

FORTESCUE METALS GROUP LTD - PUBLIC REPORT 2013

Part 1 - Corporation details

Period to which the report relates

Start Period End Period

Controlling corporation

Insert the name of the controlling corporation exactly as it is registered with the EEO Program.

Fortescue Metals Group Ltd

Table 1.1 - Major changes to corporate group structure or operations

Table 1.1 – Major changes to corporate group structure or operations in the last 12 months

In the past 12 months Fortescue has undergone a dramatic expansion of its iron ore operation growing its exported product from 57 million tonnes per annum (mtpa) to 81 mtpa on its way to 155mtpa expected in 2013-14. Mining has expanded with the delivery into production of the Solomon mine and the expansion of mining and processing at Christmas Creek mine. To match this growth in mining the rail transport infrastructure has expanded with the duplication of the main rail line between Herb Elliott Port and Cloudbreak, an extension of the main rail line to Christmas Creek mine, additional locomotives and carriages and the completion of a spur line to Solomon mine. Port infrastructure has also grown with the addition of two new shipping berths, the introduction of a second train unloader and associated conveyor/stacking equipment and an expansion of ore-reclaimer / ship-loading circuits from one to three.

Declaration

Declaration of accuracy and compliance

The information included in this report has been reviewed and noted by the board of directors and is to the best of my knowledge, correct and in accordance with the *Energy Efficiency Opportunities Act 2006* and *Energy Efficiency Opportunities Regulations 2006*. All opportunities have been assessed to a level of accuracy that is commensurate with the financial investment required for implementation.


Neville Power - Chief Executive Officer

Date: 12th November 2013

Part 2 - Assessment outcomes

Table 2.1 – Assessment details

Name of entity	Cloudbreak and Christmas Creek Mines (Chichester Metals Pty Ltd)	
A. Total corporate energy use in the last financial year	12,659,946 ¹	GJ
B. Total energy use covered by assessments	12,659,946	GJ
C. Total percentage of energy use assessed (B ÷ A) x 100	100	%

Description of the way in which the entity carried out its assessment:

During the financial year 2009-2010, Fortescue Metals Group Ltd (Fortescue) commissioned a detailed energy assessment across the Cloudbreak mine, a representative assessment to cover both Cloudbreak and Christmas Creek mines. Together these two mines represent our Chichester Metals Pty Ltd Operations.

The Cloudbreak assessment included detailed analysis of energy consumed by the mobile mine resources including: haul trucks; road trains; surface miners; wheel loaders; bulldozers and excavators; and fixed resources including: bore field and water movement infrastructure; mine villages accommodation, power station generators, the ore processing facility (OPF) and the associated mine conveying and train loading systems.

A number of significant energy efficiency opportunities were identified through the assessment process. Involvement in the process by senior representatives of each operational area ensured that informed decisions on these projects have been made in a timely manner. Implementation of some projects has already commenced or been completed. Of the twenty (20) projects selected for detailed analysis (KE4), fourteen (14) were identified for the mine sites.

Fortescue elected to assess all operations within the first assessment year rather than spread the assessments over the five year assessment cycle. This decision was made to enable opportunities identified at an early stage in the company's development to be rolled into future expansions.

Fortescue is continuing its rapid growth strategy, which will result in increases in total energy consumption. Fortescue is aiming to further improve its energy efficiency based on energy per tonne of effective material movements undertaken across operations. The key metric for the mine sites is 'tonnes of material moved per gigajoule of energy', but a series of subordinate metrics report energy usage against other facets of mining activity.

¹Total energy used by Fortescue in 2012/13 for the facilities covered by this report in accordance with the Assessment and Reporting Schedule (ARS) (Chichester Metals Pty Ltd - Cloudbreak and Christmas Creek mines and The Pilbara Infrastructure Pty Ltd - Herb Elliott Port and Thomas Rail Yards (previously Rowley Marshalling Yards) differs from that reported for these sites under the National Greenhouse and Energy Reporting Act (NGER). This is due to differences in the way EEO and NGER calculate energy use from on-site power generation.

Table 2.2 - Energy efficiency opportunities identified in the assessment

Status of opportunities identified	Total Number of opportunities	Total estimated energy savings per annum (GJ)
Business response	Implemented	129,534
	Implementation commenced	0
	To be implemented	0
	Under investigation	20,912
Not to be implemented	7	20,769
Outcomes of assessment	Total identified	171,215

Note: This year (2012-13) two particular haul truck types, specifically mentioned in four of the EEO Opportunities, have been removed from the Cloudbreak mine fleet. These four related Opportunities were last year reported as "Under investigation", but this year are being reported as "Not to be implemented" and the associated energy savings set to zero.

Please note that corporate groups **are not required** to report opportunities with a payback greater than four years. Reporting this data is voluntary.

Table 2.3 - Details of significant opportunities identified in the assessment

It is compulsory to report at least 1 example of a significant opportunity for improving the energy efficiency for the controlling corporation that has been identified in assessments. If a corporation has structured assessments to relate to business units or key activities they should report one significant opportunity for each of those entities to which the assessment applies.

Description of opportunity	Type of information to be covered
<p><u>Replace throttled pumps and gen-sets to improve efficiency</u></p> <p>A review of dewatering bores on site revealed that many of the standard bore pumps are throttled as a means of reducing the water flow to a level the bore can sustain. Detailed analysis of the dewatering pump performance showed that highly throttled pumps consume significantly more diesel per megalitre of water pumped than pumps with little or no throttling.</p> <p>The assessment proposed to improve the energy efficiency of this dewatering function by creating a rotatable store of spare pumps of varying sizes and replace heavily throttled pumps in the field with better matched pumps and generators.</p> <p>Pumps at Cloudbreak mine have been progressively swapped to more appropriate sized equipment where possible and the same approach is now also planned for implementation at Christmas Creek mine.</p> <p>Technology that allows pumps to run at variable speeds is being evaluated at present as a further improvement to the rotatable store approach.</p>	<p>Equipment type: Bore pump and associated generators</p> <p>Business response: Created a rotatable pump store at both Cloudbreak and Christmas Creek mines from which pumps are swapped to better match bore demands. EEO Status "Implemented". Also considering other technologies to improve efficiency.</p> <p>Estimated energy saved (GJ) – 123,405</p> <p>Greenhouse gas abated (tCO2-e) – 8,577</p> <p>Estimated \$ saved –\$2,781,401</p> <p>Payback period - < 1 month</p>

Part 2 - Assessment outcomes

Table 2.1 – Assessment details

Name of entity	The Pilbara Infrastructure Pty Ltd - Thomas Rail Yard (previously Rowley Marshalling Yard)		
A. Total corporate energy use in the last financial year	2,479,371 ¹	GJ	
B. Total energy use covered by assessments	2,479,371	GJ	
C. Total percentage of energy use assessed (B ÷ A) x 100	100	%	

Description of the way in which the entity carried out its assessment:

During the financial year 2009-2010, Fortescue Metals Group (Fortescue) commissioned a detailed energy assessment across the group members, including the Rowley Marshalling Yards, recently renamed to Thomas Rail Yard.

The assessment of Rowley (as it was then) focused on the locomotive fleet which represented over 90% of the energy consumption for the facility.

A small number of significant energy efficiency opportunities were identified through the assessment process. Involvement in the process by senior representatives of each operational area ensured that informed decisions on these projects have been made in a timely manner. Of the twenty (20) projects selected for detailed analysis across Fortescue, two (2) are associated with the Thomas Rail Yard operation.

Fortescue elected to assess all operations within the first assessment year rather than spread the assessments over the 5 –year assessment cycle. This decision was made to enable opportunities identified at an early stage in the company's development to be rolled into future expansions.

Fortescue is continuing its rapid growth strategy, which will result in increases in total energy consumption. Fortescue is aiming to further improve its energy efficiency based on energy per tonne of effective material movements undertaken across operations. The Thomas Rail operation's specific metric is the measure of tonnes of ore railed per gigajoule of energy consumed.

¹Total energy used by Fortescue in 2012/13 for the facilities covered by this report in accordance with the Assessment and Reporting Schedule (ARS) (Chichester Metals Pty Ltd -Cloudbreak and Christmas Creek mines and The Pilbara Infrastructure Pty Ltd - Herb Elliott Port and Rowley Marshalling Yards now Thomas Rail Yard) differs from that reported for these sites under the National Greenhouse and Energy Reporting Act (NGER). This is due to differences in the way EEO and NGER calculate energy use from on-site power generation.

Table 2.2 - Energy efficiency opportunities identified in the assessment

Status of opportunities identified		Total Number of opportunities	Total estimated energy savings per annum (GJ)
Business response	Implemented	1	9,534
	Implementation commenced	0	0
	To be implemented	0	0
	Under investigation	1	27,792
	Not to be implemented	0	0
Outcomes of assessment	Total identified	2	37,326

Table 2.3 - Details of significant opportunities identified in the assessment

It is compulsory to report at least 1 example of a significant opportunity for improving the energy efficiency for the controlling corporation that has been identified in assessments. If a corporation has structured assessments to relate to business units or key activities they should report one significant opportunity for each of those entities to which the assessment applies.

Description of opportunity No. 1	Type of information to be covered
<p><u>Installation of auto start/stop on locomotives to reduce idle times</u></p> <p>Each locomotive engine logs lifetime data for a number of parameters, including throttle position and idle time. Although the idle fuel consumption rate is fairly low, the data showed that the engines remain idling for up to 74% of the time, resulting in approximately 7% of lifetime fuel consumption associated with idling. While some idle time will always be necessary for the locomotives to maintain battery charge and brake pressures, it was clear that it could be reduced.</p> <p>Analysis showed that up to 675 kL of diesel may be saved annually by reducing idle time for the 15 locomotives in operation at the time of Assessment. The installation of GE's proprietary loco Automatic Engine Stop Start (AESS) system on each of the 15 was a primary tool to achieve at least some of that reduction. The AESS system has been installed on all the original 15 locomotives and immediately 23% of the time spent at 'idle' was removed. Whilst there is no direct means of measuring all of the fuel savings associated with reducing idle time, the AESS software allows us to record the hours that AESS shuts down the engine. This information enables the calculation of diesel savings for this opportunity.</p> <p>New locomotives in operation this year need modifications to enable the installation and operation of AESS and those modification are currently being undertaken.</p>	<p>Equipment type: GE – 9 locomotives</p> <p>Business response: AESS was implemented in 2010-11 for all 15 Locomotives. EEO Status "Implemented"</p> <p>Energy saved (GJ): 9,534</p> <p>Greenhouse gas abated (tCO2-e): 666</p> <p>\$ saved: \$214,890</p> <p>Payback period: >2 years</p>

Part 2 - Assessment outcomes

Table 2.1 – Assessment details

Name of entity	The Pilbara Infrastructure Pty Ltd - Herb Elliott Port		
A. Total corporate energy use in the last financial year	580,594 ¹	GJ	
B. Total energy use covered by assessments	580,594	GJ	
C. Total percentage of energy use assessed (B ÷ A) x 100	100	%	

Description of the way in which the entity carried out its assessment:

During the financial year 2009-2010, Fortescue Metals Group (Fortescue) commissioned a detailed energy assessment across the Group members, including Herb Elliott Port.

The Port assessment focused on the conveyor systems and mechanics that service the train unloader, stockpile management and ship loader, accounting for more than 80% of the energy consumption at the Port. The Port relied on the representative assessment from Cloudbreak for the heavy machinery used on the site.

A number of significant energy efficiency opportunities were identified through the assessment process. Involvement in the process by senior representatives of each operational area ensured that informed decisions on these projects have been made in a timely manner. Of the twenty (20) projects selected for detailed analysis across Fortescue, four (4) are associated with the Port operation.

Fortescue elected to assess all operations within the first assessment year rather than spread the assessments over the 5 –year assessment cycle. This decision was made to enable opportunities identified at an early stage in the company's development to be rolled into future expansions.

Fortescue is continuing its rapid growth strategy, which will result in increases in total energy consumption. Fortescue is aiming to further improve its energy efficiency based on energy per tonne of effective material movements undertaken across operations. The Port's specific metric is the measure of tonnes of ore loaded per gigajoule of energy consumed.

¹Total energy used by Fortescue in 2012/13 for the facilities covered by this report in accordance with the Assessment and Reporting Schedule (ARS) (Chichester Metals Pty Ltd -Cloudbreak and Christmas Creek mines and The Pilbara Infrastructure Pty Ltd - Herb Elliott Port and Rowley Marshalling Yards now Thomas Rail Yard) differs from that reported for these sites under the National Greenhouse and Energy Reporting Act (NGER). This is due to differences in the way EEO and NGER calculate energy use from on-site power generation.

Table 2.2 - Energy efficiency opportunities identified in the assessment

Status of opportunities identified		Total Number of opportunities	Total estimated energy savings per annum (GJ)
Business response	Implemented	1	3,427
	Implementation commenced	0	0
	To be implemented	0	0
	Under investigation	3	10,325
	Not to be implemented	0	0
Outcomes of assessment	Total identified	4	13,752

Table 2.3 - Details of significant opportunities identified in the assessment

It is compulsory to report at least 1 example of a significant opportunity for improving the energy efficiency for the controlling corporation that has been identified in assessments. If a corporation has structured assessments to relate to business units or key activities they should report one significant opportunity for each of those entities to which the assessment applies.

Description of opportunity No. 1	Type of information to be covered
<p><u>Reduce the time conveyors run unloaded</u></p> <p>Conveyors at Port carry ore from the train unloaders to stockpile stackers and then from stockpile recovery equipment out to the ship loaders. During the Port operations conveyors would be left running with no load for long periods for a number of reasons, some necessary and some not.</p> <p>The proposed opportunity suggested that conveyors should be limited to a period of 30 minutes running unloaded before they are automatically shut down. Naturally maintenance requirements can override this programming rule if required.</p>	<p>Equipment type: Conveyor systems transporting ore</p> <p>Business response: Program the conveyors to run against business rules. Status "Implemented"</p> <p>Estimated Energy saved (GJ): 3,427</p> <p>Estimate of the Greenhouse gas abated (tCO2-e): 676</p> <p>Estimate of \$ saved: \$126,864</p> <p>Payback period: Immediate</p>
<p>The Port Operations has agreed and implemented a set of program changes which limit the unmanaged 'no-load' running periods. The Port has several train unloader conveyor circuits and several ship loading conveyor circuits and so the conveying system is designed into a set of 'routes' through the multitude of conveyor paths in the Port. Any conveyor running unloaded that is not part of a scheduled 'route' will shut down after a very short controlled time. Conveyor segments within a scheduled route will be allowed to run a little longer unloaded before they too are shut down by the program.</p>	

