



**NSW  
Resources  
Regulator**

# **Mine safety performance report**

2018 - 2019



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# Mine safety performance overview

## **+** Fatal injuries **↑↑ 2** INCREASE OF 2 IN 2018-19 FROM 0 IN 2017-18

### Metalliferous mine

A contract worker suffered spinal injuries from a fall from an elevated work platform. The scissor lift's front and left side guard rails had been removed to move it under a steel structure. While on the scissor lift platform using its control unit, the worker lost balance and fell off the platform from a height of about one metre. The worker experienced a series of complications secondary to surgery and passed away six weeks after the incident.

See [Investigation Information Release IIR18-14](#) for more information.

### Coal mine

A tyre maintenance worker was fatally injured when a large earthmoving tyre fell from a tyre handler at the mine's heavy vehicle wash bay. The tyre maintenance worker and another worker had removed the tyre from a water cart at a service bay with the tyre handler. The tyre handler was then used to take the tyre to the nearby wash bay for cleaning. At some point during the cleaning process, the tyre fell onto the tyre maintenance worker. Other workers responded to the scene and initiated the mine's emergency response procedures.

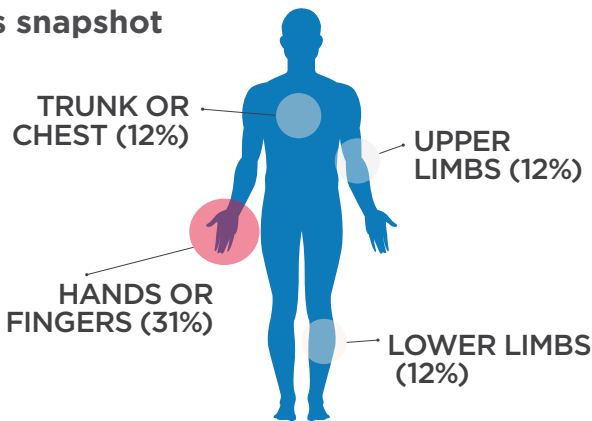
See [investigation report and animation](#) for more information.

## **+** Serious injuries **↑↑ 93** INCREASE OF 11 IN 2018-19 FROM 82 IN 2017-18

## **+** Fatal and serious injuries

### Fatal and serious injuries snapshot

MECHANISM
Being hit by moving object (41%)
Falls, trips and slips of a person (29%)



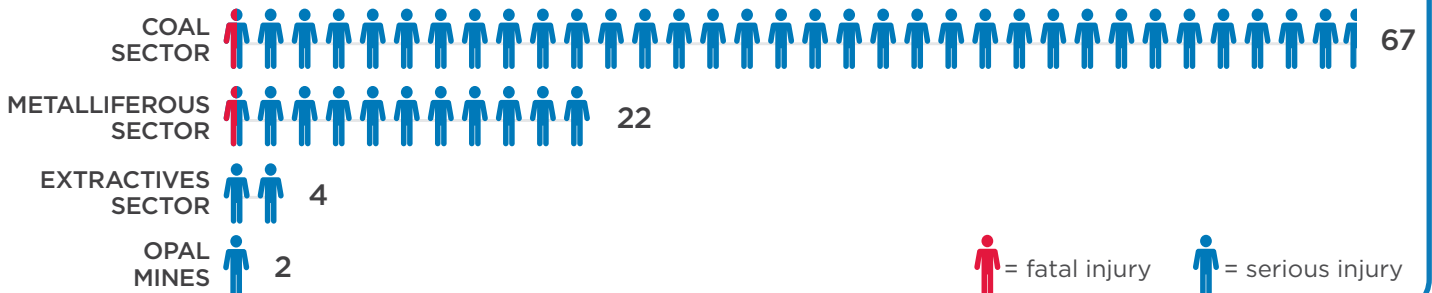
NATURE OF INJURY
Fracture (52%)
Wounds, lacerations, amputations and internal organ damage (24%)

\*Represents 70% of the total

\*Represents 67% of the total

\*Represents 76% of the total

### Fatal and serious injuries by sector (one person = 2 serious injuries)



## **+** LTIs LOST TIME INJURIES

**↑↑ 295** INCREASE OF 35 IN 2018-19 FROM 260 IN 2017-18

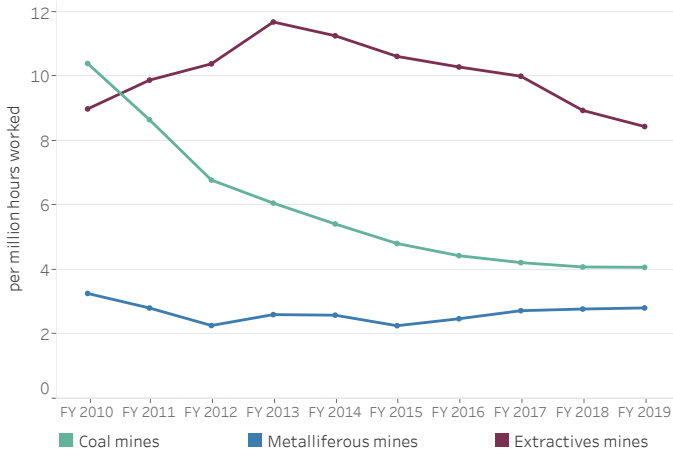
## **+** TRIs TOTAL RECORDABLE INJURIES

**↓↓ 959** DECREASE OF 16 IN 2018-19 FROM 975 IN 2017-18

# Mine safety performance overview

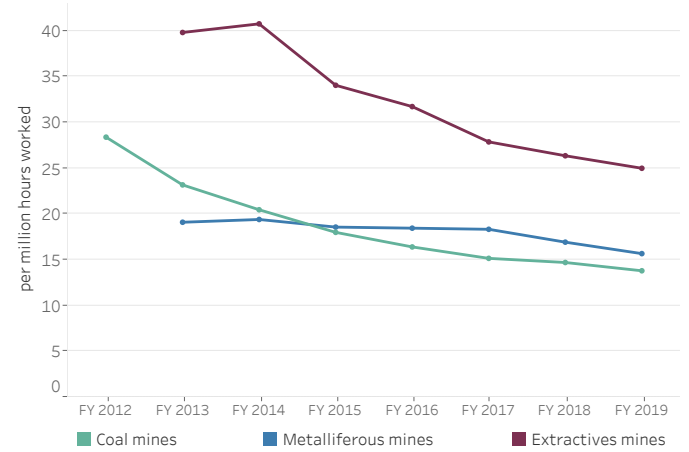
## LTIFR

Five year average lost time injury frequency rate



## TRIFR

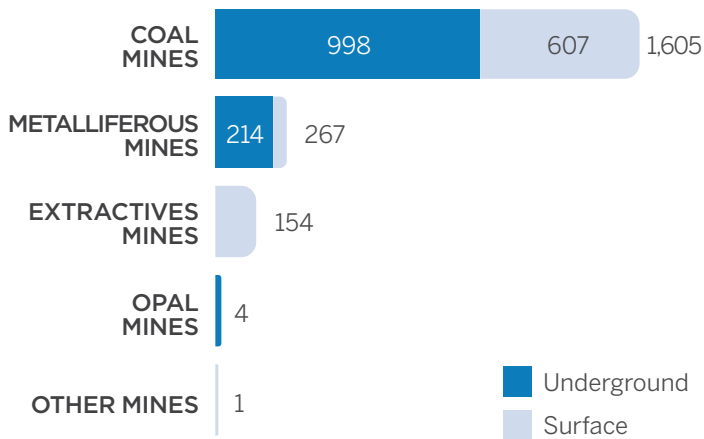
Five year average total recordable injury frequency rate



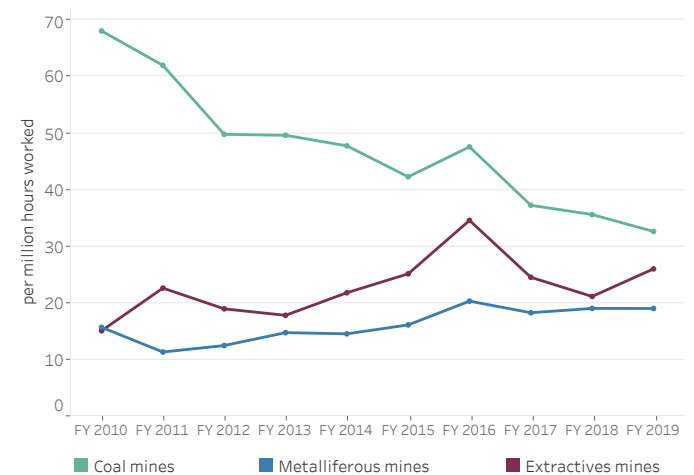
## Incidents **2,031**

INCREASE OF 17 IN 2018-19 FROM 2,014 IN 2017-18

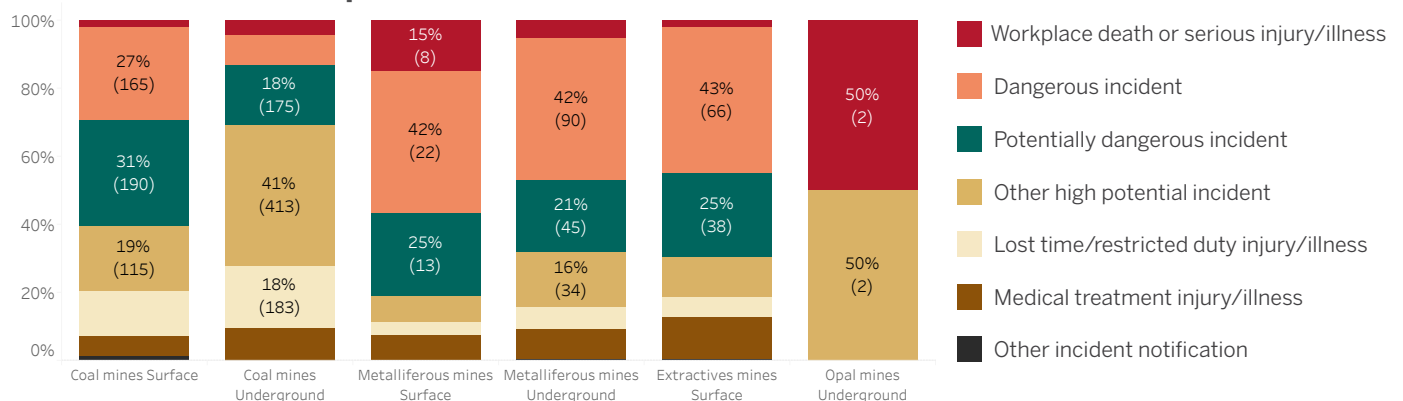
Incident notifications by sector and operation type



Incident notification annual frequency rate



## Incident notification profile 2018-19

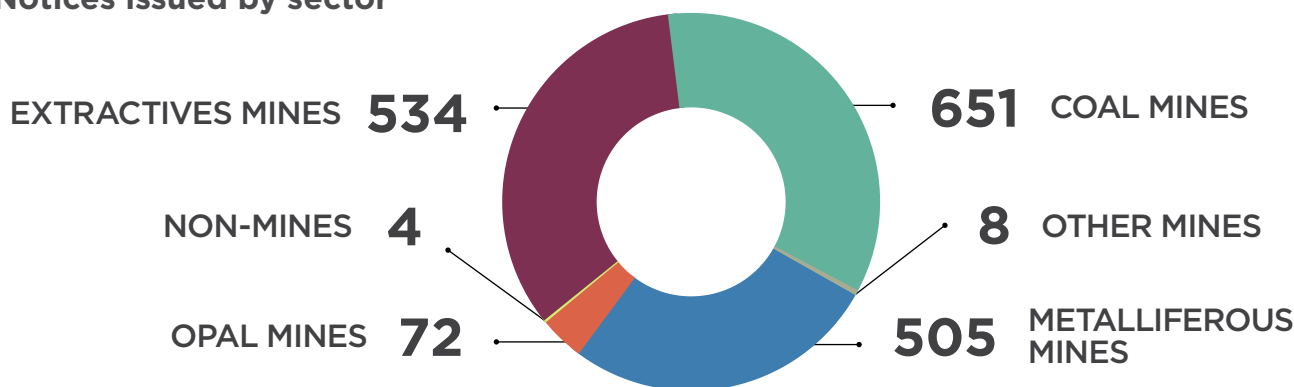




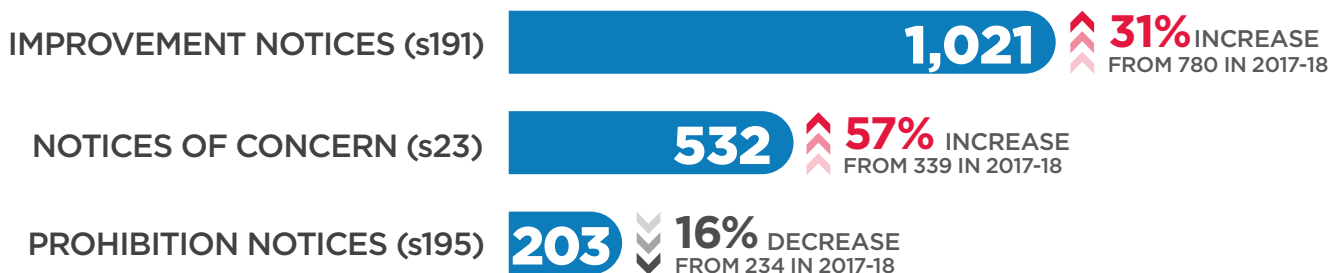
# Mine safety performance overview

**Notices issued** **↑ 1,774** INCREASE OF 17 IN 2018-19 FROM 2,014 IN 2017-18

## Notices issued by sector



## Notices issued by type



**Hours worked** **↑ 69.1m** INCREASE OF 4.3m IN 2018-19 FROM 64.8m IN 2017-18

## Total hours worked in 2018-19



## For more information

This overview was first published in August 2020 with data current at May 2020.

To read the full **Mine Safety Performance Report for 2018 - 2019**, and other safety publications, visit our website: [resourcesregulator.nsw.gov.au](https://resourcesregulator.nsw.gov.au)

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# Executive summary

This report provides an overview of the health and safety performance of the NSW mining and petroleum industry as reported to the NSW Resources Regulator, in conjunction with selected regulatory activities during that same period. The report is for the financial year 2018-19, and comparisons are made with certain indicators over a ten year period from 2009-10.

While the report does not tell of the breadth of innovative and proactive risk management by the industry's duty holders or detail the many activities of the Regulator, it does feature an important suite of measures to help guide future actions to improve health and safety performance and to allow industry to benchmark their performance against others in their sector.

Work health and safety regulatory intervention has been in place in the Australian mining industry for more than a century. While the NSW mining industry has continued to minimise the risk to health and safety of workers, there were still two fatal injuries, 93 serious injuries, 295 lost time injuries and 959 total recordable injuries reported to the Regulator in 2018-19.

Over the past 100 years, there has been a long-term decrease in the number of NSW mining fatal injuries. Since 2009-10, the combined coal, metalliferous and extractives rolling five-year average frequency rate of fatal injuries ranged from a low of 0.015 to a high of 0.034 injuries per million hours worked.

During the past decade the most common fatal hazard mechanism in NSW mines was 'being hit by moving objects' followed by a 'vehicle interaction'.

The rolling five-year average frequency rate of serious injuries (per million hours worked) declined from 2009-10 until 2013-14 when the rate rose sharply. The broadening of the legislated definition of serious injury with the commencement of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 on 1 February 2015, contributed to the increase in notifications. The definition now also includes additional injury types, as well as any injury irrespective of its nature that results in immediate treatment as an in-patient in a hospital. Since the introduction of the expanded definition, the overall number of serious injuries notified has effectively doubled. Since last year the total number of serious injuries increased by 13%. This provides a valuable source of information on the types of injuries occurring in order to guide regulatory activity.

Since 2009-10 the most common hazard mechanism resulting in serious injury in NSW mines was being 'hit by moving objects' followed by 'slips, trips and falls of a person'. Together, these two mechanisms accounted for 70% of the serious injuries in 2018-19. The nature of that injury was most likely to be a 'fracture' followed by a 'wound, laceration or amputation'. 'Hand or fingers' were the bodily location most likely to be seriously injured.

Lost time injuries capture the number of injuries that cause a worker to not work subsequent days. Since 2009-10, the rolling five-year average lost time injury frequency rate (LTIFR) has steadily declined from 8.39 to 4.18 in 2018-19, a reduction of about half. While the LTIFR for the extractives in 2018-19 was almost double the rate for the combined coal, metalliferous and extractives sectors, it is worth noting that during the ten-year reporting period it has remained relatively steady.

As always, it is important to caution against overreliance on failure (lag) data to monitor performance as it means that improvements or changes are only determined after something has gone wrong. While lag indicators like those in this report have a place in understanding control failure, our proactive and reactive assessment programs are focused on checking whether critical controls are effective and operating as intended. Proactive and reactive program assessments and monitoring lag indicators are needed to provide a full and complete picture.

In a high-hazard industry, a concerted and sustained effort is required to maintain a focus on preventing catastrophic events. The Regulator's incident prevention strategy, implemented in July 2016, shifts the focus of compliance activity from incident investigation (reactive) to preventing incidents through planned, risk-based programmed assessments.

In 2018-19, the Regulator conducted 1,435 programmed assessments under its incident prevention strategy which resulted in 1,432 notices issued at a notice rate of one notice per programmed assessment. This strategy, together with continued implementation of our compliance and enforcement approach in July 2017, has resulted in an increase in the notice issue rate. The increased notice issue rate in the metalliferous sector has contributed to this overall observed increase where in 2018-19 the notice issue rate in the metalliferous sector (1.69) was double that of coal sector (0.85).

Analysing the types of notices issued during the reporting decade provides further safety performance insights as well as providing a measure of regulatory input. Between 2014-15 and 2018-19, the proportion of improvement notices relative to notices of concern continued to increase. There was also an increase in the number of prohibition notices in that time. This reflected our renewed focus on incident prevention via our compliance and enforcement policy where we sought to clearly identify matters that necessitate the issue of an improvement notice, compared to a written notice of concern.



# Explanatory notes

## Health and safety performance data from the NSW mining sector

This report presents data on injuries (fatal, serious, lost time and total recordable injuries), notified incidents, notices issued and hours worked. All information presented was either reported to the Regulator by the NSW mining and extractives industry through work health and safety reporting, through incident notifications or was information obtained from enforcement and concern notices issued by the Regulator. See definitions in [Appendix 1](#).

## Mining sectors in NSW

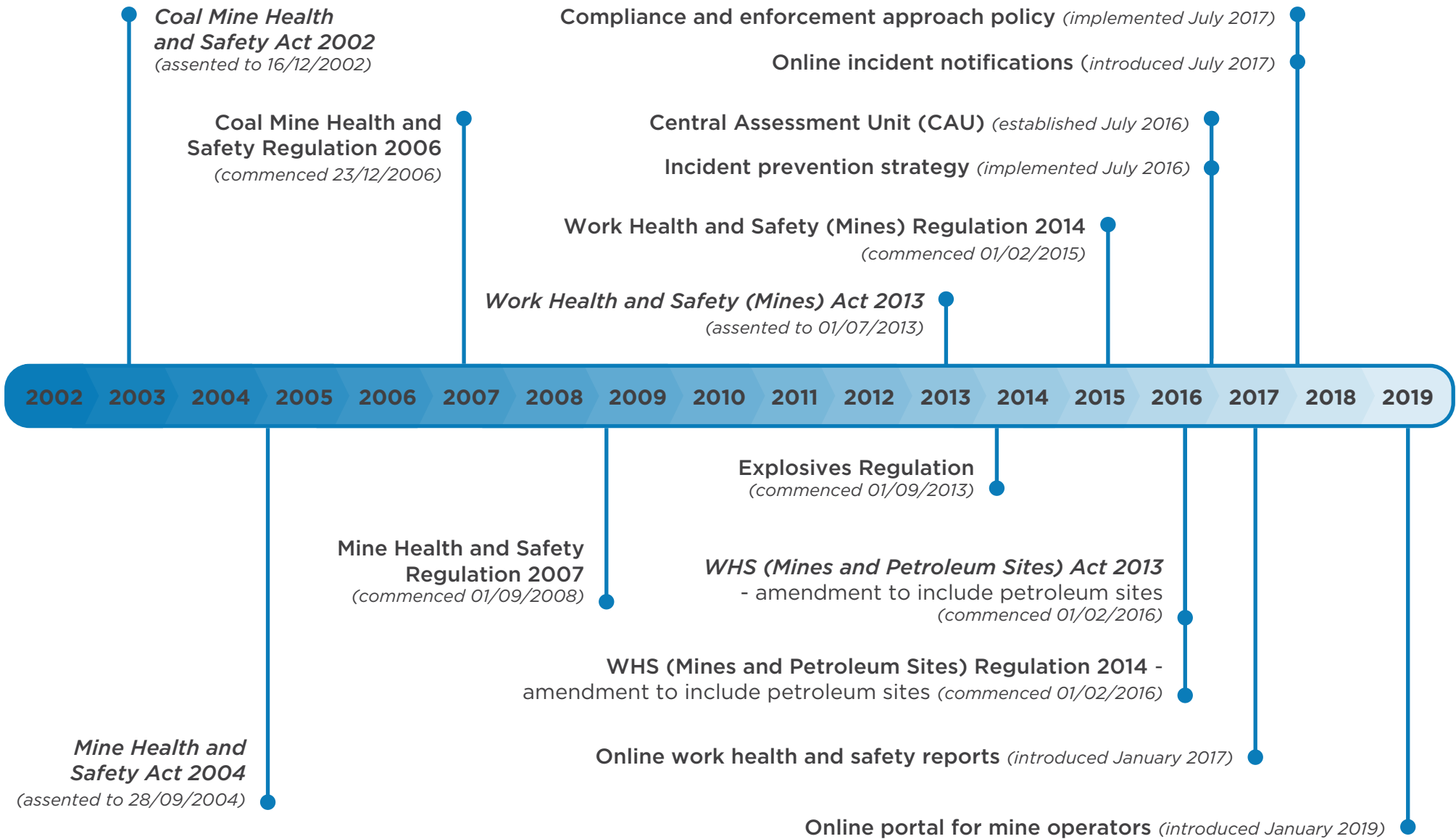
Sector-based chapters in the report have been included for the coal, metalliferous, extractives, petroleum and geothermal and opal sectors. Exploration activities are included within each relevant sector. See [Appendix 2. Mine definitions](#).

## Key regulatory changes timeline

Amendments to mine safety legislation in NSW and refined compliance and enforcement practices by the Regulator have impacted data in this report. The timeline in Figure 1 highlights key dates since 2006, including those in relation to notified incidents, injuries, illnesses and work health and safety reporting. While at times it may be difficult to distinguish between real changes in occurrences of an event, the implication of certain changes to the legislation or the implementation of certain strategies are clear. For example, the broadening of the legislated definition of serious injury with the commencement of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 on 1 February 2015 contributed to the observed increase in notifications. Since the introduction of the expanded definition, the overall number of serious injuries notified has effectively doubled.



FIGURE 1. KEY REGULATORY CHANGES IN NSW MINING 2002 - 2019



### **Rate-based frequency measures are calculated using work health and safety reports**

In NSW, coal, metalliferous and extractives mine operators are required to submit work health and safety reports with lost time, restricted duty and medical treatment injury information as well as hours worked. This information was used to generate frequency rates and total recordable injuries.

It is worth noting that mandatory work health and safety reporting commenced as follows:

- coal sector - beginning of 2007-08
- metalliferous and extractives sectors - second quarter of 2008-09
- coal exploration sites - 1 February 2015.

Until the beginning of 2007-08, hours worked and lost time injury data for the coal sector were sourced from Coal Services Pty Ltd. Until quarter two 2008-09, metalliferous and extractives hours worked and lost time injuries were compiled from several sources and included some estimation.

Frequency rates (per million hours worked) have been calculated for each injury and incident notification measure. Rates were based on hours worked data submitted by the coal, metalliferous and extractives sectors as part of the work health and safety reporting requirements listed above. Petroleum sites, underground small gemstone mines, opal mines and tourist mines are not required to submit reports. Frequency rates are therefore not available for the non-coal other (such as opal mines) and petroleum (onshore) sectors.

Rates for injury measures were calculated using a rolling five-year average rate. This smoothing technique shows the value for the past five years combined, enabling a long-term trend to be produced directly from raw data. This is particularly useful where values may vary widely from year to year. Annual rates were calculated for incident notification data. See [Appendix 3](#) for sector data.

### **Data extraction**

This report covers ten financial years from 2009-10 to 2018-19. The rolling five-year average rate calculation was based on 15 years of data from 2004-05 to 2018-19. The data in this report was extracted from the Regulator's compliance database on 16 April 2020. Additional extractions were conducted for serious injury classification data in May 2020. All data is subject to continuous improvement due to internal audit and validation processes and updates from external sources. Incorrectly classified information from past years is sometimes found and reclassified in source databases. The Regulator's reporting employs the best available data at the time of data extraction, which may differ from previously published figures.



Chapter 1.

# Industry overview





# Industry overview

## Key performance measures 2018-19

---

**2**  
fatal injuries

**93**  
serious injuries

**295**  
lost time injuries

**959**  
total recordable injuries

**2,031**  
notified incidents

**1,774**  
notices issued

In the NSW mining industry in 2018-19:

- There were two work-related mining fatalities.
- The rolling five-year fatal injury frequency rate (FIFR) for the coal, metalliferous and extractives sectors decreased by 31% from the previous year to 0.022.
- There were 93 serious injuries notified, an increase of 11 (13%) from the previous year. Coal mines accounted for 71% of serious injuries.
- The rolling five-year average serious injury frequency rate (SIFR) for the combined coal, metalliferous and extractives sector was up 17% compared to the previous year, from 1.20 to 1.40.
- There were 295 lost time injuries reported in the combined coal, metalliferous and extractives sectors.
- For the combined coal, metalliferous and extractives sectors, the rolling five-year lost time injury frequency rate (LTIFR) in 2018-19 was virtually unchanged compared to the previous year.
- The LTIFR for the extractives sector was almost double the rate for all sectors combined.
- There were 959 total recordable injuries in the combined coal, metalliferous and extractives sectors, virtually unchanged from the previous year.

- Since 2012-13, the combined coal, metalliferous and extractives sectors experienced a reduction in the rolling five-year total recordable injury frequency rate (TRIFR), resulting in a steady downward trend.
- Notified incidents increased by a small amount compared to the previous year, from 2,014 to 2,031.
- The incident notification annual frequency rate (INFR) for the combined coal, metalliferous and extractives sectors was down approximately 5% compared to the previous year, from 31.01 to 29.32.
- 1,774 notices were issued, an increase of 30% from the previous year. More than half were improvement notices.
- The Regulator conducted 1,435 programmed assessments which resulted in 1,432 notices being issued and a notice issue rate of one notice per programmed assessment.



TABLE 1. NSW COAL, METALLIFEROUS AND EXTRACTIVES COMPARISON OF KEY PERFORMANCE INDICATORS 2017-18 AND 2018-19

KEY PERFORMANCE INDICATORS	COAL SURFACE		COAL UNDERGROUND		COAL TOTAL		METALLIFEROUS SURFACE		METALLIFEROUS UNDERGROUND		METALLIFEROUS TOTAL		EXTRACTIVES		COAL, METALLIFEROUS & EXTRACTIVES TOTAL	
	FY 2018	FY 2019	FY 2018	FY 2019	FY 2018	FY 2019	FY 2018	FY 2019	FY 2018	FY 2019	FY 2018	FY 2019	FY 2018	FY 2019	FY 2018	FY 2019
Active mines	152	161	43	46	195	207	648	676	42	47	690	723	2,588	2,552	3,473	3,482
Million hours worked	32.2	34.2	13.7	14.9	45.9	49.1	5.6	6.4	7.2	7.5	12.9	14.0	5.8	5.9	64.8	69.0
Full time equivalent workers	16,100	17,111	6,899	7,466	22,999	24,578	2,848	3,233	3,633	3,777	6,481	7,010	2,929	2,958	32,408	34,545
Fatal injuries	0	1	0	0	0	1	0	1	0	0	0	1	0	0	0	2
Fatal injury 5 year average frequency rate	0.021	0.013	0.027	0.000	0.023	0.009	0.000	0.045	0.063	0.046	0.045	0.046	0.079	0.075	0.032	0.022
Lost time injuries	74	93	111	125	185	218	19	12	15	19	34	31	41	46	260	295
Lost time injury 5 year average frequency rate	1.91	2.09	8.32	8.28	4.09	4.07	3.38	2.91	2.55	2.77	2.78	2.82	8.94	8.44	4.20	4.18
Restricted duty injuries	81	75	260	222	341	297	23	11	71	76	94	87	54	52	489	436
Medical treatment injuries	45	30	81	81	126	111	10	12	26	35	36	47	63	66	225	224
Total recordable injuries	200	199	452	430	652	629	52	36	112	130	164	166	159	164	975	959
Total recordable injury 5 year average frequency rate	6.06	6.03	31.46	30.27	14.69	13.79	11.55	10.07	19.00	18.54	16.91	15.66	26.35	24.98	16.12	15.13
Serious injuries	27	12	30	54	57	66	5	7	7	14	12	21	11	4	80	91
Serious injury 5 year average frequency rate	0.62	0.65	2.13	2.82	1.14	1.34	0.97	0.94	1.17	1.59	1.11	1.37	2.05	1.92	1.20	1.40
Incident notifications	585	607	1,054	998	1,639	1,605	33	53	214	214	247	267	124	154	2,010	2,026
Incident notification annual frequency rate	18.17	17.74	76.39	66.84	35.63	32.65	5.79	8.20	29.45	28.33	19.06	19.04	21.17	26.03	31.01	29.32
% of mines that notified an incident	31%	28%	70%	57%	39%	34%	2%	1%	43%	38%	4%	4%	3%	3%	5%	5%
Notices issued	207	269	368	382	575	651	60	77	200	428	260	505	462	534	1,297	1,690
Notice issue rate per programmed assessment	0.89	0.82	0.58	0.87	0.67	0.85	1.39	1.24	1.07	1.80	1.12	1.69	1.35	1.28	0.91	1.15

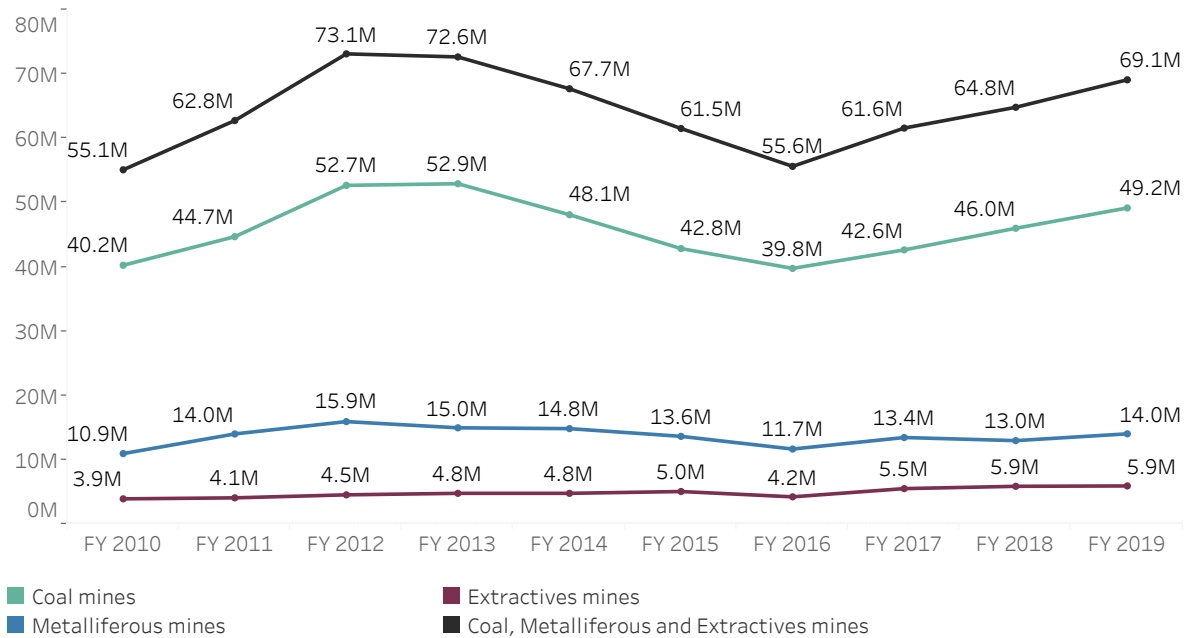
# Hours worked

From 2017-18 to 2018-19, work activity in the NSW combined coal, metalliferous and extractives sectors increased by 7% from 64.8 to 69.1 million hours. In 2018-19 just over 70% of the hours were worked in the coal sector, 20% in the metalliferous sector and 9% in the extractives sector.

Over the ten-year reporting period the total number of hours worked has increased by 25% from 55.1M in 2009-10 to 69.1M hours worked in 2018-19. This pattern is driven primarily by variations in hours worked in the coal sector.

Petroleum sites, underground small gemstone mines, opal mines and tourist mines are not represented in NSW hours worked figures because mining operators in these sectors are not required to submit work health and safety reporting data to the Regulator.

FIGURE 2. **COAL, METALLIFEROUS AND EXTRACTIVES HOURS WORKED BY SECTOR 2009-10 TO 2018-19**



## Fatal injuries

### Fatal injuries 2018-19

In 2018-19 there were two work-related mining fatalities in NSW. There were also two non-work-related deaths at mines in NSW in 2018-19.

#### Spotlight on a work-related death

##### **TYRE MAINTENANCE WORKER AT AN OPEN CUT COAL MINE IN MUSWELLBROOK, 3 NOVEMBER 2018**

##### **RELATED HAZARD: WORKING NEAR SUSPENDED LOADS**

On 3 November 2018 a tyre maintenance worker was fatally injured when a large earthmoving tyre fell from a tyre handler at the mine's heavy vehicle wash bay.

The tyre maintenance worker and another worker had removed the tyre from a water cart at a service bay with the tyre handler. The tyre handler was then used to take the tyre to the nearby wash bay for cleaning. At some point during the cleaning process, the tyre fell onto the tyre maintenance worker. Other workers responded to the scene and initiated the emergency response procedures.

This incident reinforces the importance of implementing effective risk control measures when working near suspended loads and lifting equipment.

See [investigation report and animation](#) for more information.

#### Spotlight on a work-related death

##### **WORKER AT AN OPEN CUT GOLD MINE IN WEST WYALONG, 29 JULY 2018**

##### **RELATED HAZARD: WORKING FROM HEIGHT**

On 29 July 2018, a contract worker suffered spinal injuries from a fall from an elevated work platform. The scissor lift's front and left side guard rails had been removed to move it under a steel structure. While on the scissor lift platform using its control unit, the worker lost balance and fell off the platform from a height of about one metre. The worker subsequently underwent surgery and experienced a series of complications secondary to the surgery. The worker passed away on 14 September 2018.

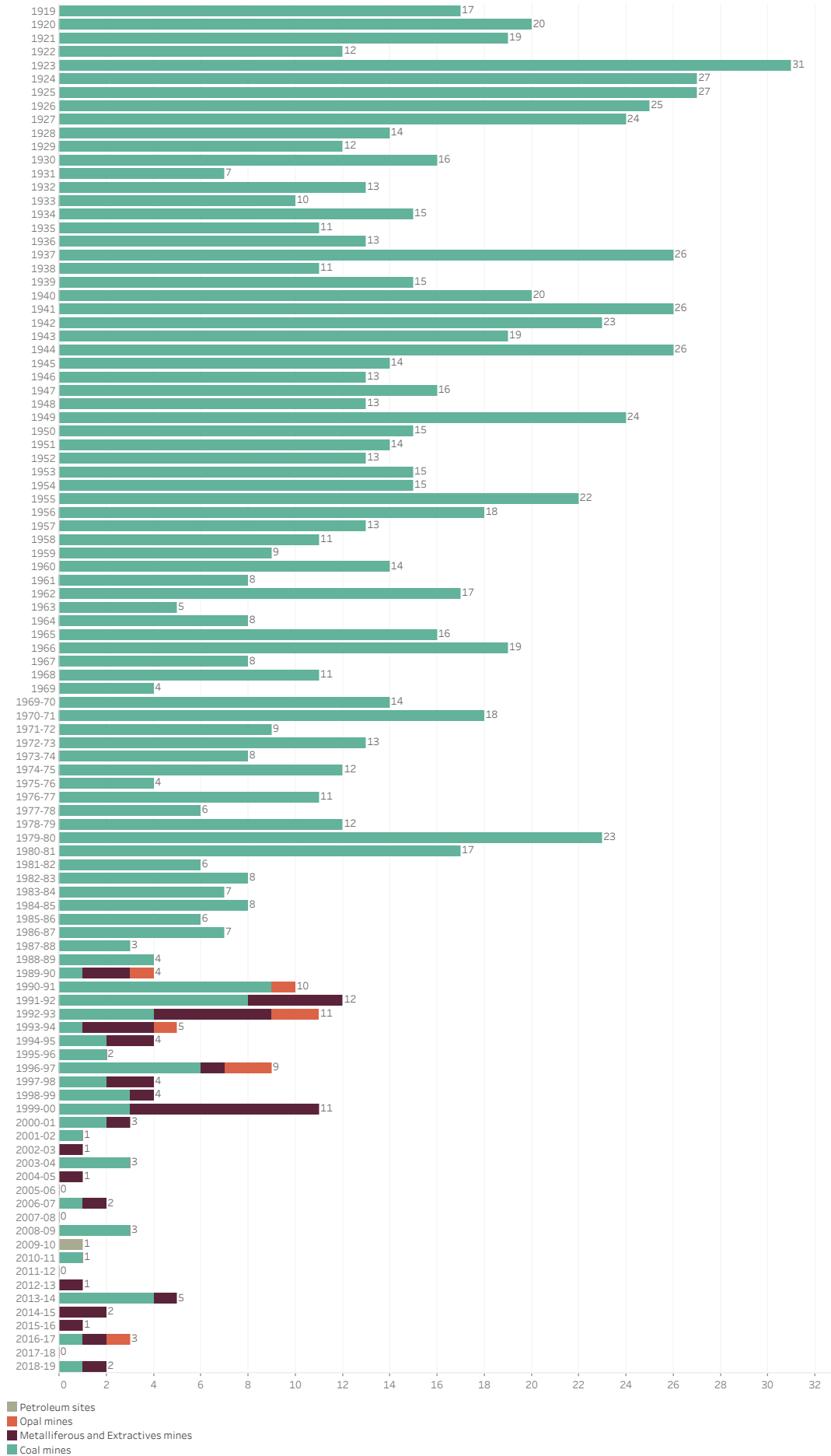
A person falling from height from mobile plant is a foreseeable risk and adequate control measures should be put in place to manage the risk. The provision of guard rails on mobile plant is a critical control measure to reduce the risk of falling. Mine operators and contractors must manage the risk of a person falling from one level to another when it is reasonably likely to cause injury to that person or any other person.

See [Investigation Information Release IIR18-14](#) for more information.

### Fatal injuries in NSW mining, last 100 years

Over the last 100 years, there has been a long-term decrease in the number of fatal injuries in the NSW mining industry. Fatal injury data for all sectors became available from 1989 onwards and is presented in Figure 3.

FIGURE 3. FATAL INJURIES BY SECTOR 1919 TO FY 2018-19



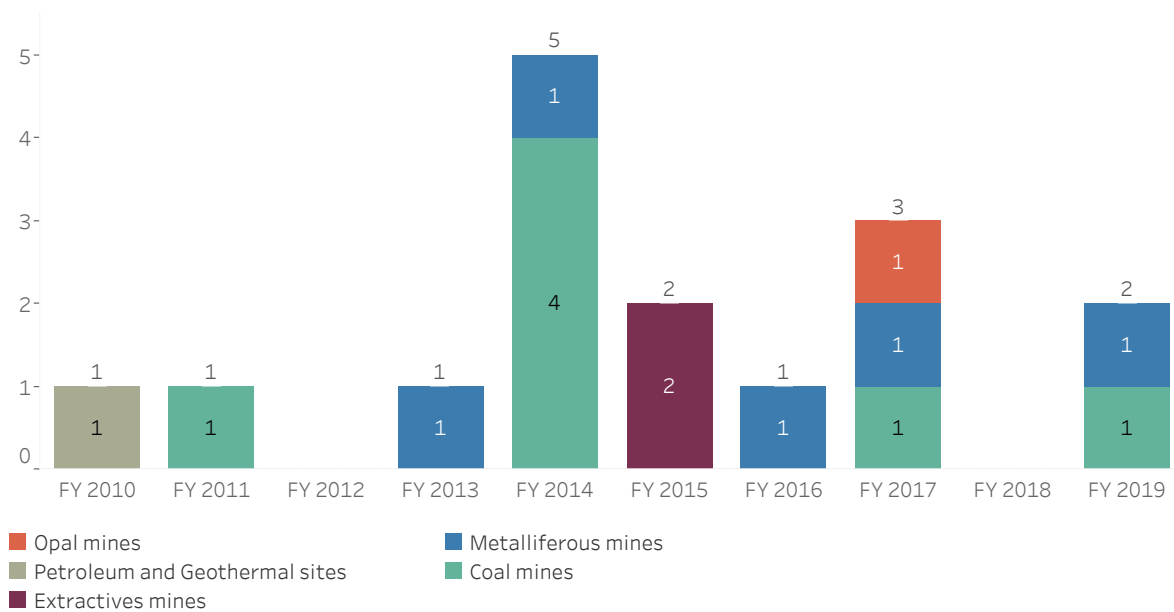


### Fatal injuries by sector

In 2018-19 there were two fatal injuries with one in each of the coal sector and metalliferous sector.

During the ten-year reporting period, 16 fatal injuries have occurred in coal, metalliferous, extractives, petroleum and geothermal and opal sectors with seven out of the 16 fatalities occurring in the coal sector.

FIGURE 4. FATAL INJURIES BY SECTOR 2009-10 TO 2018-19



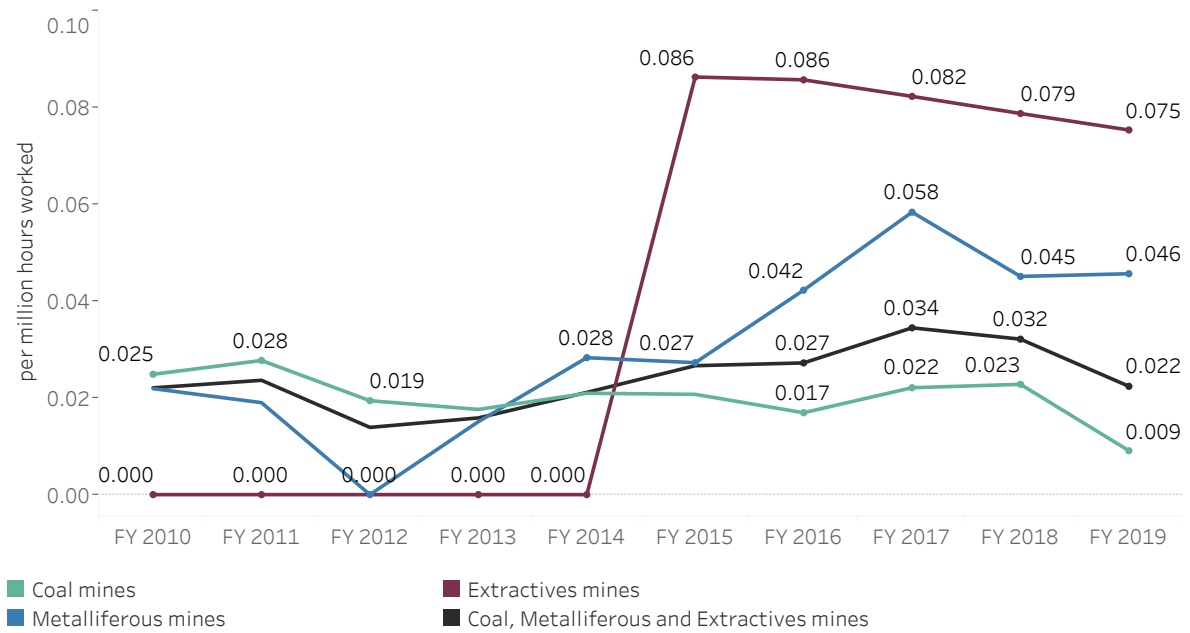
### Fatal injury frequency rate

For the combined coal, metalliferous and extractives sectors, the rolling five-year average fatal injury frequency rate (FIFR) in 2018-19 was down by almost one-third from the previous year to 0.022. This equates to an average of one mining fatality every 45.5 million hours worked. The overall low levels of FIFR are in line with the long-term decrease in mining fatalities in the last 100 years (see [Figure 3](#)).

While it is worth noting that relatively small numbers of fatalities recorded can cause fluctuating frequency rates, an upward trend was observed in the FIFR for the metalliferous and extractives sectors within the ten-year reporting period.



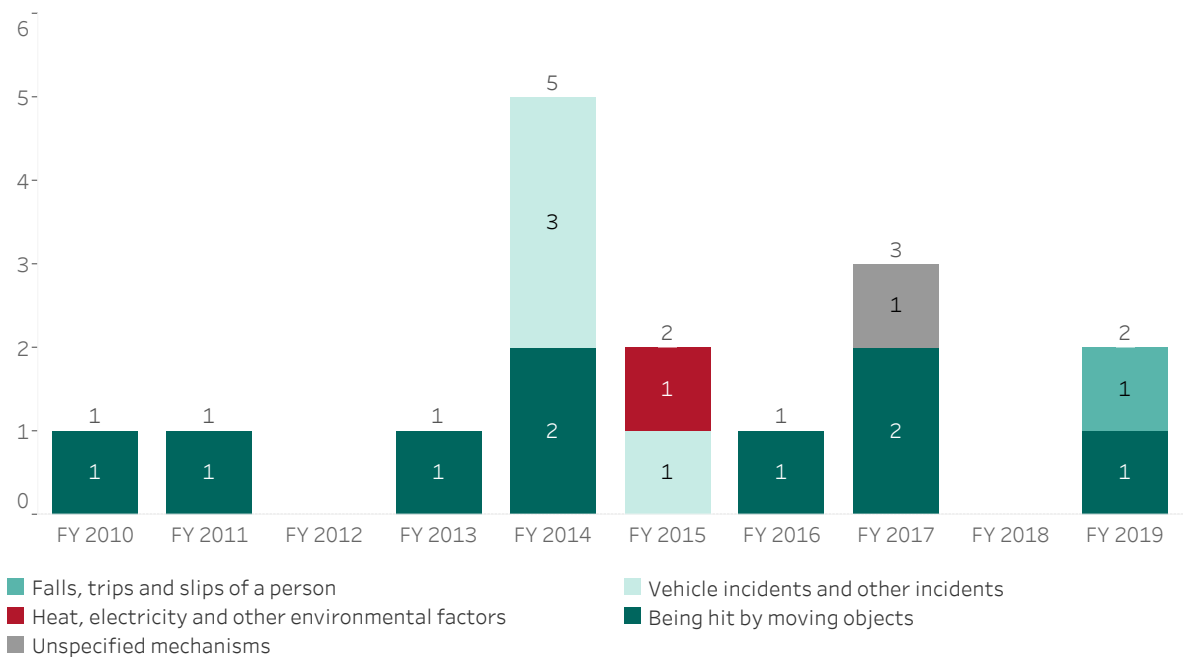
FIGURE 5. COAL, METALLIFEROUS AND EXTRACTIVES ROLLING FIVE-YEAR FIFR 2009-10 TO 2018-19



### Fatal injury hazard mechanism

Since 2009-10 the most common hazard mechanism resulting in fatal injury was ‘being hit by a moving object’, accounting for nine of the 16 fatal injuries (56%). ‘Vehicle incidents’ accounted for four (25%) of the fatal injuries in the reporting decade. See [Appendix 1](#) for injury classification.

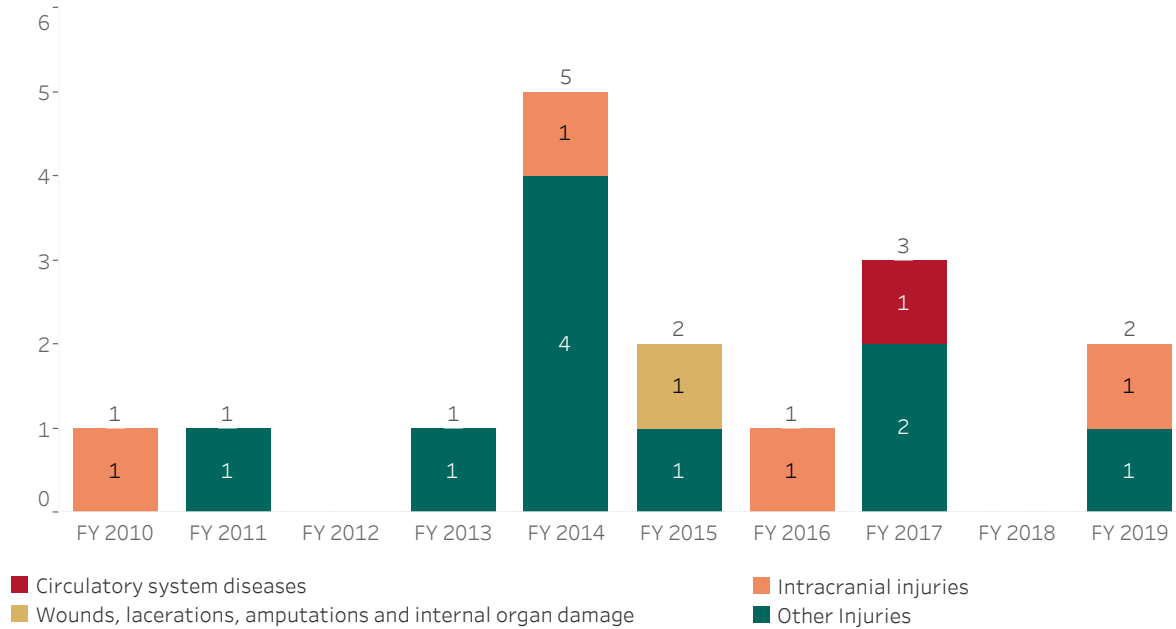
FIGURE 6. FATAL INJURIES BY HAZARD MECHANISM 2009-10 TO 2018-19



### Fatal injury nature of injury

Since 2009-10, the nature of fatal injuries was most often classified as ‘other injuries’ (nine) and intracranial injuries (four). See [Appendix 1](#) for injury classification.

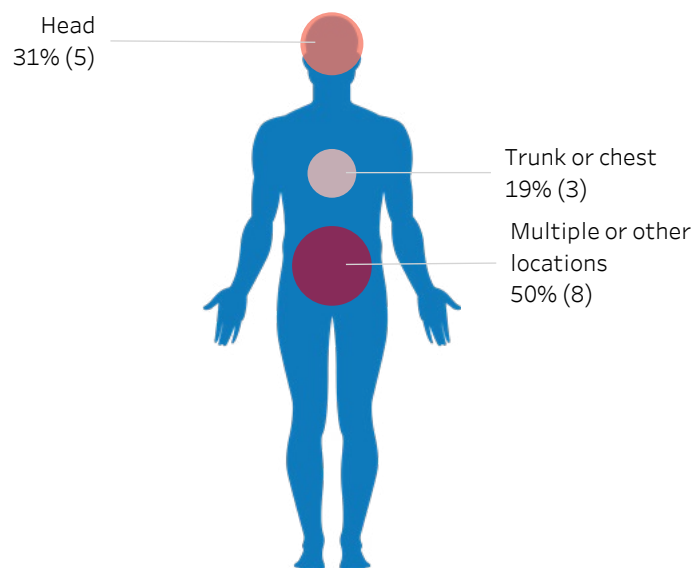
FIGURE 7. FATAL INJURIES BY NATURE OF INJURY 2009-10 TO 2018-19



### Fatal injury bodily location

Of the 16 fatal injuries in the reporting decade, almost one-third (five) were head injuries, almost 20% (three) were trunk or chest injuries while half (eight) affected multiple or other body locations. The two fatalities in 2018-19 involved one injury to the head and one injury to multiple locations. See [Appendix 1](#) for injury classification.

FIGURE 8. FATAL INJURIES BY BODILY LOCATION 2009-10 TO 2018-19



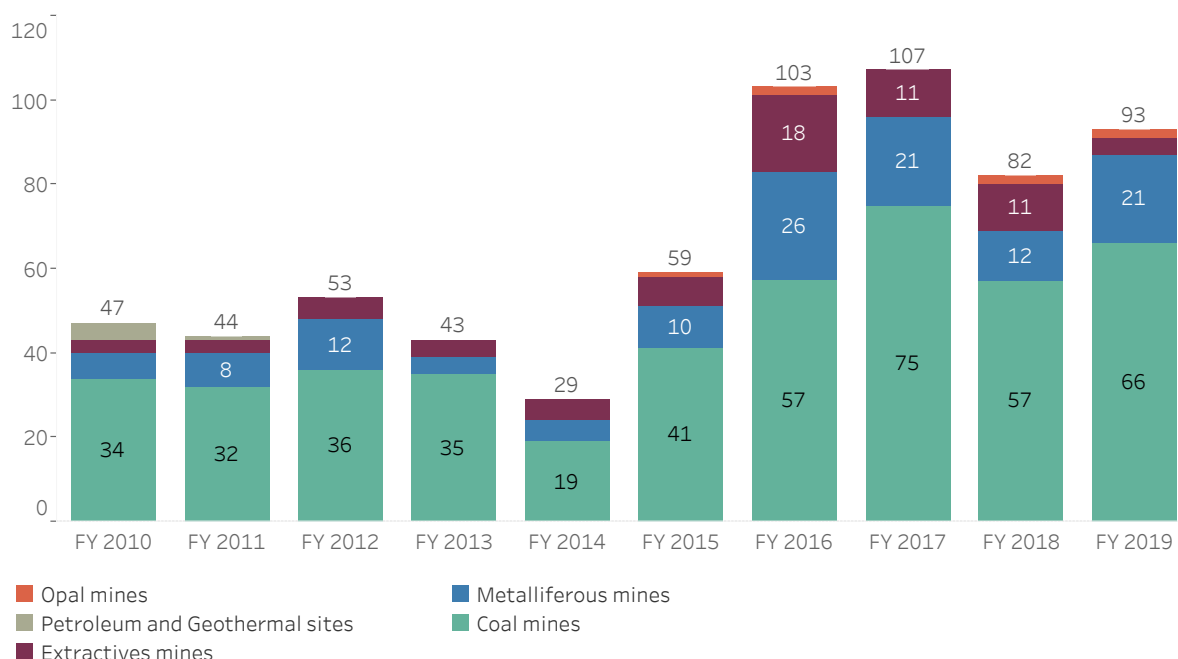
# Serious injuries

## Serious injuries by sector

There were 93 serious injuries notified during 2018-19, an increase of 11 (13%) from the previous year. Coal mines accounted for 71% of serious injuries notified in 2018-19.

The definition of a serious injury was expanded in February 2015 with the commencement of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 which has contributed to more serious injuries being notified from 2014-15.

FIGURE 9. SERIOUS INJURIES BY SECTOR 2009-10 TO 2018-19

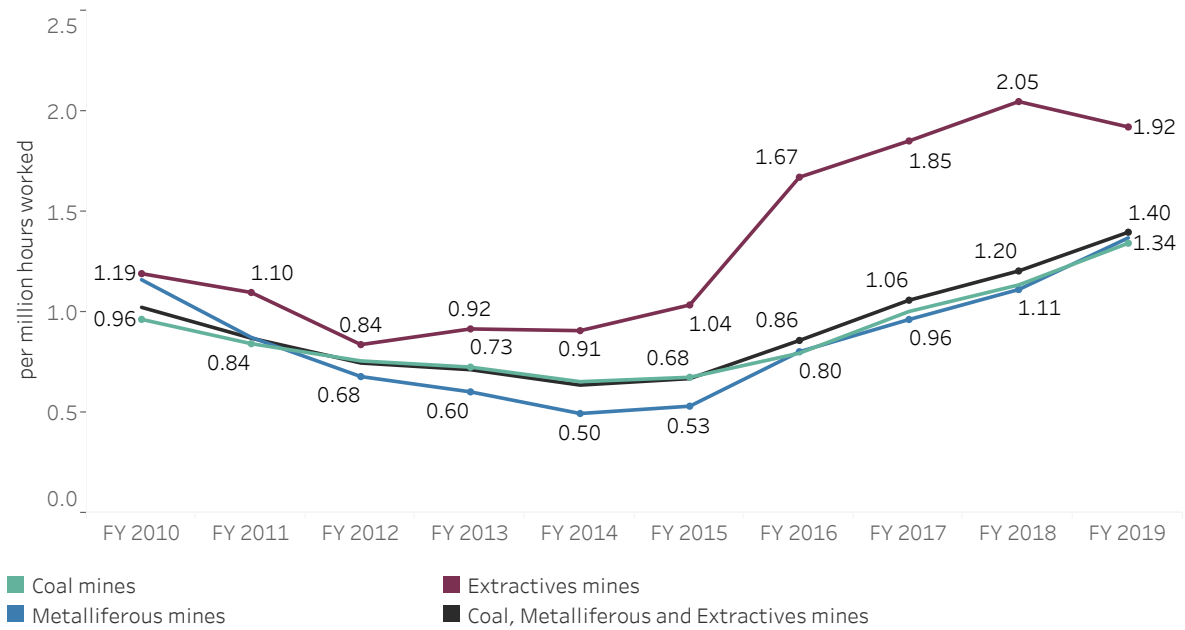


## Serious injury frequency rates

The rolling five-year average serious injury frequency rate (SIFR) for the combined coal, metalliferous and extractives sectors in 2018-19 was 1.40 which represents a 17% increase from the previous year. Since 2015-16 an upward trend in SIFR was observed across each of the mining sectors and most notably in the extractives sector. The broadened definition of serious injury has contributed to the increase.

Since 2015-16 an upward trend in SIFR was observed across each of the mining sectors. The broadened definition of serious injury has contributed to the increase. While the increase was most notable in the extractives sector, this equates to four serious injuries notified in this sector in 2018-19.

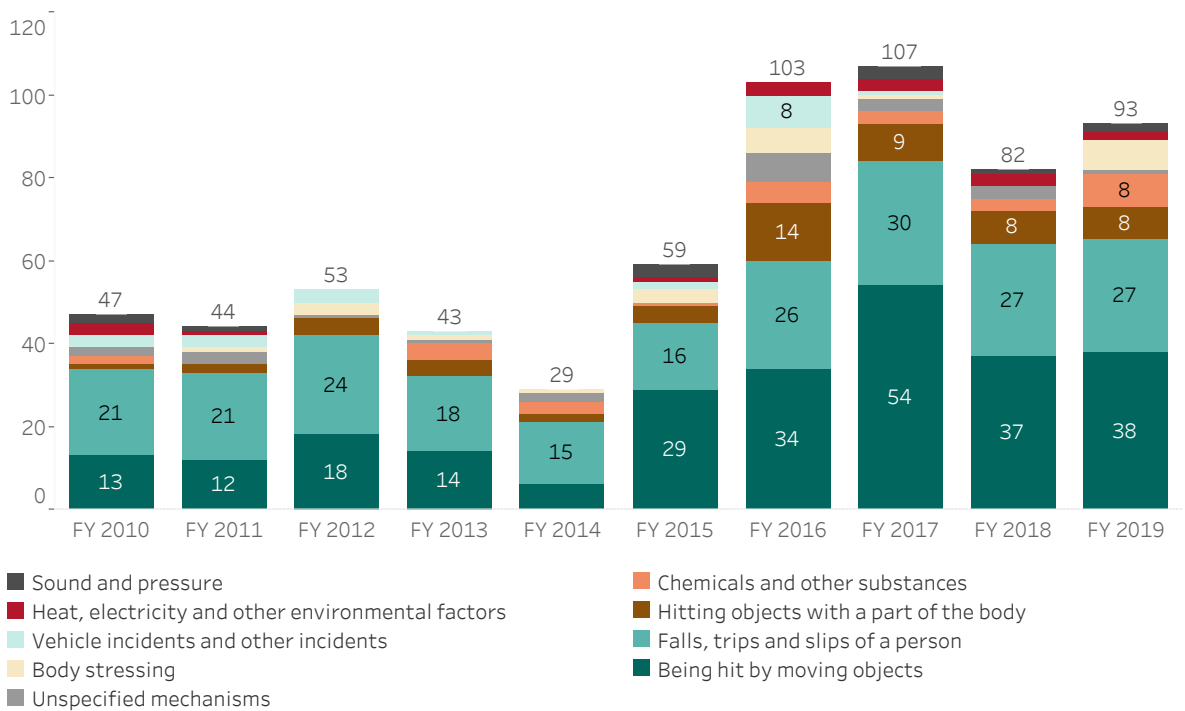
FIGURE 10. **COAL, METALLIFEROUS AND EXTRACTIVES ROLLING FIVE-YEAR SIFR 2009-10 TO 2018-19**



### Serious injury hazard mechanism

The most common serious injury hazard mechanism in the period 2009-10 to 2018-19 is ‘being hit by a moving object’, followed by ‘falls, slips and trips’. Together these two mechanisms accounted for 65 (70%) of the serious injuries in 2018-19. See [Appendix 1](#) for injury classification.

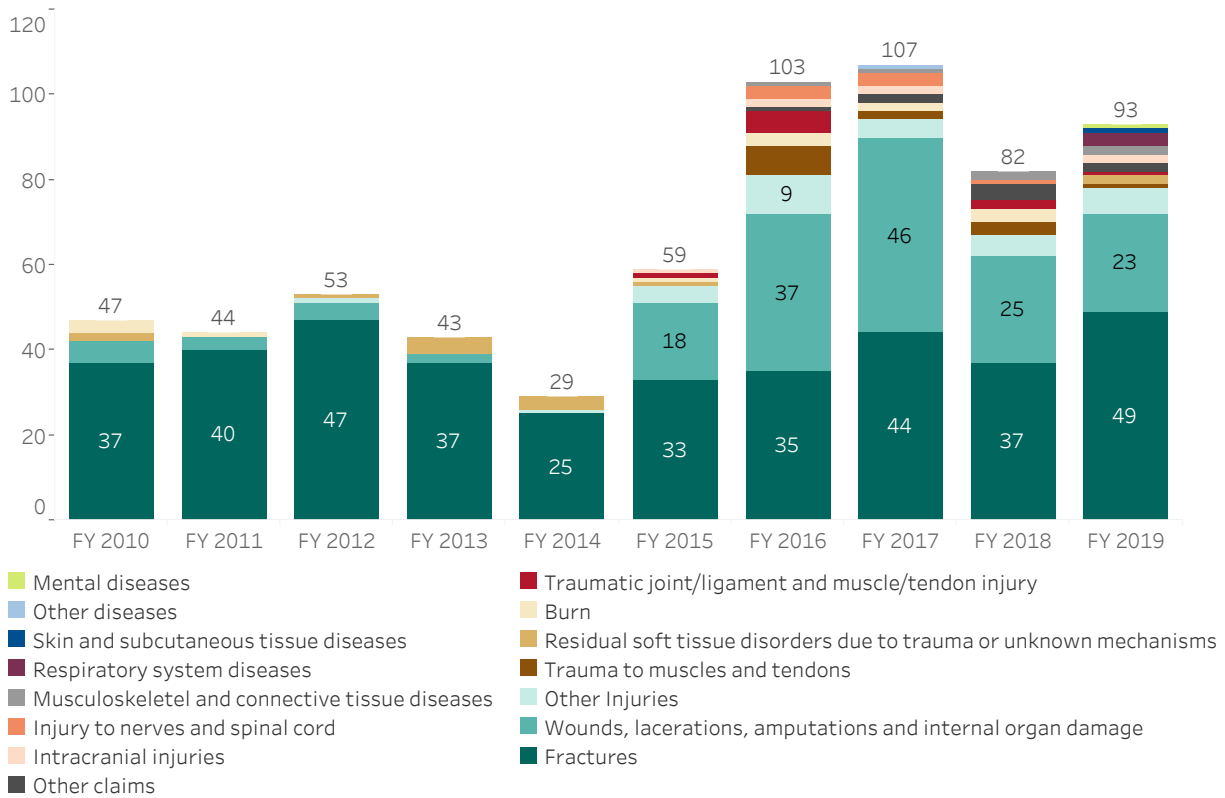
FIGURE 11. **SERIOUS INJURIES BY HAZARD MECHANISM OF INJURY 2009-10 TO 2018-19**



### Serious injury nature of injury

The most common nature of serious injury during the past ten years was ‘fracture’, followed by ‘wound, laceration or amputation’. Together they accounted for 77% of serious injuries in 2018-19. See [Appendix 1](#) for injury classification.

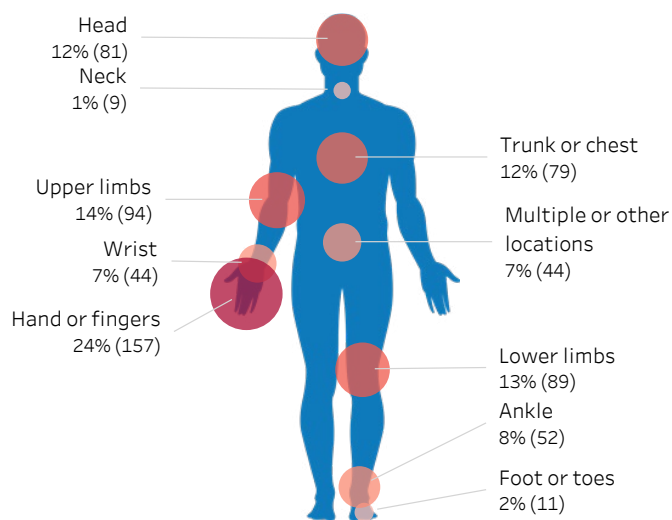
FIGURE 12. SERIOUS INJURIES BY NATURE OF INJURY 2009-10 TO 2018-19



### Serious injury bodily location

Over the reporting decade the most frequent bodily location for serious injuries were ‘hand or fingers’ (24%), followed by ‘upper limbs’ (14%) which includes shoulder, upper arm, elbow and forearm. Consistent with recent trends, ‘hands or fingers’ were the most seriously injured bodily location in 2018-19. See [Appendix 1](#) for injury classification.

FIGURE 13. SERIOUS INJURIES BY BODILY LOCATION 2009-10 TO 2018-19

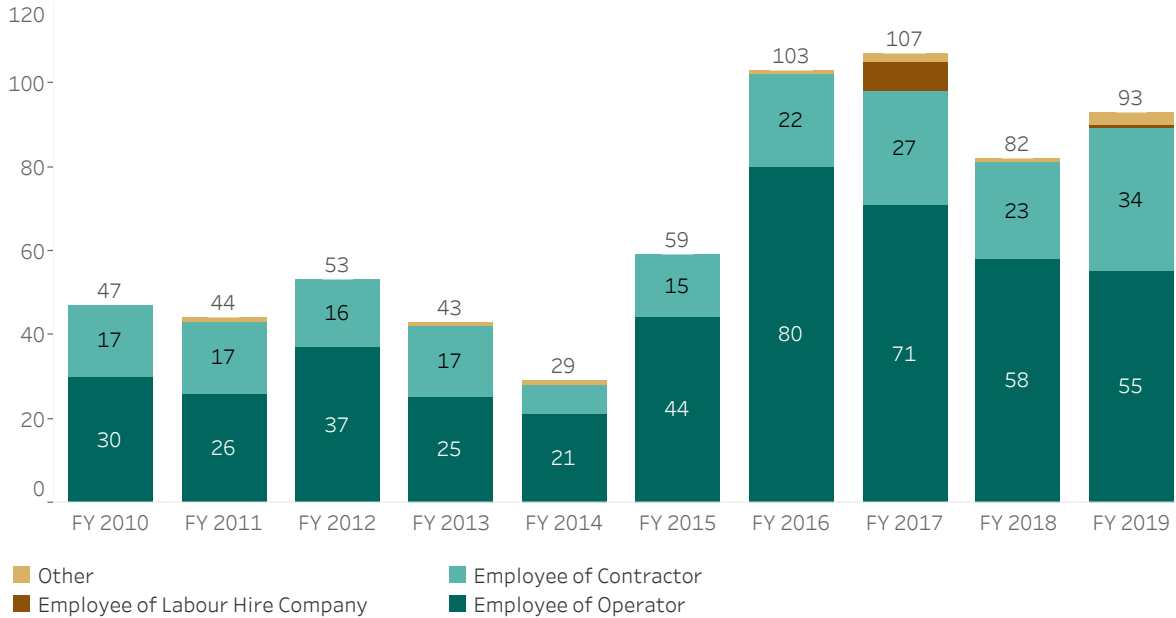


### Serious injury employment type

In 2018-19, 55 serious injuries (60%) were experienced by direct employees of mine operators.

Direct employees of mine operators accounted for 66% of serious injuries over the reporting decade.

FIGURE 14. SERIOUS INJURIES BY EMPLOYMENT TYPE 2009-10 TO 2018-19

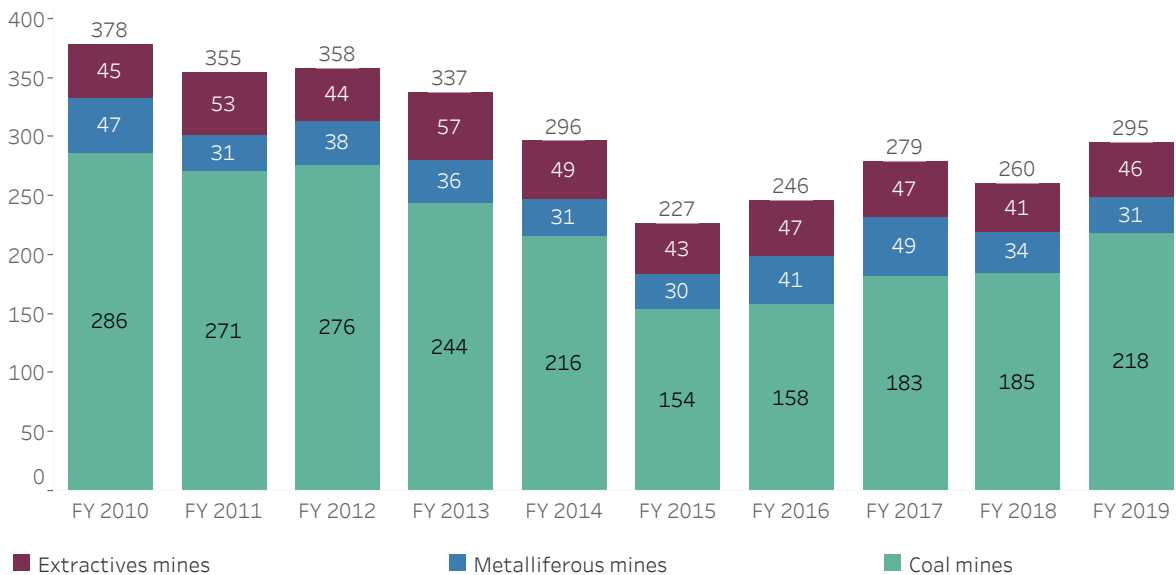


## Lost time injuries

### Lost time injuries by sector

In 2018-19, there were 295 lost time injuries reported in the combined coal, metalliferous and extractives sectors, up 13% compared to the previous year.

FIGURE 15. COAL, METALLIFEROUS AND EXTRACTIVES LOST TIME INJURIES BY SECTOR 2009-10 TO 2018-19



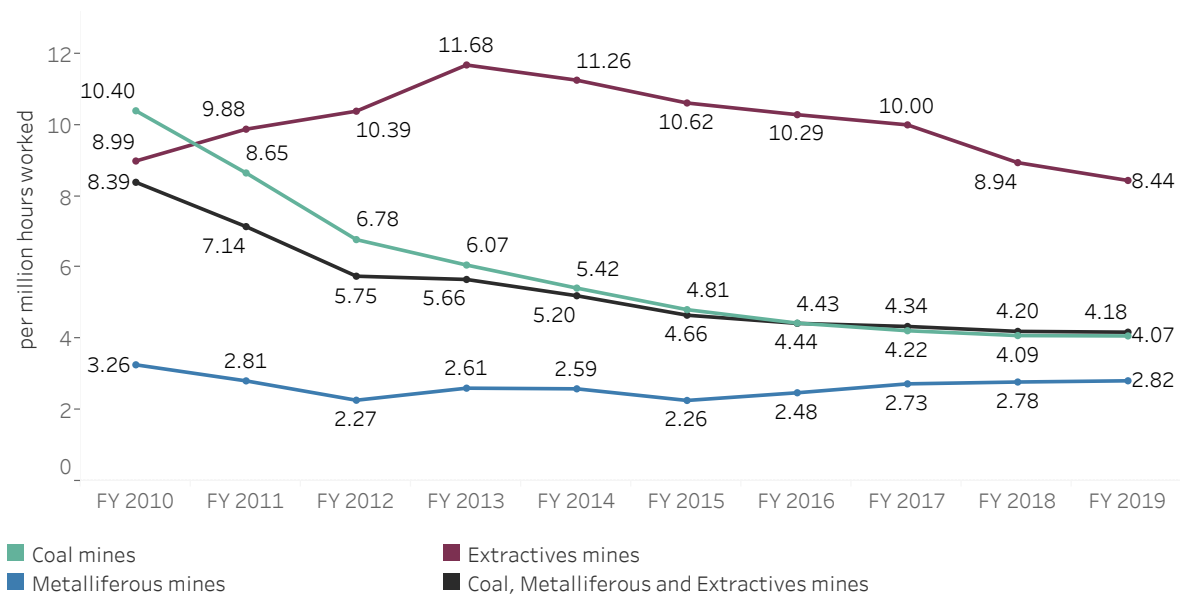
## Lost time injury frequency rates

For the combined coal, metalliferous and extractives sectors, the rolling five-year lost time injury frequency rate (LTIFR) in 2018-19 was virtually unchanged compared to the previous year (4.20 in 2017-18 and 4.18 in 2018-19).

Since 2009-10, a steady downward trend in LTIFR for the combined coal, metalliferous and extractives sectors was observed where the LTIFR has more than halved, from 8.39 in 2009-10 to 4.18 in 2018-19.

While the LTIFR for the extractives sector was almost double the rate for the sectors combined in 2018-19, it is worth noting that over the ten-year reporting period, a steady downward trend was observed.

FIGURE 16. **COAL, METALLIFEROUS AND EXTRACTIVES ROLLING FIVE-YEAR LTIFR 2009-10 TO 2018-19**



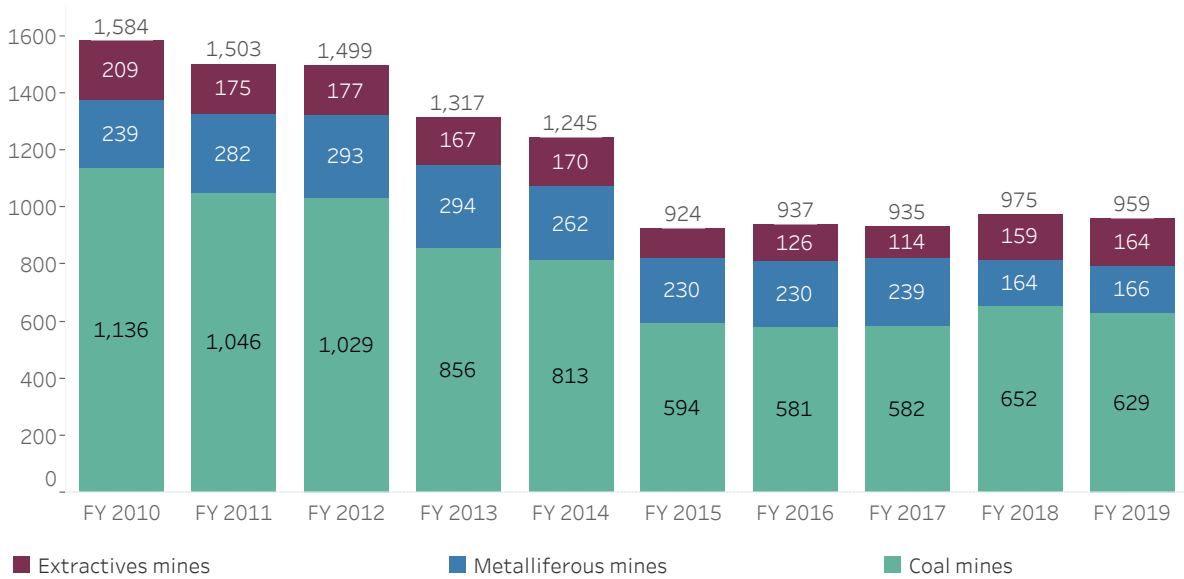
## Total recordable injuries

### Total recordable injuries by sector

In 2018-19 there were 959 total recordable injuries in the combined coal, metalliferous and extractives sector, a small decrease since the previous year (from 975).

In the ten-year period since 2009-10, total recordable injuries have decreased by nearly 40% with minimal change in reports being observed during the past five years.

FIGURE 17. **COAL, METALLIFEROUS AND EXTRACTIVES TOTAL RECORDABLE INJURIES 2009-10 TO 2018-19**



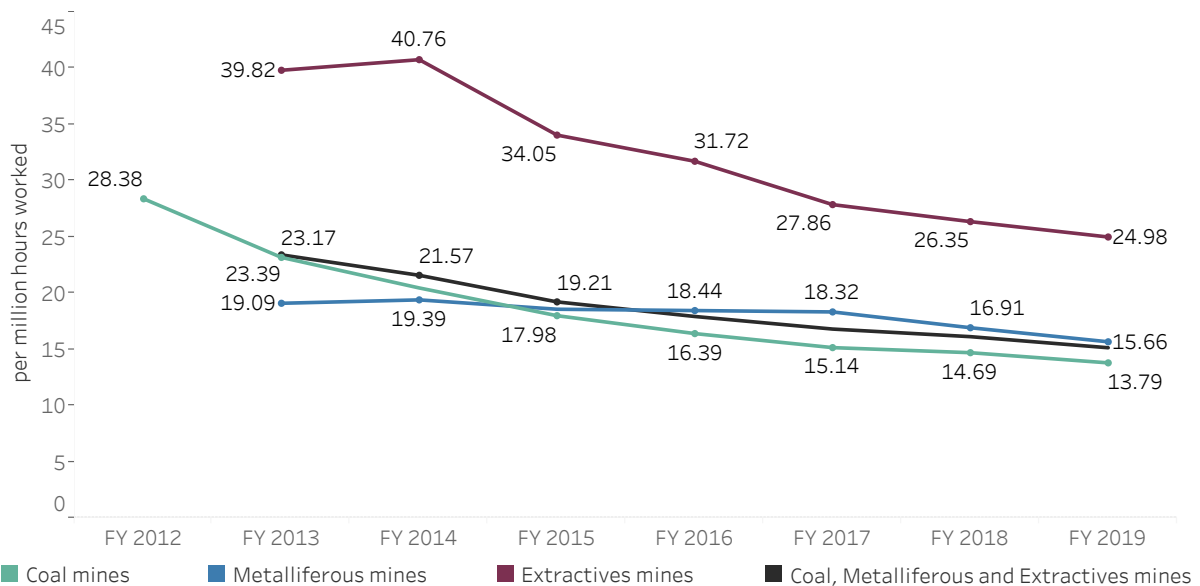
### Total recordable injury frequency rates

In 2018-19 the rolling five-year total recordable injury frequency rate (TRIFR) for the combined coal, metalliferous and extractives sector decreased slightly by 6% from the previous year to 15.13.

Since 2012-13, the combined coal, metalliferous and extractives sector experienced a reduction in the TRIFR, resulting in a steady downward trend. Each of the individual sectors also experienced downward trends during the reporting period.

Note, a rolling five-year TRIFR frequency rate was unable to be calculated for the whole ten-year period as this information was only included in coal work health and safety reporting requirements from the beginning of 2007-08 and metalliferous and extractives work health and safety reporting requirements from the second quarter of 2008-09.

FIGURE 18. **COAL, METALLIFEROUS AND EXTRACTIVES ROLLING FIVE-YEAR TRIFR 2011-12 TO 2018-19**





# Notified incidents

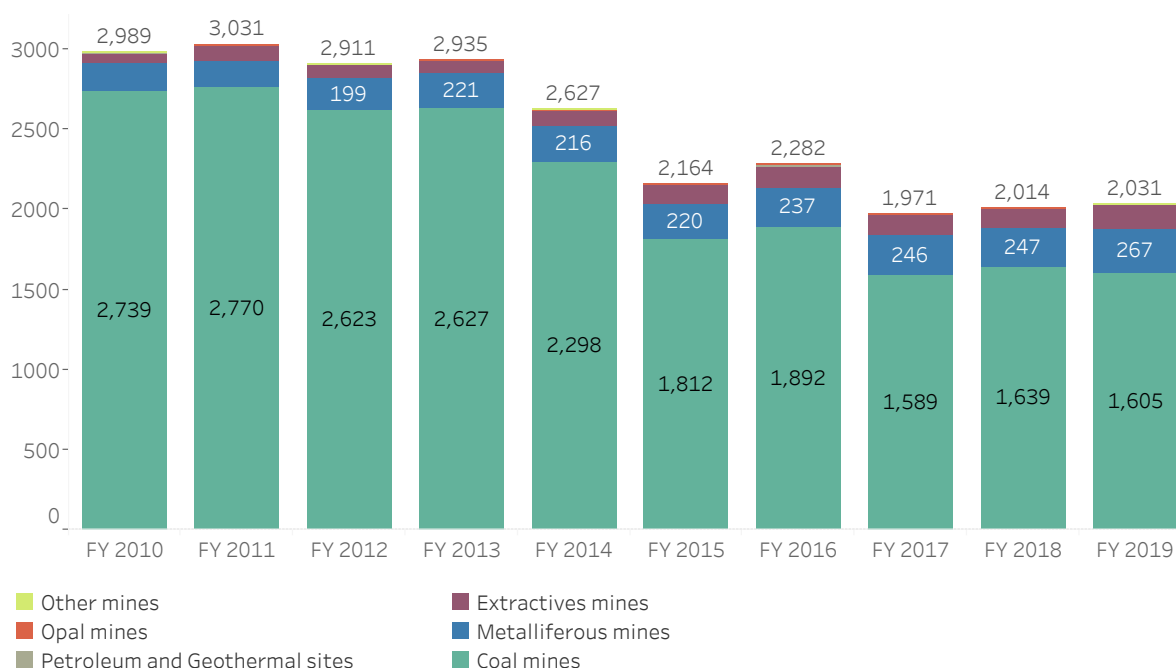
## Notified incidents by sector

Under work health and safety legislation, mine operators must notify the Regulator about the occurrence of certain types of incidents. In 2018-19 the number of notified incidents increased by a small amount compared to the previous year, from 2,014 to 2,031. The coal sector accounted for 79% of these notified incidents.

During the ten-year reporting period, the total number of notified incidents has declined by almost one-third.

Note that any multiple gas exceedances that were notified to the Regulator in a single incident notification have been included as individual incident notifications in this report.

FIGURE 19. NOTIFIED INCIDENTS BY SECTOR 2009-10 TO 2018-19

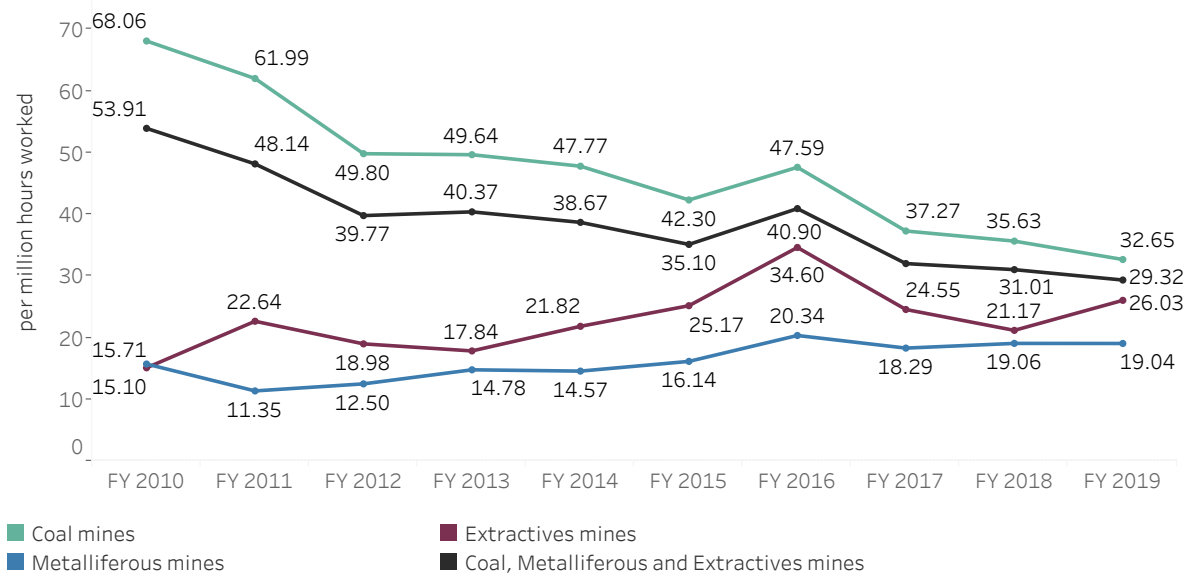


## Incident notification rates

In 2018-19, the annual incident notification frequency rate (INFR) for the combined coal, metalliferous and extractives sectors was down approximately 5% compared to the previous year, from 31.01 to 29.32.

During the ten-year reporting period a steady downward trend in INFR was observed for the combined sectors. It is worthwhile noting that the spike in 2015-16 coincided with a substantial decrease in hours worked, down 10% compared to the previous year from 61.5 million in 2014-15 to 55.6 million in 2015-16. Heightened awareness about notification requirements in response to the commencement of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 in February 2015 might have also contributed to this increase. See [Appendix 3](#) for sector data.

FIGURE 20. **COAL, METALLIFEROUS AND EXTRACTIVES SECTOR INCIDENT NOTIFICATION RATE 2009-10 TO 2018-19**



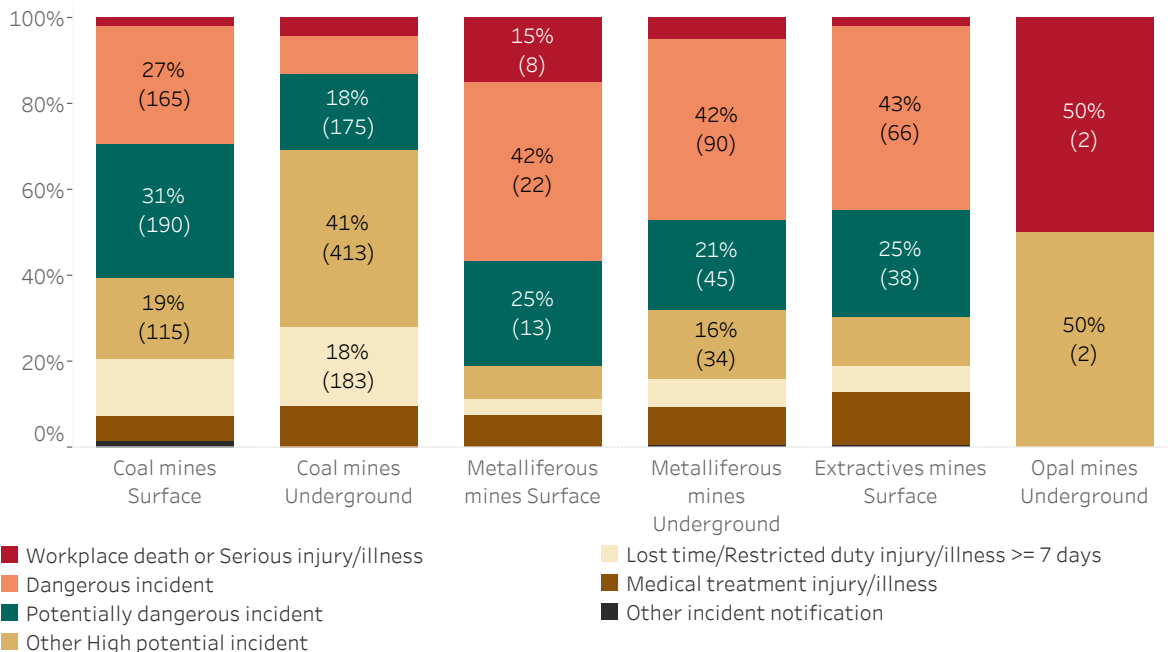
### Incident notification reporting trends

#### INCIDENT NOTIFICATION PROFILE

Incident notification data allows the Regulator to monitor compliance and respond to sector specific reporting trends. Multiple contributing factors influence the types of incidents notified by sectors and operation types. These include, but are not limited to, the legislative framework, inherent hazards and characteristics of each sector and operation type as well as the commodity produced.

A breakdown of the types of incidents notified by the underground and surface sectors for 2018-19 is shown below in Figure 21. While each sector and operation type presents a distinct notification profile, notifications for incidents unrelated to illness or injury were also notified.

FIGURE 21. **INCIDENT NOTIFICATION PROFILE BY SECTOR AND OPERATION TYPE 2018-19**



## PROPORTION OF MINES NOTIFYING INCIDENTS

Incident notification data allows the Regulator to monitor compliance and respond to sector specific reporting trends.

Since 2009-10 the proportion of mines notifying incidents has remained steady. On average, 5% of mines notified the Regulator of an incident every year during the ten-year reporting period.

TABLE 2. PROPORTION OF MINES THAT NOTIFIED AN INCIDENT 2009-10 TO 2018-19

MEASURE	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	AV.
Total notified incidents	2,989	3,031	2,911	2,935	2,627	2,164	2,282	1,971	2,014	2,031	2,496
Number of active mines	2,292	2,883	3,060	3,195	3,270	3,335	3,440	3,350	3,473	3,482	3,178
Number of mines that notified an incident	166	167	176	155	169	171	175	171	181	179	171
% of mines that notified an incident	7%	6%	6%	5%	5%	5%	5%	5%	5%	5%	5%

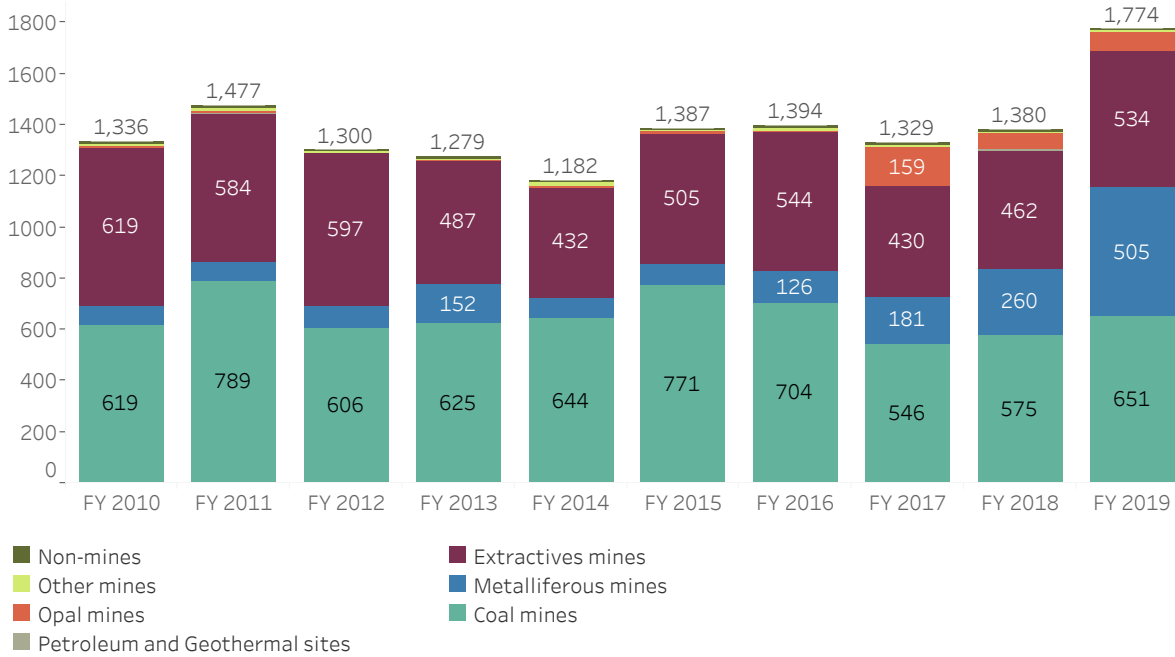
## Notices issued

### Notices issued by sector

In 2018-19, the Regulator issued 1,774 notices (notices of concern and improvement, prohibition and non-disturbance enforcement notices), a 28.5% increase from the previous year and the most notices issued in a year across the reporting decade.

The increase observed was largely driven by the increased number of programmed assessments conducted in 2018-19. See [Table 3](#).

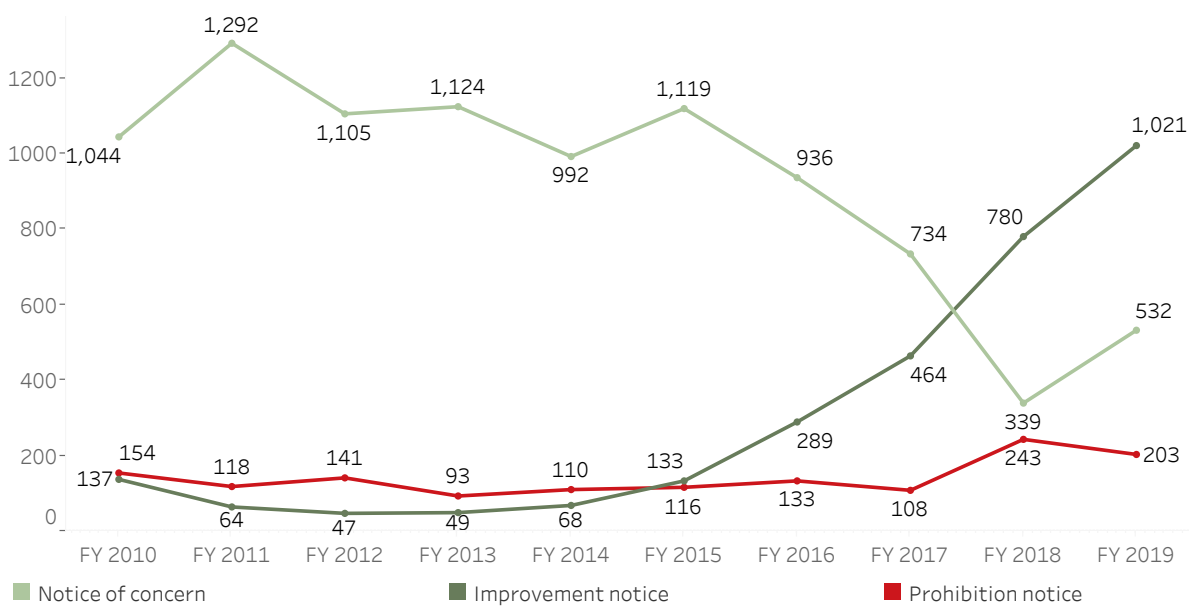
FIGURE 22. NOTICES ISSUED BY SECTOR 2009-10 TO 2018-19



### Notices issued by notice type

In 2018-19 improvement notices made up almost 60% of all notices issued by the Regulator. During the four years since 2015-16, the proportion of improvement notices increased relative to notices of concern. This reflected the Regulator’s renewed focus on incident prevention via the publication of its compliance and enforcement approach in July 2017, where it sought to clearly identify matters that necessitate the issue of an improvement notice rather than a written notice of concern.

FIGURE 23. NOTICES ISSUED BY NOTICE TYPE 2009-10 TO 2018-19



## Notices issued per programmed assessment

The Regulator conducts both proactive and reactive assessments which may result in notices being issued.

In 2018-19, across all sectors, the Regulator conducted 1,435 programmed assessments which resulted in 1,432 notices being issued. This represents a notice issue rate of 1.0 per programmed assessment. Compared to the previous year, this is an increase of about 28%.

While notices may be issued in relation to incident notifications and various tasks including high risk activities, only those that have been issued under a program plan have been reported here. In the current year approximately 81% of all notices issued related to programmed assessments.

Note that this rate has been calculated for the three years since the commencement of the Regulator's incident prevention strategy in July 2016.


TABLE 3. ALL SECTOR NOTICE ISSUE RATE PER PROGRAMMED ASSESSMENT 2016-17 TO 2018-19

MEASURE	FY 2017	FY 2018	FY 2019
Notices issued from programmed assessments	549	914	1,432
Programmed assessments conducted	846	1,178	1,435
Notice issue rate per programmed assessment	0.65	0.78	1.0

# Sector profiles





A close-up photograph of a person's hand holding several pieces of dark, lustrous coal. The coal pieces are irregular in shape and have a metallic sheen. The background is a solid blue color, and a button from a blue shirt is visible in the upper right. A dark blue rounded rectangle is overlaid on the left side of the image, containing white text.

Chapter 2.

# **Coal Sector**



# Coal sector

## Key performance measures 2018-19

**1**  
fatal injury

**66**  
serious injuries

**218**  
lost time injuries

**629**  
total recordable injuries

**1,605**  
notified incidents

**651**  
notices issued

In the coal sector in 2018-19:

- There was one work-related fatality.
- There were 66 serious injuries notified, an increase of nine (16%) from the previous year.
- The serious injury frequency rate (SIFR) increased by 18% compared to the previous year, from 1.14 to 1.34.
- There were 218 lost time injuries reported.
- The rolling five-year average lost time injury frequency rate (LTIFR) was 4.07 with no discernible difference observed compared to the previous year.
- Since 2009-10, the LTIFR has steadily declined resulting in a strong downward trend over the reporting decade and has decreased by more than 60% during this period.
- There were 629 total recordable injuries, marking a small decrease from the previous year.
- The rolling five-year total recordable injury frequency rate (TRIFR) also experienced a small decrease of 6% compared to the previous year to 13.79.
- A consistent decrease in the TRIFR since 2011-12 resulted in a steady downward trend over the reporting decade.
- There were 1,605 incidents notified to the Regulator. This number is consistent with the last two financial years.



- The incident notification annual frequency rate (INFR) was down 8% compared to the previous year, from 35.01 to 32.65.
- Underground operations accounted for almost two-thirds of incidents notified.
- There were 651 notices in the coal sector, an increase of 13% from the previous year, with improvement notices accounting for just over half.
- The Regulator conducted 595 programmed assessments which resulted in 504 notices being issued and a notice issue rate of 0.85 notice per programmed assessment.

## Fatal injuries

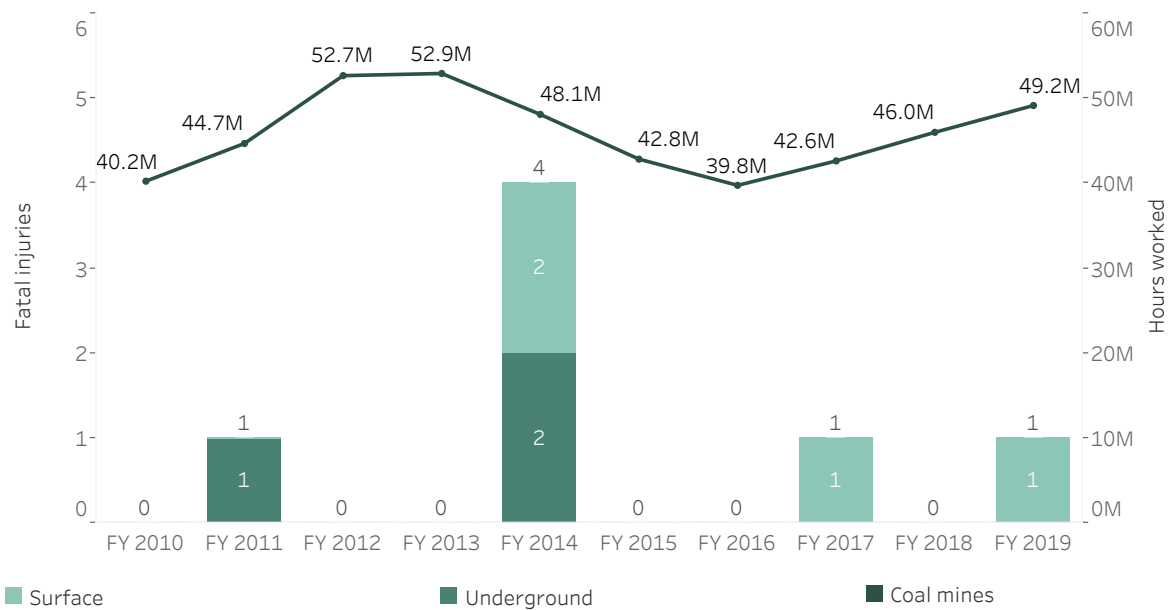
### Fatal injuries and hours worked

In 2018-19 one mining fatality occurred in the coal sector at an open cut coal mine in Muswellbrook. See the fatal injury spotlight section for further details.

During the past ten years, there have been seven work related mining fatalities in NSW.

[Figure 3](#) includes fatal injuries in NSW coal mines for the last 100 years and shows the sustained long-term decrease in coal mining fatal injuries in NSW.

FIGURE 24. COAL SECTOR FATAL INJURIES AND HOURS WORKED 2009-10 TO 2018-19



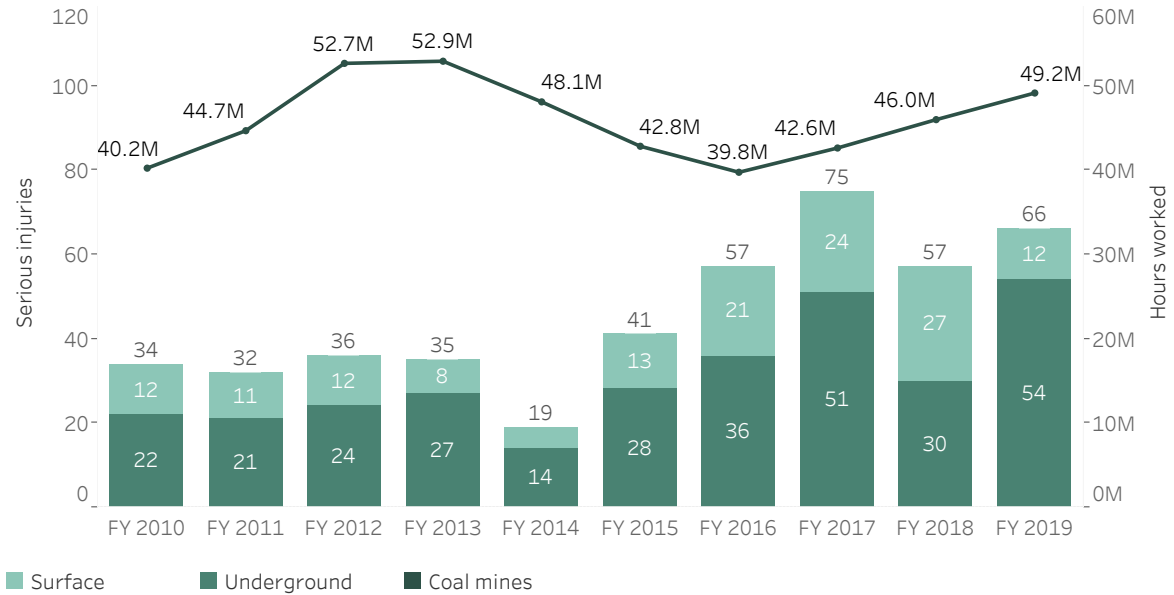
## Serious injuries

### Serious injuries and hours worked

There were 66 serious injuries notified in the coal sector during 2018-19, an increase of nine (16%) from the previous year. Underground mines continue to account for the majority (82% in 2018-19) of serious injuries in the coal sector.

The definition of a serious injury was broadened in February 2015 with the commencement of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 which has contributed to more serious injuries being notified since 2014-15. Since then, the number of serious injuries in the coal sector has shown an overall steadily increasing trend.

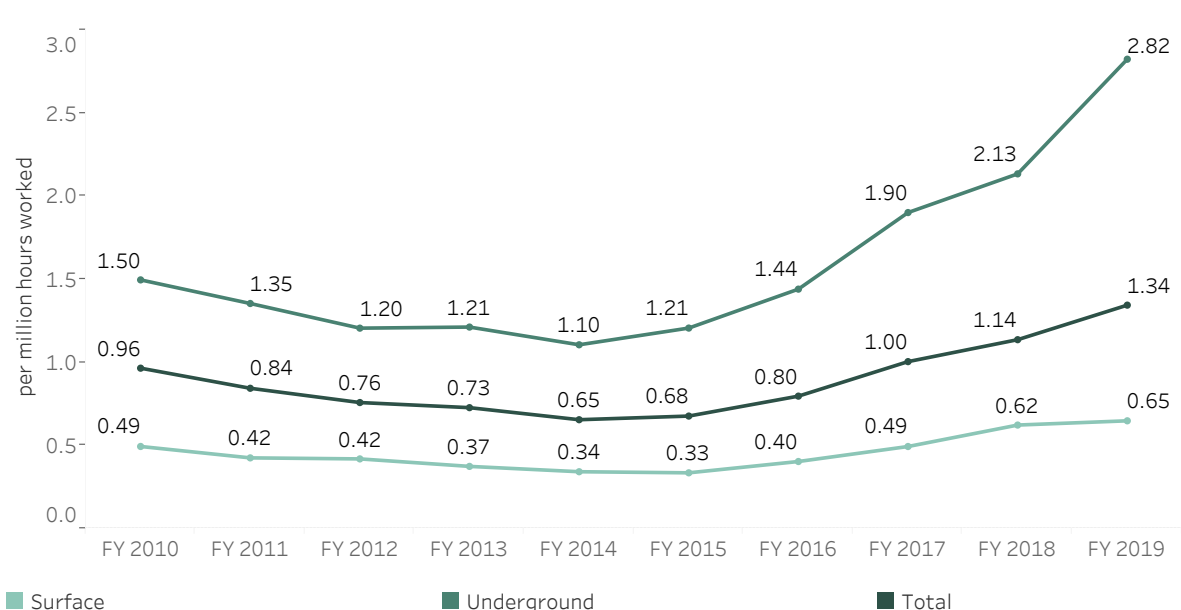
FIGURE 25. COAL SECTOR SERIOUS INJURIES AND HOURS WORKED 2009-10 TO 2018-19



### Serious injury frequency rates

In 2018-19, the rolling five-year average serious injury frequency rate (SIFR) for the coal sector increased by 18% from 1.14 in the previous year to 1.34, driven primarily by an increase at underground operations. However, the SIFR has remained relatively constant at surface operations during the past two years.

FIGURE 26. COAL SECTOR ROLLING FIVE-YEAR SERIOUS INJURY FREQUENCY RATE (SIFR) 2009-10 TO 2018-19

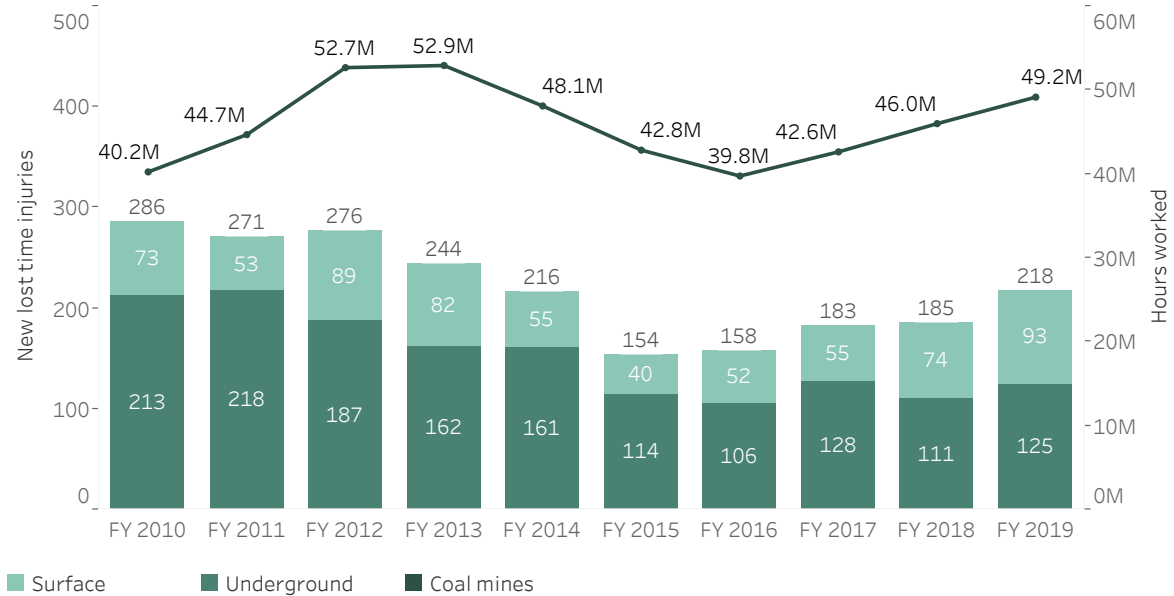


# Lost time injuries

## Lost time injuries and hours worked

In 2018-19, there were 218 lost time injuries reported in the coal sector, an increase of 33 (18%) from the previous year.

FIGURE 27. COAL SECTOR LOST TIME INJURIES AND HOURS WORKED 2009-10 TO 2018-19

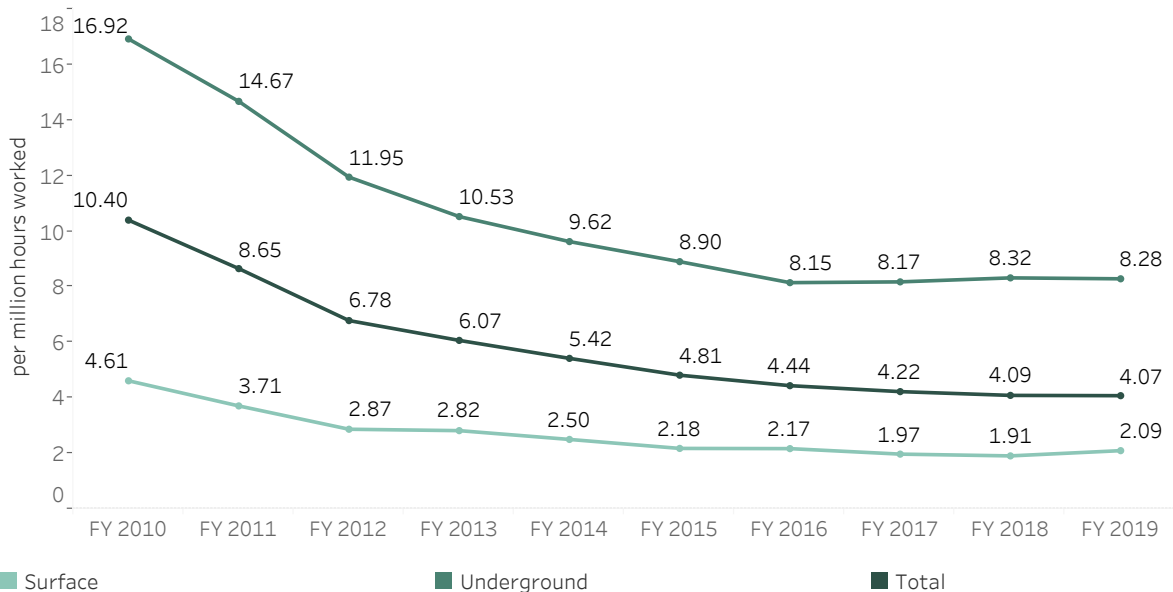


## Lost time injury frequency rates

In 2018-19 the rolling five-year average lost time injury frequency rate (LTIFR) was virtually unchanged compared to the previous year (4.09 in 2017-18 to 4.07 in 2018-19).

Since 2009-10, a steady downward trend in lost time injury frequency rates (LTIFR) was observed in coal surface and underground operations. This translates to a decrease in the rolling five-year LTIFR by approximately 60%.

FIGURE 28. COAL SECTOR ROLLING FIVE-YEAR LTIFR 2009-10 TO 2018-19



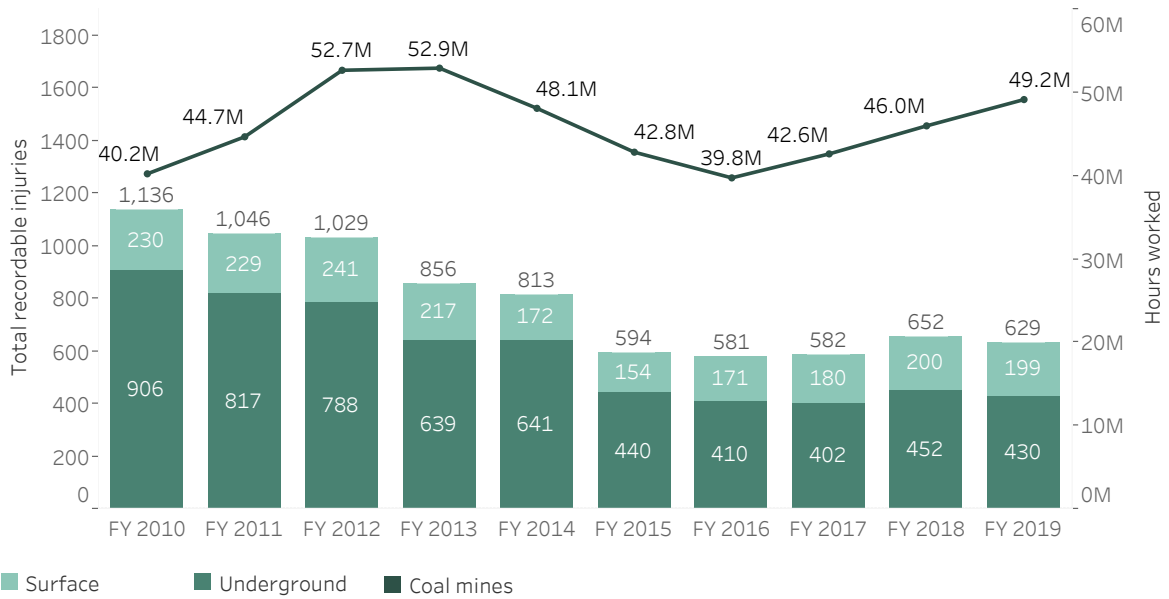
# Total recordable injuries

## Total recordable injuries and hours worked

In 2018-19 there were 629 total recordable injuries in the coal sector, a decrease of 23 compared to the previous year.

In the ten-year period since 2009-10, total recordable injuries have decreased by almost 45%.

FIGURE 29. COAL SECTOR TOTAL RECORDABLE INJURIES AND HOURS WORKED 2009-10 TO 2018-19



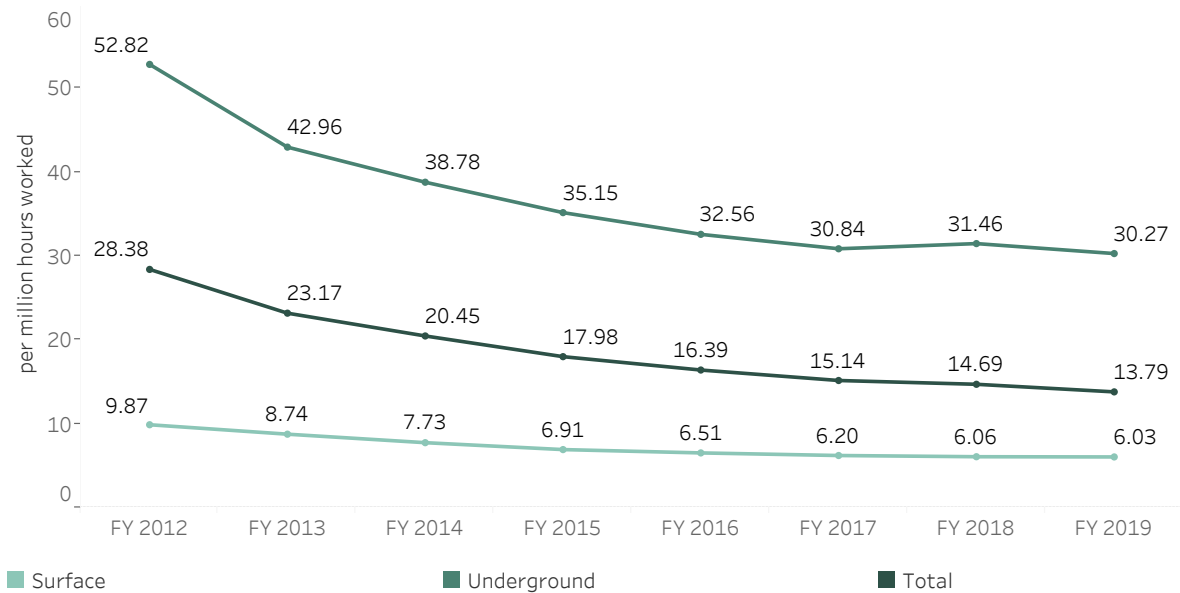
## Total recordable injuries frequency rates

In 2018-19 the rolling five-year average total recordable injury frequency rate (TRIFR) for the coal sector decreased by 6% from the previous year to 13.79.

Since 2011-12, downward trends in TRIFR were observed across the coal sector.

Note, a rolling five-year TRIFR frequency rate was unable to be calculated for the whole ten-year period as this information was only included in coal work health and safety reporting requirements from the beginning of 2007-08.

FIGURE 30. COAL SECTOR ROLLING FIVE-YEAR TRIFR 2011-12 TO 2018-19



## Notified incidents

### Notified incidents by operation type

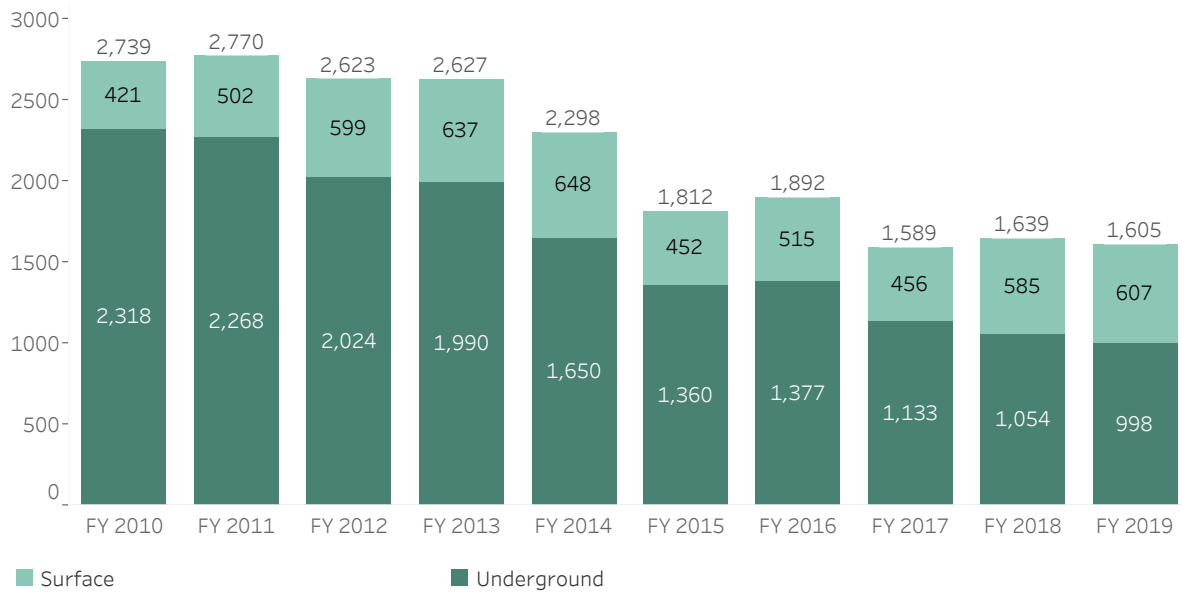
Under work health and safety legislation, mine operators must notify the Regulator about the occurrence of certain types of incidents.

In the ten years since 2009-10, incidents notified by the coal sector decreased by 34 (41%) from 1,639 to 1,605. Since 2016-17, incidents notified by the coal sector has remained relatively stable. Year on year the greatest proportion of incidents notified by the coal sector were in underground operations.

Note that any multiple gas exceedances that were notified to the Regulator in a single incident notification have been included as individual incident notifications in this report.



FIGURE 31. COAL SECTOR NOTIFIED INCIDENTS BY OPERATION TYPE 2009-10 TO 2018-19

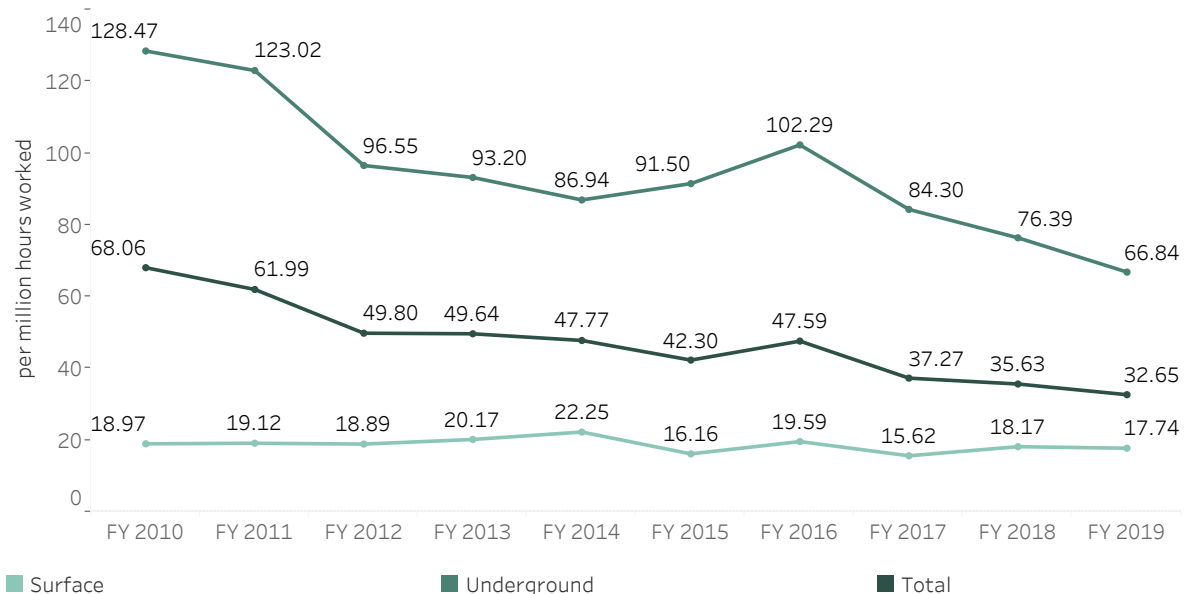


### Incident notification rates

In 2018-19, the annual incident notification frequency rate (INFR) for the coal sector was down approximately 8% compared to the previous year, from 35.63 to 32.65.

A strong downward trend in INFR was observed in the underground coal sector during the ten-year reporting period. It is worth noting that since 2014-15, the underground coal sector reported a substantial drop in hours worked, contributing to the changes observed in the INFR from that time. Heightened awareness about notification requirements in response to the commencement of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 in February 2015 might have also contributed to the spike observed in the underground coal sector in 2015-16. See [Appendix 3](#) for sector data.

FIGURE 32. COAL SECTOR INCIDENT NOTIFICATION RATE 2009-10 TO 2018-19



## Incident notification reporting trends

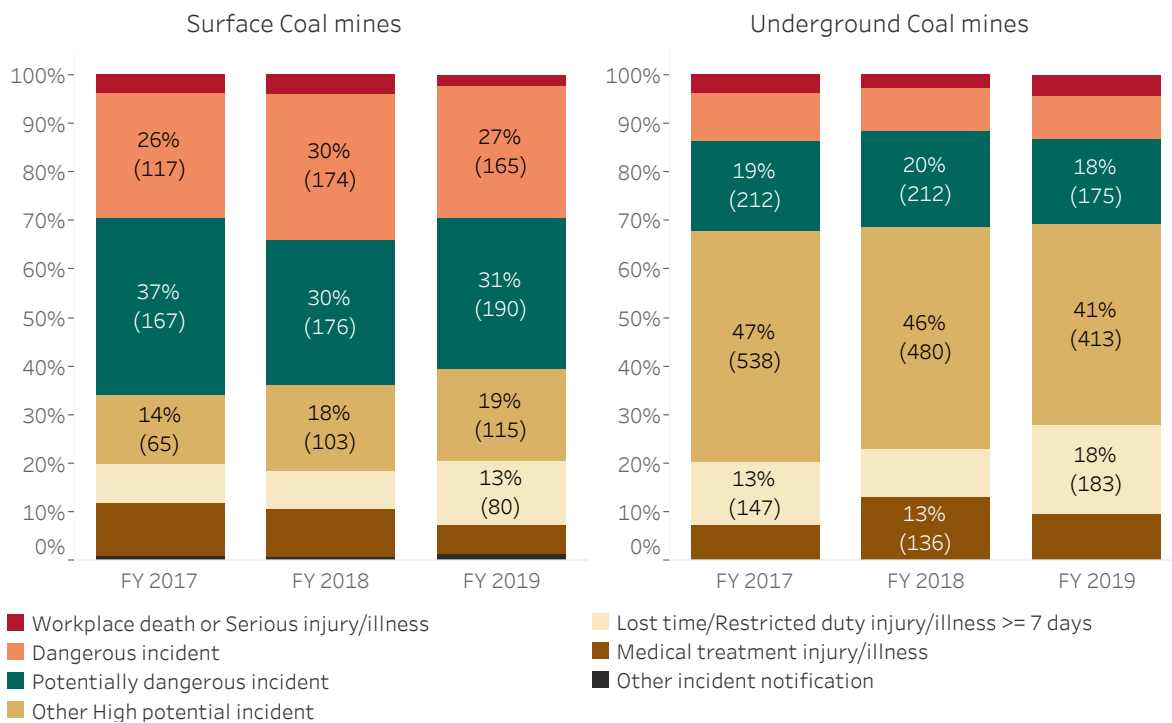
### INCIDENT NOTIFICATION PROFILE

Incident notification data allows the Regulator to monitor compliance and respond to sector specific reporting trends.

Multiple contributing factors influence the types of incidents notified by sectors and operation types. These include, but are not limited to, the legislative framework, inherent hazards and characteristics of each sector and operation type as well as the commodity produced.

A breakdown of the types of incidents notified by the coal sector underground and surface operation types since 2016-17 is shown in Figure 33, including notifications for incidents unrelated to illness or injury. While each operation type presents a distinct notification profile, comparable results were observed across the three-year period.

FIGURE 33. **COAL SECTOR INCIDENT NOTIFICATION PROFILE BY OPERATION TYPE 2016-17 TO 2018-19**



### PROPORTION OF COAL MINES NOTIFYING INCIDENTS

Incident notification data allows the Regulator to monitor compliance and respond to sector specific reporting trends.

The proportion of coal mines notifying incidents has remained relatively stable during the past seven years. Over the ten-year reporting period, on average 44% of coal mines notified incidents.

TABLE 4. COAL SECTOR PROPORTION OF MINES THAT NOTIFIED AN INCIDENT 2009-10 TO 2018-19

MEASURE	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	AV.
Total notified incidents	2,739	2,770	2,623	2,627	2,298	1,812	1,892	1,589	1,639	1,605	2,159
Number of active mines	98	98	166	201	200	201	214	195	195	207	178
Number of mines that notified an incident	91	81	84	79	77	73	70	71	77	71	77.4
% of mines that notified an incident	93%	83%	51%	39%	39%	36%	33%	36%	39%	34%	44%

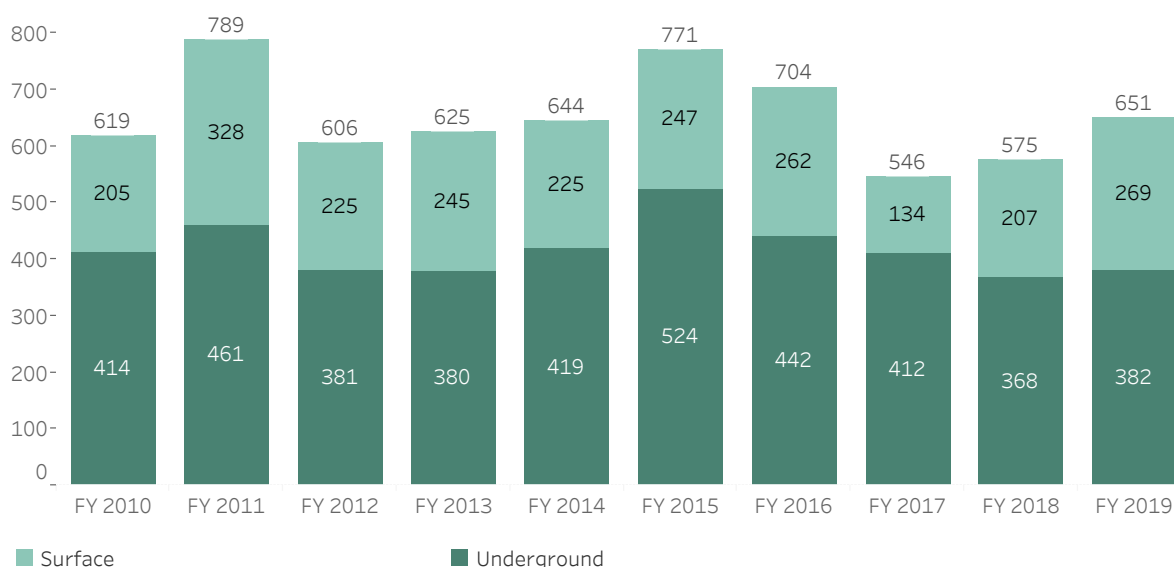
## Notices issued

### Notices issued by operation type

In 2018-19, the Regulator issued 651 notices (notices of concern and improvement, prohibition and non-disturbance enforcement notices) in the coal sector, an increase of 76 (13%) compared to the previous year.

The number of notices issued in the coal sector has remained relatively stable over the reporting decade.

FIGURE 34. COAL SECTOR NOTICES ISSUED BY OPERATION TYPE 2009-10 TO 2018-19

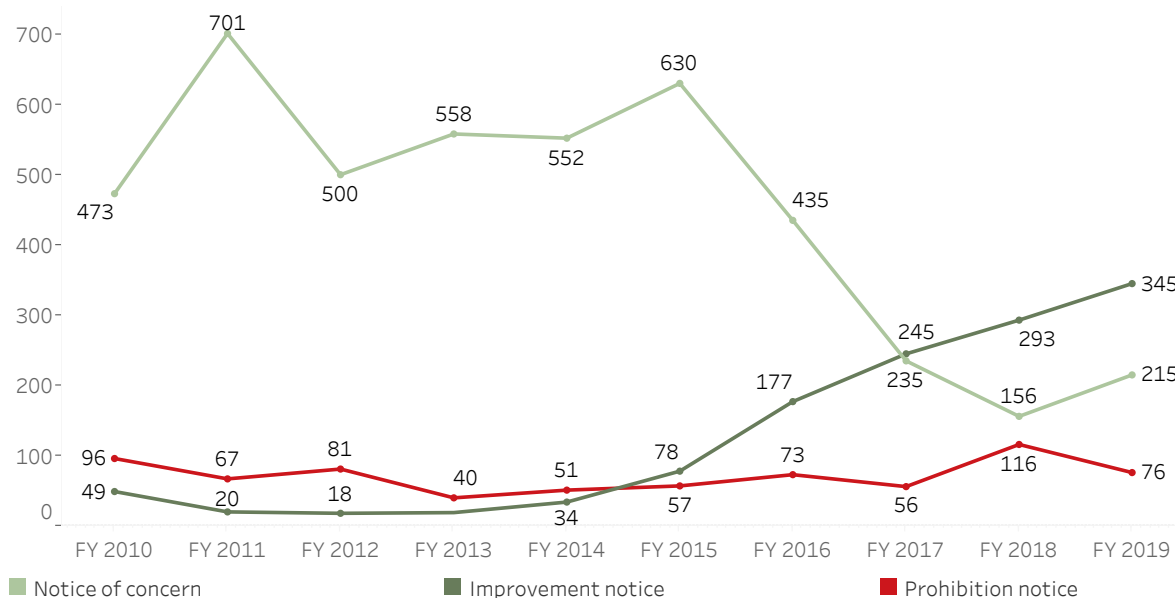


### Notices issued by notice type

In 2018-19, improvement notices made up just over half of all notices issued in the coal sector. During the four years since 2015-16, the proportion of improvement notices

has increased relative to notices of concern. This reflected the Regulator’s renewed focus on incident prevention, via the publication of our compliance and enforcement approach in July 2017, where we sought to clearly identify matters that necessitate the issue of an improvement notice rather than a written notice of concern.

FIGURE 35. COAL SECTOR NOTICES ISSUED BY NOTICE TYPE 2009-10 TO 2018-19



### Notices issued per programmed assessment

The Regulator conducts both proactive and reactive assessments which may result in notices being issued.

In 2018-19, across all operations types in the coal sector, the Regulator conducted 595 programmed assessments which resulted in 504 notices being issued. This represents a notice issue rate of 0.85 per programmed assessment which, compared to the previous year, is an increase of about 27%.

While notices may be issued in relation to incident notifications and various tasks including high risk activities, only those that have been issued under a program plan have been reported here. In the current year approximately 77% of notices issued related to programmed assessments.

Note that this rate has been calculated for the three years since the commencement of the Regulator’s incident prevention strategy in July 2016.

TABLE 5. COAL SECTOR NOTICE ISSUE RATE PER PROGRAMMED ASSESSMENT 2009-10 TO 2018-19

MEASURE	FY 2017	FY 2018	FY 2019
Notices issued from programmed assessments	265	374	504
Programmed assessments conducted	429	562	595
Notice issue rate per programmed assessment	0.62	0.67	0.85



Chapter 3.

# Metalliferous Sector





# Metalliferous sector

## Key performance measures 2018-19

**1**  
fatal injury

**21**  
serious injuries

**31**  
lost time injuries

**166**  
total recordable injuries

**267**  
notified incidents

**505**  
notices issued

In the metalliferous sector in 2018-19:

- There was one work-related fatality.
- There were 21 serious injuries notified, an increase of nine (75%) from the previous year.
- The serious injury frequency rate (SIFR) increased by 23% from the previous year, from 1.11 to 1.37.
- There were 31 lost time injuries reported.
- The rolling five-year average lost time injury frequency rate (LTIFR) was 2.77 with no discernible difference observed compared to the previous year.
- Since 2009-10, an increase in the LTIFR for surface operations has resulted in an upward trend over the reporting decade.
- There were 166 total recordable injuries.
- The total recordable injury frequency rate (TRIFR) decreased slightly (down 7%) from the previous year to 15.66.
- A steady decrease in the TRIFR since 2009-10 resulted in a consistent downward trend over the eight-year reporting period.
- There were 267 incidents notified to the Regulator, up 8% compared to the previous year. Underground operations accounted for 80% of all incidents notified.
- The Regulator issued 505 notices. This was almost double the number issued the previous year with improvement notices accounting for more than half of all the

notices issued in the year.

- The Regulator conducted 238 programmed assessments which resulted in 403 notices issued and a notice issue rate of 1.69 notices per programmed assessment.

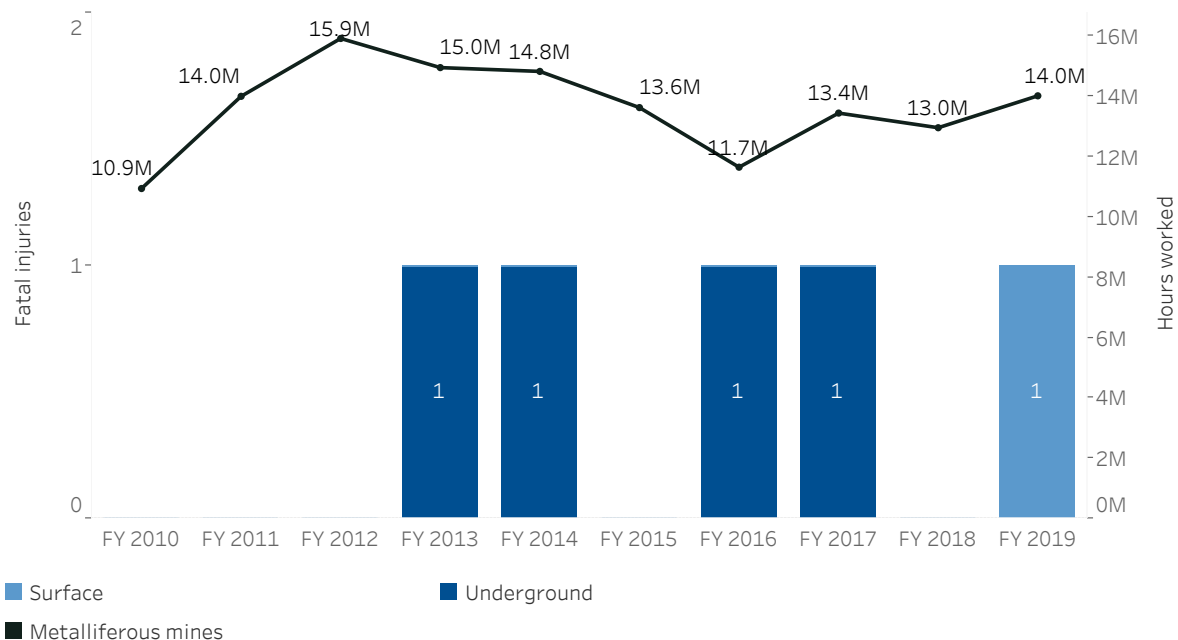
## Fatal injuries

### Fatal injuries and hours worked

In 2018-19 one mining fatality occurred in the metalliferous sector at a gold mine in West Wyalong. See the fatal injury spotlight section for further details.

During the past ten years, there have been five work-related mining fatalities in the metalliferous sector, four of which have occurred in underground operations. [Figure 3](#) presents fatal injuries in NSW metalliferous and extractives mines since 1989.

FIGURE 36. METALLIFEROUS SECTOR FATAL INJURIES AND HOURS WORKED 2009-10 TO 2018-19



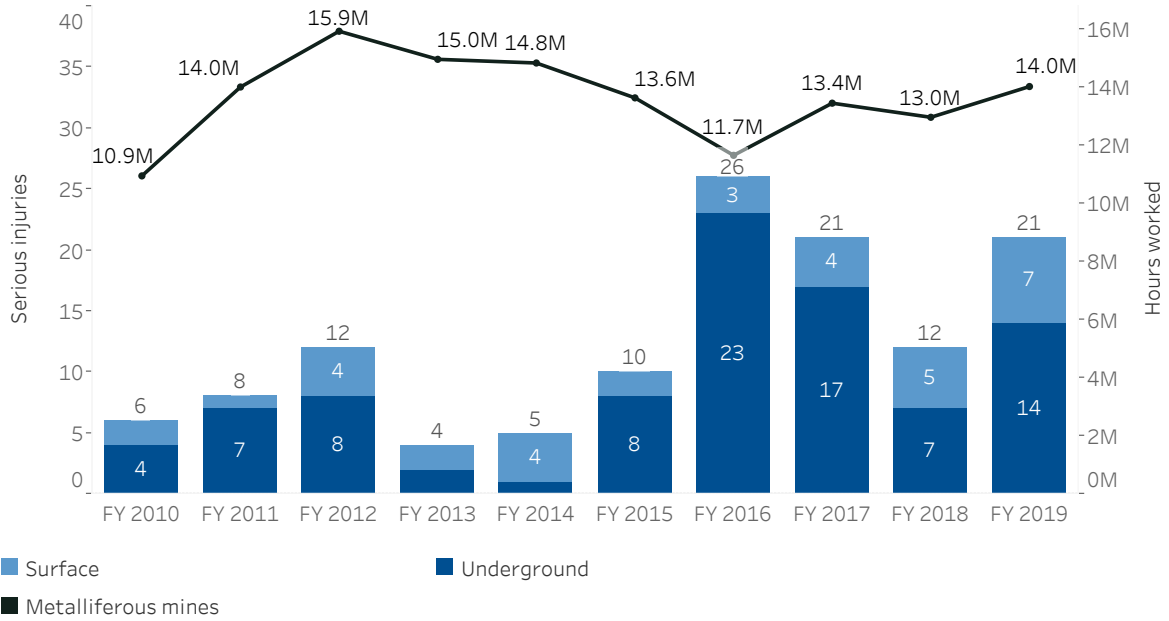
## Serious injuries

### Serious injuries and hours worked

There were 21 serious injuries notified in the metalliferous sector during 2018-19, an increase of 9 (up 75%) from the previous year. Underground mines continue to account for the majority (67% in 2018-19) of serious injuries in the metalliferous sector.

The definition of a serious injury was broadened in February 2015 with the commencement of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014. This broadened definition has contributed to the increased number of serious injuries being notified for the metalliferous sector since that time.

FIGURE 37. METALLIFEROUS SECTOR SERIOUS INJURIES AND HOURS WORKED 2009-10 TO 2018-19

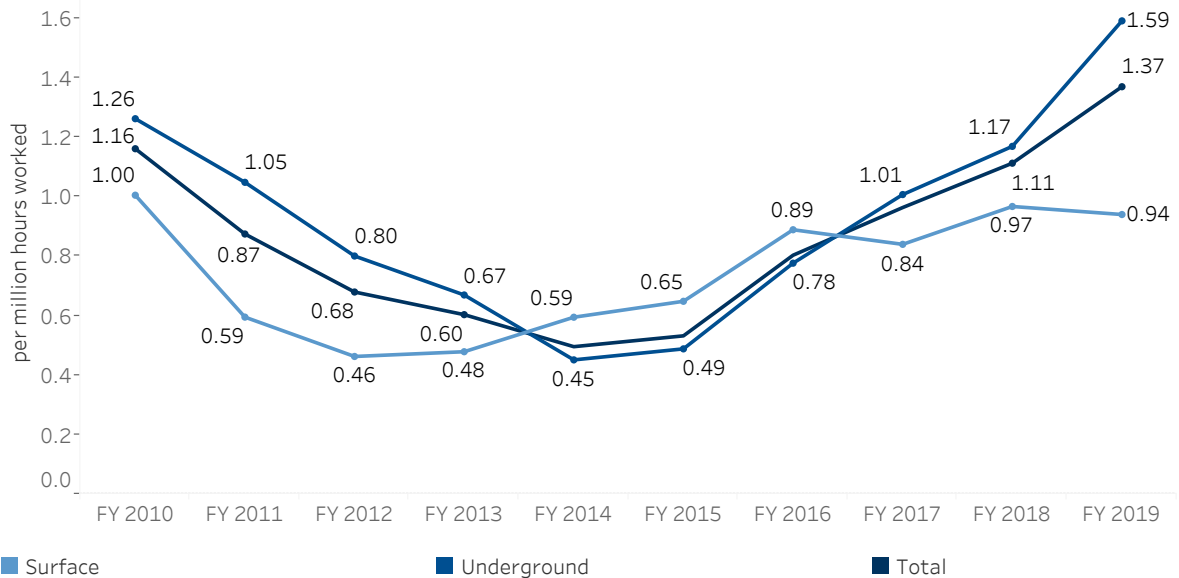


### Serious injury frequency rates

In 2018-19, the rolling five-year average SIFR for the metalliferous sector increased by 23% from 1.11 the previous year to 1.37, driven primarily by an increase at underground operations.

Since 2015-16 the SIFR has remained relatively constant at surface metalliferous operations despite the amendment to the definition of serious injury in 2015.

FIGURE 38. METALLIFEROUS SECTOR ROLLING FIVE-YEAR SIFR 2009-10 TO 2018-19

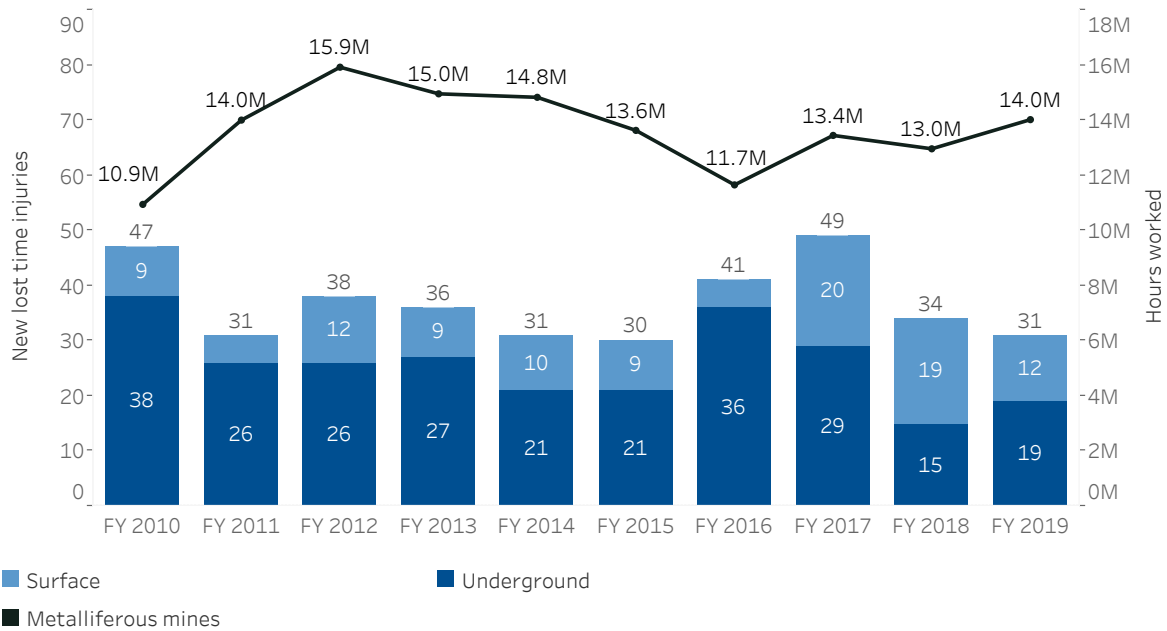


# Lost time injuries

## Lost time injuries and hours worked

In 2018-19, there were 31 lost time injuries reported in the metalliferous sector. This was down three from the previous year.

FIGURE 39. METALLIFEROUS SECTOR LOST TIME INJURIES AND HOURS WORKED 2009-10 TO 2018-19

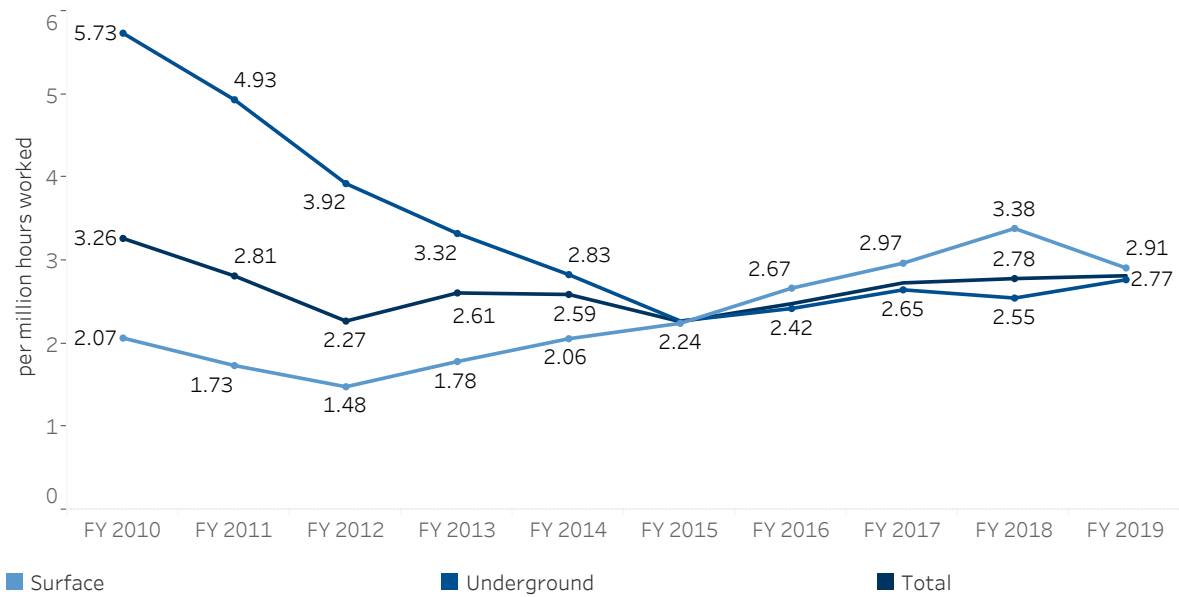


## Lost time injury frequency rates

In 2018-19 there was no discernible difference in the rolling five-year average lost time injury frequency rate (LTIFR) compared to the previous year, from 2.78 in 2017-18 to 2.77 in 2018-19.

Since 2009-10, the overall LTIFR trend for metalliferous mines has remained relatively steady while an upward trend was observed for surface operations and a downward trend for underground operations.

FIGURE 40. METALLIFEROUS SECTOR ROLLING FIVE-YEAR LTIFR 2009-10 TO 2018-19



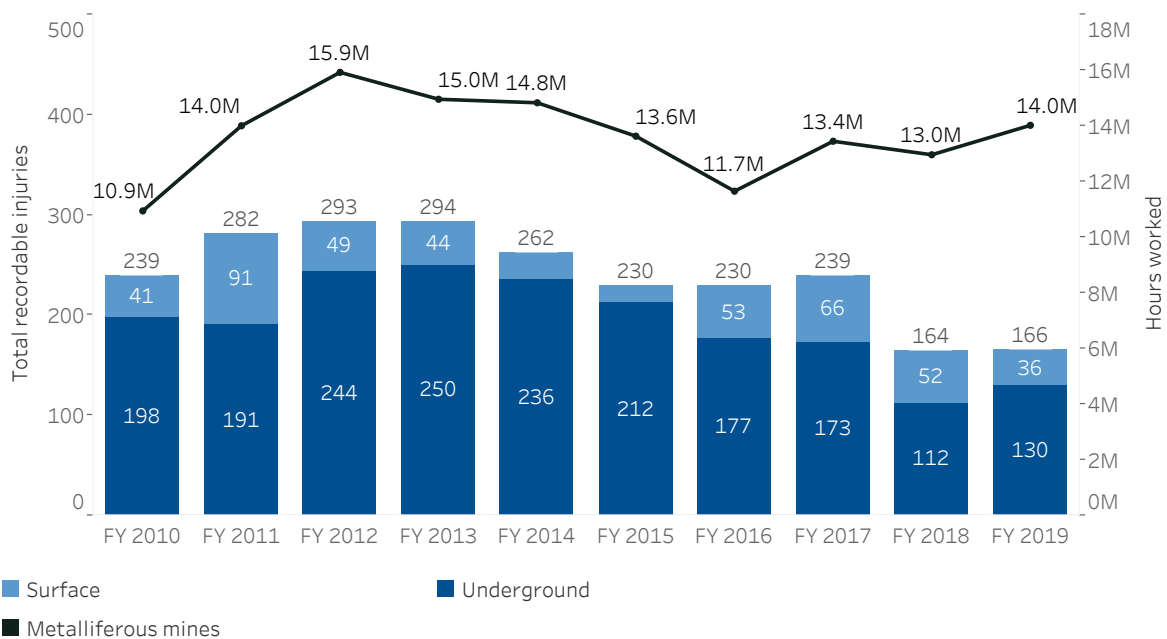
## Total recordable injuries

### Total recordable injuries and hours worked

In 2018-19 there were 166 total recordable injuries in the metalliferous sector, up two compared to the previous year.

Since 2009-10, total recordable injuries in the metalliferous sector has decreased by almost one third.

FIGURE 41. METALLIFEROUS SECTOR TOTAL RECORDABLE INJURIES AND HOURS WORKED 2009-10 TO 2018-19





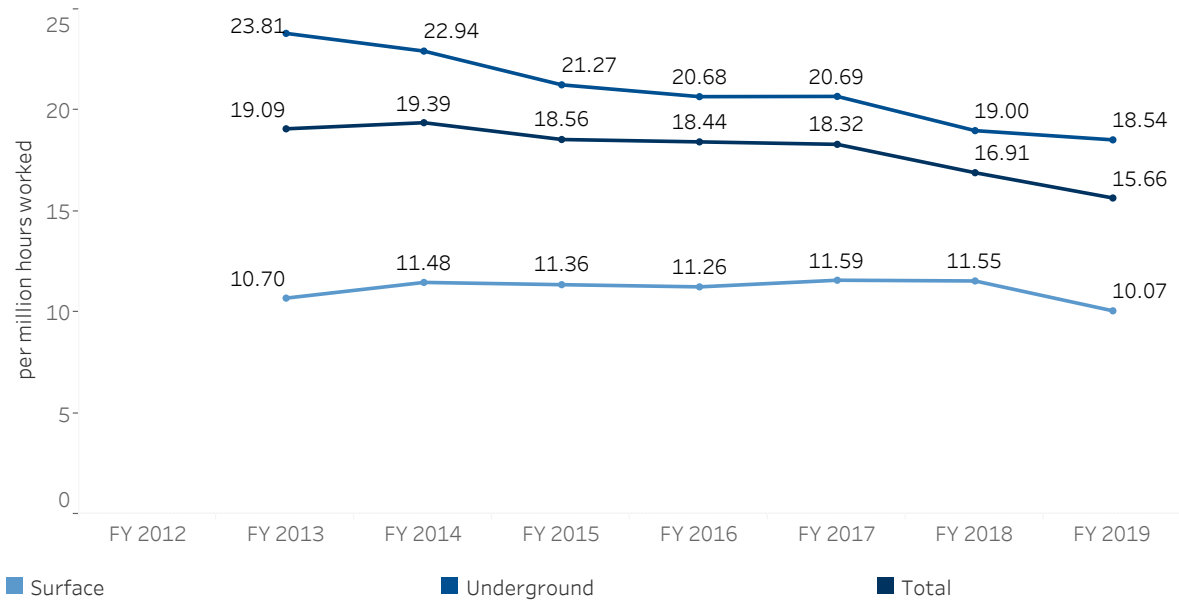
### Total recordable injuries frequency rates

In 2018-19 the rolling five-year average total recordable injury frequency rate (TRIFR) for the metalliferous sector decreased slightly (7%) from the previous year to 15.66.

Since 2012-13, a steady reduction in the TRIFR occurred in the metalliferous sector. This resulted in observed downward trends for underground operations and the total metalliferous sector over the past eight years.

Note, a rolling five-year TRIFR frequency rate was unable to be calculated for the whole ten-year period as this information was only included in metalliferous and extractives work health and safety reporting requirements from the second quarter of 2008-09.

FIGURE 42. METALLIFEROUS SECTOR FIVE-YEAR AVERAGE TRIFR FY 2012 TO 2018-19



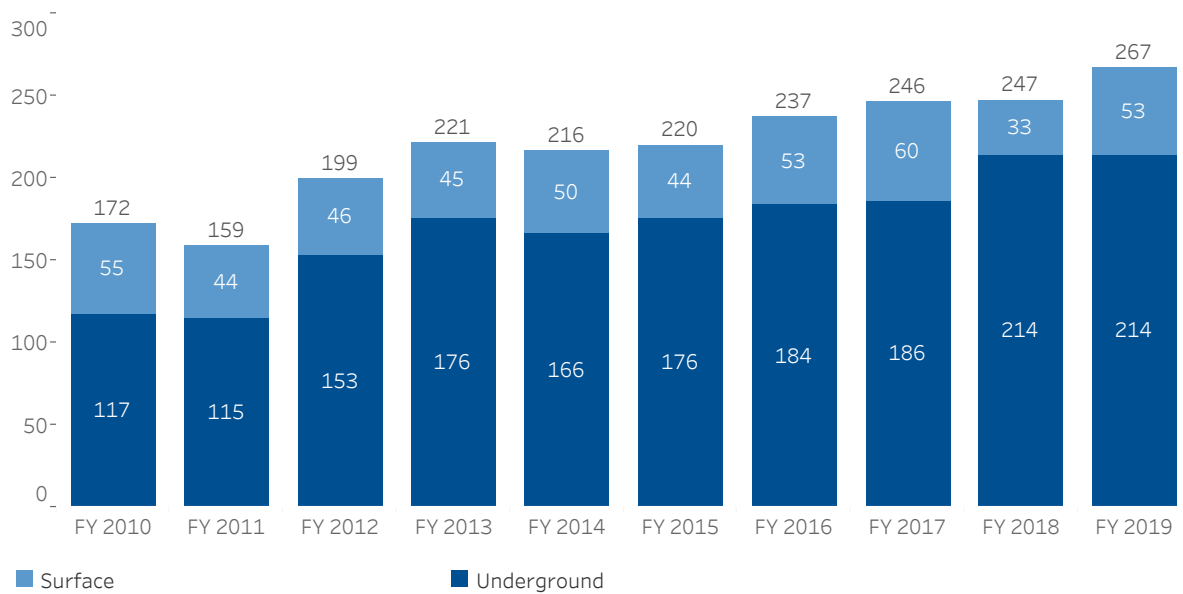
## Notified incidents

### Notified incidents by operation type

Under work health and safety legislation, mine operators must notify the Regulator about the occurrence of certain types of incidents.

In the ten years since 2009-10, a steady overall increase in the number of notified incidents was observed. In 2018-19, notified incidents in the metalliferous sector were up 20 (8%) from the previous year, from 247 to 267.

FIGURE 43. METALLIFEROUS SECTOR NOTIFIED INCIDENTS BY OPERATION TYPE 2009-10 TO 2018-19

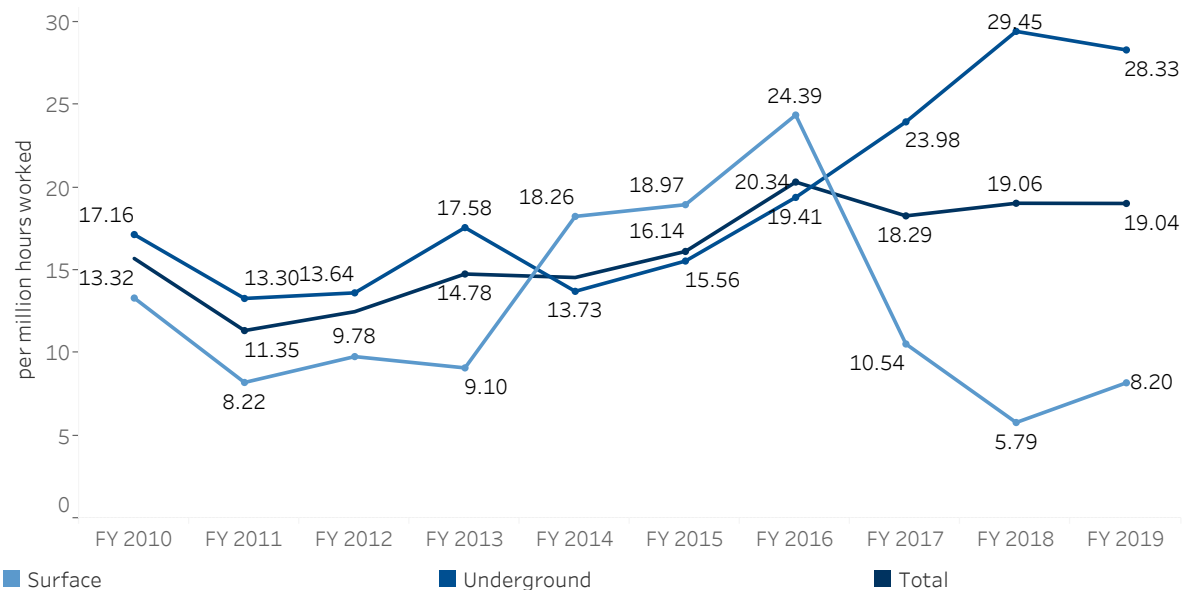


### Incident notification rates

In 2018-19 the annual incident notification frequency rate (INFR) of 19.04 for the metalliferous sector was virtually unchanged compared to the previous year.

Since 2009-10 a steady trend was observed in the metalliferous sector. It is worth noting that in 2016-17 the surface metalliferous sector reported substantially more hours worked compared to the previous year while the reverse was reported in the underground sector. This coincided with the substantial change observed in INFR patterns in both the surface and underground metalliferous sectors. Heightened awareness about notification requirements in response to the commencement of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 in February 2015 might have also contributed to the changes observed in both metalliferous operation types. See [Appendix 3](#) for sector data.

FIGURE 44. METALLIFEROUS SECTOR INCIDENT NOTIFICATION RATE 2009-10 TO 2018-19



## Incident notification reporting trends

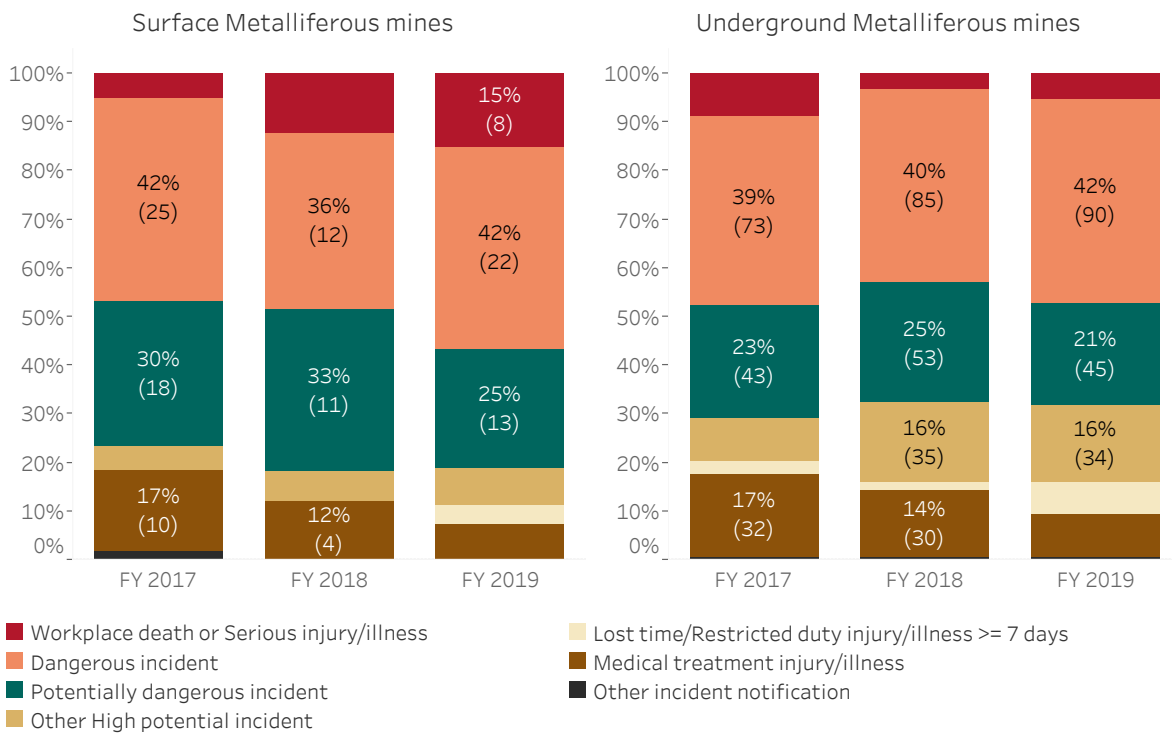
### INCIDENT NOTIFICATION PROFILE

Incident notification data allows the Regulator to monitor compliance and respond to sector specific reporting trends.

Multiple contributing factors influence the types of incidents notified by sectors and operation types. These include, but are not limited to, the legislative framework, inherent hazards and characteristics of each sector and operation type as well as the commodity produced.

A breakdown of the types of incidents notified by the metalliferous sector underground and surface operation types since 2016-17 is shown in Figure 45, including notifications for incidents unrelated to illness or injury. While each operation type presents a distinct notification profile, comparable results were observed across the three-year period. As noted earlier, increased workplace death or serious injury notifications were observed for surface metalliferous mines in 2018-19.

FIGURE 45. **METALLIFEROUS SECTOR INCIDENT NOTIFICATION PROFILE BY OPERATION TYPE 2016-17 TO 2018-19**



### PROPORTION OF METALLIFEROUS MINES NOTIFYING INCIDENTS

Incident notification data allows the Regulator to monitor compliance and respond to sector specific reporting trends. While, the number of metalliferous mines has more than tripled in the ten years since 2009-10 (from 198 mines to 723 in 2018-19), the proportion of mines notifying incidents has remained steady.

On average, 28 (6%) active metalliferous mines notified the Regulator of an incident every year within the ten-year reporting period.

TABLE 6. METALLIFEROUS SECTOR PROPORTION OF MINES THAT NOTIFIED AN INCIDENT 2009-10 TO 2018-19

MEASURE	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	AV.
Total notified incidents	172	159	199	221	216	220	237	246	247	267	218
Number of active mines	198	351	381	402	492	462	437	412	690	723	455
Number of mines that notified an incident	27	26	31	22	29	30	27	31	30	28	28.1
% of mines that notified an incident	14%	7%	8%	5%	6%	6%	6%	8%	4%	4%	6%

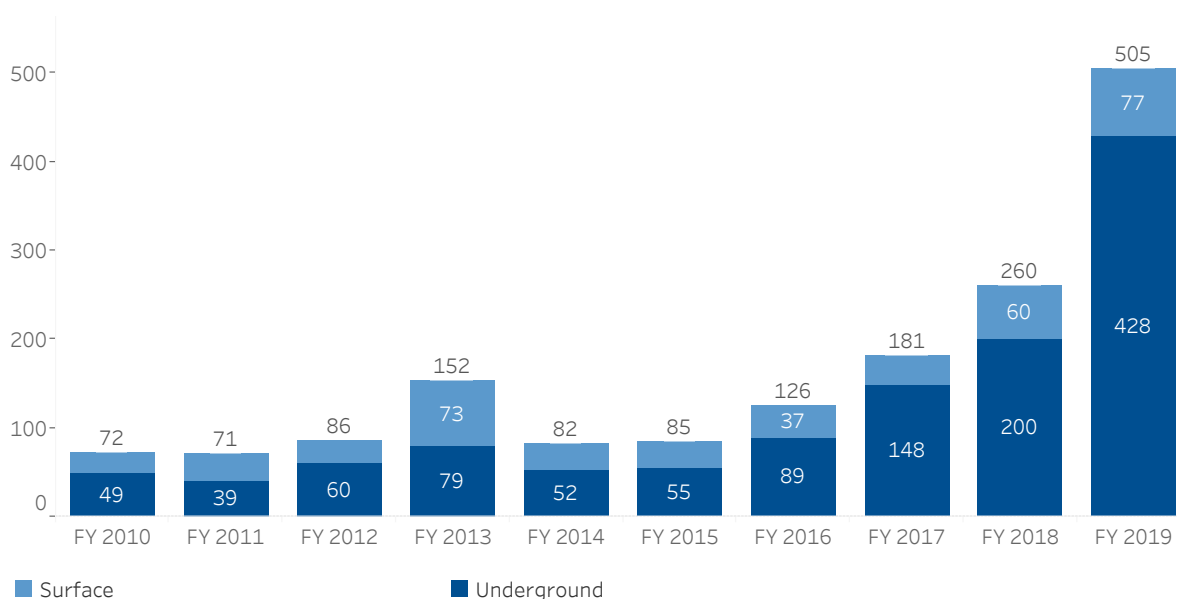
## Notices issued

### Notices issued by operation type

In 2018-19, the Regulator issued 505 notices (notices of concern and improvement, prohibition and non-disturbance enforcement notices) in the metalliferous sector. This was almost double the number issued the previous year.

The steady increase in the notices issued during the past three years coincides with the commencement of the Regulator’s incident prevention strategy. This saw more programmed assessments conducted in the metalliferous sector which contributed to the increase observed in notices issued. See Figure 46 for more details.

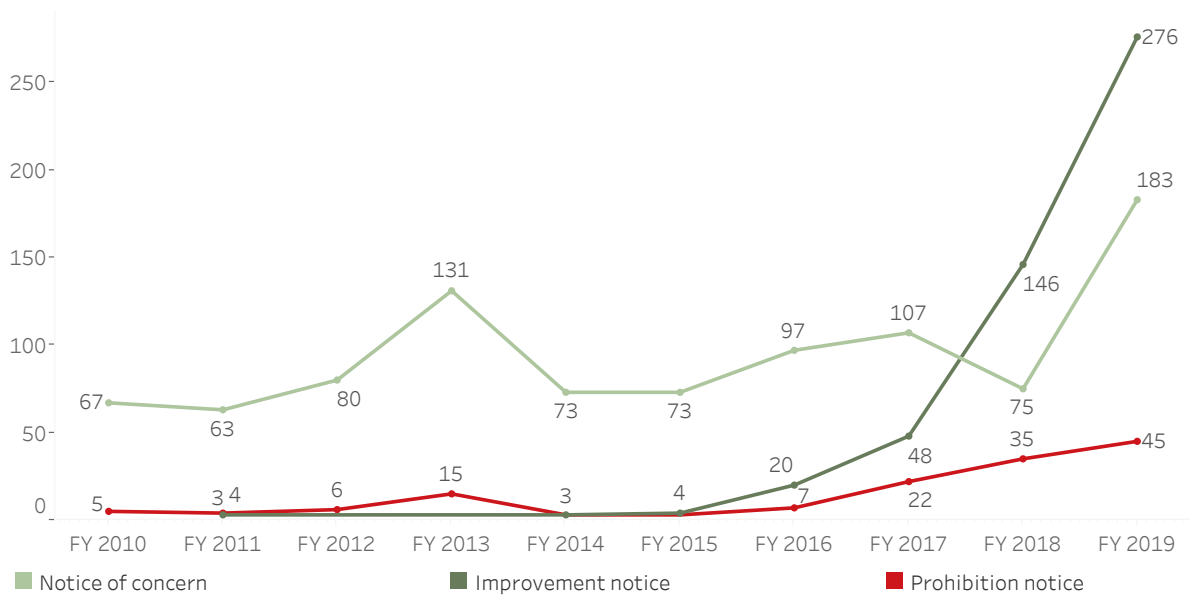
FIGURE 46. METALLIFEROUS SECTOR NOTICES ISSUED BY OPERATION TYPE 2009-10 TO 2018-19



### Notices issued by notice type

In 2018-19 improvement notices made up more than half of all notices issued in the metalliferous sector. During the four years since 2015-16, both improvement notices and notices of concern have increased. This reflected the Regulator’s renewed focus on incident prevention via the publication of our compliance and enforcement approach in July 2017 where we sought to clearly identify matters that necessitate the issue of an improvement notice rather than a written notice of concern.

FIGURE 47. METALLIFEROUS SECTOR NOTICES ISSUED BY NOTICE TYPE 2009-10 TO 2018-19





## Notices issued per programmed assessment

The Regulator conducts proactive and reactive assessments which may result in notices being issued.

In 2018-19, the Regulator conducted 238 planned assessments which resulted in 403 notices being issued. This represents a notice issue rate of 1.69 notices per programmed assessment, an increase of just over 50% compared to the previous year.

While notices may be issued in relation to incident notifications and various tasks including high risk activities, only those that have been issued under a program plan have been reported here. In the current year approximately 80% of notices issued related to programmed assessments. Note that rates have been calculated for the three years since the commencement of the Regulator's incident prevention strategy in July 2016.

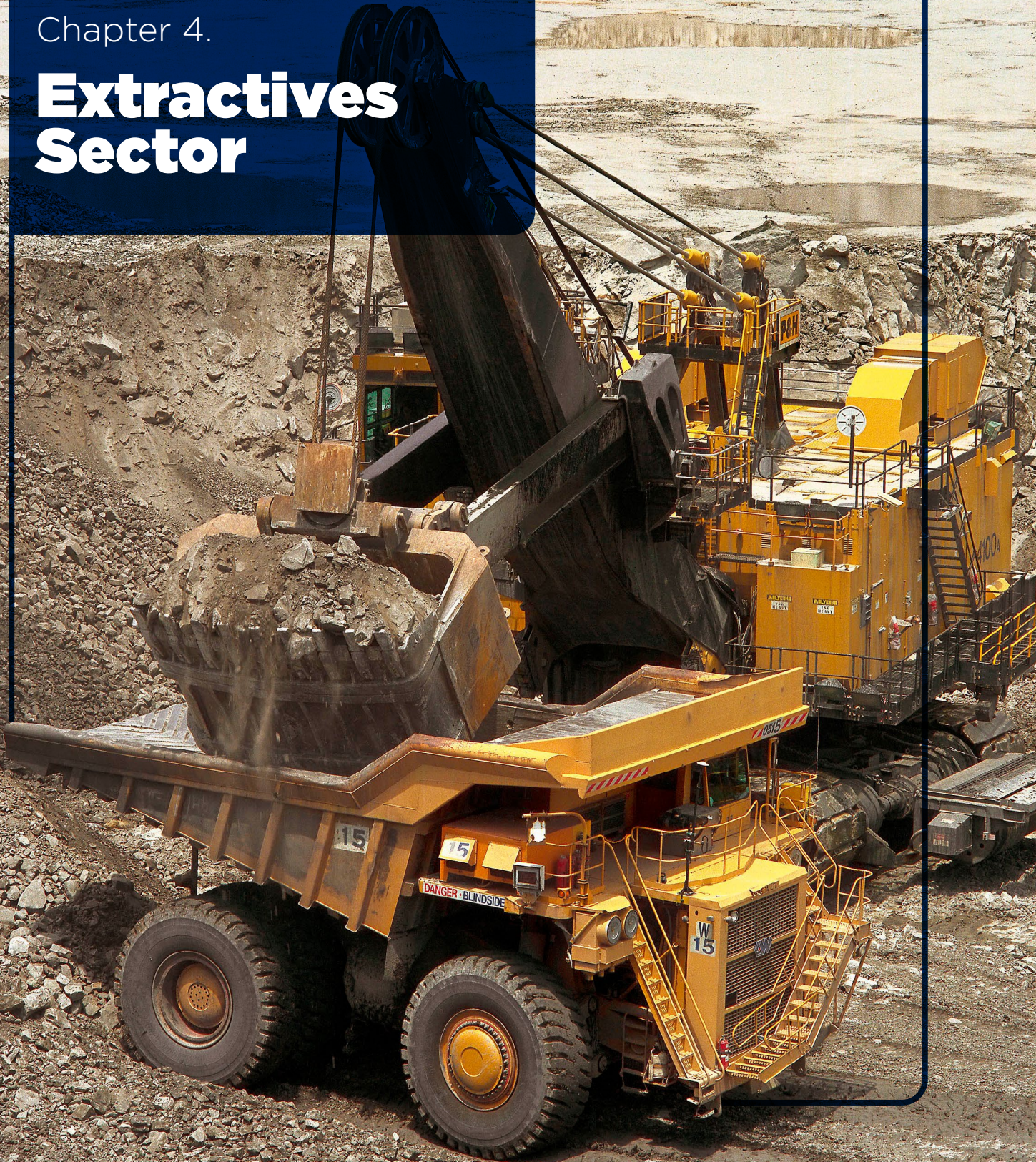
TABLE 7. **METALLIFEROUS SECTOR NOTICE ISSUE RATE PER PROGRAMMED ASSESSMENT 2016-17 TO 2018-19**

MEASURE	FY 2017	FY 2018	FY 2019
Notices issued from programmed assessments	88	161	403
Programmed assessments conducted	75	144	238
Notice issue rate per programmed assessment	1.17	1.12	1.69



Chapter 4.

# Extractives Sector





# Extractives sector

## Key performance measures 2018-19

**0**

**fatal injuries**

**4**

**serious injuries**

**46**

**lost time injuries**

**164**

**total recordable injuries**

**154**

**notified incidents**

**534**

**notices issued**

In the extractives sector in 2018-19:

- There were no work-related fatalities. The last mining related fatalities were in 2015-16.
- There were four serious injuries notified, a decrease of seven (57%) from the previous year.
- The serious injury frequency rate (SIFR) for the extractives sector decreased 6% from the previous year (2.05 to 1.92).
- There were 46 lost time injuries reported.
- The lost time injury frequency rate (LTIFR) was 8.44, a small decrease compared to the previous year. There was no observed trend over the reporting decade.
- There were 164 total recordable injuries marking a small increase from the previous year.
- The rolling five-year total recordable injury frequency rate (TRIFR) experienced a decrease of 5% compared to the previous year to 24.98. A steady downward trend in the TRIFR was observed since 2009-10.
- There were 154 incidents notified to the Regulator, an increase of almost 23%.
- The incident notification frequency rate (INFR) increased 23% from 21.17 in the previous year to 26.03 in 2018/19.
- Since 2009-10, a steady upward trend in the incident notification frequency rate (INFR) was observed.
- There was an increase of 16% in notices issued from the previous year. Of the 534

notices issued, improvement notices accounted for more than 60%.

- The Regulator conducted 345 programmed assessments which resulted in 443 notices issued and a notice issue rate of 1.28 notices per programmed assessment.

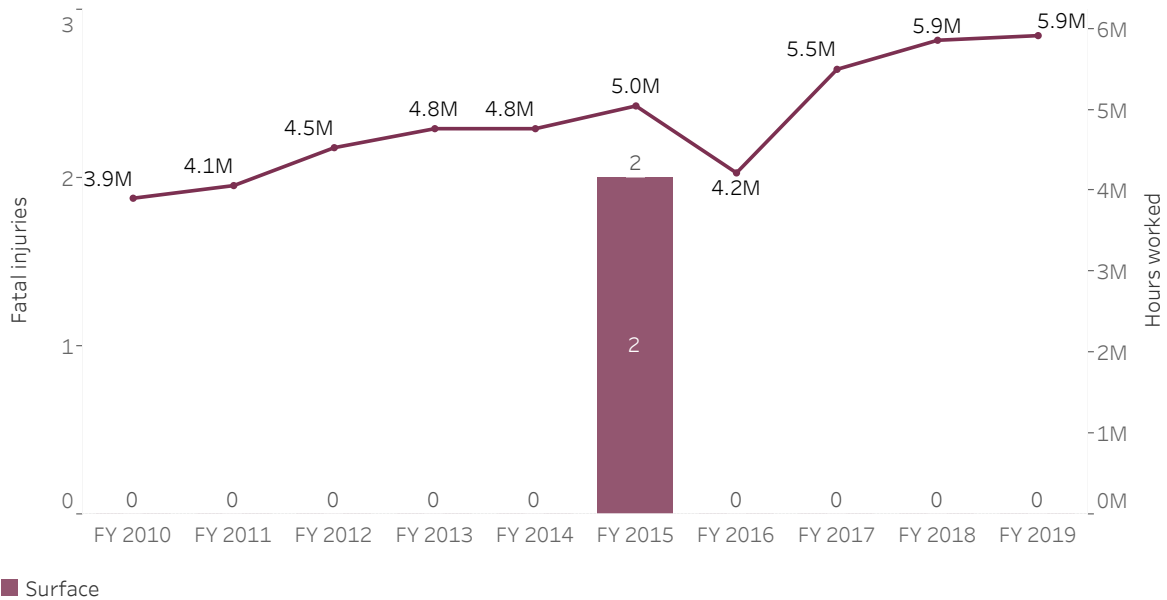
## Fatal injuries

### Fatal injuries and hours worked

In 2018-19 there were no fatal injuries in the extractives sector.

During the ten-year reporting period, there were two fatal injuries in the extractives sector, both occurred at surface operations in 2014-15.

FIGURE 48. **EXTRACTIVES SECTOR FATAL INJURIES AND HOURS WORKED 2009-10 TO 2018-19**



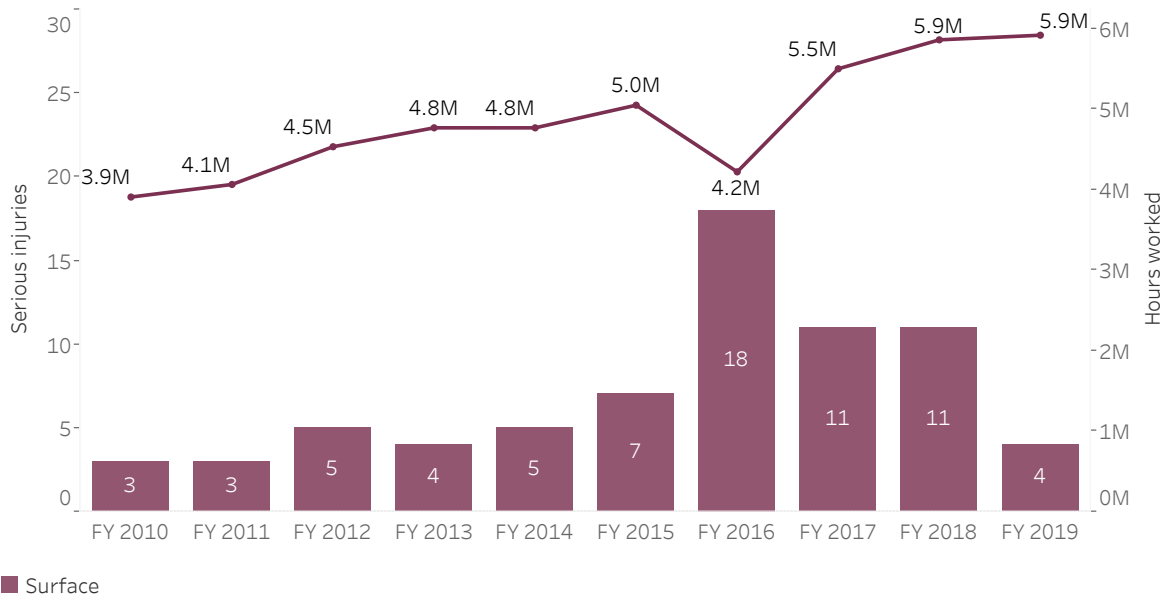
## Serious injuries

### Serious injuries and hours worked

There were four serious injuries notified in the extractives sector during 2018-19, down seven from the previous year. This is the lowest number of serious injuries in the extractives sector since the definition of a serious injury was broadened in February 2015 with the commencement of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014.



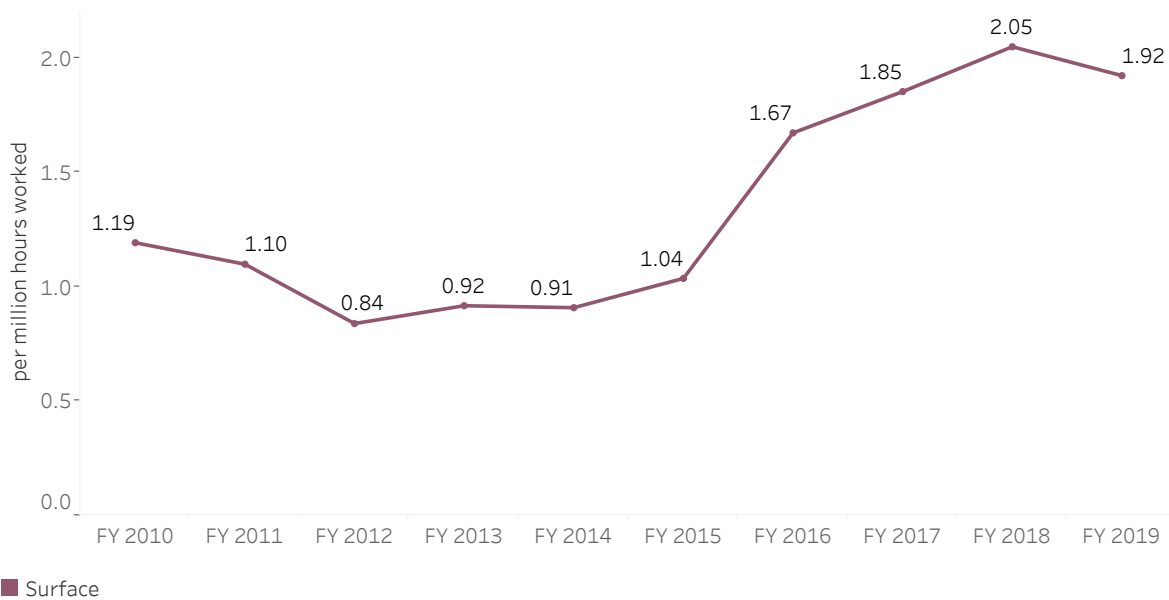
FIGURE 49. **EXTRACTIVES SECTOR SERIOUS INJURIES AND HOURS WORKED 2009-10 TO 2018-19**



### Serious injury frequency rates

In 2018-19, the rolling five-year average serious injury frequency rate (SIFR) for the extractives sector decreased slightly from 2.05 in the previous year to 1.92. The broadened definition of serious injury in 2015 has contributed to the observed increasing trend in the five-year SIFR since then.

FIGURE 50. **EXTRACTIVES SECTOR ROLLING FIVE-YEAR SIFR 2009-10 TO 2018-19**

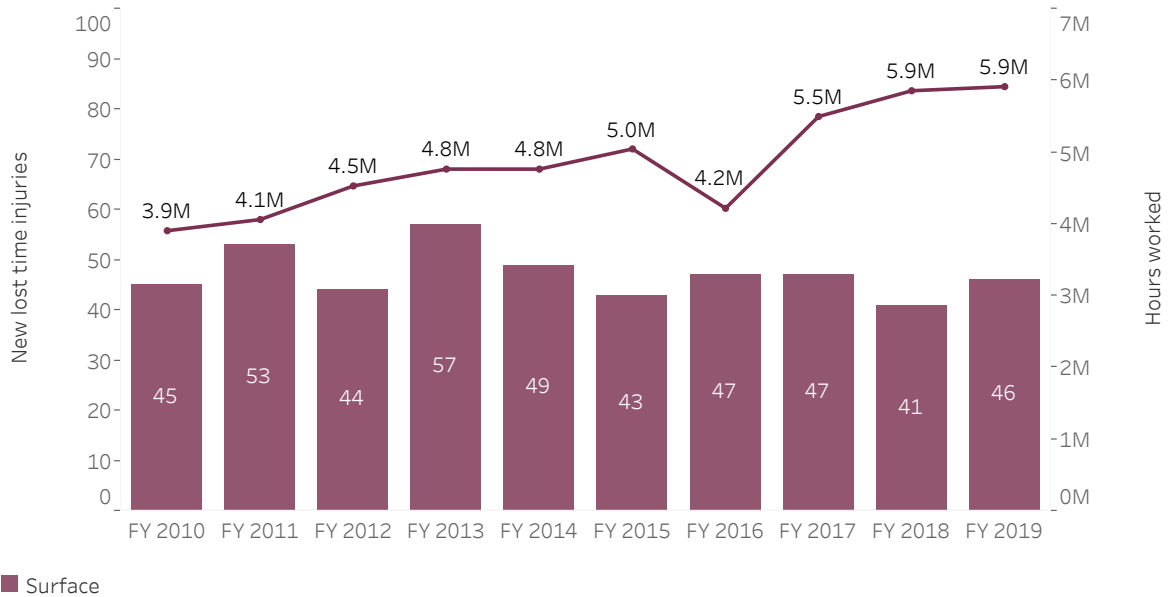


# Lost time injuries

## Lost time injuries and hours worked

In 2018-19, there were 46 lost time injuries reported in the extractives sector, an increase of five (12%) from the previous year to 24.98. Lost time injuries have remained relatively stable in the extractives sector over the past ten years.

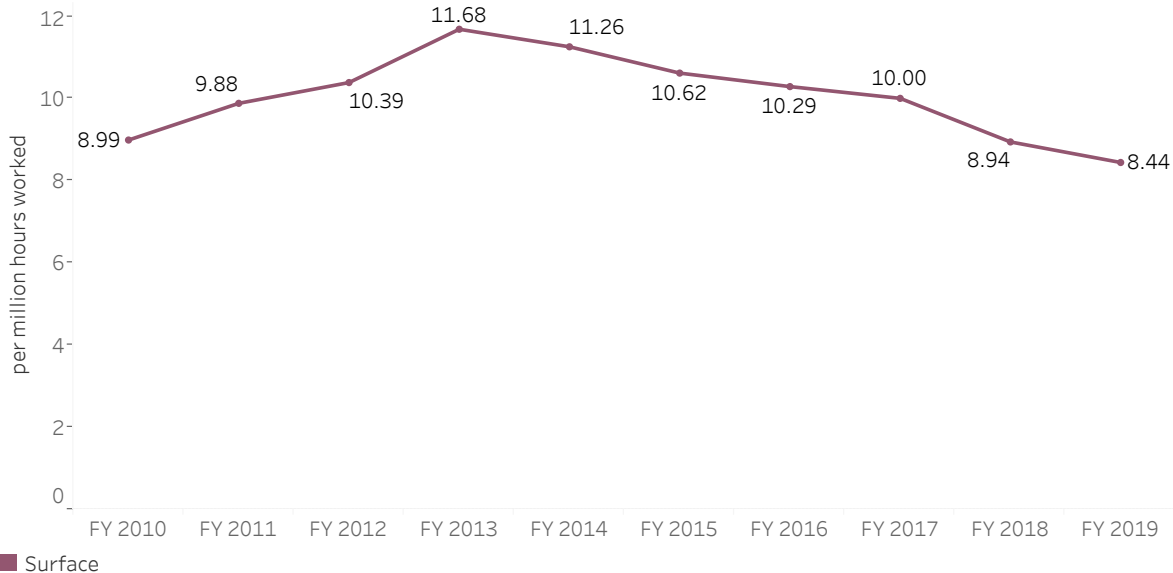
FIGURE 51. **EXTRACTIVES SECTOR LOST TIME INJURIES AND HOURS WORKED 2009-10 TO 2018-19**



## Lost time injury frequency rates

In 2018-19 the rolling five-year average lost time injury frequency rate (LTIFR) decreased by 6% to 8.44 compared to the previous year. The LTIFR for surface extractives has remained steady over the reporting decade.

FIGURE 52. **EXTRACTIVES SECTOR ROLLING FIVE-YEAR LOST TIME INJURY FREQUENCY RATE (LTIFR) 2009-10 TO 2018-19**

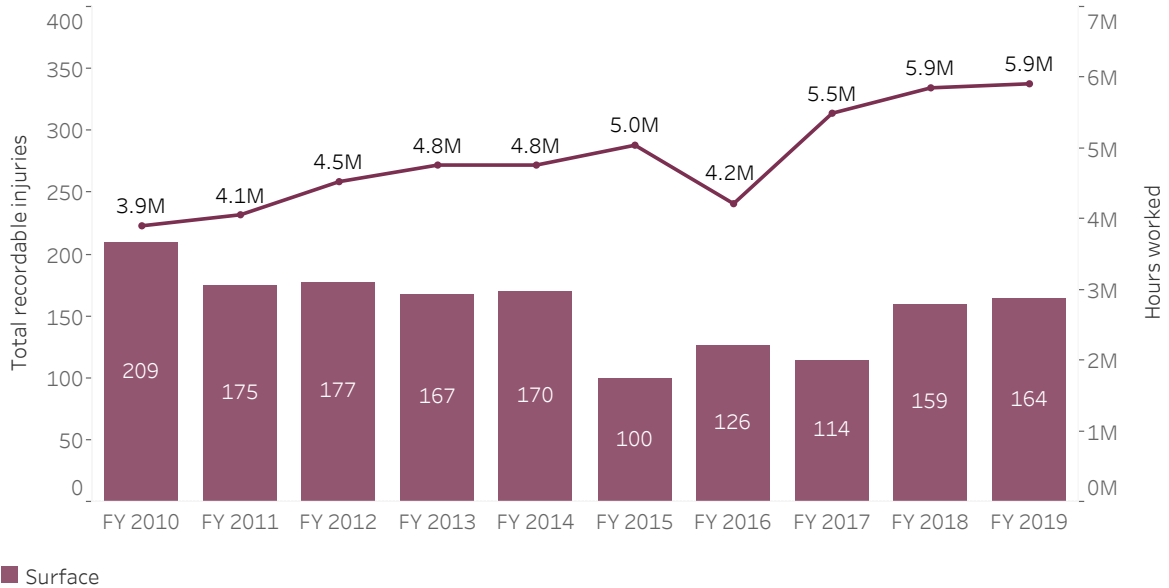


# Total recordable injuries

## Total recordable injuries and hours worked

In 2018-19 there were 164 total recordable injuries, up five from the previous year. In the ten-year period since 2009-10, the number of total recordable injuries has decreased over 20%.

FIGURE 53. **EXTRACTIVES SECTOR TOTAL RECORDABLE INJURIES AND HOURS WORKED 2009-10 TO 2018-19**



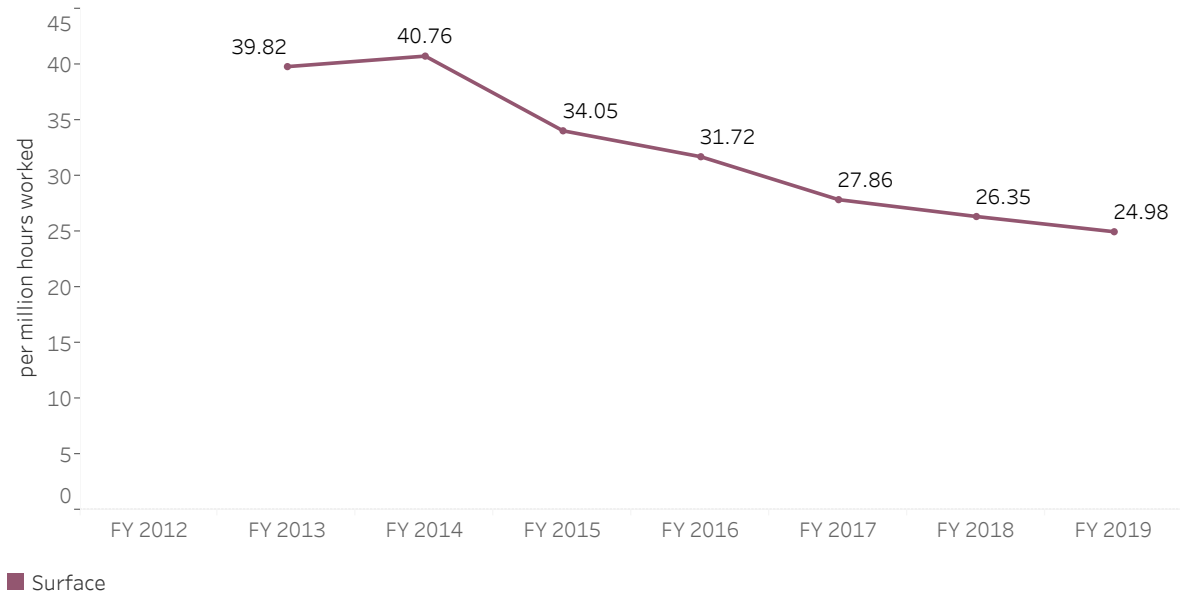
## Total recordable injury frequency rates

In 2018-19 the rolling five-year average total recordable injury frequency rate (TRIFR) for the extractives sector decreased by 5% from the previous year to 24.98.

Since 2012-13 a steady downward trend in the TRIFR was observed in the extractives sector.

Note, a rolling five-year average TRIFR frequency rate was unable to be calculated for the whole ten-year period as this information was only included in metalliferous and extractives work health and safety reporting requirements from the second quarter of 2008-09.

FIGURE 54. **EXTRACTIVES SECTOR ROLLING FIVE-YEAR TRIFR 2012-13 TO 2018-19**



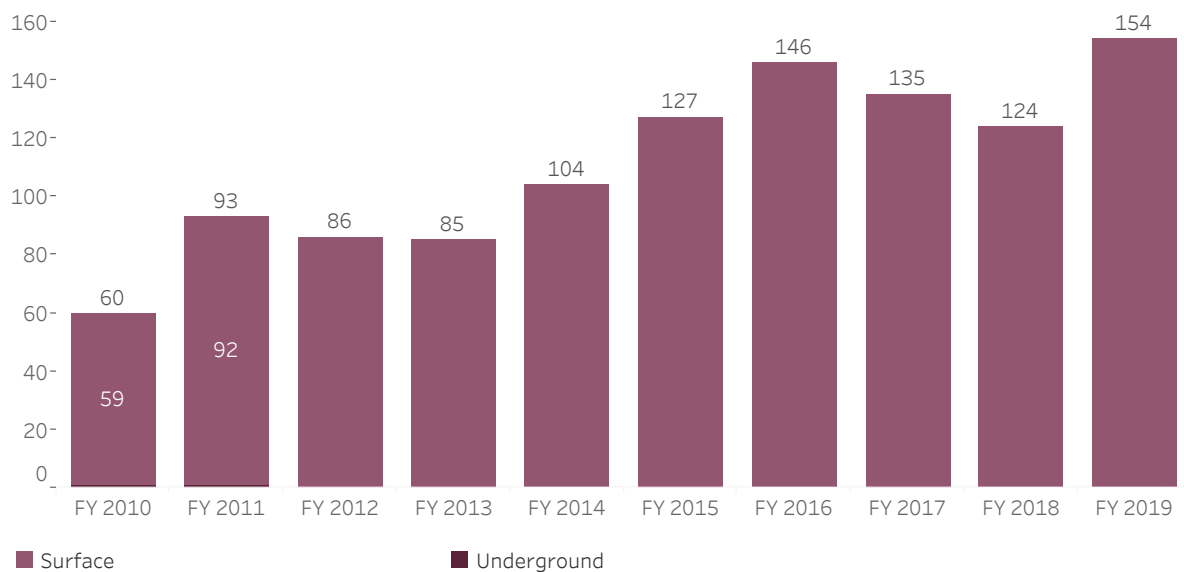
## Notified incidents

### Notified incidents by operation type

Under work health and safety legislation, mine operators must notify the Regulator about the occurrence of certain types of incidents.

In 2018-19, notified incidents in the extractives sector were up 30 (24%) from the previous year, from 124 to 154. The number of notified incidents has trended up over the past ten years.

FIGURE 55. **EXTRACTIVES SECTOR NOTIFIED INCIDENTS BY OPERATION TYPE 2009-10 TO 2018-19**



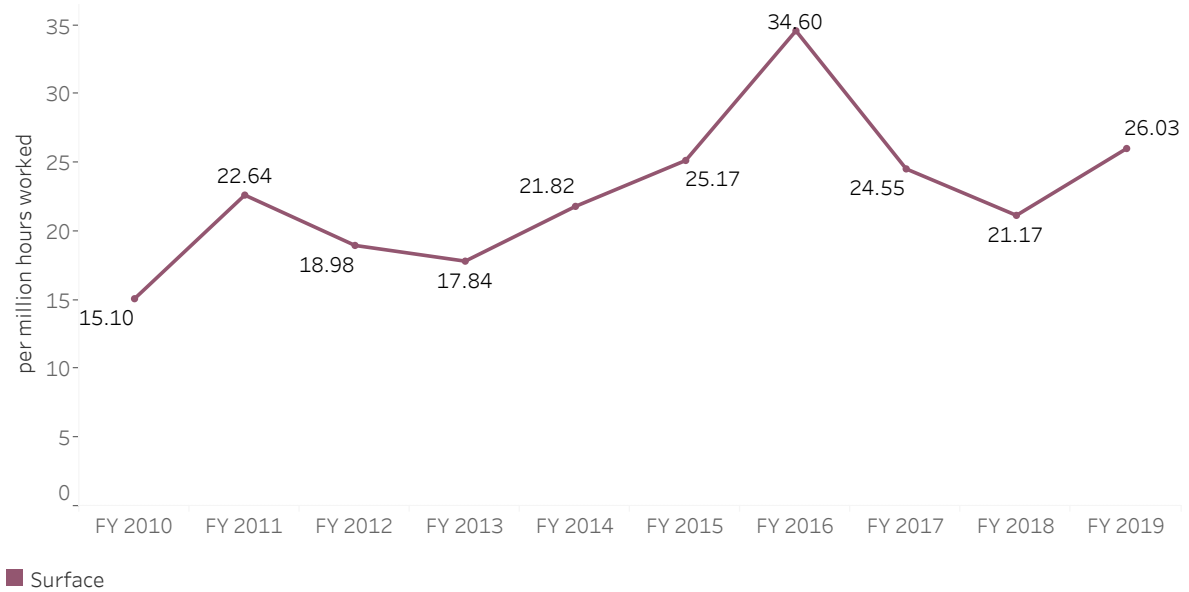


## Incident notification rates

In 2018-19, the annual incident notification frequency rate (INFR) for the extractives sector was up almost 23% compared to the previous year, from 21.17 to 26.03.

Since 2009-10, a steady upward trend in INFR was observed in the extractives sector. The notable increase in 2015-16 coincided with a dip in the number of hours worked by the surface extractives sector. Heightened awareness about notification requirements in response to the commencement of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 in February 2015 might have also contributed to the spike in INFR in 2015-16 in the extractives sector. See [Appendix 3](#) for sector data.

FIGURE 56. **FIGURE EXTRACTIVES SECTOR INCIDENT NOTIFICATION RATE 2009-10 TO 2018-19**



## Incident notification reporting trends

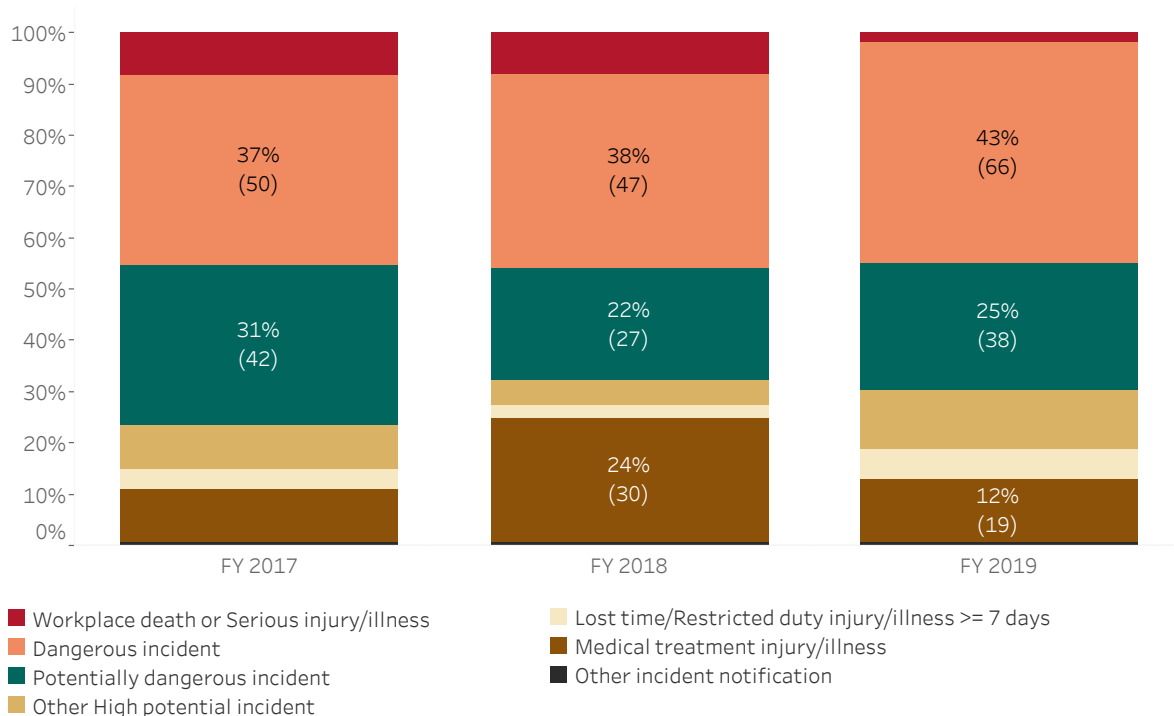
### INCIDENT NOTIFICATION PROFILE

Incident notification data allows the Regulator to monitor compliance and respond to sector specific reporting trends.

Multiple contributing factors influence the types of incidents notified by sectors and operation types. These include, but are not limited to, the legislative framework, inherent hazards and characteristics of each operation type as well as the commodity produced.

A breakdown of the types of incidents notified by the extractives sector since 2016-17 is presented in Figure 57, including notifications for incidents unrelated to injury and illness. Comparable results were observed across the three-year period.

FIGURE 57. **EXTRACTIVES SECTOR INCIDENT NOTIFICATION PROFILE 2016-17 TO 2018-19**



**PROPORTION OF EXTRACTIVE MINES NOTIFYING INCIDENTS**

Incident notification data allows the Regulator to monitor compliance and respond to sector specific reporting trends.

While the number of extractive mines has increased since 2009-10 by almost 30% up to 2,552, the proportion of mines notifying an incident is relatively low. On average 3% (65) of extractive mines notified the Regulator of an incident every year within the ten-year reporting period.

TABLE 8. **EXTRACTIVES SECTOR PROPORTION OF MINES THAT NOTIFIED AN INCIDENT 2009-10 TO 2018-19**

MEASURE	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	AV.
Total notified incidents	60	93	86	85	104	127	146	135	124	154	111
Number of active mines	1,996	2,434	2,513	2,592	2,578	2,672	2,789	2,743	2,588	2,552	2,546
Number of mines that notified an incident	48	60	61	54	63	68	78	69	74	80	65.5
% of mines that notified an incident	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%

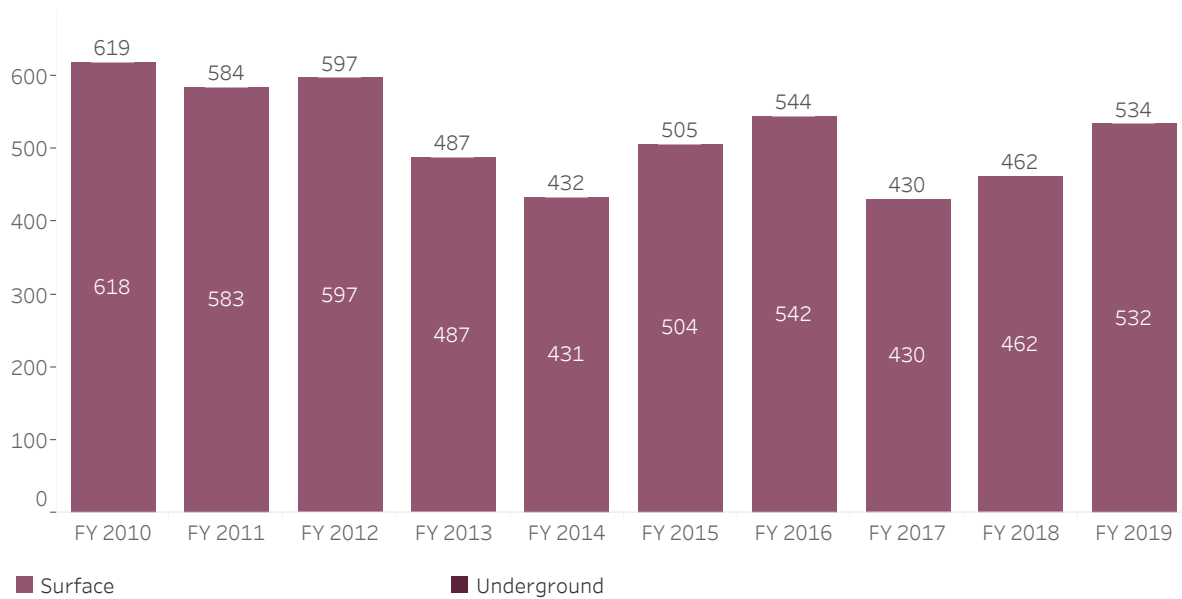
## Notices issued

### Notices issued by operation type

In 2018-19, the Regulator issued 534 notices (notices of concern and improvement, prohibition and non-disturbance enforcement notices) in the extractives sector, an increase of 72 (16%) from the previous year.

The number of notices issued in the extractives sector has remained relatively stable over the reporting decade.

FIGURE 58. **EXTRACTIVES SECTOR NOTICES ISSUED BY OPERATION TYPE 2009-10 TO 2018-19**

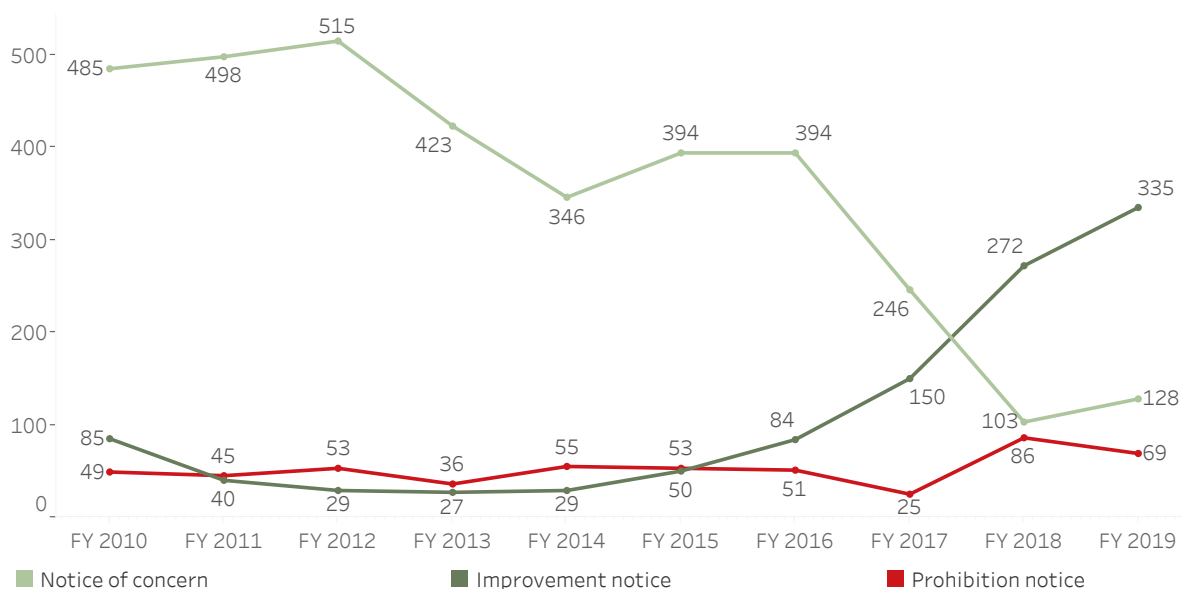


### Notices issued by notice type

In 2018-19 improvement notices made up 63% of all notices issued in the extractives sector.

During the four years since 2015-16, the proportion of improvement notices has increased relative to notices of concern. This reflected the Regulator’s renewed focus on incident prevention via the publication of our compliance and enforcement approach in July 2017 where we sought to clearly identify matters that necessitate the issue of an improvement notice rather than a written notice of concern.

FIGURE 59. **EXTRACTIVES SECTOR NOTICES ISSUED BY NOTICE TYPE 2009-10 TO 2018-19**



### Notices issued per programmed assessment

The Regulator conducts proactive and reactive assessments which may result in notices being issued.

Note the rates have been calculated for the three years since the commencement of the Regulator’s incident prevention strategy in July 2016.

Across the extractives sector the notice issue rate for 2018-19 was 1.28 notices per programmed assessment. Compared to the previous year this represents a decrease of 5%. In 2018-19, the Regulator conducted 345 programmed assessments which resulted in 443 notices issued.

While notices may be issued in relation to incident notifications and various tasks including high risk activities, only those that have been issued under a program plan have been reported here. In the current year approximately 83% of notices issued related to programmed assessments. Note that rates have been calculated for the three years since the commencement of the Regulator’s incident prevention strategy in July 2016.

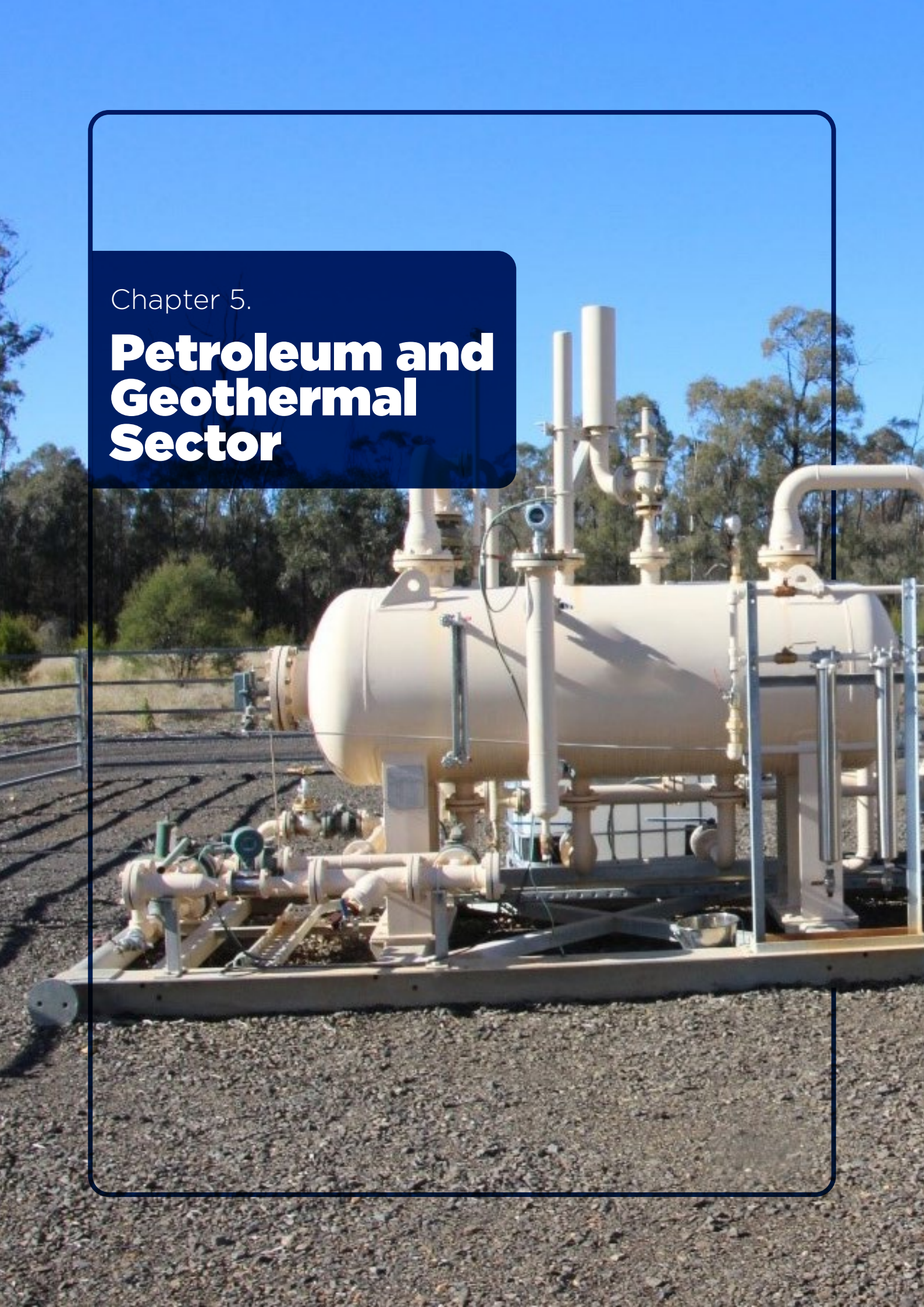
TABLE 9. **EXTRACTIVES SECTOR NOTICE ISSUE RATE PER PROGRAMMED ASSESSMENT 2016-17 TO 2018-19**

MEASURE	FY 2017	FY 2018	FY 2019
Notices issued from programmed assessments	177	313	443
Programmed assessments conducted	185	231	345
Notice issue rate per programmed assessment	0.96	1.35	1.28



Chapter 5.

# **Petroleum and Geothermal Sector**



# Petroleum and geothermal sector

In the 2018-19, there were 267 active petroleum and geothermal sites, all of which were surface operations.

## Fatal injuries, serious injuries and notified incidents

In 2018-19 there were no fatal injuries, serious injuries or notified incidents in the petroleum and geothermal sector. In the ten years since 2009-10, there has been one fatal injury, five serious injuries and 35 notified incidents.

Note that the petroleum and geothermal sector is not required to submit work health and safety reports and therefore frequency rates for these measures have not been calculated.

TABLE 10. PETROLEUM AND GEOTHERMAL SECTOR FATAL INJURIES, SERIOUS INJURIES AND NOTIFIED INCIDENTS 2009-10 TO 2018-19

MEASURE	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	TOTAL
Fatal injuries	1	0	0	0	0	0	0	0	0	0	1
Serious injuries	4	1	0	0	0	0	0	0	0	0	5
Notified incidents	14	8	2	1	3	4	3	0	0	0	35

## Notices issued

In 2018-19, the Regulator did not issue any notices in the petroleum and geothermal sector.

TABLE 11. PETROLEUM AND GEOTHERMAL SECTOR NOTICES ISSUED 2009-10 TO 2018-19

MEASURE	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	TOTAL
Notices issued	4	2	0	0	0	0	1	0	9	0	16

### Notices issued per programmed assessment

The Regulator conducts proactive and reactive assessments which may result in notices being issued.

In 2018-19, the Regulator conducted 113 programmed assessments at petroleum and geothermal sites with zero notices issued from these assessments.

While notices may be issued in relation to incident notifications and various tasks including high risk activities, only those that have been issued under a program plan have been reported here.

TABLE 12. **PETROLEUM AND GEOTHERMAL SECTOR NOTICE ISSUE RATE PER PROGRAMMED ASSESSMENT 2016-17 TO 2018-19**

MEASURE	FY 2017	FY 2018	FY 2019
Notices issued from programmed assessments	0	9	0
Programmed assessments conducted	41	73	113
Notice issue rate per programmed assessment	0.00	0.12	0.00



Chapter 6.

# Opal Sector





# Opal sector

In 2018-19, there were 3,564 active opal mines, over 99% of which were underground operations.

## Fatal injuries, serious injuries and notified incidents

In the ten years since 2009-10 there has only been one fatal injury, eight serious injuries and 22 notified incidents in the opal sector.

Note the opal sector is not required to submit work health and safety reports and therefore frequency rates for these measures have not been calculated.

TABLE 13. OPAL SECTOR FATAL INJURIES, SERIOUS INJURIES AND NOTIFIED INCIDENTS 2009-10 TO 2018-19

MEASURE	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	TOTAL
Fatal injuries	0	0	0	0	0	0	0	1	0	0	1
Serious injuries	0	0	0	0	0	1	3	0	2	2	8
Notified incidents	2	1	0	1	4	1	4	1	4	4	22

## Notices issued

In 2018-19, the Regulator issued 72 notices in the opal sector.

TABLE 14. OPAL SECTOR NOTICES ISSUED 2009-10 TO 2018-19

MEASURE	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	TOTAL
Notices issued	2	6	0	1	3	16	1	159	63	72	323

### Notices issued per programmed assessment

The Regulator conducts proactive and reactive assessments which may result in notices being issued.

In 2018-19, the Regulator conducted 130 programmed assessments, resulting in 72 notices issued. This represents a notice issue rate of 0.55 notices per programmed assessment, an increase of 62% compared to the previous year.

While notices may be issued in relation to incident notifications and various tasks including high risk activities, only those that have been issued under a program plan have been reported here.

TABLE 15. OPAL SECTOR NOTICE ISSUE RATE PER PROGRAMMED ASSESSMENT 2016-17 TO 2018-19

MEASURE	FY 2017	FY 2018	FY 2019
Notices issued from programmed assessments	14	54	72
Programmed assessments conducted	38	158	130
Notice issue rate per programmed assessment	0.37	0.34	0.55



# Appendices





# Appendices

## Appendix 1. Definitions

### Injury type

INJURY TYPE	DEFINITION
Fatal injury (FI)	A work related injury or illness that results in death.
Lost time injury (LTI)	A work related injury or illness that results in a minimum of one full shifts absence (AS1885.1 - 1990).
Restricted duty injury (RDI)	A work related injury or illness resulting in the affected person returning to alternative or restricted duties.
Medical treatment injury (MTI)	A work related injury or illness requiring medical treatment.
Total recordable injuries (TRI)	The sum of fatal injuries, permanent incapacity injuries, lost time injuries, restricted duty injuries and medical treatment injuries.
Serious injury (SI)	<p>A work related injury or illness where the nature of injury or illness is defined by the relevant legislation.</p> <p>Note, with the commencement of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 on 1 February 2015, the definition of a serious injury was expanded to also include additional injury and illness types, as well as any injury or illness irrespective of its nature, that results in immediate treatment as an in-patient in a hospital.</p> <p>Note: In general, a serious injury under this definition is not directly comparable to definitions in other mining jurisdictions or SafeWork Australia.</p> <p>Until the inclusion of the petroleum sector in the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 in February 2016, petroleum sector serious injuries were notified at a lower threshold under the Petroleum (Onshore) Schedule 1992, 301(1).</p>

### Injury classifications

Fatal and serious injuries and illnesses are classified according to the Australian Safety and Compensation Council 'Type of occurrence classification system (TOOCS)' and in this report are based on the TOOCS major groups.

Note that to provide further detail of bodily locations on the fatal and serious body maps in Figures 8 and 13, 'hand or fingers' and 'wrist' are shown separately from the major group 'upper limbs', and 'foot or toes' and 'ankle' are shown separately from the major group 'lower limbs'.

Further details of the Australian Safety and Compensation Council 'Type of occurrence classification system (TOOCS)' can be found [here](#).



## Incidents

TERM	DEFINITION
Notified incident	<p>Mine operators must report certain types of safety incidents if they arise out of conducting business or performing any mining activities at a mine or petroleum site.</p> <p>The legislation applicable to the incident notifications in this report, and the incident notification types under the current legislation are listed below.</p> <p>Note that any multiple gas exceedances that were reported to the Regulator in a single incident notification have been included as individual incident notifications in this report.</p>

## Legislation applicable to incident notifications in this report

LEGISLATION	COMMENCED	STATUS
Petroleum (Onshore) Schedule 1992	1/08/1992	Repealed
<i>Coal Industry Act 2001</i>	1/01/2002	Current
Explosives Regulation 2005	1/09/2005	Repealed
<i>Coal Mine Health and Safety Act 2002</i>	23/12/2006	Repealed
Coal Mine Health and Safety Regulation 2006		
<i>Mine Health and Safety Act 2004</i>	1/09/2008	Repealed
Mine Health and Safety Regulation 2007		
Explosives Regulation 2013	1/09/2013	Current
<i>Work Health and Safety (Mines and Petroleum Sites) Act 2013</i>	1/02/2015	Current
Work Health and Safety (Mines and Petroleum Sites) Regulation 2014		

## Incident notification types under current legislation

INCIDENT TYPE	LEGISLATION	SECTION OR CLAUSE
Death of a person	<i>Work Health and Safety (Mines and Petroleum Sites) Act 2013</i>	s 14(a)
Serious injury	<i>Work Health and Safety (Mines and Petroleum Sites) Act 2013</i>	s 14(b)
	Work Health and Safety (Mines and Petroleum Sites) Regulation 2014	cl 178
Dangerous incident	<i>Work Health and Safety (Mines and Petroleum Sites) Act 2013</i>	s 14(c)
	Work Health and Safety (Mines and Petroleum Sites) Regulation 2014	cl 179

INCIDENT TYPE		LEGISLATION	SECTION OR CLAUSE
High Potential incident	Potentially dangerous incident	Work Health and Safety (Mines and Petroleum Sites) Regulation 2014	cl 128(5)(a)
	Other high potential incident	Work Health and Safety (Mines and Petroleum Sites) Regulation 2014	cl 128(5)(b)-(v) (except those notified under cl 128 (5)(n) and cl 128(5)(o))
	Lost time/ Restricted duty injury/illness >= 7 days	Work Health and Safety (Mines and Petroleum Sites) Regulation 2014	cl 128(5)(n) cl 128(5)(o)
Medical treatment injury		Work Health and Safety (Mines and Petroleum Sites) Regulation 2014	cl 128(1)(a)
Other incidents	Loss or theft of explosives	Explosives Regulation 2013	cl 102
	Serious incident involving explosives		cl 103
	Event at mine rescue station	<i>Coal Industry Act 2001</i>	s 45

## Work health and safety report

Under clause 130 of the Work Health and Safety (Mine and Petroleum Sites) Regulation 2014 (and relevant former legislation), mine operators are required to submit work health and safety reports to the NSW Resources Regulator. In accordance with Schedule 9 to the regulation, reports must contain relevant information about injuries and illness occurring in the year, as well as other information such as the total number of hours worked at the mine. This information is used for preparing key injury measures for coal, metalliferous and extractives mining sectors including frequency rates.

## Notice categories

NOTICE CATEGORY	DEFINITION	LEGISLATION AND NOTICE TYPE	
Notice of concern	Notice raising concerns regarding health, safety or welfare to the attention of operators.	<i>Coal Mine Health Safety Act 2002</i>	s 150 Bringing of concerns regarding health, safety or welfare to the attention of operators
		<i>Mine Health Safety Act 2004</i>	s 131 Bringing of concerns regarding health, safety or welfare to the attention of operators
		<i>Work Health and Safety (Mines and Petroleum Sites) Act 2013</i>	s 23 Notice of concern

NOTICE CATEGORY	DEFINITION	LEGISLATION AND NOTICE TYPE		
Improvement notice	Notice directing remedy or prevention of a contravention or potential contravention.	<i>Occupational Health and Safety Act 2000</i>	s 91	Issue of improvement notices
		<i>Work Health and Safety Amendment Act 2011</i>	s 191	Issue of improvement notices
Prohibition notice	Notice prohibiting carrying on of an activity or carrying on of an activity in a way that involves or will involve serious risk to health and safety. In an underground mine this may require removal of workers from underground areas.	<i>Occupational Health and Safety Act 2000</i>	s 93	Issue of prohibition notices
		Coal Mine Health Safety Regulation 2006	cl 51	Chief Inspector may impose prohibitions or restrictions or direct evacuation or closure of coal operation
		Mine Health Safety Regulation 2007	cl 158	Chief Inspector may impose prohibitions or restrictions or direct evacuation or closure of mine
		<i>Work Health and Safety Act 2011</i>	s 195	Power to issue prohibition notices
Non-disturbance notice	Notice requiring the person to preserve the site or prevent the disturbance of a particular site.	<i>Occupational Health and Safety Act 2000</i>	s 89	Investigation notice to stop plant or prevent disturbance of premises to allow investigation
		<i>Work Health and Safety Act 2011</i>	s 198	Issue of a non-disturbance notice

## Frequency rates

TERM	DEFINITION
Fatal injury frequency rate (FIFR)	The number of fatal injuries and illnesses per, million hours worked.
Lost time injury frequency rate (LITFR)	The number of lost time injuries and illnesses, per million hours worked.
Serious injury frequency rate (SIFR)	The number of serious injuries and illnesses, per million hours worked.
Total recordable injury frequency rate (TRIFR)	The total number of fatal, lost time, medical treatment and restricted duties injuries and illnesses, per million hours worked.
Incident notification frequency rate (INFR)	The number of notified incidents per million hours worked.
Rolling five-year rates	The total number of injuries/illnesses or incidents in five years divided by total hours worked in five years, per million hours worked.



## Appendix 2. Mine definitions

This appendix is included to help readers understand the different types of mines and how they are classified into mining sectors. In this report exploration is included in surface operations. both surface and underground activity occurring at an underground operation is considered as underground activity.

### Mining sectors and mine types

MINING SECTOR	MINE TYPE
Coal mines	<ul style="list-style-type: none"> <li>• Coal</li> <li>• Declared plant - CPP</li> </ul>
Metalliferous mines	<ul style="list-style-type: none"> <li>• Metals</li> <li>• Mineral sands</li> </ul>
Extractive mines	<ul style="list-style-type: none"> <li>• Construction materials</li> <li>• Industrial minerals</li> </ul>
Petroleum and Geothermal sites	<ul style="list-style-type: none"> <li>• Petroleum</li> <li>• Geothermal</li> </ul>
Opal mines	<ul style="list-style-type: none"> <li>• Small Scale Titles</li> <li>• Opal claim</li> <li>• Gemstones or precious stones with Operation type of Opal Mining (All Types)</li> </ul>
Other mines	<ul style="list-style-type: none"> <li>• Gemstones or precious stones (excluding Operation type of Opal Mining (All Types))</li> <li>• Readymix or bitumen</li> <li>• Ancillary to mining</li> <li>• Waste mining</li> <li>• Treatment plant</li> </ul>

## Mine operation types

MINING SECTOR OPERATION TYPE	MINE OPERATION TYPE
Underground	<ul style="list-style-type: none"> <li>• Underground</li> </ul>
Surface	<ul style="list-style-type: none"> <li>• Open cut</li> <li>• Processing</li> <li>• Borrow pit</li> <li>• Dredging</li> <li>• Exploration</li> <li>• Exploration wells</li> <li>• Opal mining (All types)</li> <li>• Production wells</li> </ul>

## Active mines

Active mines include mines that are:

- open
- operate intermittently
- under care and maintenance
- open tourist mines
- planned mines
- small-scale titles that are current or pending

## Appendix 3. Sector data

### Surface coal mines

Measure	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Active mines	65	65	135	171	171	171	176	152	152	161
Hours worked	22,198,670	26,249,904	31,709,298	31,575,110	29,124,476	27,974,169	26,291,644	29,192,406	32,200,086	34,222,870
Full time equivalent workers	11,099	13,125	15,855	15,788	14,562	13,987	13,146	14,596	16,100	17,111
Fatal injuries	0	0	0	0	2	0	0	1	0	1
Fatal injury 5 year average frequency rate	0.000	0.000	0.000	0.000	0.014	0.014	0.014	0.021	0.021	0.013
Serious injuries	12	11	12	8	5	13	21	24	27	12
Serious injury 5 year average frequency rate	0.49	0.42	0.42	0.37	0.34	0.33	0.40	0.49	0.62	0.65
Lost time injuries	73	53	89	82	55	40	52	55	74	93
Lost time injury 5 year average frequency rate	4.61	3.71	2.87	2.82	2.50	2.18	2.17	1.97	1.91	2.09
Total recordable injuries	230	229	241	217	172	154	171	180	200	199
Total recordable injury 5 year average frequency rate			9.87	8.74	7.73	6.91	6.51	6.20	6.06	6.03
Incident notifications	421	502	599	637	648	452	515	456	585	607
Incident notification annual frequency rate	18.97	19.12	18.89	20.17	22.25	16.16	19.59	15.62	18.17	17.74
% of mines that notified an incident	89%	77%	38%	27%	26%	24%	24%	28%	31%	28%
Incident rate per notifying mine	7.26	10.04	11.75	13.55	14.40	11.02	12.26	10.86	12.45	13.49
Workplace death or Serious injury/illness notifications								17	24	13
Dangerous Incident notifications								117	174	165
Potentially dangerous incident notifications								167	176	190
Other High Potential incident notifications								65	103	115
Lost time/Restricted duty injury/illness >= 7 days notifications								37	46	80
Medical treatment injury notifications								48	58	36
Other incident notifications								5	4	8
Notices issued	205	328	225	245	225	247	262	134	207	269
Notice issue rate per programmed assessment								0.44	0.89	0.82
Notices of concern issued	143	304	180	220	185	196	156	63	65	78
Improvement notices issued	25	5	11	11	15	31	71	58	105	151
Prohibition notices issued	37	19	33	12	21	18	22	13	33	34
Non-disturbance notices issued	0	0	1	2	4	2	13	0	4	6

## Underground coal mines

Measure	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Active mines	33	33	31	30	29	30	38	43	43	46
Hours worked	18,042,482	18,435,310	20,962,203	21,350,886	18,977,766	14,863,344	13,461,814	13,439,336	13,797,079	14,932,163
Full time equivalent workers	9,021	9,218	10,481	10,675	9,489	7,432	6,731	6,720	6,899	7,466
Fatal injuries	0	1	0	0	2	0	0	0	0	0
Fatal injury 5 year average frequency rate	0.053	0.062	0.045	0.042	0.031	0.032	0.022	0.024	0.027	0.000
Serious injuries	22	21	24	27	14	28	36	51	30	54
Serious injury 5 year average frequency rate	1.50	1.35	1.20	1.21	1.10	1.21	1.44	1.90	2.13	2.82
Lost time injuries	213	218	187	162	161	114	106	128	111	125
Lost time injury 5 year average frequency rate	4.61	3.71	2.87	2.82	2.50	2.18	2.17	1.97	1.91	2.09
Total recordable injuries	906	817	788	639	641	440	410	402	452	430
Total recordable injury 5 year average frequency rate			52.82	42.96	38.78	35.15	32.56	30.84	31.46	30.27
Incident notifications	2,318	2,268	2,024	1,990	1,650	1,360	1,377	1,133	1,054	998
Incident notification annual frequency rate	128.47	123.02	96.55	93.20	86.94	91.50	102.29	84.30	76.39	66.84
% of mines that notified an incident	100%	94%	106%	107%	110%	107%	74%	67%	70%	57%
Incident rate per notifying mine	70.24	73.16	61.33	62.19	51.56	42.50	49.18	39.07	35.13	38.38
Workplace death or Serious injury/illness notifications								41	30	43
Dangerous Incident notifications								112	90	89
Potentially dangerous incident notifications								212	212	175
Other High Potential incident notifications								538	480	413
Lost time/Restricted duty injury/illness >= 7 days notifications								147	106	183
Medical treatment injury notifications								83	136	95
Other incident notifications								0	0	0
Notices issued	414	461	381	380	419	524	442	412	368	382
Notice issue rate per programmed assessment								0.57	0.58	0.87
Notices of concern issued	330	397	320	338	367	434	279	172	91	137
Improvement notices issued	24	15	7	8	19	47	106	187	188	194
Prohibition notices issued	59	48	48	28	30	39	51	43	83	42
Non-disturbance notices issued	1	1	6	6	3	4	6	10	6	9



## All coal mines

Measure	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Active mines	98	98	166	201	200	201	214	195	195	207
Hours worked	40,241,152	44,685,214	52,671,501	52,925,996	48,102,242	42,837,513	39,753,458	42,631,742	45,997,165	49,155,032
Full time equivalent workers	20,121	22,343	26,336	26,463	24,051	21,419	19,877	21,316	22,999	24,578
Fatal injuries	0	1	0	0	4	0	0	1	0	1
Fatal injury 5 year average frequency rate	0.025	0.028	0.019	0.018	0.021	0.021	0.017	0.022	0.023	0.009
Serious injuries	34	32	36	35	19	41	57	75	57	66
Serious injury 5 year average frequency rate	0.96	0.84	0.76	0.73	0.65	0.68	0.80	1.00	1.14	1.34
Lost time injuries	286	271	276	244	216	154	158	183	185	218
Lost time injury 5 year average frequency rate	10.40	8.65	6.78	6.07	5.42	4.81	4.44	4.22	4.09	4.07
Total recordable injuries	1,136	1,046	1,029	856	813	594	581	582	652	629
Total recordable injury 5 year average frequency rate			28.38	23.17	20.45	17.98	16.39	15.14	14.69	13.79
Incident notifications	2,739	2,770	2,623	2,627	2,298	1,812	1,892	1,589	1,639	1,605
Incident notification annual frequency rate	68.06	61.99	49.80	49.64	47.77	42.30	47.59	37.27	35.63	32.65
% of mines that notified an incident	93%	83%	51%	39%	39%	36%	33%	36%	39%	34%
Incident rate per notifying mine	30.10	34.20	31.23	33.25	29.84	24.82	27.03	22.38	21.29	22.61
Workplace death or Serious injury/illness notifications								58	54	56
Dangerous Incident notifications								229	264	254
Potentially dangerous incident notifications								379	388	365
Other High Potential incident notifications								603	583	528
Lost time/Restricted duty injury/illness >= 7 days notifications								184	152	263
Medical treatment injury notifications								131	194	131
Other incident notifications								5	4	8
Notices issued	619	789	606	625	644	771	704	546	575	651
Notice issue rate per programmed assessment								0.54	0.67	0.85
Notices of concern issued	473	701	500	558	552	630	435	235	156	215
Improvement notices issued	49	20	18	19	34	78	177	245	293	345
Prohibition notices issued	96	67	81	40	51	57	73	56	116	76
Non-disturbance notices issued	1	1	7	8	7	6	19	10	10	15

## Surface metalliferous mines

Measure	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Active mines	160	312	343	364	455	423	391	371	648	676
Hours worked	4,128,144	5,355,418	4,702,806	4,946,590	2,738,186	2,319,458	2,172,793	5,690,585	5,696,098	6,466,098
Full time equivalent workers	2,064	2,678	2,351	2,473	1,369	1,160	1,086	2,845	2,848	3,233
Fatal injuries	0	0	0	0	0	0	0	0	0	1
Fatal injury 5 year average frequency rate	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.045
Serious injuries	2	1	4	2	4	2	3	4	5	7
Serious injury 5 year average frequency rate	1.00	0.59	0.46	0.48	0.59	0.65	0.89	0.84	0.97	0.94
Lost time injuries	9	5	12	9	10	9	5	20	19	12
Lost time injury 5 year average frequency rate	2.07	1.73	1.48	1.78	2.06	2.24	2.67	2.97	3.38	2.91
Total recordable injuries	41	91	49	44	26	18	53	66	52	36
Total recordable injury 5 year average frequency rate				10.70	11.48	11.36	11.26	11.59	11.55	10.07
Incident notifications	55	44	46	45	50	44	53	60	33	53
Incident notification annual frequency rate	13.32	8.22	9.78	9.10	18.26	18.97	24.39	10.54	5.79	8.20
% of mines that notified an incident	8%	4%	4%	2%	2%	3%	2%	4%	2%	1%
Incident rate per notifying mine	4.23	3.14	3.07	5.63	4.55	3.38	6.63	4.29	2.75	5.30
Workplace death or Serious injury/illness notifications								3	4	8
Dangerous Incident notifications								25	12	22
Potentially dangerous incident notifications								18	11	13
Other High Potential incident notifications								3	2	4
Lost time/Restricted duty injury/illness >= 7 days notifications								0	0	2
Medical treatment injury notifications								10	4	4
Other incident notifications								1	0	0
Notices issued	23	32	26	73	30	30	37	33	60	77
Notice issue rate per programmed assessment								0.53	1.39	1.24
Notices of concern issued	23	28	26	61	29	28	27	22	18	31
Improvement notices issued	0	2	0	3	1	1	8	8	29	40
Prohibition notices issued	0	2	0	9	0	1	0	3	11	6
Non-disturbance notices issued	0	0	0	0	0	0	2	0	2	0

## Underground metalliferous mines

Measure	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Active mines	38	39	38	38	37	39	46	41	42	47
Hours worked	6,817,017	8,648,244	11,219,977	10,009,650	12,091,598	11,310,300	9,479,785	7,756,909	7,265,704	7,553,978
Full time equivalent workers	3,409	4,324	5,610	5,005	6,046	5,655	4,740	3,878	3,633	3,777
Fatal injuries	0	0	0	1	1	0	1	1	0	0
Fatal injury 5 year average frequency rate	0.036	0.031	0.000	0.023	0.041	0.038	0.055	0.079	0.063	0.046
Serious injuries	4	7	8	2	1	8	23	17	7	14
Serious injury 5 year average frequency rate	1.26	1.05	0.80	0.67	0.45	0.49	0.78	1.01	1.17	1.59
Lost time injuries	38	26	26	27	21	21	36	29	15	19
Lost time injury 5 year average frequency rate	5.73	4.93	3.92	3.32	2.83	2.27	2.42	2.65	2.55	2.77
Total recordable injuries	198	191	244	250	236	212	177	173	112	130
Total recordable injury 5 year average frequency rate				23.81	22.94	21.27	20.68	20.69	19.00	18.54
Incident notifications	117	115	153	176	166	176	184	186	214	214
Incident notification annual frequency rate	17.16	13.30	13.64	17.58	13.73	15.56	19.41	23.98	29.45	28.33
% of mines that notified an incident	37%	31%	42%	37%	49%	44%	41%	41%	43%	38%
Incident rate per notifying mine	8.36	9.58	9.56	12.57	9.22	10.35	9.68	10.94	11.89	11.89
Workplace death or Serious injury/illness notifications								16	7	11
Dangerous Incident notifications								73	85	90
Potentially dangerous incident notifications								43	53	45
Other High Potential incident notifications								16	35	34
Lost time/Restricted duty injury/illness >= 7 days notifications								5	3	14
Medical treatment injury notifications								32	30	19
Other incident notifications								1	1	1
Notices issued	49	39	60	79	52	55	89	148	200	428
Notice issue rate per programmed assessment								1.36	1.07	1.80
Notices of concern issued	44	35	54	70	44	45	70	85	57	152
Improvement notices issued	0	1	0	0	2	3	12	40	117	236
Prohibition notices issued	5	2	6	6	3	2	7	19	24	39
Non-disturbance notices issued	0	1	0	3	3	5	0	4	2	1

## All metalliferous mines

Measure	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Active mines	198	351	381	402	492	462	437	412	690	723
Hours worked	10,945,161	14,003,662	15,922,783	14,956,240	14,829,784	13,629,758	11,652,578	13,447,494	12,961,802	14,020,076
Full time equivalent workers	5,473	7,002	7,961	7,478	7,415	6,815	5,826	6,724	6,481	7,010
Fatal injuries	0	0	0	1	1	0	1	1	0	1
Fatal injury 5 year average frequency rate	0.022	0.019	0.000	0.015	0.028	0.027	0.042	0.058	0.045	0.046
Serious injuries	6	8	12	4	5	10	26	21	12	21
Serious injury 5 year average frequency rate	1.16	0.87	0.68	0.60	0.50	0.53	0.80	0.96	1.11	1.37
Lost time injuries	47	31	38	36	31	30	41	49	34	31
Lost time injury 5 year average frequency rate	3.26	2.81	2.27	2.61	2.59	2.26	2.48	2.73	2.78	2.82
Total recordable injuries	239	282	293	294	262	230	230	239	164	166
Total recordable injury 5 year average frequency rate				19.09	19.39	18.56	18.44	18.32	16.91	15.66
Incident notifications	172	159	199	221	216	220	237	246	247	267
Incident notification annual frequency rate	15.71	11.35	12.50	14.78	14.57	16.14	20.34	18.29	19.06	19.04
% of mines that notified an incident	14%	7%	8%	5%	6%	6%	6%	8%	4%	4%
Incident rate per notifying mine	6.37	6.12	6.42	10.05	7.45	7.33	8.78	7.94	8.23	9.54
Workplace death or Serious injury/illness notifications								19	11	19
Dangerous Incident notifications								98	97	112
Potentially dangerous incident notifications								61	64	58
Other High Potential incident notifications								19	37	38
Lost time/Restricted duty injury/illness >= 7 days notifications								5	3	16
Medical treatment injury notifications								42	34	23
Other incident notifications								2	1	1
Notices issued	72	71	86	152	82	85	126	181	260	505
Notice issue rate per programmed assessment								1.17	1.12	1.69
Notices of concern issued	67	63	80	131	73	73	97	107	75	183
Improvement notices issued	0	3	0	3	3	4	20	48	146	276
Prohibition notices issued	5	4	6	15	3	3	7	22	35	45
Non-disturbance notices issued	0	1	0	3	3	5	2	4	4	1



## All extractives mines

Measure	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Active mines	1996	2434	2513	2592	2578	2672	2789	2743	2588	2552
Hours worked	3,906,655	4,062,785	4,531,081	4,765,834	4,765,601	5,046,646	4,219,388	5,498,846	5,857,925	5,915,300
Full time equivalent workers	1,953	2,031	2,266	2,383	2,383	2,523	2,110	2,749	2,929	2,958
Fatal injuries	0	0	0	0	0	2	0	0	0	0
Fatal injury 5 year average frequency rate	0.000	0.000	0.000	0.000	0.000	0.086	0.086	0.082	0.079	0.075
Serious injuries	3	3	5	4	5	7	18	11	11	4
Serious injury 5 year average frequency rate	1.19	1.10	0.84	0.92	0.91	1.04	1.67	1.85	2.05	1.92
Lost time injuries	45	53	44	57	49	43	47	47	41	46
Lost time injury 5 year average frequency rate	8.99	9.88	10.39	11.68	11.26	10.62	10.29	10.00	8.94	8.44
Total recordable injuries	209	175	177	167	170	100	126	114	159	164
Total recordable injury 5 year average frequency rate				39.82	40.76	34.05	31.72	27.86	26.35	24.98
Incident notifications	60	93	86	85	104	127	146	135	124	154
Incident notification annual frequency rate	15.36	22.89	18.98	17.84	21.82	25.17	34.60	24.55	21.17	26.03
% of mines that notified an incident	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%
Incident rate per notifying mine	1.25	1.55	1.41	1.57	1.65	1.87	1.87	1.96	1.68	1.93
Workplace death or Serious injury/illness notifications								11	10	3
Dangerous Incident notifications								50	47	66
Potentially dangerous incident notifications								42	27	38
Other High Potential incident notifications								12	6	18
Lost time/Restricted duty injury/illness >= 7 days notifications								5	3	9
Medical treatment injury notifications								14	30	19
Other incident notifications								1	1	1
Notices issued	619	584	597	487	432	505	544	430	462	534
Notice issue rate per programmed assessment								0.96	1.35	1.28
Notices of concern issued	485	498	515	423	346	394	394	246	103	128
Improvement notices issued	85	40	29	27	29	50	84	150	272	335
Prohibition notices issued	49	45	53	36	55	53	51	25	86	69
Non-disturbance notices issued	0	1	0	1	2	8	15	9	1	2

## Coal, metalliferous and surface extractives mines

Measure	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Active mines	2292	2883	3060	3195	3270	3335	3440	3350	3473	3482
Hours worked	55,092,968	62,751,661	73,125,365	72,648,070	67,697,627	61,513,917	55,625,424	61,578,081	64,816,892	69,090,408
Full time equivalent workers	27,546	31,376	36,563	36,324	33,849	30,757	27,813	30,789	32,408	34,545
Fatal injuries	0	1	0	1	5	2	1	2	0	2
Fatal injury 5 year average frequency rate	0.022	0.024	0.014	0.016	0.021	0.027	0.027	0.034	0.032	0.022
Serious injuries	43	43	53	43	29	58	101	107	80	91
Serious injury 5 year average frequency rate	1.02	0.87	0.75	0.71	0.64	0.67	0.86	1.06	1.20	1.40
Lost time injuries	378	355	358	337	296	227	246	279	260	295
Lost time injury 5 year average frequency rate	8.39	7.14	5.75	5.66	5.20	4.66	4.43	4.34	4.20	4.18
Total recordable injuries	1,584	1,503	1,499	1,317	1,245	924	937	935	975	959
Total recordable injury 5 year average frequency rate				23.39	21.57	19.21	17.91	16.79	16.12	15.13
Incident notifications	2,971	3,022	2,908	2,933	2,618	2,159	2,275	1,970	2,010	2,026
Incident notification annual frequency rate	53.93	48.16	39.77	40.37	38.67	35.10	40.90	31.99	31.01	29.32
% of mines that notified an incident	7%	6%	6%	5%	5%	5%	5%	5%	5%	5%
Incident rate per notifying mine	17.90	18.10	16.52	18.92	15.49	12.63	13.00	11.52	11.10	11.32
Workplace death or Serious injury/illness notifications								88	75	78
Dangerous Incident notifications								377	408	432
Potentially dangerous incident notifications								482	479	461
Other High Potential incident notifications								634	626	584
Lost time/Restricted duty injury/illness >= 7 days notifications								194	158	288
Medical treatment injury notifications								187	258	173
Other incident notifications								8	6	10
Notices issued	1310	1444	1289	1264	1158	1361	1374	1157	1297	1690
Notice issue rate per programmed assessment								0.70	0.91	1.15
Notices of concern issued	1025	1262	1095	1112	971	1097	926	588	334	526
Improvement notices issued	134	63	47	49	66	132	281	443	711	956
Prohibition notices issued	150	116	140	91	109	113	131	103	237	190
Non-disturbance notices issued	1	3	7	12	12	19	36	23	15	18

