

Enhancing Site Emergency Response Capability

BHP Billiton Cannington

The Initiative

Mining by its very nature is a high risk profession and emergencies (both natural or man-made) can occur. Mine site personnel must always be ready to respond to an emergency situation in a coordinated, timely and effective manner to protect lives (as a first priority), prevent injuries and minimise losses to property, operations and the environment.

Cannington has always maintained the capacity of an emergency response team by embedding the responsibility for its coordination into the existing onsite roles of personnel. Cannington also utilised the services of multiple training providers to deliver training across various rescue disciplines.

Cannington soon decided involvement from a specialised team of workers in the coordination of emergency response would improve response time and achieve its goal of safety being a first priority for its workers.

Using emergency events across the mining industry as a learning tool and the variation of potential incidents on its mine site, Cannington developed a strategy to enhance its emergency response capability by improving the skills of its emergency response team members.

Cannington focused on transitioning from skills-based training to an all-encompassing approach, by:

- improving membership stability despite having a fly-in-fly-out workforce;
- changing culture with regard to the perception and value of the Emergency Response Team (ERT);
- up-skilling team members; and
- embracing an experiential-based training approach.

The Solution

Cannington decided the best approach to enhance emergency response was to up-skill workers and develop a unique and holistic approach that would increase the capacity for site emergency response.

A full time, permanent Supervisor Emergency Response was employed and the following ERT elements targeted:

1. Analysis;
2. Measuring competency and capability;
3. Establishing training methodologies;

4. Plan, do, check, act;
5. Management support.

Element One: Analysis

Cannington reviewed two years worth of data that showed potential/ actual incidents onsite . The data was cross-referenced with the site Risk Register to calculate Cannington's likely response needs.

The review consisted of:

- quantifying response capability including analysing potential and actual events;
- assessing likely emergency response scenarios;
- skills assessment; and
- gap analysis.

The review culminated in the development of a two year plan that:

- quantified Cannington's emergency response capability;
- determined where Cannington wanted it to be in terms of emergency response capability; and
- defined objectives to achieve this goal.

Cannington's remote location means it cannot rely on external emergency services, and is highly exposed if its own emergency services are not skilled across the full spectrum of mine rescue and emergency response disciplines.

Cannington took a proactive approach in developing and delivering the required high level of emergency response capability by reviewing best practice and trending indicators across other mining operations.

Cannington performed a hypothetical assessment analysing what a capable response to emergencies could look like and, with the aid of a gap analysis, mapped out an improvement plan.

Benchmarks were established to measure performance. These measurement metrics considered location, roster patterns and access to assistance from external resources or emergency services. This not only applied to the level of competency within site's emergency response teams, but also the required levels of coverage within the Crisis and Emergency Management Framework and overall response capability.

Element Two: Measuring Competency and Capability

The ability to measure or 'quantify' capability and training competency levels provided the identification of 'gap' and provided the basis for assessing training methodologies.

The measurement tool presented a baseline from which progression could be easily measured and tracked. It created a means of presenting meaningful information to management and quantified competency levels and response capabilities onsite .

Ultimately, it allowed the completion of the work cycle (plan, do, check, act) and provided opportunity to refine and improve the process.

The tool is a customised database that tracks pre-determined or 'aspirational' targets based on what is required to successfully respond to an emergency event, considering location, roster, Risk Register or likely events.

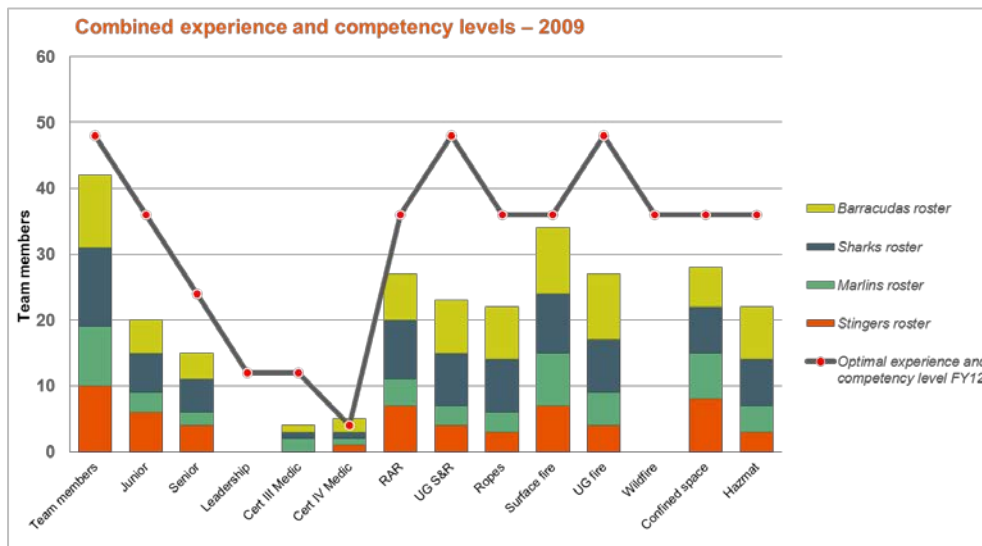


Figure 1. Snapshot from ERT database – 2009 competency levels.

		Team Profile																		
S or U	Name	Date Joined	Experience				Qualifications				Special Skills						Total			
			Rookies	>12 months	>24 months	Leadership	Cert III MR	Cert III PS	Cert III M	Cert IV M	RAR	UG S&R	Ropes	Sur Fire	UG Fire	Wildfire	Confined Space	Hazmat		
Operational Team Profile (optimal)			12	9	6	3	7	7	3	1	9	12	9	9	12	9	9	9	126	
S	HAMBRECHT, Steve	11/2006	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	
S	ARBITAGE, Wayne	2/2012	1	1			1				1	1	1	1	1		1	1	9	
U	ASGHARY, Tar	1/09	1	1	1		1	1	1		1	1	1	1	1	1	1	1	14	
U	CLEMENTS, Jade	02/2010	1	1	1		1	1			1	1	1	1	1		1	1	12	
S	CORDER, Daniel	10/2009	1	1	1	1	1	1			1	1	1	1	1		1	1	12	
U	JOHNSTON, Steffan	1/09	1	1	1		1	1	1		1	1	1	1	1	1	1	1	14	
S	KINGDOM, Dallas	1/2011	1	1	1	1	1				1	1	1	1	1		1	1	10	
S	LOZOU, Nick	2/2012	1	1							1	1	1	1	1		1	1	8	
S	LOUWRENS, Louis	2/2012	1	1							1	1	1	1	1		1	1	7	
U	LYNCH, Chris	12/2012	1								1	1		1	1		1	1	4	
U	RITCHIE, Shann	4/2011	1	1							1	1	1	1	1	1	1	1	8	
U	SELF, Adam C	>2yrs	1	1	1	1	1	1			1	1	1	1	1	1	1	1	14	
U	SIANDRI, Steve	4/2008	1	1	1		1	1			1	1	1	1	1	1	1	1	12	
	TIBBLES, Ashley	12/2012	1								1	1		1	1		1	1	4	
% Compliance			108.3%	122.2%	116.7%	100.0%	85.7%	85.7%	66.7%	0.0%	88.9%	108.3%	111.1%	111.1%	108.3%	44.4%	122.2%	122.2%	101.6%	
Operational Team Profile (actual)			13	11	7	3	6	6	2	0	8	13	10	10	13	4	11	11	128	
U	BARKER, Daniel	2007	1	1	1		1	1			1	1	1	1	1	1	1	1	13	
U	BRODIE, Chris	11/2012	1								1	1		1	1		1	1	4	
U	CASEY, Chris	10/2012	1								1	1		1	1		1	1	2	
	deBOER, Susan	12/2012	1								1	1		1	1		1	1	4	
	JOHNSON, Tamika	3/2013	1								1	1		1	1		1	1	2	
U	JONES, Ian	09/2009	1	1	1	1		1			1	1	1	1	1	1	1	1	11	
S	JONES, Stephen	10/2009	1	1	1	1		1			1	1	1	1	1	1	1	1	11	
	MacPHERSON, Jon	12/2012	1								1	1		1	1		1	1	4	
U	PARRISI, Michael	1/2011	1	1	1		1	1			1	1	1	1	1	1	1	1	13	
S	SADIE, Frikie	>2yrs	1	1	1		1	1			1	1	1	1	1	1	1	1	11	
U	SMITH, Mitchell	4/2011	1	1	1	1	1	1			1	1	1	1	1	1	1	1	10	
	TURNER, Joe	1/2012	1	1							1	1		1	1		1	1	6	
% Compliance			100.0%	77.8%	83.3%	66.7%	57.1%	42.9%	33.3%	0.0%	66.7%	83.3%	66.7%	66.7%	75.0%	33.3%	100.0%	88.9%	72.2%	
Operational Team Profile (actual)			12	7	5	2	4	3	1	0	6	10	6	6	9	3	9	8	91	
Total Required			24	18	12	6	12	12	6	2	18	24	18	18	24	18	18	18	18	248
Combined Roster 1			104.2%	100.0%	100.0%	83.3%	83.3%	75.0%	50.0%	0.0%	77.8%	95.8%	88.9%	85.9%	91.7%	38.9%	111.1%	105.6%	88.3%	

Figure 2. Snapshot from ERT database – team profile.

Element Three: Establishing Training Methodologies

Being a remote, 100% fly-in fly-out site, Cannington is highly impacted by staff turnover, rosters and leave arrangements, as well as the requirements of individual roles.

Cannington's previous traditional training approach revolved around skills-based/blanket training, ignoring the impacts these working conditions have on emergency response and employees' ability to undertake ERT duties. The repetitive nature of skills-based training contributed to high ERT member turnover and low levels of member commitment to emergency response duties.

Cannington focused on creating stability, transitioning from a skills-based approach to experiential-based training. Combined with a targeted training approach, provision of nationally accredited competencies, and the identification and development of leadership potential assisted to improve retention.

Element Four: Plan, Do, Check, Act

The Plan, Do, Check, Act methodology forms the basis for the tailored approach to Cannington's emergency response training.

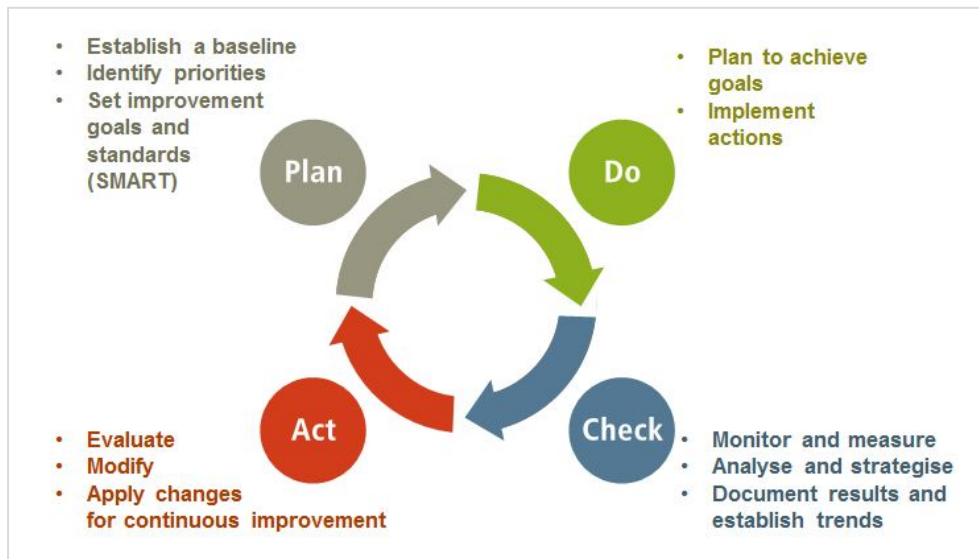


Figure 3. The Plan, Do, Check, Act methodology as applied to Cannington ERT.

Competition participation is one method used to evaluate the effectiveness of current training, allowing Cannington to determine the ERT's competency levels and actual response capability.

Cannington changed its approach to competitions to help better understand the true capability of its emergency response.

Team members were selected from an assortment of rostered crews, rather than the traditional method of a pre-established crew. Teams included rookies and those with minimal training to obtain an even sample across the entire ERT group. Minimal competition training was undertaken to better reflect actual capability rather than manufacture a competition result. (The teams came together for three to six days training beforehand for familiarisation purposes.)

This approach provided Cannington with the confidence that regardless of who was responding to an emergency, or the crew roster, the response would be conducted to the same professional standard.



Figure 4. ERT members participating in a training scenario.

Element Five: Management Support

The plan recognised the specific needs of individual managers and provided quantitative versus subjective assessment for review. Proactive planning considered the use of leading indicators for emergency response coverage, such as high leave periods and fly-in fly-out rosters and requirements. The tools provided information that enabled proactive planning with regards to coverage within Cannington's Three-tiered Crisis and Emergency Management structure.

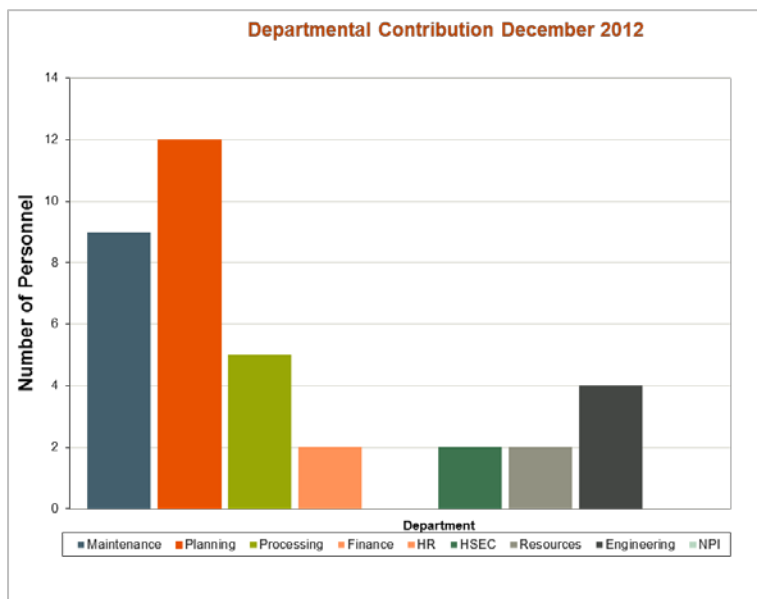


Figure 5. Example of quantitative data customised for management.

Cannington's efforts to enhance onsite emergency response capability is identified as an administrative control. Project implementation shows Cannington is continuously:

- managing training and onsite emergency preparedness;
- actively recruiting and promoting the efforts and achievements of the ERT;
- guaranteeing every onsite contingency is catered for.

This administrative control ensures the Cannington ERT maintains high standards and capabilities that are now perceived as the 'norm' onsite .

Benefits/ Effects

Cannington is proud of the demonstrated emergency response capability of its ERT as evidenced by competition results.

Since 2009, Cannington has achieved:

- First place (2009) – Mt Isa Mines Rescue Competition;
- Second place (2010) – Mt Isa Mines Rescue Competition;
- Second place (2010) – Northern Australian Emergency Response Competition;
- First place (2011) – Northern Australian Emergency Response Competition;
- First place (2012) – Northern Australian Emergency Response Competition.

Cannington is also undefeated in the Vertical Rescue and Team Safety Awards at all of the above competitions.



Figure 6. ERT members participating in a training scenario.

The competitions provide more than the opportunity to win awards and trophies. They allow Cannington to evaluate the effectiveness of its training methodologies in that it's made a conscious decision to not set out to 'win', but rather to use the competitions as a base to test onsite capabilities and determine how robust the revised system was.

Competitions are used as field verification of the systems and processes that had been put in place at Cannington. They provide Cannington's ERT with greater **preparedness** and **experience** due to exposure to realistic scenarios performed under the pressure of competition. The competitions allow for greater **participation** from members across all crews.

The combination of increased competency levels with competition success confirm Cannington is on the right track.



Figure 7. (L – R) Steve Hambrecht (ERT Supervisor), Troy Wilson (General Manager Operations), and Dave Lestone (ERT Captain) accepting an award.

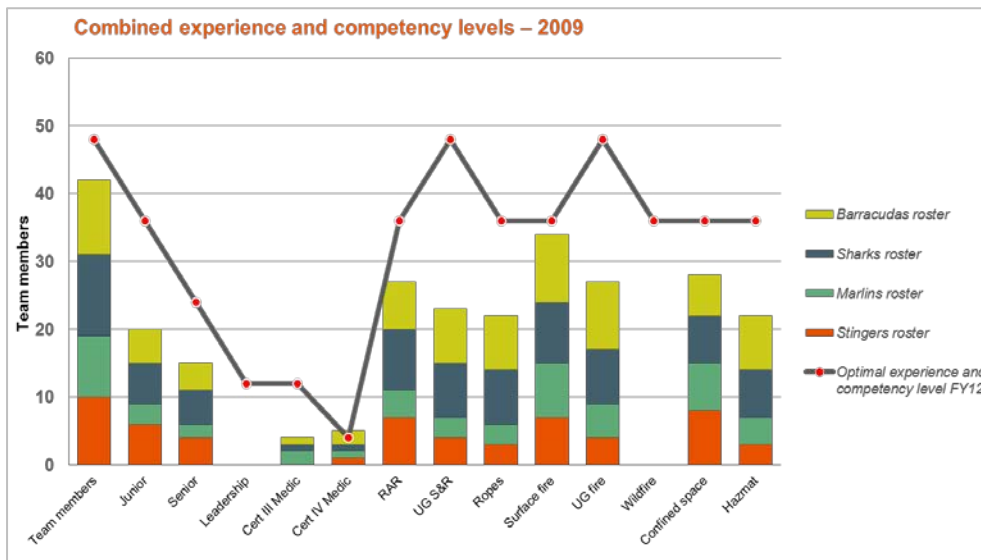


Figure 8. Competency levels 2009.

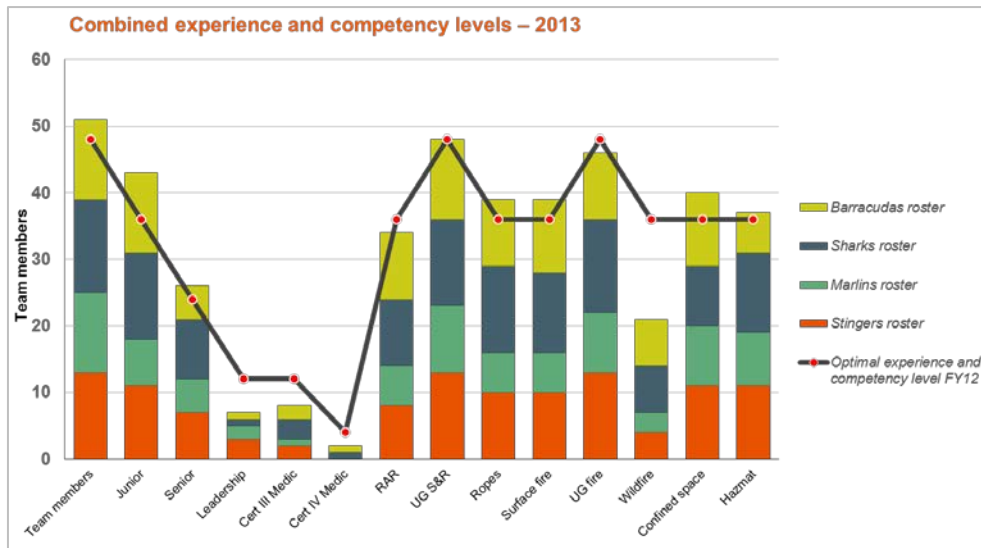


Figure 9. Competency levels 2013.

The Project has benefited Cannington Mine in a variety of ways:

- a targeted training approach that addressed weaknesses within individual crews as a priority;
- consistency in delivery of information across all emergency response teams;
- a single trainer (skilled in the full range of disciplines, along with Cannington's ERT Supervisor) to ensure consistency in delivery of information and practical methods ;
- the creation of a standard and simplified approach to emergency response
- an increase in emergency response capacity; and
- a wider pool of ERT members with greater skill sets and response experience.

Transferability

Cannington's emergency response training approach is transferrable across mining and other high risk work environments, particularly those located remotely and operating intricate roster and staffing interchanges.

The project offers scalability whereby focus can be applied on single areas, or on those that matter most. It provides a strategy for achieving aspirational targets, addressing specific challenges and executing its objectives when it matters most.

Other mining operations should look to employ a dedicated person whose function is to solely overlook the revised training approach. This allows emergency response to be promoted onsite as something to be a part of—"become part of a united team"—and provides intrinsic values for ERTs.

The common saying "a team of champions does not necessarily result in a champion team" embodies this project. For the mining industry to carry out the all-encompassing approach, the basic needs of an effective emergency response capability must be supported. Rather than having a focus on winning competitions and "being the best", Cannington's lead should be followed—competitions should be

used as a base to test onsite capabilities and determine how dynamic the revised system really is.

Innovation

This innovative approach to emergency response is positively changing the way ERTs are viewed not only across site but industry-wide.

With this all-encompassing training approach not in place anywhere else, Cannington is a proven industry leader in enhancing emergency response capabilities. The program does not aim to equip members with experience in every emergency scenario possible; rather, it provides a manageable and measureable framework that focuses on the things that matter most.

It is vital to have emergency response plans in place to mitigate the effects of major events and crises on people and assets and ensure a coordinated response can be launched as effectively and efficiently as possible when disaster strikes. Equally vital is having the skills within Emergency Response Teams to execute those plans.

The Enhancing Cannington's Emergency Response Capability project is an effective strategy that has:

- brought about a positive change in culture;
- provided good results, early;
- delivered business and industry recognition; and
- strengthened Cannington's emergency response capability and capacity.

Cannington's revised training approach ensures a simplified approach to emergency response and considers the basic needs of an effective emergency response capability. The rigour applied to standardising training and the discipline exemplified by team members is what gives Cannington the edge over other emergency response teams. ERT members are now undergoing training that has a purpose, and are valued by other site personnel and the company as having an important role, not just out playing games.

Although equipment may change, the skills remain the same and Cannington is capitalising on the investment made in its people.



Figure 10. A revised training approach has reinvigorated Cannington's ERT members.