

**Mumbida Wind Farm 2014 Performance Audit and Asset Management System Review, Electricity Generation Licence,**

**POST AUDIT IMPLEMENTATION PLAN**

EIA = Electricity Industry Act 2004  
 EIMC = Electricity Industry (Metering) Code 2012

PERFORMANCE AUDIT							
Oblig No	Lic Cl/ Act	Licence Requirement / Rating	Finding	Recommendation	Action	By Whom	Due Date
103	CI.20.2  EIA 14 (1B)	The licensee must notify the Authority of the details of the asset management system within 5 business days from the later of:  (a) the commencement date; and  (b) the completion of construction of the generating works.  <i>Rating: 3</i>	▶ Details of the asset management system were not notified to the Authority within 5 business days from the completion of construction of the generating works. Advice on the Asset management plan was submitted late, advice letter (undated) was received by the Authority on 12 September 2013, the Asset Management Plan ( <b>AMP</b> ) however had been finalised on 27 March 2013 and project practical completion achieved on 17 May 2013 (as per OM sec 4.1.1).	1. Compliance to licence obligations needs to be monitored effectively. A corrective action has been implemented by the licensee for recurring obligations. The action will need to be expanded to include reporting AMS changes to the Authority as they occur.	▶ Reporting AMS changes will be included in GE's Weekly report.	GE Site Service Manager	31 August 2014
105	CI 4.1  EIA 17(1)	A licensee must pay to the Authority the prescribed licence fee within one month after the day of grant or renewal of the licence and within one month after each anniversary of that day during the term of the licence.  <i>Rating: 3</i>	▶ The licensee was due to pay the licence fees within one month after the anniversary of the day of grant of the licence. The 2013 payment was late. (see below for corrective action implemented by the licensee)	2. Compliance to licence obligations needs to be monitored effectively. A corrective action has been implemented by the licensee, its performance will need to be monitored to ensure that the issue has been resolved.	▶ Monitor the corrective action performance to achieve compliance.	General Manager Mumbida Wind Farm	31 January 2015

PERFORMANCE AUDIT							
Oblig No	Lic CI/ Act	Licence Requirement / Rating	Finding	Recommendation	Action	By Whom	Due Date
124	CI 16.1 EIA 11	<p>A licensee must provide the Authority, in the manner prescribed, any information the Authority requires in connection with its functions under the Electricity Industry Act.</p> <p><i>Rating: 3</i></p>	<ul style="list-style-type: none"> <li>▶ The compliance report for the period 2010-2011 was provided to the Authority after the required date;</li> <li>▶ The compliance report for the period 2011-2012 was provided to the Authority after the required date. The report for the year ending 30 June 2012 was due on 31 August 2012, however it was issued on 10 September 2012 and received by the Authority on 11 September 2012;</li> </ul> <p><b>Corrective Action by the Licensee</b>            Since the issue of the latest report the licensee has linked the compliance obligations to the company's calendar so that prompts are generated when obligations are due.</p>	Recommendation 2 of Obligation 105 applies.	As above	As above	As above

## POST REVIEW IMPLEMENTATION PLAN

ASSET MANAGEMENT REVIEW							
Item No	EC Ref	AMS Element Effectiveness Criteria / Rating	Finding	Recommendation	Action	By Whom	Due Date
	1	<b>Asset Planning</b>					
1	1.1	<p>Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning.</p> <p><i>Rating: B2</i></p>	<ul style="list-style-type: none"> <li>▶ It is noted that at present the licensee's plans do not report on the asset life and condition. Asset information is provided in management reports. (Observation only). A planning document with forecasts over the next five years is in preparation, this is the "Mumbida Wind Farm Business Plan 2014 – 2019".</li> </ul>	<p>1. It is recommended that the asset management plan reports on asset life and condition at the next review and that the planning documentation is progressed to completion.</p>	<ul style="list-style-type: none"> <li>▶ Provide a review of asset life and condition.</li> </ul>	General Manager Mumbida Wind Farm	31 July 2015.
2	1.7	<p>Likelihood and consequences of asset failure are predicted.</p> <p><i>Rating: C3</i></p>	<ul style="list-style-type: none"> <li>▶ It is not easily apparent in the risk register which actions are in progress, which completed. The register should show by which date actions should be completed, completion of actions, the degree of risk after treatment.</li> <li>▶ No document systematically assessing the likelihood and consequences of asset failures was viewed during the audit.</li> </ul>	<p>2. The risk register should show by which date actions should be completed, completion of actions, the degree of risk after treatment.</p> <p>3. A risk register systematically assessing the likelihood and consequences of asset failures should be implemented.</p>	<ul style="list-style-type: none"> <li>▶ The risk register will be updated to show which date actions should be completed, completion of actions, the degree of risk after treatment.</li> <li>▶ A risk register to systematically assess the likelihood and consequences of major asset failures will be completed.</li> </ul>	General Manager Mumbida Wind Farm	31 July 2015 at the next risk review workshop.
	2	<b>Asset Creation and acquisition</b>					
3	2.4	<p>Commissioning tests are documented and completed.</p>	<ul style="list-style-type: none"> <li>▶ Documentation for Balance of Plant was available, however</li> </ul>	<p>4. Commissioning records for the Balance of Plant need to be registered so that test</p>	<ul style="list-style-type: none"> <li>▶ Commissioning records for the Balance of Plant will be registered</li> </ul>	General Manager Mumbida Wind Farm	31 January 2015

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		<i>Rating: B2</i>	the records need to be registered so that test documents can be readily found. For example records for the step-up transformers were not readily accessible during the review.	documents can be readily found.	so that test documents can be readily found.		
	<b>4</b>	<b>Environmental Analysis</b>					
4	4.3	Compliance with statutory and regulatory requirements.  <i>Rating: B3</i>	<p>▶ There have been a number of non-compliances during the audit period:</p> <ul style="list-style-type: none"> <li>◦ The compliance report for the period 2010-2011 was provided to the Authority after the required date;</li> <li>◦ The compliance report for the period 2011-2012 was provided to the Authority after the required date. The report for the year ending 30 June 2012 was due on 31 August 2012, however it was issued on 10 September 2012 and received by the Authority on 11 September 2012;</li> <li>◦ The report for 2011-2012 refers both to the compliance period of 2011-2012 (Title and item 1) and the compliance period of 2010-2011 (item c and reference in Schedule A);</li> </ul>	<p>5. Compliance to licence obligations needs to be monitored effectively. A corrective action has been implemented by the licensee, its performance will need to be monitored to ensure that the issue has been resolved. (Similar finding and recommendation were made at Obligation 105).</p>	▶ Monitor the corrective action performance to achieve compliance.	General Manager Mumbida Wind Farm	31 January 2015

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Item No	EC Ref	AMS Element Effectiveness Criteria / Rating	Finding	Recommendation	Action	By Whom	Due Date
			<ul style="list-style-type: none"> <li>○ Details of the asset management system in respect of the licensee's assets were not notified to the Authority within 5 business days from the completion of construction of the generating works. Advice on the asset management plan was submitted late, advice letter is undated, it was received by the Authority on 12 September 2013, the AMP however had been finalised on the 27 March 2013;</li> <li>○ Late payment of generation fee: the annual licence fee is due one month after the anniversary of the Licence issue. The annual fee for 2013 was due 17 April 2013 and was not paid until 01 May 2013.</li> </ul> <p>▶ <b>Corrective Action by the Licensee</b>            Since the issue of the latest report the licensee has linked the compliance obligations to the company's calendar so that prompts are generated when obligations are due.</p>				

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Item No	EC Ref	AMS Element Effectiveness Criteria / Rating	Finding	Recommendation	Action	By Whom	Due Date
			<ul style="list-style-type: none"> <li>▶ Details of the asset management system in respect of the licensee's assets were not notified to the Authority within 5 business days from the completion of construction of the generating works. Advice on the asset management plan was submitted late, advice letter is undated, it was received by the Authority on 12 September 2013, the AMP however had been finalised on the 27 March 2013;</li> </ul>	<p>6. Monitoring of compliance with licence obligation will need to be expanded to include monitoring and reporting of AMS changes to the Authority as they occur.</p>	<ul style="list-style-type: none"> <li>▶ Reporting AMS changes will be included in GE's Weekly report.</li> </ul>	GE Site Service Manager	31 August 2014
	<b>5</b>	<b>Asset Operations</b>					
5	5.3	Assets are documented in an Asset Register including asset type, location, material, plans of components, and an assessment of assets physical/structural condition and accounting data.	<ul style="list-style-type: none"> <li>▶ Information on the asset physical or structural condition can be obtained but the process appeared difficult and inspection information was limited.</li> </ul>	<p>7. (OFI) The AMS documentation should include a system map or guide to assist in identifying and accessing the systems which provide the information required under the AMS. Alternatively system should be reviewed to identify improvements that can be made to ease access to information.</p>	<ul style="list-style-type: none"> <li>▶ A system map will be developed to improve usability.</li> </ul>	GE Site Service Manager	31 January 2015
	<b>6</b>	<b>Asset Maintenance</b>					
6	6.2	Regular inspections are undertaken of asset performance and condition.  <i>Rating: B3</i>	<ul style="list-style-type: none"> <li>▶ (OFI) Balance of Plant (BOP) inspections are documented in individual checklists. As the plant list is extensive and there is no overall means for checking that all individual items of plant have been</li> </ul>	<p>8. (OFI) BOP inspections are documented in individual checklists. As the plant list is extensive and there is no overall means to check that all individual items of plant have been inspected it will be beneficial to</p>	<ul style="list-style-type: none"> <li>▶ A way to summarise which plant has been inspected will be developed.</li> </ul>	GE Site Service Manager	31 January 2015

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			<p>inspected it will be beneficial to introduce a summary list that identifies that all plant has been inspected.</p> <ul style="list-style-type: none"> <li>▶ Actions raised in the BOP inspection are not identified by an identification number or tag so that there is no ready traceability of the action completion.</li> <li>▶ BOP Emergency generator check sheet does not include for running of generator in checking list. At present requirement is only noted in the "Further Information" section.</li> </ul>	<p>introduce a summary list that identifies which plant has been inspected.</p>			
				<p>9. Actions raised in BOP inspections should be identified by an identification number or tag so that completion of the action can be easily controlled.</p>	<ul style="list-style-type: none"> <li>▶ Inspection check-sheets are reviewed by the site lead after each inspection is completed by the service technicians. Action items raised in BOP inspection check sheets will be identified by the site lead/maintenance planner and rectification works will be scheduled according to urgency. The item will be flagged and remain on the active service checklist until it is rectified.</li> </ul>	GE Site Service Manager	31 January 2015
				<p>10. BOP Emergency Generator check sheet should include for running of the generator in checking list.</p>	<ul style="list-style-type: none"> <li>▶ Emergency Generator testing check sheet will be created.</li> </ul>	GE Site Service Manager	31 January 2015
	<b>7</b>	<b>Asset Management Information System (MIS)</b>					
7	7.5	<p>Data backup procedures appear adequate.</p> <p><i>Rating: C3</i></p>	<ul style="list-style-type: none"> <li>▶ There is a GE documented back up procedure on site, the procedure contains directions on how to perform the back up and how to retrieve the data however review of the procedure and discussion with site personnel indicated that the</li> </ul>	<p>11. The recommendation is for the licensee (and as required, the operator) to review the current backup procedure(s) on site, check their current implementation and check that there is sufficient information on the systems, software and data</p>	<ul style="list-style-type: none"> <li>▶ GE will review the current backup procedure(s) on site, check their current implementation and check that there is sufficient information on the systems, software and data that are to be backed up. GE will implement the procedure(s).</li> </ul>	GE Site Service Manager	31 January 2015

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			<p>procedure is generic and lacks specific direction for the Mumbida WF site.</p> <p>The procedure did not identify functions responsible for the control of the process; it did not provide clear indication of what is backed up, the extent of the equipment/software and data that was backed up, the timing of backups and rotation of media.</p> <p>The auditor was advised that there were no spare backup tapes on site. The GE O&amp;M Manual notes that the purchaser can buy additional tapes, a specific back-up procedure will be required based on the number of tapes, to cover issues such as tape rotation, type of backups performed etc.</p>	<p>that are backed up and direction to enable staff to perform, maintain and reuse the data and software in the event of a failure or emergency, and then update and implement the procedure. Generally items such as noted below should be included in the procedure:</p> <ul style="list-style-type: none"> <li>• identifying personnel responsible for tasks under the procedure;</li> <li>• the equipment that requires backing up;</li> <li>• what software, settings and data is backed up;</li> <li>• the GE O&amp;M Manual allows the purchaser to buy additional tapes, a specific back-up procedure will be required based on the number of tapes, to cover issues such as tape rotation, type of backups performed etc;</li> <li>• timing of back ups;</li> <li>• where the tapes are stored;</li> <li>• there should be documentary evidence to show that, if tapes are stored on site, storage is fire rated;</li> <li>• there should be allowance for regular testing for backup integrity.</li> </ul> <p>This is only a sample of the</p>			



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Item No	EC Ref	AMS Element Effectiveness Criteria / Rating	Finding	Recommendation	Action	By Whom	Due Date
				recommendations arising from the review, the licensee should review the back up procedure in full and determine the full extent of the improvement required and ensure implementation.			
8	7.7	Management reports appear adequate for the licensee to monitor licence obligations.  <i>Rating: B2</i>	<ul style="list-style-type: none"> <li>▶ Whilst licence obligations are monitored in the key planner calendar there is an opportunity for improvement in the system by expanding the reporting to monitor areas such as:               <ul style="list-style-type: none"> <li>○ Emergency Response: eg. Fire Drills</li> <li>○ Audit program</li> <li>○ Reporting timetable for compliance.</li> </ul> </li> </ul>	<b>12. (OFI)</b> Management reports could be expanded to monitor licence obligations such as: <ul style="list-style-type: none"> <li>• emergency response</li> <li>• audit program</li> <li>• reporting timetable for compliance.</li> </ul>	<ul style="list-style-type: none"> <li>▶ The Key Planner calendar with be expanded to include all licence obligations such as:               <ul style="list-style-type: none"> <li>• emergency response</li> <li>• audit program</li> <li>• reporting timetable for compliance.</li> </ul> </li> </ul>	General Manager Mumbida Wind Farm	31 July 2015
	<b>8</b>	<b>Risk Management</b>					
9	8.1	Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system.  <i>Rating: B3</i>	<ul style="list-style-type: none"> <li>▶ A corporate business risk register exists ("110922 MWF Risk Register") but there is no clear evidence that it has been presented to the Board six-monthly or that it has been regularly updated.</li> </ul>	<b>13.</b> Risk management process should be reviewed to ensure its continuous application to the operation of the assets.	<ul style="list-style-type: none"> <li>▶ Risk management process will be reviewed to ensure its continuous application to the operation of the assets.</li> </ul>	General Manager Mumbida Wind Farm	31 July 2015 at the next risk review workshop
				<b>14.</b> The corporate business risk register ("110922 MWF Risk Register") should be presented to the Board six-monthly in accordance with the Risk Management Framework.	<ul style="list-style-type: none"> <li>▶ The corporate business risk register will be presented to the Board six-monthly in accordance with the Risk Management Framework.</li> </ul>	General Manager Mumbida Wind Farm	

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10	8.2	Risks are documented in a risk register and treatment plans are actioned and monitored.  <i>Rating: C2</i>	Business corporate risks have been documented in the "MWF-R-0157_RiskRegister v2".  <ul style="list-style-type: none"> <li>▶ It is not clear from the register if the actions have been monitored or completed.</li> <li>▶ Plan does not show expected mitigation in risk resulting from treatment plans.</li> <li>▶ Other risk registers are also present in the system and it would be best to remove or control them and control the register in use either in the OM or in other suitable document.</li> </ul>	15. Risk register should show status and progress of actions. Planned date for completion of actions and risk rating reduction should be included.	▶ The risk register will be updated to show which date actions should be completed, completion of actions, the degree of risk after treatment.	General Manager Mumbida Wind Farm	31 July 2015 at the next risk review workshop
				16. A few risk registers are present in the system and it would be best to remove or control them and refer to the risk register in use either in the OM or in other suitable documents.	▶ Historic risk registers will be archived.	General Manager Mumbida Wind Farm	31 July 2015 at the next risk review workshop
11	8.3	The probability and consequences of asset failure are regularly assessed.  <i>Rating: C3</i>	▶ There is no documentary evidence that the probability and consequences of asset failures have been regularly assessed.	17. There should be a new review and an update of the risk register relating to assets, their failure modes, likelihood of failures and consequences. The actions required should be recorded and brought up to date. The register should include responsibilities for actions, dates for completion and progress. The asset risk register should be reviewed regularly.	▶ A risk register to systematically assess the likelihood and consequences of major asset failures will be completed.	GE Site Service Manager	31 July 2015 at the next risk review workshop
		<b>9</b>	<b>Contingency Planning</b>				
12	9.1	Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks.	▶ The "MWF-P-0136 Crisis Management Plan" does not include for testing for confirmation of operability.	18. The contingency plan for MWF's head office should be reviewed and should include a provision for testing. Reference to the plan should be made in the	▶ The contingency plan for MWF's head office will include a provision for testing. A test will take place.	General Manager Mumbida Wind Farm	31 July 2015

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Item No	EC Ref	AMS Element Effectiveness Criteria / Rating	Finding	Recommendation	Action	By Whom	Due Date
		<i>Rating: C3</i>		Operational Manual.			
			▶ (OFI) The succession plan “MWF-P-0152 Succession Plan” is concise and may need a brief guide to assist with its application.	19. (OFI) The succession plan should be reviewed with the aim of easing its application.	▶ The succession plan will be reviewed with the aim of easing its application.	General Manager Mumbida Wind Farm	31 July 2015
	<b>10</b>	<b>Financial Planning</b>					
13	10.4	The financial plan provides firm predictions on income for the next five years and reasonable indicative predictions beyond this period.  <i>Rating: B2</i>	▶ The “Mumbida Wind Farm Business Plan 2014 – 2019” is in preparation and is to include commercial and financial assumptions that will impact on the operation of the facility and key financial forecasts for the next 5 years.	20. (OFI) Complete the financial plan including firm predictions on income for the next five years and indicative predictions beyond this period. .	▶ Mumbida Wind Farm Business Plan 2015 – 2020, will link to the financial model which contains long term revenue predictions.	General Manager Mumbida Wind Farm	31 July 2015, during preparation of next Business Plan 2015-2020
	<b>11</b>	<b>Capital Expenditure Planning</b>					
14	11.4	There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned.  <i>Rating: C2</i>	▶ The financial model or financial projections will require regular review and updating in regard to CAPEX (and also OPEX), this process is not adequately described in the asset management plan or system.	21. The financial model or financial projections will require regular review and updating in regard to CAPEX (and also OPEX), this process should be described in the asset management plan or system.	▶ The financial projections will be reviewed and updated in regard to CAPEX and OPEX, this process will be described in the asset management plan or system.	General Manager Mumbida Wind Farm	31 July 2015, during preparation of next Business Plan 2015-2020