

# **Regional Power Stations – Noise regulation 17 Variation to assigned noise levels**

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**Western Power Corporation**

**Report and recommendations  
of the Environmental Protection Authority**

**Environmental Protection Authority  
Perth, Western Australia  
Bulletin 1074  
Regulation 17 Report 5  
October 2002**

ISBN. 0 7307 6712 4  
ISSN. 1030 – 0120

# SUMMARY AND RECOMMENDATIONS

Western Power Corporation (WPC) has applied to the Minister for the Environment under regulation 17 of the *Environmental Protection (Noise) Regulations 1997* to allow the emission of noise from 23 Regional Power Stations to exceed the prescribed standard for noise emissions as specified in noise regulation 7.

While WPC has made application under noise regulation 17 in relation to all of its facilities, this report relates only to those facilities under the operations of WPC's Regional Power Division. Other aspects of WPC's operations will be addressed in separate noise regulation 17 reports.

In consideration of the high levels of the noise emissions, and the likelihood that the existing Power Stations will be replaced over the next few years through the Regional Power Procurement Program (RPPP), the EPA considers that the noise emissions are best managed through a Ministerial Exemption Order under section 6 of the Act, in preference to a noise regulation 17 approval.

## Recommendations

The EPA submits the following recommendations to the Minister for the Environment:

1. That the Minister notes that noise emissions from Western Power Corporation's 23 Regional Power Stations that are the subject of the noise regulation 17 application are likely to exceed or vary from the standard prescribed under noise regulation 7;
2. That the Minister notes that, while the noise emissions from the Regional Power Stations exceed the prescribed standard to a substantial extent, the community response to the noise emissions is generally tempered by the recognition of the essential nature of the service provided;
3. That the Minister notes that Western Power Corporation is, through the Government's Regional Power Procurement Program and Western Power's West Kimberley Power Project, providing for new facilities to be built and run by independent companies, such that the existing units will be replaced within a few years;
4. That the Minister refuse the noise regulation 17 application to allow the emission of noise to exceed or vary from the prescribed standard; and
5. That the Minister grants an Exemption Order under section 6 of the *Environmental Protection Act 1986*, having regard to the preliminary drafting instructions set out in Appendix 3.

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# 1. Introduction

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for the Environment on the application by Western Power Corporation (WPC) under regulation 17 of the *Environmental Protection (Noise) Regulations 1997*, to allow the emission of noise from 23 of its Regional Power Stations to exceed the prescribed standard for noise emissions as specified under regulation 7.

Noise regulation 17 provides that:

*“where a person is of the opinion that he or she cannot reasonably or practicably comply with a standard prescribed under these regulations, or that a proposal of that person will not be reasonably or practicably capable of complying with that standard, that person may apply to the Minister for approval to allow the emission of noise to exceed or vary from that standard.”*

This report forms the advice required under sub-regulation (3) (b) (ii) of regulation 17, from the EPA to the Minister for the Environment.

In compiling this report, the EPA has considered the information provided by WPC (covering noise reduction considerations and consultation with the community and local government), and advice from the Department of Environmental Protection (DEP).

Details of the Regional Power Stations, the noise emissions and community response are presented in section 2 of this report. Section 3 discusses noise reduction from the facilities. The EPA's assessment and recommended noise regulation strategy are set out in section 4. Section 5 presents the EPA's recommendations.

## 2. The Facilities

### 2.1 Existing situation

Western Power Corporation is the sole provider of energy in many regional locations in WA, having taken over this essential service from many Shire Councils in the 1970's and '80's. The majority of stations were constructed by the Shires, using convenient, central locations. The facilities usually consisted of diesel generators housed in metal clad sheds, with openings for ventilation and access, thus providing limited sound attenuation. As the towns grew, additional generators were added, resulting in increasing noise emissions, while residential development encroached, thus reducing buffer distances.

With the advent of the *Environmental Protection (Noise) Regulations 1997*, it became apparent that these facilities were non-compliant with the prescribed standards. Subsequent noise surveys have confirmed that none of the 23 facilities fully complies.

The various facilities are described in the report "Submission to the Environmental Protection Authority - Supplemental Information Regarding Section 17 Variation to Noise Emissions from Western Power Corporation's Regional Power Division

Operations", dated December 2000 (Western Power Corporation, 2000). It is noted that one of the 24 facilities listed in that report, namely Broome 12 Mile, has since been decommissioned and withdrawn from the noise regulation 17 application, leaving the other 23 facilities as the subject of the application.

For each power station, the report describes extent of noise exceedance, the results of a community survey on the regulation 17 application, the noise reduction measures already implemented and cost of further measures (which may or may not lead to compliance). It should be noted that no data is presented for Wittenoom, as the Government has removed support services within this town.

## **2.2 Noise emissions**

The WPC report provides estimates of the noise emissions from each power station, based on the results of noise surveys and computer modelling of noise emissions. These results are used to determine the maximum exceedance over the prescribed standard in the regulations by comparison of the predicted level with the night time assigned level for the nearest noise-sensitive premises.

The assigned levels under the noise regulations are presented in Appendix 1.

The results show that all stations exceed the assigned levels, the lowest exceedance being 6 dB(A) at Denham and the highest being 39 dB(A) at Sandstone. The exceedances are substantial in many cases, with 9 stations showing exceedances of 30 dB(A) or more, and 7 stations showing exceedances of 20 dB(A) or more. It is noted that the Kununurra power station is only used as a standby station.

The EPA advises that the noise exceedances are based on simplified noise modelling, with the noise emission from each station being classed as one of several different types. The model then assumes flat ground (no shielding from topography or other structures) and calm meteorological conditions (not worst case, such as may occur with downwind propagation of sound). The assigned noise levels for premises receiving noise appear to include no influencing factors; and this is a reasonable assumption for country towns with little industrial or commercial land and no major roads.

Notwithstanding the above simplifications, the modelling provides a rough indication of the likely extent of noise exceedance. The EPA also notes that the noise emissions are likely to contain tonality.

The EPA therefore considers that the noise emissions of the regional power stations operated by WPC exceed the prescribed standard in the noise regulations, and so informs the Minister under regulation 17 (2).

## **2.3 Community response**

The results of the noise modelling were used to identify an "affected area", over which the prescribed standard may be exceeded. This was generally taken to be the area within the 35 dB(A) contour, which represents the lowest assigned level for night time. The above comments in relation to the simplifications in the model also apply to these

estimates of the affected area. The affected area was used to estimate the population affected by noise exceedances.

The affected population represented greater than 50% of the total population of the town for 12 of the power stations, with 5 stations affecting more than 90% of the population.

Perhaps surprisingly, the number of noise complaints is very low, with Fitzroy Crossing and Kununurra recording 2 complaints each, and Halls Creek, Sandstone, Meekatharra and Esperance one each. This would appear to be a reflection of the essential nature of the service provided.

As part of its community consultation regarding the noise regulation 17 application, WPC wrote to local governments and 22,000 customers seeking their response to the application. A total of 82 responses was received, of which 24 were "for" the idea of a noise regulation 17 approval and 29 "against".

The results of the noise modelling, population estimates, the community survey and the noise complaints data, were used to develop a "sensitivity ranking" of the stations, with higher weightings applied to complaints than to number of negative and positive responses to the survey. The WPC report goes on to provide more detailed data in relation to the "top ten" stations on the sensitivity ranking.

## **2.4 Summary of existing noise emissions and community response**

Table 1 below presents the stations in rank order, from most to least sensitive, with a summary of the data from the WPC report.



**Table 1: Summary Details of Regional Power Stations**

Location (in rank order)	Max noise exceedance dB(A)	Estimated population affected	Community response to survey re reg 17	Noise reduction history
Fitzroy Crossing	33	829	6 against, 2 for	New silencers, quiet radiator
Halls Creek	35	1,153	No responses	Operational measures
Derby	24	2,834	4 against, 3 for, 11 other	Nil
Hopetoun	33	131	4 against, 2 other	Nil
Sandstone	39	120	2 against	Nil
Meekatharra	27	843	2 for	Wall insulation, acoustic louvres
Cue	38	394	No responses	Nil
Exmouth	30	3,000	2 other	Wall insulation, acoustic louvres
Carnarvon	24	300	3 against, 5 for, 2 other	Silencers, new plant
Wiluna	33	175	No responses	Nil
Marble Bar	31	361	No responses	Nil
Laverton	17	84	1 against	Nil
Esperance	19	2,663	1 against, 14 for, 12 other	Nil
Camballin	32	50	No responses	Nil
Broome	11	13	3 against, 2 for, 8 other	Nil
Menzies	28	108	No responses	Nil
Kununurra (standby only)	23	0	No responses	Wall insulation, acoustic louvres
Mt Magnet	16	138	No responses	Enclosures (ineffective)
Nullagine	28	38	No responses	Acoustic covers 2 units
Yalgoo	22	80	No responses	Nil
Denham	6	38	1 for	Nil
Gascoyne Junction	10	5	No responses	Silencer, quiet radiator 1 unit
Wittenoom	Not reported	Not reported	Not reported	Nil



## **3. Noise Reduction And Compliance**

### **3.1 Past noise reduction**

The main noise sources are radiation from the generator casing and exhaust noise (resulting from the engine firing frequency), and the noise from the turbocharger and the cooling radiator fan. The structures are generally steel clad sheds, although some newer stations may be made of concrete. The radiator and exhaust are located outside the shed. The exhaust is fitted with a silencer, of residential grade in most cases, and critical grade in some cases.

WPC has retrofitted sound insulation into some old stations, with limited success because of the building penetrations for access and ventilation. The costs of some measures are indicated below:

- The cost of this retrofitting sound insulation was up to \$150,000 per station in 1987.
- Replacement of standard ventilation louvres and roof vents with acoustic units cost \$30,000 in 1987.
- Covering the generator sets at Nullagine was reasonably successful and cost around \$50,000 per unit in 1986.
- Low noise radiators with using multiple low speed fans have been used successfully in recent times, at a cost of up to \$27,000 per unit.

Silencers are installed on the air intakes of the larger generators to reduce turbocharger noise as a matter of policy. WPC is also pursuing town planning measures to increase buffer distances, as in the case of the newer station at Denham. However, most stations would need to be completely reconstructed to approach compliance.

### **3.2 Compliance costs**

Given the age of the power stations and the surrounding land uses, WPC is of the view that new power stations are the best means of achieving compliance. The EPA supports this view. The only stations where it is proposed to retain the existing facilities are Carnarvon, Denham, Laverton, Gascoyne Junction, Meekatharra and Mt Magnet (the latter two only if the Regional Power Procurement Program (RPPP) does not provide new stations).

If the RPPP process fails to deliver a power station at the specified site, WPC has committed to achieve compliance, either through staged upgrades or through a new power station. This would take up to two years to complete.

Table 2 details the estimated costs and timing to achieve compliance through upgrades or replacement, (from the 2000 report) and also lists the estimated replacement dates through the RPPP (based on May 2002 information provided by WPC).

**Table 2: Compliance Costs and Dates for Regional Power Stations**

<b>Location (in rank order)</b>	<b>Max noise exceedance dB(A)</b>	<b>Replacement or upgrade cost \$M</b>	<b>Estimated date for RPPP operation</b>	<b>Compliance date requested</b>
Fitzroy Crossing	33	3.6	May 2004	May 2006
Halls Creek	35	3.6	May 2004	May 2006
Derby	24	10.5	Nov 2004	Nov 2006
Hopetoun	33	2.2	July 2003	July 2005
Sandstone	39	0.9	May 2003	May 2005
Meekatharra	27	2.5	May 2003	May 2005
Cue	38	1.9	May 2003	May 2005
Exmouth	30	12	May 2004	May 2006
Carnarvon	24	10.4	Dec 2004 95% compliance	Dec 2007
Wiluna	33	1.7	May 2003	May 2005
Marble Bar	31	2.4	Dec 2004	Dec 2006
Laverton	17	0.35	March 2005	March 2006
Esperance	19	24	July 2004	July 2006
Camballin	32	1.2	May 2004	May 2006
Broome	11	28	Nov 2004	Nov 2006
Menzies	28	0.9	Dec 2004	Dec 2006
Kununurra	23	0	Standby	Standby
Mt Magnet	16	1.8	May 2003	May 2005
Nullagine	28	1.5	Dec 2004	Dec 2006
Yalgoo	22	1.0	May 2003	May 2005
Denham	6	0.2	March 2005	March 2006
Gascoyne Junction	10	0.05	July 2007	July 2008
Wittenoom	-	-	No action	-

## **4. EPA Assessment**

### **4.1 Noise emissions and community impacts**

The EPA concludes that the noise emissions from the 23 regional power stations do not comply with the prescribed standard in the noise regulations. The exceedances are generally large, the lowest exceedance being 6 dB(A) at Denham and the highest 39 dB(A) at Sandstone. The EPA notes that the number of people affected by noise emissions varies from location to location, but represents greater than 50% of the total population of the town in 12 cases.

The EPA acknowledges that there has been limited community complaint about noise emissions, and limited opposition to the idea that Western Power Corporation should receive a noise regulation 17 approval. The EPA attributes this relatively low level of community response primarily to the essential nature of the service provided.

Notwithstanding the above, the EPA is concerned about the potential impacts of sustained high noise levels on the health, welfare and amenity of the people in the affected communities, and considers that all practicable measures should be implemented to achieve compliance. In this regard, the EPA recognizes that there is limited scope to achieve compliance through acoustic treatment of the existing facilities. The EPA supports the Power Procurement processes as the means by which the regional power stations may be brought into compliance over the next few years, and would urge that the process be expedited as far as is practicable.

In the interim, the EPA accepts that it is not practicable for WPC to achieve compliance with the prescribed standards in the noise regulations.

### **4.2 Noise regulation strategy**

It is the view of the EPA that a noise regulation 17 approval is an appropriate regulation strategy where the exceedance over the assigned levels in the regulations is not considered large, and where alternative noise limits can readily be specified. In this case, the exceedances are generally considered too large for regulation 17 approval to be the recommended strategy. Further, the specification of noise limits is not the means by which the non-compliances are best resolved in this case, but rather through the replacement dates stemming from the RPPP process.

In the light of the above, the EPA considers that an exemption order given by the Minister under section 6 of the *Environmental Protection Act 1986* would be a preferable strategy to the granting of a noise regulation 17 approval.

In the view of the EPA, an exemption order should be based on achievement of the "estimated dates for RPPP operation" as shown in Table 2 above, rather than on the later "compliance dates requested". There should be a facility for extension of the order if the "estimated date" cannot be met, with the extension not to be beyond the "compliance date requested".

The EPA makes the specific comment in relation to the exemption dates for the following facilities:

- Kununurra – As this station is only used on standby, the exemption may remain in place for an unrestricted period of time.
- Wittenoom – As the Government does not support services within this town, the exemption may remain in place for an unrestricted period of time.

The order should require that all practicable noise reduction measures should be carried out during the exemption period, as opportunities arise, through planned maintenance and upgrade work. WPC should be also required to retain all existing noise buffers.

Preliminary Drafting Instructions for such an exemption order are presented in Appendix 2 of this report.

## **5. EPA Recommendations**

With regard to the noise regulation 17 application by Western Power Corporation in relation to noise emissions from their regional power stations, the EPA makes the following recommendations:

1. That the Minister notes that noise emissions from Western Power Corporation's 23 Regional Power Stations that are the subject of the noise regulation 17 application are likely to exceed or vary from the standard prescribed under noise regulation 7;
2. That the Minister notes that, while the noise emissions from the Regional Power Stations exceed the prescribed standard to a substantial extent, the community response to the noise emissions is generally tempered by the recognition of the essential nature of the service provided;
3. That the Minister notes that Western Power Corporation is, through the Government's Regional Power Procurement Program and Western Power's West Kimberley Power Project, providing for new facilities to be built and run by independent companies, such that the existing units will be replaced within a few years;
4. That the Minister refuse the noise regulation 17 application to allow the emission of noise to exceed or vary from the prescribed standard; and
5. That the Minister grants an Exemption Order under section 6 of the *Environmental Protection Act 1986*, having regard to the preliminary Drafting Instructions set out in Appendix 2.

# **Appendix 1**

## **Assigned Noise Levels under the Regulations**

**Assigned Levels Derived from Table 1 of Regulation 8 of the *Environmental Protection (Noise) Regulations 1997***

Type of premises receiving noise	Time of day	Assigned level, dB(A)		
		$L_{A\ 10\ (Slow)}$	$L_{A\ 1\ (Slow)}$	$L_{A\ max\ (Slow)}$
Noise sensitive premises, at locations within 15 metres of a building directly associated with a noise sensitive use.	0700 to 1900 hours Monday to Saturday	45 + influencing factor	55 + influencing factor	65 + influencing factor
	0900 to 1900 hours Sunday and public holidays	40 + influencing factor	50 + influencing factor	65 + influencing factor
	1900 to 2200 hours all days	40 + influencing factor	50 + influencing factor	55 + influencing factor
	2200 hours 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays.	35 + influencing factor	45 + influencing factor	55 + influencing factor
Noise sensitive premises, at locations further than 15 metres from a building directly associated with a noise sensitive use.	All hours	60	75	80
Commercial premises	All hours	60	75	80
Industrial and utility premises	All hours	65	80	90

**Note –**

“ $L_{A\ max}$  assigned level” means an assigned level which, measured as a  $L_{A\ Slow}$  value, is not to be exceeded at any time;

“ $L_{A\ 1}$  assigned level” means an assigned which, measured as a  $L_{A\ Slow}$  value, is not to be exceeded for more than 1% of the representative assessment period;

“ $L_{A\ 10}$  assigned level” means an assigned which, measured as a  $L_{A\ Slow}$  value, is not to be exceeded for more than 10% of the representative assessment period; and

“influencing factor” means the influencing factor determined under Schedule 3 of the regulations.

## **Appendix 2**

### **Preliminary Drafting Instructions for a Ministerial Exemption Order**



## PRELIMINARY DRAFTING INSTRUCTIONS FOR EXEMPTION ORDER

### AUTHORITY:

The Order would be made by the Minister for the Environment under section 6 of the *Environmental Protection Act 1986*.

### CITATION:

The Order may be cited as the *Environmental Protection (Regional Power Stations Noise Emissions) Exemption Order 2002*.

### COMMENCEMENT:

The Order would come into operation on the day of publication in the *Gazette*.

### INTERPRETATION:

The following terms may need definition:

“**Western Power Corporation**” means (definition);

“**commencement**” means the day on which the Order comes into operation;

“**regional power station**” means a premises owned or operated by Western Power Corporation for the purposes of electrical power generation and located in or near a townsite listed in Schedule 1 of this Order.

“**Director**” means the Director of the Environmental Regulation Division, Department of Environmental Protection;

“**regulations**” means the *Environmental Protection (Noise) Regulations 1997*;

“**noise-sensitive premises**” has the same meaning as in the regulations; and

“**prescribed standard**” has the same meaning as in subregulation 4 (1).

### APPLICATION OF ORDER:

1. The Order should apply to all 23 of the regional power stations operated by Western Power Corporation as shown in the list in Schedule 1.
2. The Order should cease to apply in respect of a regional power station on the “date of expiry of Order” given in Table 1 for that regional power station.
3. The Order should contain a provision allowing Western Power Corporation to apply for an extension of the exemption in relation to a particular regional power station, where WPC believes it cannot reasonably or practicably comply with the prescribed standard for noise emissions after the “date of expiry of the Order”.
4. The application for extension should be made to the Minister, with the Minister being able to grant the application within the terms of the Order.

5. The order should continue to have effect in relation to a regional power station in respect of which an application for extension has been made, until such time as the Minister grants or refuses that application.
6. The Minister should not be able to grant an extension beyond the “date beyond which Order cannot be extended” as shown in Schedule 1.
7. Where a request is made for an extension beyond the “date beyond which Order cannot be extended” as shown in Schedule 1, that request would be the subject of a new exemption Order request, and this Order would remain in force until such time as the Minister granted or refused that request.

**DECLARATION OF EXEMPTION AND REQUIREMENT TO COMPLY:**

1. Part V of the Act and the *Environmental Protection (Noise) Regulations 1997* would be declared not to apply to the noise emitted as a result of the operation of regional power stations.
2. The exemption would not apply to noise of a kind referred to in regulations 3 and 13.
3. The declaration under subclause (1) would be subject to the Conditions specified in Schedule 2.
4. Western Power Corporation is the agency required to comply with the Conditions specified in Schedule 2.

## SCHEDULE 1 – REGIONAL POWER STATIONS

The following are the regional power stations to which the Order applies, the dates on which the Order will expire with respect to each regional power station and the dates beyond which the Order should not be extended –

<b>Location</b>	<b>Date of expiry of Order</b>	<b>Date beyond which Order cannot be extended</b>
Fitzroy Crossing	May 2004	May 2006
Halls Creek	May 2004	May 2006
Derby	Nov 2004	Nov 2006
Hopetoun	July 2003	July 2005
Sandstone	May 2003	May 2005
Meekatharra	May 2003	May 2005
Cue	May 2003	May 2005
Exmouth	May 2004	May 2006
Carnarvon	December 2004	December 2007
Wiluna	May 2003	May 2005
Marble Bar	December 2004	December 2006
Laverton	March 2005	March 2006
Esperance	July 2004	July 2006
Camballin	May 2004	May 2006
Broome	Nov 2004	Nov 2006
Menzies	December 2004	December 2006
Kununurra	Unrestricted	Unrestricted
Mt Magnet	May 2003	May 2005
Nullagine	Dec 2004	December 2006
Yalgoo	May 2003	May 2005
Denham	March 2005	March 2006
Gascoyne Junction	July 2007	July 2008
Wittenoom	Unrestricted	Unrestricted

## **SCHEDULE 2 - CONDITIONS OF EXEMPTION**

The Order should be subject to the following Conditions which may be specified in a Schedule to the Order –

### **Noise emissions to be reduced as far as is practicable**

1. Noise emissions from the regional power stations are to be reduced as far as is reasonably practicable.
2. Measures which have been introduced to control noise emissions are to be maintained so their effectiveness in reducing noise emissions is not impaired.
3. It is not a breach of the Order if a reasonably practicable measure is identified, provided that measure is thereafter implemented in the shortest reasonably practicable time.

### **Western Power Corporation to retain buffers**

Western Power Corporation shall not, during the period of exemption, sell or lease to another party a dwelling or any land that it owns, any part of which dwelling or land lies within an area where noise emissions from a regional power station exceed the prescribed standard in the regulations, unless it is a condition of the sale that the land or dwelling is only to be used for purposes such that the noise emissions will not exceed the assigned levels for that use. (For example, land owned by WPC where the noise emissions from a nearby regional power station exceed the assigned levels for noise-sensitive premises shall not be sold for use as noise-sensitive premises, but could be sold for, say, commercial purposes, if the noise emissions comply with the assigned levels for commercial premises).

### **Western Power Corporation to report progress with compliance program**

Western Power Corporation shall provide a report to the Director every 6 months after the date of commencement detailing –

- the progress with the replacement of regional power stations; and
- the implementation of any noise reduction measures,

which has occurred in respect of a regional power station during the previous 6 months.