undertaken an impact assessment on Mine Inspector Training which was completed recently. The results of this research project still need to be assessed and approved.

8.4 SKILLS DEVELOPMENT PRIORITY 3: ENHANCE INFORMATION MANAGEMENT FOR SKILLS DEVELOPMENT IN THE SECTOR

8.4.1 Goal and objective

The goal of Priority 3 is to provide accurate and current skills development information, and make it available and accessible to all stakeholders in the sector. The objective is to have a

user-friendly, well-maintained and well-resourced management information system that is fully functioning. The information system should maintain high data integrity.

8.4.2 Targets and progress

The target is to design and develop a new Management Information System (MIS) for the core operations of the MQA to replace the current system. The MQA business processes have been re-engineered and will form the specifications for the new system. The MQA is currently in the procurement stage of this process. Stakeholders (including employers, labour and DMR representatives) have been given the opportunity to submit inputs regarding the development of the new MIS through the formation of an MIS Stakeholder Steering Committee. The MIS project will commence with the development of a data warehouse to house all MQA data from year 0. The data warehouse will be built using open relational database technology to ensure easy data migration and accessible accurate data that will be available to the sector. To ensure the security of data, the MQA has identified a Disaster Recovery (DR) site. The implementation of the secondary site will be used to ensure business continuity in case of an incident at the primary site at Head Office.

The MQA is also in the process of revamping its website. This will provide additional access to information for the sector and the general public. The MQA Customer Relationship Management (CRM) system will also be linked to the new website to assist with the efficient handling of all stakeholder queries. Investigations into the use of social media on the site are also underway.

8.5 SKILLS DEVELOPMENT PRIORITY 4: FACILITATE AND SUPPORT THE IMPLEMENTATION OF CORE SECTOR SKILLS AND DEVELOP PROGRAMMES ALIGNED WITH THE SECTOR QUALIFICATIONS FRAMEWORK

8.5.1 Goal and objective

The goal of Priority 4 is to facilitate and support the development and implementation of core skills for the MMS. The objective is to review the sector qualifications framework and register learners on OFO-aligned core MMS programmes.

8.5.2 Targets and progress

The development of core skills for the MMS is supported by the MQA through a suite of projects that are aimed at the specific sector skills needs outlined in Chapter 6 of this SSP. The projects are funded from the discretionary funds available in the MQA. Quantitative targets have been set for each of the projects, which are specified in the Strategic Plan.

Qualifications design

The MMS Qualifications Framework has been updated and aligned with OFO 2012 (version 12). This framework contains sector-specific occupations and qualifications, as well as cross-sectoral learning programmes.

The MQA has completed the following 14 QCTO qualifications:

- Mining Technician: Surveyor Mining
- Mining Technician: Mine Sampler
- Mining Technician: Ventilation Officer
- Mining Technician: Ventilation Observer
- Mining Technician: Strata Control Observer (UHR)
- Mining Technician: Strata Control Officer/Practitioner (UHR)
- Mining Technician: Strata Control Officer/Practitioner (Coal)
- Mine Planner and Designer
- Assistant Mine Planner
- Goldsmith
- Mines Rescue Service Worker
- Occupational Health and Safety Practitioner
- Electrician (collaborative qualification)
- Chemical Laboratory Analyst (collaborative qualification)

The following qualifications are still under development and will be finalised in the 2013/14 financial year:

Table 8.1 Qualifications still under development

Cluster	Occupation
Mining occupations supporting government certificates of competency (GCCs)	<p>Miner: Underground Hardrock, 312102001</p> <p>Miner: Underground Coal, 312102002</p> <p>Miner: Surface Excavations, 312102003</p> <p>Miner: Non-blasted Operations, 312102004</p> <p>Miner: Explosives Manager, 312102005</p> <p>Mining Team Leader</p> <p>Shift Overseer (Shift Boss): Underground Hard Rock, 312102004</p> <p>Shift Overseer (Shift Boss): Underground Coal, 312102005</p> <p>Shift Overseer (Shift Boss): Surface Excavations, 312102006</p> <p>Mine Overseer: Underground Hard Rock, 312102001</p> <p>Mine Overseer: Underground Coal, 312102002</p> <p>Mine Overseer: Surface Excavations, 312102003</p> <p>Qualification development supporting the above occupations, is ongoing and also pending a decision regarding the Rock Breaker/Blasting Certificate.</p> <p>The Shift Boss occupation has not been regulated and made a mandatory competency as yet by the Mine Health and Safety Council (MHSC).</p> <p>Occupations for mining operators and drillers will be added in the 2012/13 financial year.</p>
Non-GCC mining occupations approved by the QCTO for development	<p>Mine Rescue Service Worker, 541902</p> <p>Development in relation to the above occupations has been completed.</p>
Mining technician stream,	Mine Surveyor and Mapper: Survey Officer, 216502001

Cluster	Occupation
including qualifications supporting the Chamber of Mines certificates of competency	<p>Mine Surveyor and Mapper: Junior Survey Officer, 216502002 Mining Technician: Strata Control Officer, 311701001 Mining Technician: Strata Control Officer, 311701002 Mining Technician: Mine Ventilation Officer, 311701003 Mining Technician: Mine Ventilation Officer, 311701004</p> <p>Development in relation to the above occupations has been completed.</p>
Mining technician occupations that are not supported by Chamber of Mines certificates of competency	<p>Mine Planner and Designer, 312903004</p> <p>Development in relation to the above occupation is ongoing.</p>
Mining health and safety occupations	<p>Safety Professional/Advisor, 226302001 Safety Office/Practitioner, 226302002 Safety Coordinator, 226302003 Full-time Safety Representative, 226302004 Workplace Safety Representative (Safety Steward), 226302001</p> <p>Development in relation to the above occupations is ongoing.</p>
Mine inspector occupation approved by the QCTO for development	<p>Mine Health and Safety Inspector, 311703</p> <p>Development in relation to the above occupation is ongoing.</p>
Engineering trades approved for development and for which an artisan qualification is required under the QCTO	<p>Automotive Motor Mechanic: 653101 Diesel Mechanic: 653102 Diesel Fitter, 653304 Earthmoving Equipment Mechanic, 653307 Rigger, 651401</p> <p>Planned for completion in the March 2013/14 financial year. Non-core occupations (Motorcycle and Scooter Mechanic, 653103; Motor Mechanic-Small Engine Mechanic, 653104) will also be developed as part of this cluster of occupations.</p>
Beneficiation trades occupations	<p>Goldsmith, 661301 – completed and submitted to the QCTO.</p> <p>The following new occupations are approved for development:</p> <p>Diamond and Gemstone Setter, 661302 Horologist (Watchmaker), 661101 Diamond Cutter and Polisher, 711203</p>

In terms of Section 26I of the Skills Development Act of 1998 (as amended in 2008) and the NQF Act of 2008, the QCTO has delegated the functions of qualification design and development to the MQA as a development quality partner (DQP). The MQA is thereby required to supply the MMS-related occupational qualifications in accordance with QCTO requirements and by OFO Code. The OFO informs the development of qualifications in the new QCTO and provides a useful basis for determining skills requirements.

The MQA is collaborating with other relevant DQPs for the design and development of other occupations relevant to the mining industry.

For the current financial year, a budget of R3 852 000 has been allocated for the various activities.

A further 15 qualifications and specialisations will be developed in the 2013/14 financial year.

Learning material development

The MQA learning material initiative has been executed in collaboration with the Chamber of Mines. The initiative has focused on the development of learning packs that support registered MMS-registered standards.

Since its inception, the MQA has developed a total of 1 604 learning packs, which have all been approved. These learning packs serve as a benchmark and minimum standard for the provisioning of the standards within the sector.

Indicated below is the number of learning packs developed in the specified year:

Table 8.2 Number of learning packs developed in the specified year

2011-2012	2012-2013		2013-2014	
	Target	Achieved	Target	Achieved
Learning packs for 202 unit standards were developed for use in the sector.	80 unit standard-based learning packs	99 developed	85 unit standard-based learning packs	25 unit standard-based learning packs
	Occupational QCTO qualification: Mines Rescue Services Worker	22 modules	19 modules for QCTO qualifications	n/a
	Occupational QCTO qualification: Goldsmith	In process		In process
	Customisation of the MQA Level 3 jewellery manufacturing and design qualification learning packs to suit learners with special needs	In process		In process

Community Training in Mining

The mining industry's involvement with and responsibilities towards the communities surrounding the mines have been mentioned in Chapter 2. As a pilot project, the MQA intends to assist a mining community with training interventions in order for them to gain employment. This intervention also supports the Social and Labour Plan programmes of the sector.

The target for the 2013/14 financial year is 2 000 learners. In the first quarter, no communities have been supported.

Classification of Mines

The Classification of Mines Risk Rating Table has been compiled and distributed to operating mines to complete and return to the MQA. Further risk ratings are still required from plants, underground coal mines, large surface mining operations, large platinum mines and other smaller operations in an attempt to determine the validity of the risk-based Classification of Mines Model.

It is envisaged that two meetings are still required to finalise the Classification of Mines Risk Matrix. Once completed, a meeting needs to be arranged with the DMR to review the work.

Once the Classification of Mines is complete, the task team will be disbanded. Any further work on the above will require a revised mandate and guidance from the Mining Regulation Advisory Committee (MRAC) as to the deliverables expected as an outcome from the work of the Classification of Mines Task Team.

Cement, Lime, Aggregates and Sand (CLAS) Support

The following have been done:

- A qualifications framework for the CLAS subsector was developed and the subsector participates in the development of QCTO surface mining-related qualifications.
- The CLAS subsector participated in the development of the following QCTO qualifications:
 - Production Supervisor, Shift Boss Supervisor, Miner/ Rockbreaker and Miner (Including associated competencies: Examine and Make Safe, etc.)
 - Chemistry Technician/ Laboratory Analyst/ Laboratory Assistant
 - Occupational Health and Safety Practitioner and Representative
 - Certificated Engineer/ Manager
 - Rockbreaker/ Blasting Certificate Task team
- Ten learning packs have been reviewed and approved.
- A CLAS advocacy workshop was held in July to promote the MQA, its projects and the work of CLAS subsector.

Certificated Engineer/Manager

The Certificated Engineer/Manager Steering Committee has been established for the development of higher education and training (HET) practical programmes linked to the Registered National Certificate in Certificated Engineering, NQF Level 7. The development of the programme is progressing well. It is envisaged that two workshops are required to finalise this curriculum. An application to the QCTO has also been submitted. However the Council on Higher Education (CHE) is now responsible for all qualifications at Level 6 and above.

Rock Breaker Task Team

The Standards Generating Body (SGB) Committee took the decision to progress this work further, facilitated by an independent facilitator. A special SGB committee meeting was held whereby the DMR would develop a position paper on the practicability of reverting back to the Blasting Certificate, including the possible implications of reverting back to it. Constituencies were invited to contribute to this paper. The DMR was to submit the position paper to the SGB Office in May. The position paper from the DMR is still awaited.

Legislative Framework Governing Government Certificates of Competency

In accordance with an MQA board decision, the examination analysis is first to be completed for the Government Certificate of Competency (GCC) (the new competency model) prior to taking the legislative framework forward.

Maths and Science Support

A total of 1 035 grade 10 to 12 learners were registered on the MQA Maths and Science Project in 2012, spread over eight provinces. The project targeted HDSA learners from rural mining communities and related areas. The assistance provided to learners included extra-curricular classes that took place after school on Fridays and on Saturdays and Sundays. Winter and Spring schools were also convened during the winter and spring school holidays. There was an overall marked improvement in the pass rate from 86% to 89%. The number of Mathematics and Physical Science distinctions increased significantly from 49 to 103. There was an increase in the decent pass rate (learners passing with 50% and above) in both Mathematics and Physical Science. An overall rate of 54% of learners obtained between 50% and 100% in 2011, compared to the 47% in 2010. During 2011, the Maths and Science Project has seen an increase in bachelor passes. This has allowed a greater number of matriculants to gain access to tertiary education institutions. Learners have also been encouraged to consider artisan and learnership programmes. However, some learners were not successful due to poor attendance and family and personal issues. Learners that fared well showed a good class attendance record.

In the first quarter of 2013/14, no learners have been taken on. They will be supported from the second quarter. The target is 1 000.

Adult Basic Education and Training

The MMS continues to have one of the lowest levels of education in the economy. Some 32.7% of the employees in the sector have an educational level below NQF Level 1. The MQA has therefore continued to support the delivery of adult basic education and training (ABET) within current and estimated budget constraints.

The MQA's target is a relatively small figure in comparison to the need. This support augments employers' investments in ABET.

A total of 6 339 learners entered ABET programmes and 1 544 completed the programmes in the 2012/13 financial year. The target was for 8 800 people to enter, and 4 400 completed the programmes.

The target for the 2013/14 financial year remains 8 800 learners to enter the programmes and 4 400 to complete the programmes. In the first quarter, 1 763 learners have entered programmes and 320 have completed their programmes.

Foundational Learning Grant Incentive Project

A target of 500 learners has been set for this financial year. A total of 191 completed the Foundational Learning Competency Programme in 2012/13. Eighty-five learners have been enrolled on the programme for the first quarter of 2013/14.

Facilitator Development

The objective of this project is to support the development of facilitators for programmes that are required in the MMS. Eighty-four out of a target of 100 were supported. For this financial year, the target is also 100. In the first quarter, no learners have been supported.

ABET practitioners

The aim of this project is to upskill 100 AET practitioners and to improve the quality of AET provision. In the 2012/13 financial year, the target of 100 registered learners was achieved. The target for the 2013/14 financial year remains 100. In the first quarter, no new learners were registered.

Intermediate (FET) level core programmes through learnerships

Non-artisan learnerships

The objective of this programme is to develop employed and unemployed learners in core non-artisan programmes. The target for the 2012/13 financial year was 1 200 to be registered. The achievement was 1 749.

For this financial year, the target is 3 000 learners to be registered. In the first quarter, 858 have been registered.

Learnerships for people with disabilities

The MQA Disability Project was implemented to encourage mining companies to take on learners with disabilities in learning programmes. The MQA has compiled a Disability and Reasonable Accommodation Toolkit.

In the 2012/13 financial year, 164 learners have been registered against a target of 50. For the 2013/14 financial year, the target is 68. In the first quarter, 11 learners have been registered.

Artisan development

There continues to be a need for qualified artisans to support and grow the South African economy. To this end, the MQA has undertaken several initiatives.

- **The MQA/UIF Artisan Development Project** is a partnership with the Unemployment Insurance Fund to facilitate and support the registration of 1 000 artisan learners on the MQA Artisan Programmes. This programme will continue until 2015, when the learners will have completed their programmes. No new target has been set for the next financial year.
- **The MQA/NSF2 Artisan Development Project** aims to support a total of 1 000 registered unemployed artisan learners with grants. A total of 877 learners were supported. The MQA supports the learners towards completion of their programme in 2014.
- **The MQA-Artisan Development Project** aims to facilitate and support artisan development in the sector. For the 2012/13 financial year, 2 164 learners were registered against a target of 2000. For the 2013/14 financial year, the target is 1 200 completions. In the first quarter, 332 learners completed the programme.
- **The MQA-Artisan RPL /Aides Development Programme** is geared towards preparing artisan aides to access artisan programmes. For the 2012/13 financial year, the target was 1 500 learners to be registered on various programmes. Only 97 were registered. For the 2013/14 financial year, a target of 500 has been set. In the first quarter, 16 learners completed the artisan aides skills programmes, and 64 learners entered various programmes aimed at the artisan aides project.
- **The MQA/Mpumalanga Artisan Development Project** is a partnership between the MQA, the Department of Labour, Nkangala FET College and the Colliery Training College in Mpumalanga. It is aimed at facilitating and registering a total of 220 unemployed learners on N2 Engineering and MQA Artisan Programmes. A total of 109 learners were registered on artisan programmes in the 2012/13 financial year. For the 2013/14 financial year, the target is 111. In the first quarter, 18 learners were registered.

Workplace Coaches Project (on-the-job learning)

The objective of this pilot project was to provide structured on-the-job coaching in the scarce and/or critical skills areas required by learners in the sector. To this end, Western Lonmin was appointed to develop, implement and manage the piloting of the Occupational Coaches Programme, based on a tender process. The pilot project was interrupted by the unrest of the Lonmin Marikana mine, which affected the successful implementation of the project. This led to six coaches being utilised to coach 48 learners. The target for this financial year is 10 coaches and 50 learners in learnerships. Nothing was achieved in the first quarter of 2013/14 against the target. Recruitment of both coaches and learners will be started in the third quarter.

Minerals beneficiation

The MQA signed a MoU with the Jewellery Council of South Africa during the 2011/12 financial year. An extension of this MoU was signed in 2012/13. A total of 313 learners have been registered on the jewellery manufacturing and diamond processing programmes. A further 160 beneficiaries were supported in the following interventions:

- Jewellery project – rural development with symbolic and indigenous jewellery, using semi-precious minerals
- Implementation of skills programs
- Occupational trainer (KwaZulu-Natal and Western Cape)
- National Institute of Design (NID) project
- Technical top-up training
- Workplace coaches
- Moderators forum
- Workplace training for diamonds
- FLC customisation

In the first quarter of 2013/14, 224 learners were registered, against a target of 200 non-artisan learnerships. A further target of 50 learners for skills programmes has been set, of which 22 have been registered.

OHS representatives

In 2009, the MQA started supporting the training of occupational health and safety (OHS) representatives in line with the Mining Sector Tripartite Agreement of 2008. The MQA supports this initiative by making a grant available to employers for the training of their OHS representatives. A total of 6 438 learners registered for the OHS representative programme for the 2012/13 financial year, against a set target of 8 000.

A total of 5 000 learners are to be assisted in the 2013/14 financial year. In this quarter, 1 023 learners have completed the programme.

Small-scale Miners Skills Development Support

This project comprises two parts: Small-scale Mining and Support for NGOs, CBOs, Cooperatives and non-levy-paying enterprises (NLPEs).

- **Small-scale Mining**

The focus of this project is on the training and capacity building of small-scale miners (SMEs). Through this project, 309 learners, including women in mining, received small-scale mining technical training across all nine of South Africa's provinces in the 2012/13 financial year. Learners were primarily trained using the Underground Hard Rock Mining Skills Programme. The learners were also assisted with mentoring and coaching in managing their businesses. Of these, 50 were CBOs, NLPEs and cooperatives, and 269 were trained in HIV/AIDS programmes. In the first quarter of 2013/14, no learners have been supported. Learners will be supported from the second quarter.

In the 2012/13 financial year, 225 learners have commenced with their programmes in all the provinces of the country, against a target of 220.

The target for the 2013/14 financial year is 250 learners.

High-level HET core programmes

MQA's core programmes at HET-level include lecturer support, mine inspector training, bursaries, work experience and internships, as well as learning material development for the training of rock engineers, described above. The impact of the projects will be considered. Currently, learners on bursaries and those in work experience and internship opportunities are tracked in order to determine what their final employment destinations are.

Mine Environmental Control Programmes

The objective of this project is to support the training of mine ventilation officers. For the 2012/13 financial year, no learners were supported against the target of 50 learners. However, 82 learners went through the programme, but due to the lack of supporting documents these learners could not be supported by the MQA. The target for the 2013/14 financial year remains 50. In the first quarter, no learners were supported.

Lecturer Support

This programme focused on assisting the mining and minerals departments of nine universities to achieve employment equity and transformation targets among lecturing staff. For this financial year, a total of 26 lecturers were appointed to lecture in the Mining, Geology and Mine Survey departments of the following participating universities:

- University of South Africa: one lecturer
- University of the Witwatersrand: seven lecturers
- University of Johannesburg: five lecturers
- University of Venda: two lecturers
- University of Fort Hare: two lecturers
- Rhodes University: two lecturers
- University of Pretoria: three lecturers
- University of Limpopo: two lecturers
- University of Cape Town: two lecturers

In the 2013/14 financial year, the number of lecturers will be capped at 26 and nine universities.

Bursaries

This ongoing project aims at creating a pool of qualified graduates, putting them in a position to pursue careers within the sector, in support of the Mining Charter and NSDS III. The bursary scheme, which is funded through the MQA discretionary budget, has assisted 750 bursars (against a target of 500) from HET institutions in the 2012/13 financial year. In line with the Green Economy Accord MQA undertakes green skills development through its support of Environmental Scientists through its bursary project and integrates an environmental component to all its learnerships.

A further 250 learners are being supported from January 2013.

In the 2013/14 financial year, 791 learners are being supported financially against a target of 750 learners.

Work experience

The MQA assists learners to obtain qualifications from universities and universities of technology and FET colleges by placing them in host companies to acquire practical work experience. During the 2012/13 financial year, 406 students (against a target of 300) were placed with 17 mining companies to gain workplace experiential training. This number included 77 learners who were assisted with vacation work placements during December 2011 and January 2012.

The target set for the 2013/14 financial year is 400. No learners were taken on in the first quarter. Learners will be supported from the second quarter.

Internships

This annual project aims at providing structured two-year work experience to young unemployed graduates from HET institutions, to complement qualifications in the scarce and/or critical skills required by the sector. In the 2012/13 financial year, 200 graduates were placed at different mining companies, where they could gain workplace experience. The MQA met its target on this project.

The target for the 2013/14 financial year is 600. For the first quarter, no new learners have been taken on, although 86 have completed their training.

Mine Inspector Training

This project contributed to strengthening mine health and safety by developing well-rounded mining inspectorate expertise in the management of legal risk exposure, root cause analysis, occupational health and hygiene, surface safety, underground safety, SH&EQ management, international SH&EQ management standards and practical visits. During the 2012/13 financial year, 63 employees from the regional offices of the DMR received training at the University of the Witwatersrand's Centre for Sustainability in Mining and Industry.

The target set for the 2013/14 financial year is 50. In the first quarter, no learners have been taken on as an impact assessment report is awaited to ascertain whether this project should continue.

Sector alignment to National Government Priorities

Promoting the growth of public FETs

The MQA has continued to engage in various interventions with 23 FETs linked to the MMS. Quarterly forums are held, focusing primarily on artisan development. Approximately 10 lecturers were trained on the FLC by the MQA. Plans are in place to formalise collaboration with more FETs.

In 2012/13, 17 FET lectures have been placed at companies/providers for understanding industry artisan requirements. Sixty-one NCV learners have also been taken on in artisan programmes

Career guidance

The MQA's Qualification Framework guides the learning pathways for occupations in the MMS. The MQA has undertaken a range of career guidance activities, particularly with young people.

The MQA has developed a very detailed MMS careers brochure with an accompanying DVD that it has distributed across the entire sector, as well as to numerous schools and career guidance structures. Moreover, the MQA participated in many skills development exhibitions in the country. Furthermore, various workshops and/or road shows on programme development in the sector were held during the year. The MQA provided career guidance, in partnership with the DHET, as part of Mandela Day, and also participated in the DMR's Learner Focus Week and Department of Labour career interventions and career exhibitions.

8.6 SKILLS DEVELOPMENT PRIORITY 5: ENHANCE THE MONITORING, EVALUATION AND REVIEW OF THE DELIVERY CAPACITY AND QUALITY OF SKILLS DEVELOPMENT IN THE SECTOR

8.6.1 Goal and objective

The goal of Priority 5 is to support the MMS to develop sufficient training and development capacity and continuously improve the delivery of quality programmes. The objective is to ensure sufficient training and development capacity, and quality programmes for core mining and minerals occupations.

8.6.2 Targets and progress

The MQA ETQA, jointly with the SGB, has embarked on piloting the development of the external assessment strategy and specifications for various qualifications. Once these qualifications are accepted by the QCTO, the external assessment tools will be developed. The MQA was recognised as the Assessment Quality Partner (AQP) for the Mines Rescue Services Worker (MRSW) qualification on 2 August 2013. The external development of the assessment instruments for the MRSW was completed in the first quarter of 2013/14.

In line with the QCTO policy of qualification requirements, a guideline document has been prepared for the currently registered miner qualifications to supplement the learnership agreements. A panel assessment process has been put in place where line management will form part of an evaluation panel for the declaration of competence. In addition, the workplace experience logs are submitted to the ETQA for scrutiny and verification. Three providers were monitored on this process in the period February to March 2013. There is marked improvement in the quality of learning provision for rock breakers.¹⁵³

The MQA has also analysed trends regarding their accredited providers since the beginning of 2011/12. This activity provides the opportunity to see what the major issues in terms of accreditation. One of the areas identified as an area that needs focused attention is the skills

¹⁵³ The non-artisan learnership impact study that will be undertaken will incorporate the possible effects of changed quality assurance processes.

of facilitators and assessors in the sector. The MQA has identified a project to support development of facilitators and 84 facilitators were developed in 2012/13.

The system for the monitoring of training providers is in place and the monitoring schedule is on track. All the sites where training providers conduct training and assessment are quality assured by the ETQA. At this stage, the MQA is looking at different models of utilisation of subject matter experts for quality assurance audits and is in the process of increasing the pool that should be provincially or regionally based. This model is very cost effective as the subject matter experts do not have to travel to different areas. The intention is to increase the pool of subject matter experts and ensure their capacitation as required. Thirty-five new subject matter experts were capacitated in July 2013.

In the 2012/13 financial year, 132 accredited and programme-approved training providers were monitored/checked for compliance/quality assurance of learner achievements, and 44 were monitored in the first quarter of 2013/14. Furthermore, 65 contracts (plus seven site and/or scope extensions) have been awarded to training providers.

All the MQA-registered programmes have accredited providers. However, there is a need to increase the number of accredited providers for certain qualifications, such as those in the OHS, mineral processing qualification and mining technical support fields. Twenty-five providers have been accredited for OHS, 17 for the mineral processing qualification and only one for mining technical support for the period 1 November 2012 to 30 July 2013. Subsequently three additional providers have been granted the OHS scope. One provider has been audited for the mining technical support qualifications. Large numbers of learners are participating in the skills programmes in the mineral processing field, but a drive towards the achievement of qualifications is required in the sector.

The ISO 9001:2008 grant has been phased out and the last 12 providers were supported. The MQA's process for improving capacitation in the sector also involves the continuous registration of assessors and moderators. Assessors are required to have the relevant technical qualification, as well as the assessor skills, together with a minimum of two years' experience in the relevant field before they are considered for assessing MQA's qualifications, skills programmes and/or unit standards. Once an assessor is registered and has obtained the moderator skills, they are eligible to become registered as a moderator. This implies that a moderator is also a subject matter expert. In the 2012/13 financial year, 442 assessors and 162 moderators were registered for various MQA qualifications while 235 assessors were granted scope extensions in 2012/13. In the first quarter of 2013/14 financial year, 114 assessors and 48 moderators have been registered.

There is also a concern regarding the lack of learner uptake, specifically in respect of the replacement qualifications for the current Chamber of Mines certificates of competency.¹⁵⁴ The MQA has started putting new qualifications in place to replace these certificates of competency. The Level 2 mine ventilation qualification has been registered. However, it remain as a concern that, there has not yet been any uptake of the qualifications. The MQA qualifications and the Chamber of Mines certificates will be offered concurrently until 2015

¹⁵⁴See Section 5.4.2 where the importance of the certificates of competency for the sector is discussed.

when the issuing of Chamber of Mines certificates will end. This transition is an area of focus for the MQA ETQA division. Very important is the fact that the MQA needs to develop the capacity to assess approximately 1 000 learners per year in the competency areas covered by the Chamber of Mines certificates. There is also a need for larger numbers of accredited providers in this area.

The MQA is monitoring trends in terms of providers retaining their accreditation status, needing improvements to retain their accreditation and opting out of accreditation. Seven providers have lost their accreditation and/or approval status. During monitoring visits, relatively large numbers of providers receive reports indicating the need for improvements. This is an area that needs continued monitoring and focused attention from the MQA. At the same time, a new and possibly more flexible approach to accreditation needs to be developed (also in line with the accreditation philosophy and requirements of the QCTO).

Once the records of assessment data of all learners are recorded on the MQA database, learners are certificated by the MQA within three weeks. The MQA is in the process of improving on this target after experiencing challenges with a not fully functional system.

The MQA upload to the National Learners' Records Database (NLRD) was successful for all required uploading during financial year 2012/2013.

The numbers of learners' certification that were awarded in the 2012/13 financial year are as follows:

Table 8.3 Number of learners' certification (2012/13)

Types	Numbers	Numbers (1st quarter) 2013/14
Skills Programmes' statement of attainments	34 376	11 099
The MQA Level 1 qualification	166	243
Non-artisan qualifications	2 178	474
Artisan qualifications	1 608	446

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APPENDICES

APPENDIX 1: METHODOLOGY USED IN THE DEVELOPMENT OF SECTOR PROFILES

There is no single database that provides a complete and comprehensive profile of the MMS as it has been defined for the purposes of the Skills Development Act. In order to develop such a profile, a variety of data sources were used. For each of the subsectors and for each of the variables needed in the profile, the sources that provided the best data were selected.

Mining

For five of the mining subsectors (coal mining, gold mining, PGM mining, diamond mining and other mining), the DMR's database of mines (employment in the first quarter of 2013) was used to establish total employment in each subsector. This database is maintained and updated every quarter when all mining operations are required to submit information to the DMR. The employment and earnings figures provided on this database are used by Statistics South Africa in their quarterly Survey of Employment and Earnings (SEE) and are regarded as the official statistics on employment in the mining industry.

Information on population group, gender, occupational distribution and educational levels was not available from the DMR database. However, the MQA has a relatively high return of WSPs/ATRs every year and the WSPs contain comprehensive information on the workforce of the sector. The WSPs/ATRs submitted for the financial year 2012/13 represented approximately 75% of the workers in the sector. Thus, for the purpose of establishing a sector profile, the individual records in the source data were weighted using the following formula:

$$W_a = E_{a(\text{DMR})} / E_{a(\text{source data})}$$

Where

W_a = the weight applied to records belonging to a particular subsector

$E_{a(\text{DMR})}$ = total employment in that subsector as reported by the DMR

$E_{a(\text{source data})}$ = total employment in that subsector in the WSP/ATR submissions in 2012/13

Services incidental to mining, CLAS, diamond processing and jewellery manufacturing

The CLAS subsector includes cement manufacturing, which is not included in the DMR data. For this reason, the WSP/ATR data of the CLAS subsector was weighted, using SDL payment information. Similarly, to arrive at an estimate of total employment in the services incidental to mining, diamond processing and jewellery manufacturing subsectors, SDL payments were used in weighting the source data. It was assumed that there is a direct relationship between the amount of levies paid by an organisation and the number of people employed. It was also assumed that organisations in a particular subsector would have similar wage structures and that the employment-levy relationship of companies that submitted WSPs/ATRs would be the same as for those in the same subsector that did not

submit WSPs/ATRs. Thus, the weights applied to individual employee records in these four subsectors were calculated using the following formula:

$$W_a = L_a / L_{aw}$$

where

W_a = the weight applied to records belonging to a particular subsector

L_a = total levies paid by organisations in the subsector in 2012/2013

L_{aw} = total levies paid by organisations in the subsector in 2012/2013 that submitted WSPs

The weights calculated were also applied to the individual records in the source data.

APPENDIX 2: SIC CODES AND SUBSECTORS USED IN THE MMS

Subsector	SIC code (Department of Labour)	Description of activity
Coal mining	21000	Mining of coal and lignite
Gold mining	23000	Mining of gold and uranium ore
	23001	Thin tabular operations
	23002	Thick tabular operations
	23003	Massive mining operations
PGM mining	24240	Platinum group metals
Diamond mining	25200	Mining of diamonds (including alluvial diamonds)
	25201	Marine mining operations
	25202	Coastal mining operations
Other mining	24000	Mining of metal ores, except gold and uranium
	24100	Mining of iron ore
	24200	Mining of non-ferrous metal ores, except gold and uranium
	24210	Chrome
	24220	Copper
	24230	Manganese
	24290	Other metal ore mining, except gold and uranium
	25000	Other mining and quarrying
	25102	Open cast/strip mining operations
	25103	Open-pit operations
	25300	Mining and quarrying not elsewhere classified
	25310	Mining of chemical and fertilizer minerals
	25311	Phosphates
	25319	Other chemical and fertilizer mineral mining
	25320	Extraction and evaporation of salt
	25390	Other mining and quarrying not elsewhere classified
	25391	Mining of precious and semi-precious stones, except diamonds
	25392	Asbestos
	25399	Other minerals and materials not elsewhere classified
Cement, lime, aggregates and sand (CLAS)	34240	Manufacturing of cement, lime and plaster
	25100	Stone quarrying, clay and sandpits
	25110	Dimension stone (granite, marble, slate and wonderstone)
	25101	Quarrying/dimension stone operations
	25120	Limestone and lime works
	25190	Other stone quarrying, including stone crushing and clay and sandpits
Services incidental to	92004	Education by technical colleges and technical institutions

mining	87000	Research and development
	29000	Service activities incidental to mining of minerals
Diamond processing	39212	Diamond cutting and polishing
	39219	Other precious and semi-precious stone cutting and polishing
Jewellery manufacturing	39210	Manufacturing of jewellery and related articles
	39211	Jewellery and related articles composed of precious metals, precious and semi-precious stones and pearls

APPENDIX 3: MMS SCARCE SKILLS LIST SUBMITTED BY THE MINING QUALIFICATIONS AUTHORITY ON 15TH NOVEMBER 2013.

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
711301	Driller	31	-	-	-	-	-	219	-	250	14,282	1.8%	
711302	Rock Drill Operator	-	-	-	-	-	48	63	97	208	41,876	0.5%	
653306	Diesel Mechanic	58	-	15	-	5	22	58	24	181	3,743	4.8%	
733208	Mobile Mining Equipment Operator	-	-	-	-	-	-	142	-	142	5,428	2.6%	
831101	Battery Bay Attendant/ Battery and Lamp Repairer	-	137	-	-	-	-	-	-	137			Mining Support Worker
652302	Fitter and Turner	74	-	2	-	8	6	16	25	132	4,077	3.2%	
734301	Winch Operator	-	-	-	-	-	-	-	121	121			Crane or Hoist Operator
312102	Miner	35	-	25	-	11	6	27	15	119	21,707	0.5%	

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
312101	Production / Operations Supervisor (Mining)	2	-	103	-	-	1	5	-	111	17,336	0.6%	
671101	Electrician	34	-	-	1	4	21	8	11	79	7,323	1.1%	
651302	Boilermaker	39	-	4	-	-	7	21	4	74	5,353	1.4%	
733208	Trackless Mobile Machinery (TMM) Operator	-	-	-	-	-	-	-	70	70			Mobile Mining Equipment Operator
214601	Mining Engineer	23	4	1	-	4	2	27	-	60	853	7.1%	
432105	Lampman	-	57	-	-	-	-	-	-	57	445	12.8%	
651501	Rigger Ropesman	13	-	4	2	-	2	24	4	50			Rigger
672105	Instrument Mechanician	22	-	-	1	-	5	13	4	45	1,021	4.4%	
651501	Rigger	8	-	4	-	-	2	22	6	42	2,188	1.9%	

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
711301	Drill Rig Operator	17	-	4	-	-	6	-	12	39			Driller
733208	Roof bolter Operator	-	-	-	-	-	-	27	12	39			Mobile Mining Equipment Operator
711101	Continuous Miner Operator	-	-	-	-	-	-	37	-	37			Mining Operator
311501	Mechanical Instrument Technician	-	-	1	-	-	-	36	-	37			Mechanical Engineering Technician
642701	Air Conditioning Equipment Mechanic	-	-	36	-	-	-	-	-	36	10	375.0%	
671208	Auto Electrician	18	-	-	-	-	-	13	5	36	408	8.9%	
214601	Rock Engineer	23	-	-	2	-	-	6	4	35	853	4.1%	
216502	Surveyor	17	-	-	1	1	2	5	8	35	1,309	2.7%	
671202	Millwright	10	-	-	1	-	8	12	-	31	2,060	1.5%	
711101	Roof Bolter		-	-		-	7	24					Mining Operator

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
	(Mining)	-			-				-	31			
652301	Fitter-machinist	10	-	-	-	-	13	7	-	30	605	5.0%	
242401	Training Officer	-	11	12	-	-	5	2	-	30	1,844	1.6%	
653303	Mechanical Fitter	21	-	-	-	-	-	2	5	28	3,992	0.7%	
642702	Electrical Mechanic	27	-	-	-	-	-	-	-	27			Refrigeration Mechanic
653307	Earthmoving Equipment Mechanic	25	-	-	-	-	-	-	-	25			Heavy Equipment Mechanic
831101	Mining Support Worker	-	-	18	-	-	-	7	-	25	97,773	0.0%	
734211	Dragline Operator	17	-	2	-	-	-	2	2	24	254	9.5%	
671101	Electrician (Engineering)	22	-	-	1	-	1	-	-	24			Electrician
312202	Mine		-	-		-	-	24					Maintenance Planner

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
	Equipment Planner / Coordinator	-			-				-	24			
211401	Geologist	1	-	1	1	2	5	11	-	22	1,045	2.1%	
214401	Mechanical Engineer	6	-	-	2	5	1	7	-	22	1,355	1.6%	
132201	Mine Manager	1	-	-	1	2	10	2	4	21			Production / Operations Manager (Mining)
312102	Coal Miner	18	-	-	-	-	-	-	-	18			Miner
653304	Diesel Fitter	18	-	-	-	-	-	-	-	18	67	27.3%	
214401	Mechanical Engineer (Mines)	5	4	-	-	1	4	5	-	18			Mechanical Engineer
711101	Mining Team Leader	-	-	18	-	-	-	-	-	18			Mining Operator
312101	Quarry Foreman	7	-	10	-	-	-	-	1	18			Production / Operations Supervisor (Mining)
226302	Safety, Health,	8	-	7	-	-	-	2	-	18	2,122	0.9%	

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
	Environment and Quality (SHE&Q) Practitioner												
132104	Engineering Manager (Mining)	7	-	-	-	4	2	4	-	17			Engineering Manager
215101	Electrical Engineer	1	-	2	2	2	1	6	-	16	479	3.3%	
132104	Engineering Manager	7	-	4	2	1	1	-	-	16	2,427	0.6%	
132201	Quarry Manager	-	-	10	-	-	-	6	-	16			Production / Operations Manager (Mining)
242403	Assessor	-	-	-	-	-	-	-	15	15			Assessment Practitioner
215202	Instrumentation Technologist	13	-	-	1	-	-	-	-	15			Electronics Engineering Technologist
661301	Jewellery Modelmaker	15	-	-	-	-	-	-	-	15			Goldsmith
242401	Training and Development	1	-	-	-	-	-	13	-	15			Training and Development

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
	nt Practitioner												Professional
684202	Blaster	6	-	2	-	-	1	-	4	13	323	4.1%	
214201	Civil Engineer	12	-	-	-	-	-	-	1	13	227	5.9%	
711201	Crusher Operator	-	-	-	-	-	-	12	1	13			Mineral Processing Machine Operator
734214	Dump Truck Driver/Operator	-	-	-	-	2	-	-	11	13			Dump Truck Operator (Off-road)
312101	Mine Overseer (Production)	4	-	5	-	2	-	1	1	13			Production / Operations Supervisor (Mining)
311701	Mine Planner	6	-	-	5	-	1	1	-	13			Mining Technician
311705	Mine Ventilation Officer	-	-	-	-	-	1	12	-	13			Mine Ventilation Observer
226302	Occupational Hygienist	7	-	-	1	1	-	4	-	13			Safety, Health, Environment and Quality (SHE&Q) Practitioner

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
214101	Process Engineer	2	-	-	-	4	2	-	5	13			Industrial Engineer
311707	Strata Control Officer	7	-	-	-	-	2	-	4	13	218	6.1%	
734206	Loader Driver	-	-	-	-	-	-	5	7	12			Loader Operator
711201	Machine Operator (Stone Cutting or Processing)	-	-	-	-	-	-	-	12	12			Mineral Processing Machine Operator
214605	Metallurgist	5	-	-	-	-	2	2	2	12	506	2.4%	
651302	Plater-boilermaker	1	-	1	-	-	-	-	10	12			Boiler Maker
121202	Technical Training Manager	12	-	-	-	-	-	-	-	12			Business Training Manager
734301	Winding Engine Driver (Human and Materials)	6	-	-	2	-	1	2	-	12			Crane or Hoist Operator

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
653306	Diesel Fitter-mechanic	-	-	-	-	-	-	2	8	11			Diesel Mechanic
211402	Geophysicist	1	-	-	-	-	5	-	5	11	177	6.2%	
734206	Loader Operator	-	-	-	-	-	-	11	-	11	12,698	0.1%	
214401	Maintenance Management Engineer	10	-	-	-	-	-	1	-	11			Mechanical Engineer
311501	Mechanical Engineering Technician	-	-	-	-	1	1	8	-	11	890	1.2%	
711101	Mining Operator	-	-	-	-	-	6	5	-	11	55,230	0.0%	
242402	Occupational Instructor / Trainer	4	-	-	-	-	-	7	-	11	1,425	0.8%	
214101	Plant Engineer	4	-	1	1	4	1	-	-	11			Industrial Engineer
734201	Construction Plant Operator	10	-	-	-	-	-	-	-	10			Earthmoving Plant Operator (General)

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
	Operator (General)												
215101	Electrical Engineer (Mines)	7	-	-	-	-	1	1	-	10			Electrical Engineer
711202	Jewellery Die Stamper	10	-	-	-	-	-	-	-	10			Jewellery Processing and Finishing Machine Operator
734206	Load-haul-dump (LHD) Operator	4	-	-	-	-	6	-	-	10			Loader Operator
216502	Mine Surveyor	6	1	-	2	-	-	-	-	10			Surveyor
312201	Production Plant Supervisor	-	-	-	-	1	-	8	-	10			Production / Operations Supervisor (Manufacturing)
441903	Project Advisor / Leader	-	-	-	7	2	-	-	-	10			Program or Project Administrators
241101	Accountant (General)	1	-	-	1	-	1	1	4	8	1,171	0.7%	
651302	Boiler Maker	2	-	2	-	4	-	-	-	8	5,353	0.2%	

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
671101	Electrician (General)	2	-	-	-	-	-	-	6	8			Electrician
711101	Mining Plant Operator	6	-	-	-	2	-	-	-	8			Mining Operator
431301	Payroll Assistant	8	-	-	-	-	-	-	-	8			Payroll Clerk
312102	Shaft Timberman	4	-	-	1	2	-	1	-	8			Miner
226302	Chief Safety Officer Mining	1	-	-	-	1	1	1	2	7			Safety, Health, Environment and Quality (SHE&Q) Practitioner
132202	Chief Surveyor (Mining)	2	-	-	1	1	1	1	-	7			Mineral Resources Manager
132104	Engineering Maintenance Manager	-	-	-	-	1	1	2	2	7			Engineering Manager
734206	Front-end-loader Operator	7	-	-	-	-	-	-	-	7			Loader Operator
661301	Jewellery Wax Carver	7	-	-	-	-	-	-	-	7			Goldsmith

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
134902	Laboratory Manager	5	-	1	-	1	-	-	-	7	96	7.6%	
671202	Millwright (Electromechanician)	-	-	-	-	1	-	6	-	7			Millwright
134916	Operations Foreman (Non-Manufacturing)	7	-	-	-	-	-	-	-	7	177	4.1%	
132102	Operations Manager (Production)	2	2	-	-	1	-	-	1	7			Production / Operations Manager (Manufacturing)
312102	Rockbreaker	-	-	-	-	5	2	-	-	7			Miner
831310	Sampler/ MRM Sampler/ MRT Grade Controller	7	-	-	-	-	-	-	-	7			Surveyor's Assistant
312101	Shift Foreman / Boss (Mining)	-	-	-	-	-	2	5	-	7			Production / Operations Supervisor (Mining)

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
734301	Banksman	-	-	-	-	6	-	-	-	6			Crane or Hoist Operator
734203	Bulldozer Operator	-	-	-	4	-	2	-	-	6	3,086	0.2%	
214202	Construction Technologist	6	-	-	-	-	-	-	-	6			Civil Engineering Technologist
311801	Draughtsper son	1	-	-	-	-	1	1	2	6	887	0.7%	
214201	Geotechnic al Engineer	2	-	1	-	-	1	1	-	6			Civil Engineer
734205	Grader Operator	-	-	-	-	-	4	-	2	6	555	1.1%	
121206	Health and Safety Manager	4	-	-	-	2	-	-	-	6	363	1.7%	
661302	Jewellery Setter	6	-	-	-	-	-	-	-	6			Diamond and Gemstone Setter
712101	Metal Processing Plant Operator	-	-	-	-	-	-	6	-	6	2,056	0.3%	

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
214603	Metallurgical Engineer	2	1	-	1	-	1	-	-	6	434	1.4%	
325707	Mines Safety Officer	4	2	-	-	-	-	-	-	6			Mines Safety Inspector
121206	Safety, Health and Environmental (SHE) Manager	4	-	-	1	1	-	-	-	6			Health and Safety Manager
312101	Shift Overseer (Mining)	-	-	-	-	6	-	-	-	6			Production / Operations Supervisor (Mining)
212103	Statistician	2	-	-	-	4	-	-	-	6	54	11.1%	
831101	Ventilation Observer	-	-	1	-	-	-	-	5	6			Mining Support Worker
811201	Cleaner (Non-domestic)	-	-	-	-	-	5	-	-	5			Commercial Cleaner
734214	Dump Truck Operator (Off-road)	5	-	-	-	-	-	-	-	5	5,762	0.1%	

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
134901	Environmental Manager	2	-	-	-	-	-	1	1	5	210	2.3%	
734204	Excavator Operator	5	-	-	-	-	-	-	-	5	2,087	0.2%	
832901	Fitter's Assistant	-	-	-	-	5	-	-	-	5			Metal Engineering Process Worker
651203	Fitter-welder	2	-	2	-	-	-	-	-	5	158	3.1%	
311801	Geological Draughting Person	-	-	-	-	-	-	-	5	5			Draughtsperson
226302	Health and Safety Officer / Coordinator / Professional	5	-	-	-	-	-	-	-	5			Safety, Health, Environment and Quality Practitioner (SHE&Q)
214101	Industrial Engineer	5	-	-	-	-	-	-	-	5	559	0.9%	
672105	Instrument Mechanician (Industrial Instrumentation &	5	-	-	-	-	-	-	-	5			Instrument Mechanician

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
	Process Control)												
672105	Instrument Mechanician (Industrial)	-	-	-	-	-	5	-	-	5			Instrument Mechanician
216303	Jewellery Industrial Designer	5	-	-	-	-	-	-	-	5			Jewellery Designer
653303	Maintenance Fitter	5	-	-	-	-	-	-	-	5			Mechanical Fitter
312202	Maintenance Planner	5	-	-	-	-	-	-	-	5	1,404	0.3%	
312202	Maintenance Scheduler	5	-	-	-	-	-	-	-	5			Maintenance Planner
312201	Manufacturing Foreman	-	-	-	-	-	5	-	-	5			Production / Operations Supervisor (Manufacturing)
312101	Mine Operations Foreman	2	-	-	-	2	-	-	-	5			Production / Operations Supervisor (Mining)
734301	Onsetter	5	-	-	-	-	-	-	-	5			Crane or Hoist Operator
132202	Planning		-	-			-	-					Mineral Resources

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
	Manager (Mining)	4			-	1			-	5			Manager
132102	Plant Manager (Manufacturing)	2	-	2	-	-	-	-	-	5			Production / Operations Manager (Manufacturing)
132201	Production / Operations Manager (Mining)	1	-	-	1	1	1	-	-	5	1,626	0.3%	
212103	Statistical GIS Specialist	5	-	-	-	-	-	-	-	5			Statistician
831310	Surveyor's Assistant	5	-	-	-	-	-	-	-	5	2,988	0.2%	
671101	Winder Electrical Technician	1	-	-	-	2	-	1	-	5			Electrician
241106	Accountant in Practice	-	-	-	-	-	4	-	-	4	24	15.0%	
671208	Automotive Electrician	-	-	-	-	1	2	-	-	4			Transportation Electrician
121901	Business Operations	2	-	-	-	1	-	-	-	4			Corporate General Manager

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
	Manager												
132202	Chief Geologist (Mining)	-	-	-	-	1	2	-	-	4			Mineral Resources Manager
734201	Earthmoving Plant Operator (General)	-	-	-	-	2	1	-	-	4	1,589	0.2%	
311301	Electrical Engineering Technician	1	-	-	-	2	-	-	-	4	671	0.5%	
211401	Exploration Geologist	1	-	-	-	-	-	-	2	4			Geologist
312102	Hard Rock Miner	-	-	-	-	-	4	-	-	4			Miner
242303	Human Resource Advisor	-	-	-	-	-	-	-	4	4	2,805	0.1%	
441601	Human Resources Clerk	4	-	-	-	-	-	-	-	4	2,069	0.2%	
211401	Hydrogeologist	-	-	-	-	-	-	-	4	4			Geologist

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
211402	Marine Scientist	-	-	-	-	4	-	-	-	4			Geophysicist
132202	Mineral Resources Manager	2	-	-	-	1	-	-	-	4	900	0.4%	
132202	Mining Exploration Manager	-	-	-	-	-	1	-	2	4			Mineral Resources Manager
311701	Mining Technician	4	-	-	-	-	-	-	-	4	1,045	0.3%	
132102	Plant Superintendent	4	-	-	-	-	-	-	-	4			Production / Operations Manager (Manufacturing)
441903	Project Planner	1	2	-	-	-	-	-	-	4			Program or Project Administrators
321101	Radiographer	-	-	-	-	-	4	-	-	4			Medical Diagnostic Radiographer
311701	Section Mine Planner	4	-	-	-	-	-	-	-	4			Mining Technician
432201	Shift Controller	-	-	-	-	-	-	4	-	4			Production Coordinator

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
243301	Technical Sales Consultant / Coordinator / Manager	-	-	-	-	-	4	-	-	4			Sales Representative / Salesman (Industrial Products)
731101	Train Driver	4	-	-	-	-	-	-	-	4	21,021	0.0%	
213302	Environmental Officer	1	-	-	-	-	-	1	-	2			Environmental Scientist
214101	Automation and Control Engineer	2	-	-	-	-	-	-	-	2			Industrial Engineer
313501	Blast Furnace Operator	-	-	-	-	2	-	-	-	2			Metal Manufacturing Process Control Technician
651302	Boilermaker -welder	1	-	-	-	-	-	1	-	2			Boiler Maker
242101	Business Support Project Manager	-	-	-	-	-	-	2	-	2			Management Consultant
211301	Chemist	2	-	-	-	-	-	-	-	2	344	0.7%	

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
132202	Chief Mine Planner	1	-	1	-	-	-	-	-	2			Mineral Resources Manager
711405	Concrete Batching Plant Operator	-	-	-	-	2	-	-	-	2	103	2.4%	
241107	Corporate Accountant	1	-	-	1	-	-	-	-	2			Financial Accountant
311801	Design and Manufacturing Draughtsperson	-	-	-	-	-	2	-	-	2			Draughtsperson
661302	Diamond and Gemstone Setter	-	-	-	2	-	-	-	-	2	51	4.8%	
711203	Diamond Cutter	-	-	-	-	2	-	-	-	2	500	0.5%	
671101	Electrical Fitter	2	-	-	-	-	-	-	-	2			Electrician
311401	Electronic Engineering Technician	2	-	-	-	-	-	-	-	2	87	2.8%	

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
211401	Engineering Geologist	2	-	-	-	-	-	-	-	2			Geologist
214603	Extraction Metallurgical Engineer	2	-	-	-	-	-	-	-	2			Metallurgical Engineer
661303	Jewellery Evaluator	2	-	-	-	-	-	-	-	2	110	2.2%	
652401	Metal Polisher	-	-	-	-	2	-	-	-	2	110	2.2%	
311702	Metallurgical or Materials Technician	1	-	-	-	-	1	-	-	2	716	0.3%	
211401	Mine Geologist	2	-	-	-	-	-	-	-	2			Geologist
312102	Miner (Surface Excavations)	-	-	-	1	-	-	-	1	2			Miner
711201	Mineral Beneficiation Plant Operator	2	-	-	-	-	-	-	-	2			Mineral Processing Machine Operator

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
313912	Mineral Beneficiation Process Controller	1	-	-	-	-	1	-	-	2	601	0.4%	
263101	Mineral Economist	2	-	-	-	-	-	-	-	2			Economist
134915	Operations Manager (Non-Manufacturing)	2	-	-	-	-	-	-	-	2	53	4.5%	
121905	Project Director	-	-	1	-	-	-	1	-	2			Programme or Project Manager
132202	Resource Geologist	1	-	-	-	-	-	-	1	2			Mineral Resources Manager
311706	Rock Engineering Officer	-	-	-	-	-	-	-	2	2			Rock Engineering Technician
651301	Sheet Metal Worker	-	-	2	-	-	-	-	-	2	33	7.4%	
315202	Ships Mate / Officer	2	-	-	-	-	-	-	-	2			Ship's Officer
214601	Surface		-	-			-	-					Mining Engineer

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
	Mining (including quarrying) Engineer	-			-	2			-	2			
733201	Truck Driver (General)	2	-	-	-	-	-	-	-	2	4,638	0.1%	
235205	Abet Trainer	1	-	-	-	-	-	-	-	1			Adult Education Teacher
431101	Account Coordinator / Controller	-	-	-	1	-	-	-	-	1			Accounts Clerk
122201	Advertising Manager	-	-	-	-	-	1	-	-	1			Advertising and Public Relations Manager
335905	Boring Inspector	1	-	-	-	-	-	-	-	1			Water Inspector
335913	Building Site Inspector	1	-	-	-	-	-	-	-	1			Building Inspector
242101	Business Analyst	1	-	-	-	-	-	-	-	1			Management Consultant
214501	Chemical Engineer	1	-	-	-	-	-	-	-	1	92	1.3%	
311101	Chemical Laboratory	1	-	-	-	-	-	-	-	1			Chemistry Technician

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
	Technician / Analyst												
341201	Community Development Facilitator	-	-	-	1	-	-	-	-	1			Community Worker
341201	Community Development Officer	-	-	-	-	-	1	-	-	1			Community Worker
213301	Conservation Officer	-	-	-	-	-	1	-	-	1			Conservation Scientist
734301	Crane Driver	-	-	-	-	-	1	-	-	1			Crane or Hoist Operator
251203	Developer Programmer	-	-	-	-	-	1	-	-	1	121	1.0%	
215101	Electrical Design Engineer	1	-	-	-	-	-	-	-	1			Electrical Engineer
311301	Electrical Engineering Technical Officer	-	-	-	-	-	-	1	-	1			Electrical Engineering Technician
215102	Electrical Engineering Technologists	1	-	-	-	-	-	-	-	1	56	2.2%	

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
	t												
311301	Electrical Instrument Technician	-	-	1	-	-	-	-	-	1			Electrical Engineering Technician
672107	Electrician (Power Electronics)	1	-	-	-	-	-	-	-	1			Special Class Electrician
215201	Electronics Engineer	-	-	-	-	-	1	-	-	1	112	1.1%	
215202	Electronics Engineering Technologist	-	-	-	1	-	-	-	-	1	204	0.6%	
311303	Energy Efficiency Consultant	1	-	-	-	-	-	-	-	1			#N/A
312202	Engineering Planner	-	-	-	-	1	-	-	-	1			Maintenance Planner
352201	Engineering Technician (Telecommunications)	-	-	1	-	-	-	-	-	1			Telecommunications Technical Officer or Technologist
213302	Environmen		-	-		-	-	1					Environmental Scientist

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
	tal Consultant	-			-				-	1			
213302	Environmental Scientist	-	-	-	-	-	-	1	-	1	506	0.2%	
112101	Executive Director	-	-	-	-	1	-	-	-	1			Director (Enterprise / Organisation)
711203	Final Diamond Processing Controller	1	-	-	-	-	-	-	-	1			Diamond Cutter
121101	Finance Manager	-	-	-	-	-	1	-	-	1	1,022	0.1%	
241301	Financial Analyst	-	-	-	-	1	-	-	-	1			Financial Investment Advisor
242204	Financial Risk Manager	-	-	-	-	1	-	-	-	1			Corporate Treasurer
831310	Geological Survey Field Assistant	1	-	-	-	-	-	-	-	1			Surveyor's Assistant
212103	Geostatistician	-	-	-	-	-	-	-	1	1			Statistician
325201	Health		-	-		-	-	-			40	3.0%	

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
	Information Manager	1			-				-	1			
334401	Health Practice Manager	-	-	-	-	1	-	-	-	1			Medical Secretary
242303	HR Coordinator	-	-	-	-	-	1	-	-	1			Human Resource Advisor
242303	Human Resources Development Coordinator	1	-	-	-	-	-	-	-	1			Human Resource Advisor
653303	Hydraulic Fitter	-	-	-	-	-	-	1	-	1			Mechanical Fitter
216502	Hydrographic Surveyor	-	-	-	-	-	-	1	-	1			Surveyor
132102	Industrial Production Manager	-	-	-	-	-	-	1	-	1			Production / Operations Manager (Manufacturing)
252901	Information Technology Security Manager	1	-	-	-	-	-	-	-	1			ICT Security Specialist
672105	Instrument		-	-		-	-	1					Instrument

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
	and Control Service Person	-			-				-	1			Mechanician
672105	Instrument Mechanic	-	-	-	-	1	-	-	-	1			Instrument Mechanician
672105	Instrument Mechanician (Process Control Systems)	-	-	-	-	-	-	1	-	1			Instrument Mechanician
672105	Instrument Mechanician (Process Control)	1	-	-	-	-	-	-	-	1			Instrument Mechanician
265203	Instrumentalist	-	-	-	-	-	1	-	-	1			#N/A
215201	Instrumentation Engineer	1	-	-	-	-	-	-	-	1			Electronics Engineer
241202	Investment Manager	1	-	-	-	-	-	-	-	1	4	33.3%	
132402	Logistics Manager	1	-	-	-	-	-	-	-	1	122	1.0%	
132202	Mine Design		-	-		-	-	1					Mineral Resources

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
	and Planning Manager	-			-				-	1			Manager
312101	Mine Superintendent	1	-	-	-	-	-	-	-	1			Production / Operations Supervisor (Mining)
311705	Mine Ventilation Observer	1	-	-	-	-	-	-	-	1	392	0.3%	
222104	Occupational Health Nurse	-	-	-	1	-	-	-	-	1			Registered Nurse (Community Health)
134904	Office Manager	-	-	-	-	1	-	-	-	1	80	1.5%	
214603	Ore Processing Engineer	-	-	-	-	1	-	-	-	1			Metallurgical Engineer
431301	Payroll Consultant	1	-	-	-	-	-	-	-	1			Payroll Clerk
211401	Petrologist	1	-	-	-	-	-	-	-	1			Geologist
121903	Physical Asset Manager	1	-	-	-	-	-	-	-	1	17	7.1%	



		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
651202	Plater-welder	1	-	-	-	-	-	-	-	1			Welder
242202	Policy Analyst	1	-	-	-	-	-	-	-	1	162	0.7%	
332302	Procurement Administrator / Coordinator / Officer	1	-	-	-	-	-	-	-	1			Purchasing Officer
214103	Production Engineer	1	-	-	-	-	-	-	-	1	73	1.7%	
432201	Production Foreman	-	-	1	-	-	-	-	-	1			Production Coordinator
441903	Project Controller	-	-	-	1	-	-	-	-	1			Program or Project Administrators
441903	Project Corrections Operations Advisor / Coordinator	1	-	-	-	-	-	-	-	1			Program or Project Administrators
332302	Purchasing Officer	1	-	-	-	-	-	-	-	1	1,447	0.1%	

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
121908	Quality Systems Coordinator	-	-	-	-	-	1	-	-	1			Quality Systems Manager
226302	Radiation Protection Expert	1	-	-	-	-	-	-	-	1			Safety, Health, Environment and Quality (SHE&Q) Practitioner
226302	Risk and Safety Manager	-	-	-	-	-	1	-	-	1			Safety, Health, Environment and Quality (SHE&Q) Practitioner
242208	Risk Compliance Manager	-	-	-	-	-	-	-	1	1			Organisational Risk Manager
214102	Safety Engineering Technologist	1	-	-	-	-	-	-	-	1			Industrial Engineering Technologist
243301	Sales Representative / Salesman (Industrial Products)	-	-	-	-	-	-	1	-	1	351	0.3%	

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
143904	Security Services Manager	-	-	-	-	1	-	-	-	1	166	0.7%	
315101	Ship's Engineer	1	-	-	-	-	-	-	-	1	18	6.7%	
315201	Ship's Master	1	-	-	-	-	-	-	-	1	5	25.0%	
242302	Skills Development Facilitator / Practitioner	1	-	-	-	-	-	-	-	1	185	0.7%	
134401	Social Services Manager	1	-	-	-	-	-	-	-	1	17	7.1%	
214201	Structural Engineer	1	-	-	-	-	-	-	-	1			Civil Engineer
132401	Supply Chain Manager	1	-	-	-	-	-	-	-	1			Supply and Distribution Manager
216502	Surveying Technologist	-	-	-	-	-	-	1	-	1			Surveyor

		Absolute Scarcity			Relative Scarcity								
OFO	Occupation	Lack of Skilled People	New or Emerging Occupation	Replacement Demand	EE	Location	Industry Attractiveness	Replacement Demand	Other	Total Scarcity	Total Employment	Intensity	Broader Occupation Title
121201	Transition Manager	-	-	-	-	-	-	1	-	1			Personnel / Human Resource Manager
671208	Transportation Electrician	-	-	-	-	-	-	1	-	1	408	0.3%	
242204	Treasurer	1	-	-	-	-	-	-	-	1			Corporate Treasurer
661102	Watch and Clock Maker and Repairer	-	-	-	-	-	1	-	-	1	4	33.3%	
	Grand Total	1,062	221	312	63	157	300	1,046	570	3,732			

APPENDIX 4: MINING CHARTER SCORECARD

	Element	Description	Measure	Compliance target by 2014	Progress achieved by					Weighting
					2010	2011	2012	2013	2014	
1	Reporting	Has the company reported the level of compliance with the Charter for the calendar year?	Documentary proof of receipt from the department	Annually	March 2011	March 2012	March 2013	March 2014	March 2015	Y/N
2	Ownership	Minimum target for effective HDSA ownership	Meaningful economic participation	26%	15%				26%	Y/N
			Full shareholder rights	26%	15%				26%	
3	Housing and living conditions	Conversion and upgrading of hostels to attain the occupancy rate of one person per room	Percentage reduction of occupancy rate towards 2014 target	Occupancy rate of one person per room	Baseline	25%	50%	75%	100%	Y/N
		Conversion and upgrading of hostels to family units	Percentage conversion of hostels into family units	Family units established	Baseline	25%	50%	75%	100%	
4	Procurement and enterprise development	Procurement spent from BEE entity	Capital goods	40%	5%	10%	20%	30%	40%	5%
			Services	70%	30%	40%	50%	60%	70%	5%
			Consumable goods	50%	10%	15%	25%	40%	50%	2%
		Multinational suppliers' contribution to the social fund	Annual spend on procurement from multinational suppliers	0.5% of procurement value	0.50%	0.50%	0.50%	0.50%	0.50%	3%
5	Employment Equity	Diversification of the workplace to reflect the country's demographics to	Top management (Board)	40%	20%	25%	30%	35%	40%	3%
			Senior	40%	20%	25%	30%	35%	40%	4%

	Element	Description	Measure	Compliance target by 2014	Progress achieved by					Weighting
					2010	2011	2012	2013	2014	
		attain competitiveness	management (Exco)							
			Middle management	40%	30%	35%	40%	40%	40%	3%
			Junior management	40%	40%	40%	40%	40%	40%	1%
			Core Skills	40%	15%	20%	25%	30%	40%	5%
6	Human resource development	Development of requisite skills, including support for South African-based research and development initiatives intended to develop solutions in exploration, mining, processing, technology efficiency (energy and water use in mining), beneficiation as well as environmental conservation	HRD expenditure as percentage of total annual payroll (excl. mandatory skills development levy)	5%	3%	3.5%	4.0%	4.5%	5.0%	25%
7	Mine community development	Conduct ethnographic consultative and collaborative community processes to delineate community needs analysis	Implement approved community projects	Up-to-date project implementation	Implementation of projects will serve to enhance relationships among stakeholders, leading to communities taking ownership of projects					15%
8	Sustainable development and growth	Improvement of the industry's environmental management	Implementation of approved EMPs	100%	Annual progress against approved EMPs					12%
		Improvement of the industry's mine health and safety performance	Implementation of tripartite action plan on health and safety	100%	Annual progress achieved against commitments in the tripartite action plan on health and safety					12%

	Element	Description	Measure	Compliance target by 2014	Progress achieved by					Weighting
					2010	2011	2012	2013	2014	
		Utilisation of South African-based research facilities for analysis of samples across mining value	Percentage of samples in South African facilities	100%	Establish baseline	25%	50%	75%	100%	5%
9	Beneficiation	Contribution of a mining company towards beneficiation (this measure is effective from 2012)	Additional production volume contributing to local value addition beyond the baseline	Section 26 of the MPRDA (percentage above baseline)	The beneficiation strategy and its modalities of implementation outline the beneficiation requirements per commodity extracted in South Africa					-
TOTAL SCORE										100%

Y/N applies to pillars that are ring-fenced.

APPENDIX 5: LEARNERSHIP ENROLMENTS AND ACHIEVEMENTS 2001 TO 2012

Learnership enrolments from 2001 to 2013 according to qualification

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
National Certificate Diamond Processing – Automatic Polishing									1				1
National Certificate Diamond Processing – Bottom Polishing									5				5
National Certificate Diamond Processing – Top Polishing									5				5
National Certificate Diamond Processing Operating – Operator Bottom Makeable									2				2
National Certificate Diamond Processing Operating – Operator Bottom Sawn						2		3	63			8	76
National Certificate Diamond Processing Operating – Operator Top Makeable									1				1
National Certificate Diamond Processing Operating – Operator Top Sawn								2	53			5	60
National Certificate Diesel Mechanic – Coal									1		1		2
National Certificate Diesel Mechanic – Metalliferous					2				2		1		5
National Certificate Diesel Mechanic – Opencast								1					1
National Certificate Electrical – Metalliferous			2				1			4	2	1	10
National Certificate Electrical – Opencast						1			5		1		7
National Certificate Electrical – Surface Coal					1					1			2
National Certificate Electrical – Underground Coal											2	8	10
National Certificate Electro Mechanics – Engineering and Technology											1		1
National Certificate Fitter and Turner – Opencast								1					1
National Certificate Fitting (including machining) – Opencast							1			1	1		3
National Certificate Fitting (including machining) –							1		2				3

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Surface Coal													
National Certificate Fitting (including machining) – Metalliferous				1			1	3	3	6	5	4	23
National Certificate Fitting and Turning – Metalliferous								1			1		2
National Certificate Fitting and Turning – Underground Coal										1	1		2
National Certificate in Autotronics L4										1			1
National Certificate in Jewellery Manufacture in a Production Environment				1					2		6	4	13
National Certificate in Mining Operations for Underground Hard Rock – Narrow Tabular								1	1				2
National Certificate Instrumentation Mechanician										1	3		4
National Certificate Lump Ore Beneficiation – Jig Concentration (version 2)								15					15
National Certificate Millwright – Coal									1				1
National Certificate Millwright – Opencast							1	1		1	4	4	11
National Certificate Mineral Processing – Base Metal								2					2
National Certificate Mining Operations Underground Hard Rock (V2)							2						2
National Certificate Plater/Boilermaker – Coal										1			1
National Certificate Plater/Boilermaker – Metalliferous											2		2
National Certificate Plater/Boilermaker – Opencast											1	2	3
National Certificate Plater/Welder – Coal											4		4
National Certificate Plater/Welder - Metalliferous							1			4			5
National Certificate Plater/Welder – Opencast							2		1		2	7	12
National Certificate Rigger Ropesman – Surface/Underground											1		1
National Certificate Rockbreaking Underground Hardrock – Conventional Mining								1					1

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
National Certificate: Engineering Maintenance for Underground Hard Rock (Metalliferous) – Stoping and Development								1			1		2
National Certificate: Jewellery Manufacturing											2		2
Team Leader							5						5
Autotronics L2					4		1	1					6
Community House Builder (Entrepreneurial)					5	4							9
Construction Carpenter (Formwork)						1							1
Construction Mason (Face Brick Laying)					1								1
Construction Plumber					6	4	1						11
Diesel Mechanic – Underground Diamonds								1					1
FETC (Further Education and Training Certificate) Diamond Processing – Bruting											1		1
FETC Diamond Processing – Crossworking											10	21	31
FETC Diamond Processing – Brilliantteering											5		5
First Line Manager					1								1
FETC Carbonate Materials Manufacturing Process – Cement Manufacturing							14	13					27
FETC Carbonate Materials Manufacturing Process – Lime Manufacturing							2	1					3
FETC Jewellery Manufacturing Operations							6						6
FETC Minerals Surveying								1					1
Learnership Towards National Certificate – Supervisor				1	12		24						37
National Certificate Diamond Processing – Automatic Polishing									3				3
National Certificate Diamond Processing – Bottom Polishing									188	55	85	72	402
National Certificate Diamond Processing – Preparation									1		22	20	43
National Certificate Diamond Processing – Top									39	9	132	121	301

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Polishing													
National Certificate Diamond Processing Operating – Operator Bottom Makeable								1	4				5
National Certificate Diamond Processing Operating – Operator Bottom Sawn						93	31	139	297				560
National Certificate Diamond Processing Operating – Operator Top Sawn					8	131	41	97	240				517
National Certificate Diesel Mechanic – Coal		3	20	39	38	56	71	63	55	13	1		359
National Certificate Diesel Mechanic – Metalliferous		11	38	22	12	47	90	45	27	18	2		312
National Certificate Diesel Mechanic – Opencast			28	46	46	49	57	57	46	30	1		360
National Certificate Electrical – Metalliferous		28	100	74	112	207	317	314	179	47	17	11	1406
National Certificate Electrical – Opencast		1	42	63	83	77	114	96	96	38	4		614
National Certificate Electrical – Surface Coal		5	13	14	26	25	11	21	19	1			135
National Certificate Electrical – Surface Diamond				1	5	11	3	1	4				25
National Certificate Electrical – Underground Coal	1		28	80	41	67	104	81	69	38	6	5	520
National Certificate Electrical – Underground Diamonds				2		2	5	5	1				15
National Certificate Electro-mechanics – Engineering and Technology								1					1
National Certificate Electro-mechanics – Engineering and Technology (V2)										34	21	20	75
National Certificate Engineering Maintenance for Underground Hard Rock (Metalliferous) – Horizontal Transport (V2)			2	2	24	27	32	9	26				122
National Certificate Engineering Maintenance for Underground Hard Rock Metalliferous – Horizontal Transport Services					1			6					7
National Certificate Engineering Maintenance for Underground Hard Rock Metalliferous – Stopping and Developing		3	18	43	66	36	169	61	33				429
National Certificate Fitter and Turner – Opencast			22	20	28	14	43	26	40	5	4		202

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
National Certificate Fitting (including machining) – Opencast			17	46	46	51	59	75	54	47	1	44	440
National Certificate Fitting (including machining) – Surface Coal		3	13	20	34	25	17	23	17	2			154
National Certificate Fitting (including machining) – Underground Coal			14	41	32	51	66	43	50	17			314
National Certificate Fitting (including machining) – Underground Diamonds							1	2					3
National Certificate Fitting (including machining) – Metalliferous		35	61	37	66	123	233	157	101	36	6	11	866
National Certificate Fitting and Turning – Metalliferous			24	6	14	7	36	25	22	7			141
National Certificate Fitting and Turning – Surface Diamonds				2	2	1	3	1	1				10
National Certificate Fitting and Turning – Underground Coal						3			1				4
National Certificate Fitting and Turning – Underground Diamonds				2		3	4						9
National Certificate in Autotronics L3			1				2	1	1				5
National Certificate in Autotronics L4								2	1				3
National Certificate in Jewellery Manufacture in a Production Environment				42	380	32	139	137	173	182	1	200	1286
National Certificate in Measurement Control and Instrumentation						1							1
National Certificate in Mining Operations – Blasting Operation Underground Coal						1	4	32	145	114	49	45	390
National Certificate in Mining Operations for Underground Hard Rock – Narrow Tabular		1	23	34	47	39		12	1				157
National Certificate in Mining Operations – Underground Coal Wall Mining								10	7	5			22
National Certificate In Mining Operations – Continuous Mining Underground Coal							15	12	23	65	24	19	150
National Certificate in Rockbreaking for Underground Hard Rock – Narrow Tabular			47	2	1			3					53

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
National Certificate Instrumentation Mechanician		11	28	42	36	63	92	85	47	29	2		435
National Certificate Lump Ore Beneficiation – Diamonds (v2)						7							7
National Certificate Lump Ore Beneficiation – Jig Concentration (version 2)					36	162	42	46					286
National Certificate Millwright – Coal			44	28	70	48	128	123	33	15	3		492
National Certificate Millwright – Diamond							1						1
National Certificate Millwright – Metalliferous		4	5	13	12	68	21	16		1			140
National Certificate Millwright – Opencast			15	54	49	35	59	48	66	37			363
National Certificate Mineral Processing – Base Metal								8	30				38
National Certificate Mining Operations for Underground Hard Rock – Mechanised Mining								2	27	150	83	101	363
National Certificate Mining Operations Underground Hard Rock – Conventional Mining				3	7	13	13	471	688	449	341	225	2210
National Certificate Mining Operations Underground Hardrock (V2)		5	59	14	281	284	298	332	16	4		93	1386
National Certificate Plater/Boilermaker – Coal					1				1				2
National Certificate Plater/Boilermaker – Metalliferous		24	36	14	39	55	93	84	20	14	1		380
National Certificate Plater/Boilermaker – Opencast			1	4	1	4	8	19	5	2			44
National Certificate Plater/Welder – Coal		2	8	21	18	26	35	38	17	4			169
National Certificate Plater/Welder – Metalliferous		2	10	15	13	30	33	17	14	2			136
National Certificate Plater/Welder – Opencast			24	48	50	53	54	62	62	39	7		399
National Certificate Plater/Welder – Underground Diamonds				1		2	5	3		1			12
National Certificate Plater/Welder – Diamond Opencast				1	2		1	1	1				6
National Certificate Rigger Ropesman – Opencast					4	6	5	4	2	6			27
National Certificate Rigger Ropesman – Surface/Underground		8	6	8	14	38	33	30	18	13	2		170

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
National Certificate Rockbreaking – Quarrying: Quarries								11					11
National Certificate Rockbreaking Underground Hard Rock		1	85	4	66	85	136	144	43				564
National Certificate Rockbreaking Underground Hard Rock – Mechanised Mining							1		11	162	77	81	332
National Certificate Rockbreaking Underground Hard Rock – Conventional Mining	1					7	5	109	504	427	313	314	1680
National Certificate Surface Mining Rockbreaking					22	26		3	22				73
National Certificate Winding Engine Driving				3	4	12	1	4		1	6		31
National Certificate Electro-Mechanics: Mining and Minerals							4	13	101	80	25		223
National Certificate Engineering Maintenance for Underground Hard Rock (Metalliferous) – Stoping and Development		15	9	29	19	17	29	70	36	33	8		265
National Certificate Jewellery Manufacturing L3											86	80	166
National Certificate Mineral Processing – Lump Ore Beneficiation						6	2	68	23	63	64	44	270
National Certificate Occupational Health, Safety Environment										17	18		35
National Certificate Rockbreaking: Surface Excavations – Dimension Stone Operations								3					3
National Certificate Rockbreaking: Surface Excavations – Surface Mining and Quarrying						1		6	37	149	143	114	550
National Certificate Strata Control Operations Underground Hard Rock Mining									2		12		14
National Certificate Diamond Processing – Cutting L3									17	11	4		32
Rockbreaking Quarrying Quarries L3								1					1
Team Leader							42	15					57
Associate General Accountant				4	1								5
Autotronics L2							2	3	2	2			9
Carbonate Materials Manufacturing (Cement									18	2			20

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Manufacturing) L4													
Carbonate Materials Manufacturing (Lime Manufacturing) L4										1			1
Construction Carpenter (Formwork)			2		4	3	6	86					101
Construction Mason (Face Brick Laying)					3	1	6	29					39
Construction Plumber			1		7	4	10	14					36
Customer Management							9	7					16
Diesel Mechanic – Underground Diamonds										1	3		4
Engineering Fabrication L2									2	1			3
FETC Diamond Processing – Bruting											4		4
FETC Diamond Processing – Crossworking											7		7
FETC: Diamond Processing – Brilliantteering											4		4
First-line Manager					46								46
FETC Carbonate Materials Manufacturing Process – Cement Manufacturing							2	4	1	10			17
FETC Carbonate Materials Manufacturing Process – Lime Manufacturing							1	1					2
FETC Jewellery Manufacturing Operations							1	3	1	2	1		8
FETC Autotronics										5	11		16
FETC Mining Operations											4		4
Learnership National Certificate Furniture Making Wood		8											8
Learnership Towards National Certificate – Supervisor				26	27	14	2		15				84
National Certificate Diamond Processing – Bottom Polishing											7		7
National Certificate Diamond Processing – Top Polishing									5		2		7
National Certificate Diamond Processing Operating – Operator Bottom Sawn							2		2				4

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
National Certificate Diamond Processing Operating – Operator Top Makeable								106					106
National Certificate Diamond Processing Operating – Operator Top Sawn					1			3	1				5
National Certificate Diesel Mechanic – Coal		1			5	3	8	6	20	46	84	87	260
National Certificate Diesel Mechanic – Metalliferous		2	4	2	3	2	6	4	20	50	97	45	235
National Certificate Diesel Mechanic – Opencast		1	4	1	3	1	1	5	4	30	44	44	138
National Certificate Diesel Mechanic – Surface Diamonds					1			1	1				3
National Certificate Electrical – Metalliferous		15	9	10	8	8	22	51	46	186	291	204	850
National Certificate Electrical – Opencast		2	4	1	3	1	18	8	18	82	153	110	400
National Certificate Electrical – Surface Coal			2	1	1	1		2	9	18	9		43
National Certificate Electrical – Surface Diamond										1			1
National Certificate Electrical – Underground Coal		1		6	3	2	3	9	18	33	45	29	149
National Certificate Electrical – Underground Diamonds				1				1	2	4	2		10
National Certificate Electro-mechanics – Engineering and Technology							3			10			13
National Certificate Electro-mechanics – Engineering and Technology										1	32	22	55
National Certificate Electro-mechanics – Engineering and Technology (V2)											43	47	90
National Certificate Engineering Fabrication										7	2		9
National Certificate Engineering Maintenance and Repairing for Underground Coal Mining – Breaking Services								2					2
National Certificate Engineering Maintenance and Repairing for Underground Coal Mining – Conventional Mining								120					120
National Certificate Engineering Maintenance and Repairing for Underground Coal Mining – Wall Mining								9					9

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
National Certificate Engineering Maintenance and Repairing for Underground Coal Mining – Continuous Mining								57					57
National Certificate Engineering Maintenance for Underground Hard Rock (Metalliferous) – Horizontal Transport (V2)							3	122	2				127
National Certificate Engineering Maintenance for Underground Hard Rock Metalliferous – Horizontal Transport Services				1	3		1	2	4				11
National Certificate Engineering Maintenance for Underground Hard Rock Metalliferous – Stoping and Developing							1				12		13
National Certificate Fitter and Turner – Opencast				1	1	3	2	126	5	28	43	40	249
National Certificate Fitting (including machining) – Opencast		1	1		2		6	3	9	43	135	128	328
National Certificate Fitting (including machining) – Surface Coal					1			2	11	17	12		43
National Certificate Fitting (including machining) – Surface Diamonds										5			5
National Certificate Fitting (including machining) – Underground Coal		2	1		1	2	5	4	3	26	48	31	123
National Certificate Fitting (including machining) – Underground Diamonds								1	1	1	1		4
National Certificate Fitting (including machining) – Metalliferous		4	1	4	2	4	10	23	31	78	194	101	452
National Certificate Fitting and Turning – Metalliferous	1				1	3	3		4	28	24	20	84
National Certificate Fitting and Turning – Surface Diamonds				1						1			2
National Certificate Fitting and Turning – Underground Coal								5					5
National Certificate Fitting and Turning – Underground Diamonds										2			2
National Certificate General Security Practices					25								25

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
National Certificate in Autotronics L3				1		1							2
National Certificate in Autotronics L4								4	9	9			22
National Certificate in Electrical Engineering (Electrical Construction)					3								3
National Certificate in Jewellery Manufacture in a Production Environment			20	18	123	35	23	24	9	4	11	10	277
National Certificate in Measurement Control and Instrumentation							3						3
National Certificate in Mining Operations – Blasting Operation Underground Coal								10	15	26	69	60	180
National Certificate in Mining Operations for Underground Hard Rock – Narrow Tabular			39	11	1	3	2	13	6				75
National Certificate in Mining Operations Underground Coal Wall Mining								24					24
National Certificate In Mining Operations – Continuous Mining Underground Coal								17	1	5	11	10	44
National Certificate in Rockbreaking for Underground Hard Rock – Narrow Tabular		1	37	1				2					41
National Certificate Instrumentation Mechanician		3		3	4	1	3	14	12	59	130	101	330
National Certificate Lump Ore Beneficiation – Diamonds (V2)						1							1
National Certificate Lump Ore Beneficiation – Jig Concentration (V2)					2	8	9	11					30
National Certificate Lump Ore Beneficiation: Dense Medium Separation – Coal		21					3						24
National Certificate Millwright – Coal		1	1	3	2		5	30	22	7	11	10	92
National Certificate Millwright – Metalliferous		3	2		1	2	3	6	9	5	7		38
National Certificate Millwright – Opencast			6	1		3		1	7	53	105	74	250
National Certificate Mineral Processing – Base Metal									19	5	2		26
National Certificate Mining Operations for Underground Hard Rock – Mechanised Mining								2	13	12	50	33	110
National Certificate Mining Operations			1	2	1	2		15	30	83	494	300	628

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Underground Hard Rock – Conventional Mining													
National Certificate Mining Operations Underground Hard Rock (V2)		22	25	1	86	212	125	29					500
National Certificate Occupational Hygiene and Safety (V2)											6		6
National Certificate Plater/Boilermaker – Coal										1	3		4
National Certificate Plater/Boilermaker – Metalliferous		5	4	5	12	1	12	24	3	42	89	60	257
National Certificate Plater/Boilermaker – Opencast			2	4				1	4	8	25	11	55
National Certificate Plater/Welder – Coal		1	3	6	5	2	3	1	4	19	28	30	102
National Certificate Plater/Welder – Metalliferous					1	3	5	6	18	26	43	40	142
National Certificate Plater/Welder – Opencast			1	2	4	3	10	2	4	50	75	50	201
National Certificate Plater/Welder – Underground Diamonds						2			3	1	1		7
National Certificate Plater/Welder – Diamond Opencast				2	2								4
National Certificate Professional Driving L3					38		1	1					40
National Certificate Rigger Ropesman – Opencast									1	6	6	7	20
National Certificate Rigger Ropesman – Surface/Underground		1				1	2	4	5	29	58	44	144
National Certificate Rockbreaking – Quarrying: Quarries								4					4
National Certificate Rockbreaking Underground Hard Rock		1	1		26	14	17	5	3	1		22	90
National Certificate Rockbreaking Underground Hard Rock – Mechanised Mining									2	1	30	30	63
National Certificate Rockbreaking Underground Hard Rock – Conventional Mining						1	8	12	19	28	183	101	356
National Certificate Surface Mining Rockbreaking			2		2		1	3					8
National Certificate Winding Engine Driving					3	9		69	1	8	6		96
National Certificate Electro-mechanics: Mining and Minerals								5	14	15	52	54	140

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
National Certificate Engineering Maintenance for Underground Hard Rock (Metalliferous) – Stoping and Development		22		13	34	18	6	92	15	42	58	40	340
National Certificate Jewellery Manufacturing											37	31	68
National Certificate Jewellery Manufacturing L3										9	20	10	39
National Certificate Metals Production											19		19
National Certificate Mineral Processing – Lump Ore Beneficiation						3			2	4	29	12	50
National Certificate Mineral Processing – Lump Ore													0
National Certificate Mineral Processing – Mineral Sands											6		6
National Certificate Mineral Processing – Platinum										11			11
National Certificate Mining Technical Support – Geology											19		19
National Certificate Occupational Health, Safety and Environment									1	18	17	20	56
National Certificate Rockbreaking: Surface Excavations – Surface Mining and Quarrying								1	11	50	102	44	208
National Certificate Strata Control Operations Underground Hard Rock Mining											47	22	69
National Certificate Diamond Processing – Cutting L3									1				1
NQF 4 National Diploma in ABET Practices			3	10									13
Occupationally Directed Education and Training Practices							5						5
Payroll Administration					9			13					22
Rockbreaking Quarrying Quarries L3									12				12
Team Leader				1	97		1						99
Associate General Accountant				4									4
Autotronics L2						1		1	2	1			5
Carbonate Materials Manufacturing (Cement									3				3

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Manufacturing) L4													
Community House Builder (Entrepreneurial)						3	5						8
Construction Carpenter (Formwork)					9	4	6	1					20
Construction Mason (Face Brick Laying)					3	1	6						10
Construction Plumber					3	3	9	5	1				21
Diesel Mechanic – Underground Diamonds										1			1
FETC Diamond Processing – Bruting											1		1
FETC Diamond Processing – Crossworking											1		1
FETC Carbonate Materials Manufacturing Process – Cement Manufacturing							2						2
FETC Jewellery Manufacturing Operations								1					1
FETC Autotronics										1			1
Learnership Towards National Certificate – Supervisor		3			53		1						57
National Certificate Instrumentation Mechanician											1		1
National Certificate Diamond Processing – Bottom Polishing									70	8	2	4	84
National Certificate Diamond Processing – Preparation									1		1		2
National Certificate Diamond Processing – Top Polishing									44	1	9	10	64
National Certificate Diamond Processing Operating – Operator Bottom Makeable									13				13
National Certificate Diamond Processing Operating – Operator Bottom Sawn					1	5	10	32	129				177
National Certificate Diamond Processing Operating – Operator Top Makeable									4				4
National Certificate Diamond Processing Operating – Operator Top Sawn		1			29	3	4	19	82				138
National Certificate Diesel Mechanic – Coal	1		1	4	1	9	7	9	19	5	5	5	66
National Certificate Diesel Mechanic –					1		4	9	7	17	2		40

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Metalliferous													
National Certificate Diesel Mechanic – Opencast		1	4	3		3	2	2	5	15	4		39
National Certificate Diesel Mechanic – Surface Diamonds					3								3
National Certificate Electrical – Metalliferous	1	3	4	3	6	12	24	29	27	27	14	10	60
National Certificate Electrical – Opencast			17	9	11	12	11	17	6	17	22	13	135
National Certificate Electrical – Surface Coal				1	1	6	5	3	8	7			31
National Certificate Electrical - Surface Diamond						2	4	5	1				12
National Certificate Electrical – Underground Coal		1		1	3	5	9	15	4	4	4	4	50
National Certificate Electrical – Underground Diamonds										1			1
National Certificate Electro-mechanics – Engineering and Technology							7			1			8
National Certificate Electro-mechanics – Engineering and Technology								3			1		4
National Certificate Engineering Fabrication									1	9			10
National Certificate Engineering Maintenance for Underground Hard Rock (Metalliferous) – Horizontal Transport (V2)								1					1
National Certificate Engineering Maintenance for Underground Hard Rock Metalliferous – Horizontal Transport Services				1					20				21
National Certificate Fitter and Turner – Opencast							4	5	3	5	1		18
National Certificate Fitting (including Machining) – Opencast			8	16	8	6	12	10	8	19	19	20	126
National Certificate Fitting (including Machining) – Surface Coal					1	5	3	2	8	3	1		23
National Certificate Fitting (including Machining) – Surface Diamonds						2							2
National Certificate Fitting (including Machining) – Underground Coal			2	1	3	2	14	10	3	3	2		40
National Certificate Fitting (including Machining) –								3	1				4

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Underground Diamonds													
National Certificate Fitting (including Machining) – Metalliferous	2	2			11	9	25	34	34	22	4	7	150
National Certificate Fitting and Turning – Metalliferous						1	28	12	12	7	1		61
National Certificate Fitting and Turning – Surface Coal										1			1
National Certificate Fitting and Turning – Underground Coal									1				1
National Certificate Fitting and Turning – Underground Diamonds				1				3		1			5
National Certificate in Autotronics L3							1						1
National Certificate in Autotronics L4									1				1
National Certificate in Jewellery Manufacture in a Production Environment			1	2	23	1	29	35	108	126	8	10	343
National Certificate in Measurement Control and Instrumentation						2	5						7
National Certificate in Mining Operations – Blasting Operation Underground Coal						7		2	8	6			23
National Certificate in Mining Operations for Underground Hard Rock – Narrow Tabular			1			8	1	15	24				49
National Certificate in Mining Operations Underground Coal Wall Mining								1	1	1			3
National Certificate In Mining Operations: Continuous Mining Underground Coal										6	1		7
National Certificate in Rockbreaking for Underground Hard Rock – Narrow Tabular			3					8	9				20
National Certificate Instrumentation Mechanician	1		3	2	1	2	10	15	17	9	9		69
National Certificate Lump Ore Beneficiation – Diamonds (V2)						3							3
National Certificate Lump Ore Beneficiation – Heavy Minerals (V2)								1					1
National Certificate Lump Ore Beneficiation – Jig Concentration (V2)							3	12					15

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
National Certificate Millwright – Coal			2	6	3	8	25	30	17	5			96
National Certificate Millwright – Metalliferous			1		2	4	6	1	7				21
National Certificate Millwright – Opencast		1	4		2	1	3	4	6	13	1		35
National Certificate Mineral Processing – Base Metal						1	2	14	49	11	6	7	90
National Certificate Mining Operations for Underground Hard Rock – Mechanised Mining						1			2	17	11	10	41
National Certificate Mining Operations Underground Hard Rock – Conventional Mining			2			2	1	12	219	20	24	23	303
National Certificate Mining Operations Underground Hard Rock (V2)	1	16	25	3	20	71	48	20	29	2	13	8	256
National Certificate Occupational Hygiene and Safety (V2)										1			1
National Certificate Plater/Boilermaker – Diamond Opencast							1						1
National Certificate Plater/Boilermaker – Metalliferous	1	4			1	2	12	16	14	6	4	5	65
National Certificate Plater/Boilermaker – Opencast			1					1	2				4
National Certificate Plater/Welder – Coal				2		4	4	3	3		1		17
National Certificate Plater/Welder – Metalliferous		1	1	1		1	5	2	3	10			24
National Certificate Plater/Welder – Opencast			3	12	9	14	10	3	3	13	4		71
National Certificate Plater/Welder – Underground Diamonds							1			3			4
National Certificate Plater/Welder – Diamond Opencast							1						1
National Certificate Rigger Ropesman – Opencast							1		1				2
National Certificate Rigger Ropesman – Surface/Underground		1		1		1	1	4		1			9
National Certificate Rockbreaking Underground Hard Rock	1		12	5	9	7	6	11	6	6			63
National Certificate Rockbreaking Underground Hard Rock – Mechanised Mining							1	1	5	11	1		19

Qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
National Certificate Rockbreaking Underground Hard Rock – Conventional Mining								9	18	14	14	11	66
National Certificate Surface Mining Rockbreaking						3			2	10			15
National Certificate Winding Engine Driving						16	3	1	2				22
National Certificate: Electro-mechanics: Mining and Minerals						2	1	19	27	4	1		54
National Certificate: Engineering Maintenance for Underground Hard Rock (Metalliferous) – Stoping and Development						2	5	6	2	7	3		25
National Certificate: Jewellery Manufacturing											34	22	56
National Certificate: Jewellery Manufacturing L3											10		10
National Certificate: Mineral Processing – Lump Ore Beneficiation								1		3	11	10	25
National Certificate: Occupational Health, Safety and Environment									26	14	2		42
National Certificate Rockbreaking: Surface Excavations – Surface Mining and Quarrying								1		4	22	22	47
National Certificate Diamond Processing – Cutting L3									3	11			14
NQF 5 National Diploma in ABET Practices			40	10									50
Occupational Safety, Hygiene and Environment L2							20		7	61			88
Payroll Administration					1								1
Rockbreaking Quarrying Quarries L3									1				1
Team Leader							27	8					35
Total	11	314	1154	1174	2714	2873	3686	5194	5624	4422	5067	4019	35948

APPENDIX 6: GOVERNMENT CERTIFICATES ISSUED BY DMR

The tables below demonstrates certification for the period 2000 to 2013:

Certificates issued from 2000 to 2012: Mine Engineers (Electrical and Mechanical)

ENGINEERING CERTIFICATES ISSUED FROM 2000 TO 2012			
MINE ENGINEERS (ELECTRICAL AND MECHANICAL)			
YEAR	NUMBER ISSUED	MALES	FEMALES
2000	52	51	1
2001	75	74	1
2002	52	52	0
2003	40	39	1
2004	43	41	2
2005	49	48	1
2006	56	54	2
2007	75	73	2
2008	50	47	3
2009	51	50	1
2010	141	133	8
2011	61	56	5
2012	71	70	1
TOTAL	816	788	28

Source: Department of Mineral Resources, August 2012.

Certificates issued from 2000 to 2012: Mine Managers (Coal and Metal)

CERTIFICATES ISSUED FROM 2000 TO 2012			
MINE MANAGERS (COAL AND METAL)			
YEAR	NUMBER ISSUED	MALES	FEMALES
2000-	123	123	0
2001	68	68	0
2002	81	80	1
2003	73	72	1
2004	42	42	0
2005	86	85	1
2006	96	91	5
2007	28	25	3
2008	123	116	7
2009	96	93	3
2010	104	87	17
2011	100	85	15
2012	62	49	13
TOTAL	1082	1016	66

Source: Department of Mineral Resources, August 2012.

Certificates issued from 2000 to 2012: Overseers (Coal and Metal)

CERTIFICATES ISSUED FROM 2000 TO 2012			
MINE OVERSEERS (COAL AND METAL)			
YEAR	NUMBER ISSUED	MALES	FEMALES
2000	173	173	0
2001	149	149	0
2002	135	135	0
2003	262	262	0
2004	188	188	0
2005	205	205	0
2006	220	220	0
2007	197	194	3
2008	213	210	3
2009	217	210	7
2010	154	147	7
2011	187	176	11
2012	158	152	6
TOTAL	2458	2421	37

Source: Department of Mineral Resources, August 2012.

Certificates issued from 2000 to 2012: Mine Surveyors

CERTIFICATES ISSUED FROM 2000 TO 2012			
MINE SURVEYORS			
YEAR	NUMBER ISSUED	MALES	FEMALES
2000	9	9	0
2001	8	8	0
2002	11	11	0
2003	3	3	0
2004	4	4	0
2005	9	9	0
2006	6	6	0
2007	10	10	0
2008	13	13	0
2009	13	9	4
2010	10	10	0
2011	8	8	0
2012	14	14	0
TOTAL	118	114	4

Source: Department of Mineral Resources, August 2012.

Certificates issued from 2000 to 2012: Winding-engine drivers

CERTIFICATES ISSUED FROM 2000 TO 2012			
WINDING-ENGINE DRIVERS			
YEAR	NUMBER ISSUED	MALES	FEMALES
2000	37	31	6
2001	37	32	5
2002	36	27	9
2003	55	50	5
2004	87	72	15
2005	58	44	14
2006	26	21	5
2007	69	44	25
2008	51	33	18
2009	51	42	9
2010	22	14	8
2011	31	24	7
2012	18	14	4
TOTAL	578	448	130

Source: Department of Mineral Resources, August 2012.

APPENDIX 7: TIMELINES FOR MQA PROJECTS

TIMELINES MQA PROJECTS 2013/2014		
<u>PROJECT</u>	<u>Timeframes</u>	
	<u>Start</u>	<u>Finish</u>
MQA-001-Lecturer (HET)	Jul-05	2016
MQA-002-Bursaries	2012	2016
MQA-003-Work Experience	2013	2014
MQA-005-Minerals Beneficiation (Diamond & Jewellery)	2013	2014
MQA-007-Standard Setting Grant (TRGs)	Ongoing.	
MQA-009-Learning Materials Development	Ongoing.	
MQA-010-Internships (GDP)	2013	2015
MQA-011-Learnerships	On-going till the last learner completes. Targets are set for each financial year	
MQA-012-SME Skills Development Support	2013	2014
MQA-018-Skills Development Facilitator Support	Ongoing until end of NSDS 3 in March 2016	
MQA-019-ABET	Ongoing till the last learner completes. Targets are set for each financial year	
MQA-020-Skills Development Research & Impact Analysis	Ongoing and revised annually until end of NSDS 3 in March 2016	
MQA-023-Literacy Promotion	01-Apr-13	Oct-13
	The event took place on 7 September 2013. Close off report submitted.	
MQA-024-OHS Rep Development	Ongoing till the last learner completes. Targets are set for each financial year	
MQA-026-NSF 2 - Artisan Development	Ongoing till the last learner completes. Targets are set for each financial year	
MQA-027 MQA Artisan Development-Employed	Ongoing till the last learner completes. Targets are set for each financial year	
MQA-030-Maths & Science	2013	2014
MQA-031-Mine Inspector Training	2013	2014
MQA-035-Learners with Disability	Ongoing till the last learner completes. Targets are set for each financial year	

MQA-036-External Assessment Tools Development	Ongoing Ops requirement (Functional)	
MQA-037-Facilitator Development	01-Apr-13	31-Mar-14
MQA-038-FLC Grant Incentive	Ongoing till the last learner completes. Targets are set for each financial year	
MQA-040-Standard Setting HET	Ongoing but dependant on legislative changes	
MQA-041-HDSA Development	2013	2014
MQA-042-UIF 1 Learnerships Artisan	Ongoing till the last learner completes. Targets are set for each financial year	
MQA-043-ABET Practitioner Career Progression	2013-10-22	2014-01-01
MQA-045-Mine Community Capacity Building	Ongoing till the last learner completes. Targets are set for each financial year	
MQA-049-Mining Environmental Control Programme	Ongoing till the last learner completes. Targets are set for each financial year	
MQA-050-Mpumalanga FET Artisan	Ongoing till the last learner completes. Targets are set for each financial year	
MQA-051-MQA Artisan Development-Unemployed	Ongoing till the last learner completes. Targets are set for each financial year	
MQA-052-RPL / Artisan Aides - Employed	Ongoing till the last learner completes. Targets are set for each financial year	