Kwinana International Motorplex

Western Australian Sports Centre Trust

Report and Recommendations
of the Environmental Protection Authority

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Summary and Recommendations

The Western Australian Sports Centre Trust proposes to construct a motor sports facility (the Kwinana International Motorplex) adjacent to Rockingham Road between Anketell and Thomas Roads, Kwinana. The EPA is aware that the Government has evaluated a number of sites and has chosen Kwinana as the preferred option.

Section 44 of the *Environmental Protection Act 1986* requires the Environmental Protection Authority (EPA) to report to the Minister for the Environment on the environmental factors relevant to the proposal and on the conditions and procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit. This report provides the EPA's advice and recommendations to the Minister for the Environment on the environmental factors relevant to the proposal.

The proposed Motorplex facility raises the issues of societal risk and appropriateness of locating such facilities within the Kwinana industrial buffer zone. The EPA considers that these are largely planning issues. The EPA has provided advice to the Western Australian Planning Commission (WAPC) for its consideration in the land use decision-making process for the proposal in a separate document, in accordance with Section 16(j) of the *Environmental Protection Act 1986* (EPA Bulletin 949).

Relevant environmental factors

Although a number of environmental factors were considered by the EPA in the assessment, it is the EPA's opinion that the following are the environmental factors relevant to the proposal, which require detailed evaluation in the report:

(a) Noise;

(b) Individual Risk;

(c) Vegetation Communities, Declared Rare and Priority Listed Flora; and

(d) Water Management.

Conclusions

The EPA has considered the proposal by Western Australian Sports Centre Trust to build and operate a motor sport facility (Kwinana International Motorplex) adjacent to Rockingham Road between Anketell and Thomas Roads, Kwinana.

The EPA notes that the proposal would enable the closure of the Claremont Speedway and the Ravenswood Raceway facilities which have been the cause of some public complaint in relation to noise.

The EPA considers that noise and individual risk are the environmental factors of highest importance. With respect to noise there are a number of issues which need to be considered:

(a) The noise levels generated by the Motorplex would be of the same order as in the current speedway and dragway sites at Claremont and Ravenswood. However, it is not reasonable to take the view that current noise levels at Claremont and Ravenswood are acceptable for a new site since there is a significant difference between enabling the on-going operation of a long established noisy activity and the introduction of such an activity into a community which has hitherto not been exposed to such noise. In addition, the Motorplex would bring together noises which currently impact on separate communities.

(b) If the Motorplex proceeds it would substantially exceed the *Environmental Protection (Noise) Regulations 1997* and the proposal may well be judged under Section 49 of the Environmental Protection Act to "unreasonably interfere with the health, welfare, convenience, comfort or amenity" of adjacent residential communities. The noise would have negative environmental impacts on adjacent communities, although the impact of speedway noise would be less than that for the dragway.

(c) The noise impacts on the community could be ameliorated, at a cost, by fully enclosing the Motorplex, and this is the EPA's preferred approach if the facility were to proceed on the Kwinana site. Other mitigation action includes noise limits on cars and time restriction on events.

(d) If the proposal is to be implemented without immediate enclosure, consideration should be given to a staged development such that a speedway complex is constructed and trialled before making a decision to also locate the dragway at the site. A trialled approach would enable community reaction to noise from the facility to be understood, and would allow further consideration of the benefits of complete enclosure.

(e) The area of greatest noise impact would be Hope Valley which has been recommended to be zoned "special industrial" under the preferred zoning strategy set out in the FRIARS report. If in addressing the FRIARS recommendations the Government took early action to change the residential nature of the Hope Valley area, there would be a substantial reduction in the level of impact from noise on the community. However, the Motorplex as proposed would still have significant negative impacts on the communities of Wattleup and Medina.

In making a decision on the proposal, a judgement needs to be made between the environmental cost to the community through a reduction in the amenity of social surroundings and the financial cost of adopting noise mitigation options.

A peer review of the proponent's risk report has indicated that the level of individual fatality risk at the proposed site is likely to be greater than previous estimates, and may be approaching, or exceed, the EPA's recommended criterion. This is because previous estimates have not included all possible risks associated with near-field effects, or recent developments in the Kwinana area, including transport of dangerous goods. Further risk assessment should be undertaken to better estimate the current level of individual fatality risk over the site to ascertain whether the risk to patrons would reasonably meet the EPA's criterion. If further risk assessment showed that the risk to patrons would not reasonably meet the EPA's criterion, the proposal should not be implemented unless risk reduction measures were demonstrated which would reduce the risk to acceptable levels. If the proposal is implemented, future expansion of the Kwinana industry may need to be constrained to continue to meet acceptable risk levels at the facility.

The proposal would also result in the removal or disturbance of about 7 ha of vegetation included in Perth's Bushplan Site 349. If the proposal is implemented, provisions should be made for an addition to Perth's Bushplan equivalent to the loss in Site 349.

The proposal site includes an area used by Alcoa for residue storage If the proposal is implemented, agreement would need to be reached between Alcoa and the State in relation to on-going management of groundwater affected by the residue areas.

Recommendations

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

1. That the Minister notes that the project being assessed is a motor sport facility (Kwinana International Motorplex) adjacent to Rockingham Road between Anketell and Thomas Roads, Kwinana.

2. That the Minister considers the report on the relevant environmental factors as set out in Section 3 and the conclusions reached by the EPA above.

3. That the Minister notes that the proposal, if implemented, would have negative environmental impacts on the adjacent communities, and that as a social issue, a judgement needs to be made between the environmental cost to the community through reduction in the amenity of the social surroundings and the financial cost of adopting noise mitigation options.

4. That the Minister, in her consideration as to whether or not the proposal may be implemented, take into account:

   a) if approved, the possibility of funds being available either immediately or at a future date to reduce noise levels by taking such action as enclosing the facility;

   b) if approved without enclosure, the possibility of a staged approach to the development of the proposal such that a speedway complex be constructed and trialled before a decision is taken on a dragway track; and

   c) if approved, the adoption of other mitigation actions such as noise limits on cars and time restrictions on events.

5. That the Minister encourages the Government to consider at an early date the matter of zoning of the Hope Valley area as well as the associated action in relation to the affected land holders.

6. That the Minister notes that the level of individual fatality risk to patrons at the site is likely to be greater than previous estimates, and that it may be approaching, or exceed, the EPA's recommended criterion. Further risk assessment should be undertaken to better estimate the current level of risk over the site and ascertain whether the risk to patrons would reasonably meet the EPA's criterion. If further risk assessment showed that the risk to patrons would not reasonably meet the EPA's criterion, the proposal should not be implemented unless risk reduction measures were demonstrated which would reduce the risk to acceptable levels. Any plans for future expansion of the Kwinana industrial area would need to ensure that acceptable levels of risk continued to be met.

7. That the Minister determines that if a decision is taken that the proposal may be implemented, such approval be subject to the conditions set out in Appendix 4, which include the proponent's commitments.

Contents

1. Introduction

This report provides Environmental Protection Authority (EPA) advice to the Minister for the Environment on the environmental factors relevant to the proposal by the Western Australian Sports Centre Trust to build and operate a motor sport facility (Kwinana International Motorplex) adjacent to Rockingham Road between Anketell and Thomas Roads, Kwinana, approximately 28 kilometres south-southwest of the Perth CBD (Figure 1).

The proposal was referred to the EPA in February 1999 and the level of assessment was set at Public Environmental Review (PER).

The PER report "Kwinana International Motorplex", hereafter referred to as the PER (ERM, 1999a), was made available for public review for 4 weeks from 28 June 1999 to 26 July 1999.

The EPA is aware the Government has chosen Kwinana as the preferred site for a Motorplex facility, and that it is seeking a tight time schedule for construction. The EPA is providing the advice on environmental impacts in this report in a restricted timeframe. It would have preferred to have more time to provide its report and it would also have preferred to consider a number of possible sites so that it could have assessed and provided advice on a comparative basis. However, the referral of only the Kwinana option made this not possible.

2. The proposal

The proposed site for the facility is situated east of the Kwinana heavy industry area adjacent to Rockingham Road between Anketell and Thomas Roads, Kwinana, approximately 28 kilometres south-southwest of the Perth CBD. The 70 ha site partially occupies some of Alcoa's residue storage areas. The southern boundary of the site is about 1.5 km north-west of the Medina residential area (Figure 1).

The proposal is for the construction and operation of a motor sport facility for speedway and drag racing. This development would supersede the Claremont Speedway and the Ravenswood Raceway.

The proposed operation incorporates an oval speedway track about 220 m by 130 m and a straight drag racing track approximately 1100 m long and 20 m wide.

It is proposed that the facility would primarily be used for speedway and drag racing between October to April with limited use for these activities between April to October. Typical Motorplex event details are presented in Table 2.1 of the PER.

A summary of the key characteristics of the proposal is presented in Table 1. A more detailed description of the proposal is provided in Chapter 2 of the PER.

3. Environmental Considerations

3.1 Relevant Environmental Factors

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment on the environmental factors relevant to the proposal and the conditions and procedures, if any, to which the proposal should be subject. In addition, the EPA may make recommendations as it sees fit.

Although a number of environmental factors were considered by the EPA in the assessment, it is the EPA's opinion that the following are the environmental factors relevant to the proposal, and which require detailed evaluation in this report:

(a) Noise;

(b) Public Risk;

(c) Vegetation Communities, Declared Rare and Priority Listed Flora; and

(d) Water Management.

FIGURE 1

Table 1. Summary of Proposal Key Characteristics

Element	Quantities/Description
Location	Kwinana
Nature of operation	Speedway and drag racing events.
Total area of site	70 ha of which about 15 ha will be developed for the facility and supporting infrastructure
Speedway	Speedway track covering approximately 2.8 ha.
Drag racing strip	Drag racing track 1127 m long running north-south parallel to Rockingham Road.
Competitors facilities	Hard-stand areas for pre and post race checking/maintenance; Pit area.
Fuel storage	Methanol, and petrol will not be stored on-site but will be brought onto the site for each meeting and removed after the meeting; About 1000L of diesel fuel will be stored on-site for use by site machinery.
Viewing areas	Grandstand covering about 0.8 ha
Public parking	Car parking for 4500 cars.
Waste disposal	Litter and packaging collected by weekly contractor; Sewage: connected to reticulated sewerage system; Oil/fuel drums/containers: disposed of by car owners and recycling contractors.
Other infrastructure	Amenities and associated facilities; Access roads.
Drainage	To be managed so as not to interfere with on-going management of groundwater. Drainage from residue areas is to be directed to infiltration basins within the residue area; drainage from clean soil, made surfaces and natural soils is to be directed to infiltration basins in the natural soils; and infiltration basins serving areas with potential sources of hydrocarbons are to be fitted with appropriate contaminant separation facilities.

The EPA considers that other environmental factors do not require further evaluation by the EPA because they have been adequately dealt with in the PER and the proponent's commitments where required.

The EPA has not assessed the issue of societal risk, and has provided advice to the Western Australian Planning Commission for its consideration in the land use decision-making process for the proposal in a separate document, in accordance with section 16(j) of the *Environmental Protection Act 1986* (EPA Bulletin 949)

The following sections review the relevant environmental factors.

3.2 Noise

Description

The Kwinana International Motorplex proposal includes two facilities which are potential significant noise sources. These are:

a) a speedway circuit; and
b) a drag racing strip.

Other noise sources include patron's vehicles, the public address system and the competitor's pit area.

Table 2 below provides a summary of predicted typical noise levels in adjoining suburbs resulting from the facility, as presented in the PER.

Table 2 also indicates the typical assigned noise levels which apply in these suburbs under the *Environmental Protection (Noise) Regulations 1997*. Assigned noise levels are the levels of noise allowed to be received at a premises at a particular time of day or night. These levels may only be exceeded with specific approval or an exemption under the *Environmental Protection Act 1986*

The assigned noise level varies because under the *Environmental Protection (Noise) Regulations 1997*:

- the area within the Kwinana EPP Air Quality Buffer, which includes Hope Valley and Wattleup, is deemed to be commercial premises for the purposes of calculating the 'influencing factor' while Medina is considered to be residential; and
- the percentage of time that the noise is present is taken into account in establishing the assigned noise level. 10 dB(A) increase for noise less than 10% of 4 hour period and 20 dB(A) for less than 1%.

The assigned noise levels in Table 2 are for times after 10.00 p.m. The assigned noise levels would be 5 dB(A) higher if the Motorplex activities ceased by 10.00 p.m., and thus the exceedance would be 5 dB(A) lower.

The DEP has advised that the acoustic modelling has been carried out in accordance with the Draft EPA Guidance for the Assessment of Environmental Factors - “Environmental Noise" and that the meteorological conditions used are appropriate.

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Table 2. Predicted noise levels and typical assigned noise levels

Race/vehicle type	Predicted noise level dB(A) (1)	Adjusted predicted noise level dB(A) (2)	% of 4-hour period during which noise occurs	Typical assigned noise level dB(A) (3)	Exceedance dB(A) (4)
Hope Valley - southerly wind (most common ~66%)					
Top fuel drags	99	104	0.2	64	**40**
Top comp drags	84	89	0.9	54	**35**
Super gas drags	75	80	8.1	54	**26**
Speedway	75	80	21.0	44	**36**
Wattleup - southerly wind (most common ~66%)					
Top fuel drags	81	86	0.2	64	**22**
Top comp drags	66	71	0.9	54	**17**
Super gas drags	57	62	8.1	54	**8**
Speedway	57	62	21.0	44	**18**
Medina - southerly wind (most common ~66%)					
Top fuel drags	69	74	0.2	55	**19**
Top comp drags	54	59	0.9	45	**14**
Super gas drags	45	50	8.1	45	**5**
Speedway	45	50	21.0	35	**15**
Medina - northerly wind (rare ~2%)					
Top fuel drags	87	92	0.2	55	**37**
Top comp drags	69	74	0.9	45	**29**
Super gas drags	63	68	8.1	45	**23**
Speedway	63	68	21.0	35	**33**
East Rockingham - northerly wind (rare ~2%) (5)					
Top fuel drags	69	74	0.2	58	**16**
Top comp drags	51	56	0.9	48	**8**
Super gas drags	45	50	8.1	48	**2**
Speedway	45	50	21.0	38	**12**

Notes:
1. Predicted noise levels are based on Figures 5.15 to 5.22 in the PER and supplementary data.
2. Includes +5 dB(A) adjustment for tonality.
3. For times after 10.00 pm.
4. Exceedances include tonality adjustment.
5. Adjusted predicted noise levels for East Rockingham area with southerly (common) winds would comply.

Submissions

Noise was the most commonly raised issue in public submissions. Some submissions expressed concern that the noise levels would have a negative affect on lifestyle and amenity in adjacent areas and as far away as Rockingham. Other submissions, including 2519 pro forma letters, expressed the view that the intermittent nature of the noise should render it

acceptable, drawing attention to the operation of Ravenswood Raceway and Claremont Speedway where exemptions have been granted to exceed the noise regulations.

Several submissions drew attention to the substantial number of shift workers living in the vicinity and expressed concern that sleep disturbance may affect their performance in critical industry operations.

A resident of Medina enclosed with her submission a letter from the Town of Claremont stating that they continue to receive complaints every speedway season from residents in all surrounding areas but are unable to take action because of the special regulations under which the Speedway operates.

The Kwinana Town Council undertook a brief survey of a random selection of ratepayers in Hope Valley, Medina, Calista, Orelia and Parmelia. The survey letter emphasised noise impacts from the proposal and offered participants the opportunity to listen to a demonstration of speedway and drag car noise at levels typical of those expected in Hope Valley, Medina and Wattleup. Of 919 owners surveyed, responses were received from 206 and about 100 attended a noise demonstration. About 70% of survey respondents objected to the proposal.

The proponent undertook a telephone survey of community attitudes to the proposal which concluded that 58% of people agreed with the proposal and that this figure increased to 77% when they were made aware of a range of advantages which the Motorplex might bring to the region. The EPA received submissions from some respondents to that survey suggesting that the potential noise impacts had not been clearly indicated.

The Local Government Authorities of Kwinana, Cockburn and Rockingham made submissions objecting to the proposal on the basis that it would expose their ratepayers to unacceptable levels of noise. Particular concern was expressed that noise would be present on two consecutive nights (Fridays and Saturdays) during the racing season; that allowing racing after 10:00 p.m. increased the nuisance of operational noise and potential noise from departing patrons; and that the intermittent nature of the drag racing noise would be likely to make it more intrusive than the more continuous noise from the speedway.

A number of submissions, including the Department of Resources Development and some industries in the area, pointed out that industry is undertaking significant expenditure (in excess of $4m over the next two years) to manage noise to meet the assigned noise levels in Medina and north Rockingham.

Assessment

The area considered for assessment of this factor is the urban and rural area extending from Coogee in the north to Baldivis in the south and from the coast eastwards to Casuarina with particular emphasis on the nearby residential/rural areas of Hope Valley, Wattleup and Medina.

The EPA's environmental objective for this factor is to ensure that noise impacts emanating from the proposed raceway do not unreasonably interfere with the health, welfare, convenience, comfort or amenity of residents in the assessment area.

(i) Impacts on residents

Noise is a social issue, and under Section 3 of the *Environmental Protection Act 1986*, becomes pollution if it is excessive. There are Government approved Noise Regulations promulgated under the Environmental Protection Act which set allowable noise levels based on the land use of the receiving environment, and the noise levels predicted for the proposed Motorplex exceed these levels. As currently proposed the facility is likely to result in

exceedance of the Noise Regulation levels over an area of over 200 km^2 and to exceed those levels in large measure in rural and residential areas adjacent to the site of the proposal.

However, the Regulations do provide for approval to exceed or vary from levels set in the Regulations depending upon the circumstances (regulation 17). Also, there is a provision in the *Environmental Protection Act, 1986* under which premises may be exempt from any provision of the Act, including the Noise Regulations, with appropriate authorisation (Section 6). Social issues also become land use planning issues.

The EPA availed itself of the opportunity to listen to a demonstration of speedway and drag car noise at levels typical of those expected in Hope Valley, Medina and Wattleup.

The EPA came to the view that the noise from all operations would annoy some of the residents, especially those living close to the proposed facility, but that the noise expected from the speedway operations would be likely to be less annoying to residents than that from drag racing operations. The EPA recognises that while listening to a noise demonstration in a room is different to listening to the actual noise at one's home, nevertheless the demonstration provided members with an indication of the various noise levels likely to be experienced at the property boundaries.

The proponent has presented curves which demonstrate the likely annoyance caused by noise from aircraft, traffic and railways (PER fig 5.23). These curves are consistent with recent research findings (for example Miedema, 1998).

The curves are based on noise which is present semi-continuously throughout the year. The proponent calculated 4-hour L_{Aeq} levels to provide "…some indication of the likely level of community reaction…". Table 3 shows the result of applying the annoyance curves to the expected Motorplex noise on the assumption that the noise from drag cars and the speedway causes similar annoyance to that from aircraft. These data indicate that significant proportions of the population are likely to find the noise highly annoying.

Table 3. Potential community annoyance

Race/Vehicle Type	**Predicted Noise Level** L_{Aeq} dB(A) (PER p 5.12)	**% of people highly annoyed** (PER fig 5.23)
Medina		
Drag racing	48	8%
Speedway	43	7%
Hope Valley		
Drag racing	72	55%
Speedway	66	34%
Wattleup		
Drag racing	54	12%
Speedway	51	9%

In responding to public submissions, the proponent has argued that the Motorplex noise would be less annoying since it would be present only for a few hours on two nights for about 25 weeks of the year resulting in an annual L_{Aeq} ranging from 18 to 46dB(A).

The converse argument can be made that there is a tendency for people to adjust to noises which are present most of the time and are more annoyed by noises which are more intermittent. Furthermore, it is generally accepted that there is greater tolerance of noise

generated by "socially necessary" activities (such as transport) than for noise perceived as being of benefit to a specific group (such as rock concerts). Therefore the proportion of the public highly annoyed by noise from the Motorplex may well be higher than in Table 3.

The EPA notes the results of surveys conducted by the proponent and the Town of Kwinana. The EPA considers that neither survey has been undertaken in a manner which adequately or reliably ascertained the likely community acceptance of the noise impacts from the facility. The EPA considers that a more comprehensive noise survey including proper noise demonstration would be required to provide meaningful results.

The EPA has concluded that the noise levels and the duration expected from the speedway operation and that from drag racing operations are such that they would be highly annoying to some residents. Apart from general annoyance the range of noise impacts at these levels would include disruption to evening activities such as reading, TV watching and studying, sleep disturbance to children and shift workers and interference with outdoor activities. It is not possible from the information presented in the PER or the response to public submissions to reliably assess the proportion of the community which would be highly annoyed. This would depend on a number of factors including proximity to the site and attitudes to the noise source. Impacts would be greater at Hope Valley and Wattleup than in Kwinana and Rockingham, primarily as a result of prevailing winds.

Noise also has potential to have health impacts if noise exposure is high enough (Jansen, 1998). However, there is insufficient information available for the EPA to comment on whether the noise levels from the proposed Motorplex would be high enough to contribute to any health effects.

(ii) Noise regulations for motor sports activities

In discussions, the proponent has suggested that the *Environmental Protection (Noise) Regulations 1997* are not appropriate to motor sports activities and that special regulations should be developed.

The EPA is aware that the NSW EPA has considered the issue of motor sports in its noise control guidelines (NSW EPA, 1985). For new speedways the guidelines are:

Noise level restriction at residential boundary	Number of events per year
Background + 5dB(A)	50
Background + 10dB(A)	20
Background + 15dB(A)	10
Background + 30dB(A)	5

For drag racing the guideline is 5 dB(A) above background.

The guideline indicates that for special events such as state, national or international championships, consideration would be given to allow exceedance of the guidelines for up to three weekends per year.

Background noise levels in Medina, Wattleup and Hope Valley are 35 – 40 dB(A), and therefore the permitted noise levels under the NSW EPA guidance for 50 events per year would be 40-45 dB(A). This range of noise levels is 5-10 dB(A) above the assigned level for Medina, and about the same as the assigned levels for Hope Valley and Wattleup, but is well below the predicted noise levels for the Motorplex. Even if the facility was limited to 5 events per year, the Motorplex would not meet the NSW EPA criteria.

The EPA notes that the assigned noise levels under the Noise Regulations for Wattleup and Hope Valley treat these suburbs as if they were zoned for commercial purposes. This contributes to a higher assigned noise level than would be the case for more general noises in residential areas.

The proponent further suggested (EPA meeting 25 Aug 1999) that the EPA should not assess the proposal against assigned noise levels under the Noise Regulations but rather in terms of section 49 of the *Environmental Protection Act 1986* which defines an unreasonable emission of noise as that which "unreasonably interferes with the health, welfare, convenience, comfort or amenity of any person".

The EPA is of the view that the considerable research and consultation which preceded the establishment of the *Environmental Protection (Noise) Regulations 1997* has resulted in a mechanism which establishes assigned noise levels which meet the intent of section 49 for various land uses. Therefore any activity which consistently and substantially exceeds the assigned noise levels may well be judged, except in exceptional circumstances, to "unreasonably interfere with the health, welfare, convenience, comfort or amenity" of those exposed to the noise.

The EPA notes the proponent's intention to seek a variation to, or exemption from, the Noise Regulations, and that such an application would be supported by a noise management plan setting out specified operating times, monitoring, number of major events, advice to residents and complaints handling procedures.

The Noise Regulations under the Environmental Protection Act provide for a variation upwards to the assigned noise levels on a case-by-case basis where, following receipt of advice from the EPA, it is judged by the Minister for the Environment that social issues are of a nature that such a variation should be accepted. Regulation 17 is predicated on the proponent taking all reasonable and practicable measures to reduce noise emissions. The experience of the EPA to date has been that in particular circumstances, variations of up to about 10 dB(A) may be reasonable.

The EPA notes that in the case of the existing Claremont Speedway and Ravenswood Raceway they are subject to an exemption under Section 6 of the Environmental Protection Act, rather than a regulation 17 variation.

However, the EPA does not agree with the proponent's contention that this provides an automatic precedent for similar provisions to be applied to the Motorplex. It is the EPA's view that there is a significant difference between enabling the on-going operation of a long established noisy activity and the introduction of such an activity into a community which has hitherto not been exposed to such noise. In addition, the proposal is to bring both the activities of the Claremont Speedway and Ravenswood Raceway into one site.

(iii) Potential noise mitigation measures

The proposal has included some noise mitigation measures such as lowering of the track surfaces and the provision of bunding. However, these measures do not greatly reduce the level of noise impacts on nearby residents. In responding to submissions, the proponent has indicated that there are no practicable additional noise mitigation measures which would make a significant difference to community noise levels.

In a general sense, noise mitigation strategies involve either source reduction and control, attenuation of noise transmission through barriers, or action at the point of reception.

Source reduction and control would include use of quieter cars, reduced frequency of events, time restrictions on events or relocation of the source. Noise transmission attenuation would

include enclosure of the facility and acoustic walls. At the point of reception mitigation can be achieved by acoustic treatment of buildings or relocation of sensitive land uses.

The DEP has provided information on the likely effectiveness of some noise mitigation options (Appendix 3). This information indicates that the only mechanism available which would substantially reduce noise levels is to enclose the Motorplex. The proponent has indicated in the Response to Submissions (Appendix 5), that the cost of enclosure would be about $12 million.

The EPA is aware that a number of the strategy options in the FRIARS report include the re-zoning of the Hope Valley area to industry. It is the residents of Hope Valley who would be the most severely impacted by noise from the facility. If any of these strategies were to be implemented, and if additional noise mitigation measures including complete enclosure were incorporated, the speedway would be likely to comply with the currently assigned noise levels under the Noise Regulations, except on infrequent occasions (Medina during northerly winds). A regulation 17 variation may be considered for such circumstances.

Summary

The noise from the Motorplex would substantially exceed the *Environmental Protection (Noise) Regulations 1997* in adjacent residential areas. The Noise Regulations were preceded by considerable research and consultation, and any activity which consistently and substantially exceeds the assigned noise levels pursuant to these Regulations may well be judged under Section 49 of the Environmental Protection Act to "unreasonably interfere with the health, welfare, convenience, comfort or amenity" of the people most closely exposed to the noise.

Although residences would not be as close to the raceway facility as is currently the case for the Claremont Speedway, the EPA holds the view that there is a significant difference between a long-standing existing activity in a particular area and the introduction of that activity into a community in another area. In addition, the proposal is to bring both the activities of the Claremont Speedway and Ravenswood Raceway into one site.

As a consequence, the EPA considers that the noise levels associated with the proposal would be a significant social issue. Apart from general concern by a section of the community, the proposal if implemented would disrupt activities such as reading, TV watching, sleep by children and shift workers, and outdoor living.

The EPA is unable to provide a reliable assessment of the proportion of the community close to the proposed facility which would be highly annoyed by the noise level emanating from that facility, but believes it could be at least 20% of the residents and is likely to be substantially higher in the Hope Valley area.

In making a decision on the proposal a judgement needs to be made between the environmental cost to the community through a reduction in the amenity of social surroundings and the financial cost of adopting noise mitigation options. The EPA encourages detailed consideration to be given to ways and means of reducing noise emanating from the proposed new Motorplex facility. The most effective noise mitigation measure seems likely to be that of enclosing the facility but this may involve a significant financial cost. The EPA has been informed that industry in the Kwinana area is undertaking significant expenditure (in excess of $4m over the next two years) to manage noise to meet the assigned noise levels in Medina and North Rockingham.

The EPA considers that if the proposal is to be implemented without immediate enclosure, consideration should be given to a staged development such that a speedway complex is constructed and trialled, before making a decision to also locate the dragway at the site. A

trialled approach would enable community acceptance of noise from the facility to be understood, and would also allow further consideration of the benefits of complete enclosure.

3.3 Individual Risk

Description

The Kwinana Industrial Area includes a number of industries which store or process hazardous materials. In the event of an accident at an industrial site the Motorplex site could be subject to impacts by hazardous gases, extreme heat or falling debris capable of causing fatalities or injuries.

There are two aspects of risk of fatality which need to be considered in the context of this proposal:

- *Individual Risk* is a measure of the chance per year that any one member of the public will be killed as a result of an accident.
- *Societal Risk* is a measure of the chance of a number of people, or more, being killed as a result of an accident.

For the purposes of the assessment of this proposal, the EPA has addressed the issue of individual fatality risk.

In relation to societal risk, EPA considers that this issue is largely a planning matter and understands it will be addressed by the Western Australian Planning Commission (WAPC) in its land use decision-making process relating to the proposal. The EPA has provided advice on this matter to the Commission under section 16(j) of the *Environmental Protection Act* for its consideration in this process (EPA Bulletin 949).

In addition to the risk of fatality, patrons at the proposed Motorplex would also be subject to non-fatal risks such as injury and short-term health effects. The EPA has also briefly considered these in this assessment.

Submissions

Various industries and the Department of Resources Development have expressed concern that the risk associated with the close proximity of the facility to the Kwinana Industrial Area will act as a constraint on future industrial development and that the proposed siting of the Motorplex does not reflect the principle of reducing public risks to as low as reasonably practicable.

The Fire and Emergency Services Authority drew attention to the fact that roads and railways in the vicinity of the proposal probably carry more dangerous goods than any other point within the State.

On the basis of the information presented in the PER the Department of Minerals and Energy advised that the proposal is likely to meet the EPA's individual risk criterion.

Some submissions expressed the view that, for a public venue such as the Motorplex, consideration should be given to non-fatal risk factors including routine gaseous emissions

which may comply with the air quality standards applied to the industry buffer zone but are nevertheless capable of causing distress to sensitive individuals.

Some public submissions considered that the absence of any major industrial accident in the last 30 years provides assurance that the likelihood of an accident causing death or severe injury at the facility is sufficiently small as not to merit concern. Other public submissions drew attention to a number of industrial incidents which have occurred and concluded that these are evidence that, even with the best environmental practices, industrial accidents will happen and that there is no guarantee that a serious incident will not occur when large numbers of patrons are assembled at the facility.

Assessment

The area considered for assessment of this factor is the site of the proposed facility and the surrounding road network.

The EPA's environmental objective for this factor is to ensure that risk to spectators from the adjacent industry meets the EPA's criteria for individual fatality risk and reasonable levels for non-fatal risks.

(i) Risk of fatality

The PER indicated that, based on individual risk contours determined in a study by AEA Technology (1995), the individual fatality risk at the proposed site would be less than the EPA's relevant criterion of $5x10^{-6}$ per year for commercial developments in the buffer area.

A peer review of the proponent's societal risk report by Det Norske Veritas (DNV, 1999) indicated that there were a number of factors associated with the 1995 AEA Technology study which would result in it underestimating the individual fatality risk at the Motorplex site. In particular, the AEA Technology study considered failure cases that would reach the far field populations (ie the residential zones). As the Motorplex site is considerably closer to the Kwinana Industrial Area, it would be subject to more failure cases relevant to the near field. Also, there have been new and expanded hazardous operation, including transport of dangerous good, which increase risk exposure to the site. DNV advised that "It is highly likely that the individual risk contours for the existing Kwinana Industry Area would geographically move eastwards and therefore the 10^{-6} and 10^{-5} individual risk contours will include greater sections of the proposed Motorplex site".

Based on this information, the level of individual fatality risk may exceed the EPA's relevant criterion of $5x10^{-6}$ over parts of the site, with existing industry. The EPA notes that the spectator areas of the Motorplex would be located in the northern part of the site which is generally furthest from existing industry. The EPA also recognises that, by the nature of quantitative risk assessment, there will always be a measure of uncertainty in the estimate of risk at the site. Notwithstanding these points, further risk assessment needs to be undertaken to better estimate the current level of individual fatality risk over the site to ascertain whether the risk to patrons would reasonably meet the EPA's recommended criterion. This should include near-field events and the most recent industrial development and dangerous goods transport operations.

If further risk assessment showed that the risk to patrons would not reasonably meet the EPA's criterion, the proposal should not be implemented unless risk reduction measures were demonstrated which would reduce the risk to acceptable levels. This may include modifications to the proposal including the location of spectator areas, protection from possible events and the provision of safe refuge.

If further risk assessment showed that the level of individual fatality risk for patrons was near to the EPA's criterion with existing industry, it is likely that future expansion of industry would need to be constrained to continue to achieve acceptable levels of risk.

In addition to recommending quantitative criteria, the EPA's Guidance "Risk Assessment and Management: Offsite Individual risk from Hazardous Industrial Plant" also recognises the principle of risk minimisation, and that regardless of calculated risk levels, risks should be reduced to as low as reasonably practicable. In the site selection process for the Motorplex, where eight sites were considered, there is no indication that this principle was given due attention.

(ii) Non-fatal risks

In relation to non-fatal risks, the EPA recognises that it is difficult to evaluate all industrial incidents that may result in non-fatal injury or short-term health effects. However, there are two broad types of events which need to be considered.

The first type is an event which results in an unplanned release of toxic gas or other chemical which can result in impacts off-site. These are reported on the emergency radio through the Kwinana Industry Mutual Aid emergency response system. All facilities downwind from the release are notified immediately and, if necessary, the site specific response system is immediately implemented and workers are protected in refuges. There were six off-site releases in 1998 and four to date for 1999, as reported in the annual summary of accidents report published by the Department of Minerals and Energy. If the proposal is implemented, emergency response procedures would be necessary to address such events. Serious concerns were raised by the Fire and Rescue Services, the Department of Minerals and Energy, DNV's, peer review report, and the Kwinana Industry as to the practicality of having effective crowd control and providing safe refuge or evacuation for large numbers of spectators, in the short time available before an incident affects the site.

The second type of event is one of operating excursions which happen on a regular basis, sometimes during power outages or startups. Companies in the Kwinana Industrial Area operate under licences which allow the continuous discharge of pollutants, along with excursions for non-normal occasions. The EPA is aware that the proposal is located well within the buffer zone delineated by the *Environmental Protection (Kwinana) (Atmospheric Wastes) Policy*. This policy allows SO_2 levels of up to 1000ug/m^3 (1-hour average); higher concentrations of SO_2 could occur for short periods. Ten minute average levels have been recorded as high as 2316ug/m^3 at Hope Valley and 1882ug/m^3 at Wattleup over the past 10 years and both centres have experienced 10-minute levels over 1000ug/m^3 on five occasions in that time period.

The NHMRC has recently revised its Public Health Air Quality Goals to include a cautionary note that "*at these recommended levels [570ug/m^3 1hr and 700ug/m^3 10 min], there may still be some people (for example, asthmatics and those suffering chronic lung disease) who will experience respiratory symptoms and may need further medical advice or medication*".

Elevated levels of other pollutants such as NO_X and odorous compounds also are likely to occur.

The proponent's response to this issue (Appendix 5, item 1) is to suggest the provision of filtered air refuge areas such as a ventilated first aid room containing respirators and appropriately trained medical staff.

The proponent's response draws attention to the improving trend in air quality in the buffer area. This trend is due to efforts by industry to reduce emissions and the availability of fuel

and feedstock with low sulphur content. For instance, the availability of low-sulphur crude oil at an attractive cost has resulted in relatively low SO_2 emissions from the BP Refinery in recent years. The introduction of additional industries and changes in the availability of low-sulphur fuels and feedstock may reverse this trend.

The proponent's response suggests that high concentrations are less likely to occur on weekends due to "shutdown or reduced work practices" in industries. Monitoring data do not support this contention – several of the highest SO_2 incidents having occurred on a Saturday afternoon.

Although, as the proponent's response suggests, similar effects could occur for residents of Hope Valley and Wattleup, these residents are aware of their location within the buffer zone and have recourse to some respite by moving indoors and closing windows, doors and ventilation systems. The EPA also notes that the FRIARS report includes options to relocate residents from these suburbs.

The EPA concludes that there is a potential for some sensitive patrons of the facility to be adversely affected by gaseous pollutants emitted by industry in the normal course of their operations and that this potential is not likely to decline over time.

Summary

A peer review of the proponent's risk report has indicated that the level of individual risk at the proposed site may be approaching, or exceed, the EPA's recommended criterion. The EPA recommends that further risk assessment should be undertaken to better estimate the current level of individual fatality risk over the site to ascertain whether the risk to patrons would reasonably meet the EPA's criterion.

If further risk assessment showed that the risk to patrons would not reasonably meet the EPA's criterion, the proposal should not be implemented unless risk reduction measures were demonstrated which would reduce the risk to acceptable levels.

If further risk assessment showed that the level of individual fatality risk for patrons was near to the EPA's criterion, it is likely that future expansion of the Kwinana industry would need to be constrained to continue to achieve acceptable levels of risk if the proposal was implemented.

The EPA also draws attention to the non-fatal risks which spectators would also be subject to at the site. A practical emergency response plan would need to be developed for the facility if the proposal is implemented.

3.4 Vegetation Communities, Declared Rare and Priority Listed Flora

Description

Of the 70 ha development area, about 30 ha are covered by vegetation in good condition (Figure 2):

- about 8.4 ha of jarrah banksia woodland occur along a limestone ridge near the centre of the development;
- a further 9 ha of jarrah banksia woodland occur in the south-west corner of the site;
- about 7.5 ha of banksia woodland occur along the north-west boundary of the site;
- about 5 ha of heath occur in the south-west corner of the site.

Development of the proposal would result in removal or disturbance of about 17 ha of this vegetation including about 7 ha of the vegetation in Perth's Bushplan site 349 which has a total area of 1257 ha (Figure 2).

FIGURE 2

Other areas of the site have been significantly disturbed by human activities for the disposal of bauxite processing waste and limestone/sand quarrying.

Submissions

Several submissions queried the effectiveness of the short flora/fauna survey conducted by the proponents and questioned whether the proposed supplementary survey could be carried out late enough to encounter the spring flowering required for positive identification.

In response to this submission the proponent has stated that the half day field survey was designed to verify the information obtained through aerial photographic interpretation and a review of existing information and to describe the dominant flora species within each vegetation community. A survey specifically focusing on rare and priority flora would be undertaken in late September to coincide with the middle of the known flowering period for the Declared Rare Flora (DRF) species, King Spider Orchid (*Caladenia huegelii*), which has been recorded in the region. At this stage, construction work is not proposed to commence until November.

CALM advised that approval for site works in vegetated areas would be required from CALM under the *Wildlife Conservation Act* and that staging of construction would need to allow time for the declared rare flora survey and a contingency should any such flora be located.

Assessment

The area considered for assessment of this factor is the proposal site of approximately 70 ha.

The EPA's environmental objective for this factor is to maintain the abundance, species diversity, geographic distribution and productivity of vegetation communities and to protect Declared Rare and priority listed flora.

The EPA notes that some of the remnant vegetation on the site is included in Perth's Bushplan site 349. The proponent has advised that negotiations between the Ministry for Planning (MfP) and the DEP in relation to Perth's Bushplan site 349 are proceeding. One of the guiding principles of Perth's Bushplan is that where "changes to the … boundaries … are required, the balance of representation of the plant communities should be maintained by equivalent additions …" (Gov. of WA, 1998; p. xvii). The EPA therefore expects that the negotiations will result in an addition to Perth's Bushplan equivalent to that lost if the Motorplex proposal is approved.

The proponent advised that areas disturbed during construction would be rehabilitated using native species and landscaping of developed areas would consist predominantly of native flora.

The EPA is of the view that all rehabilitation and broad-scale landscaping should be undertaken using native flora endemic to the Cottesloe Central and South vegetation complex.

The proponent has advised that no Declared Rare or priority listed flora have been recorded in the proposed development site but it is possible that one Declared Rare species and one priority listed species may occur. A flora survey targeting these species is planned to be conducted in Spring, prior to the proposed time of commencing development works. The proponent has sought advice from CALM regarding appropriate action in the event that Declared Rare or priority listed flora are observed.

Summary

The EPA considers that vegetation issues could be managed adequately provided that:

(a) an agreement is reached in relation to an addition to Perth's Bushplan equivalent to the loss in site 349;

(b) a flora survey is undertaken in Spring to CALM's requirements;

(c) CALM's advice is sought and implemented in relation to appropriate action in the event of the discovery of any Declared Rare or priority listed flora; and

(d) endemic Cottesloe Central and South vegetation is used for all rehabilitation and broad-scale landscaping.

3.5 Water Management

Description

Surface water drainage on the site is limited to some run-off from the bund walls of the bauxite residue areas which infiltrates the soil at the base of the walls.

There are wetlands in the vicinity of the proposal but none on or adjacent to the site. There is an area of dampland about 500m north of the site in the general direction of groundwater flow.

The natural groundwater is of good quality, occurs between 10 and 20m below the current land surface and flows generally north-west, eventually discharging into Cockburn Sound. Within the clay-lined bauxite residue areas, groundwater is perched above the natural groundwater level and is recovered by drains and pumps for re-use in the alumina refinery.

Alkaline contamination of the natural groundwater has occurred through leakage from the bauxite residue areas. The residue areas are currently classified as a Mine Site under the Department of Minerals and Energy's regulations, and the residue disposal operations are subject to an Agreement Act. The contaminated plume is managed by Alcoa through monitoring and recovery bores. In the event that the Motorplex proposal proceeds, the State will need to negotiate an agreement with Alcoa in relation to responsibilities for on-going groundwater management. Plumes of contamination also extend from municipal waste landfill operations south of the proposal site. These plumes are expected to pass beneath the site and combine with the alkaline plume.

A committee (Residue Planning Liaison Group) has been set up to provide advice on on-going and long term management of the impacts of the disposal. The committee includes, Alcoa, DRD, DEP, DME and WRC.

Submissions

Alcoa has set out that it cannot provide access to its bores for water for construction or operation and that stormwater drainage needs to be designed to eliminate the potential for contamination of their surface drainage systems.

The proponent has advised that tenders to be let for the construction of the facility would include a requirement that a dedicated groundwater supply bore be installed for construction and operational purposes. It may be necessary to establish an initial supply located outside the construction area and this decision would be contingent on the construction programme. The Water and Rivers Commission has been approached and has indicated that there are sufficient groundwater resources to obtain a licence for a suitable supply.

Submissions have expressed concern that fuel and other chemical spillages may enter the groundwater either directly or through drainage sumps, and that construction works may result in disruption of the integrity of the clay seal in the walls of the residue areas.

Assessment

The area considered for assessment of this factor is the proposal site and the superficial aquifer beneath the proposal site and extending down the hydraulic gradient.

The EPA's environmental objectives for this factor are:

- to ensure that the facility does not interfere with existing and future management of groundwater from the bauxite residue area and that any dewatering required for the facility is properly managed; and
- to ensure that the proponent implements sound drainage design and management practice to avoid contamination of surface and groundwater from the operations.

The proponent has stated that engineering works associated with the speedway track would require excavation of some bauxite residue and interference with the residue area embankment and clay seal and could result in loss of alkaline water to the environment. The proponent has also stated that there would be a risk that the groundwater monitoring bore-field may be affected.

The EPA is satisfied that engineering and construction techniques are available to address these issues and is of the view that, if the proposal is approved, prior to starting any site works. the proponent should develop detailed construction plans in co-operation with Alcoa and the Residual Planning Liaison Group and maintain close liaison with Alcoa and the Group as construction proceeds.

The proponent has committed to the provision of appropriate bunding and shelter for fuel and chemical storage areas together with sealed waste skips and tanks for solid and liquid wastes to minimise the risk of accidental leakage reaching the groundwater.

The proponent has committed to the development of a drainage strategy to ensure that the development does not interfere with Alcoa's ongoing management of groundwater. This strategy would ensure that drainage from residue areas is directed to infiltration basins within the residue areas, that drainage from clean soil, made surfaces and natural soils would be directed to infiltration basins in the natural soils; and that infiltration basins serving areas with potential sources of hydrocarbons would be fitted with appropriate contaminant separation facilities.

Summary

The EPA considers that surface and groundwater issues could be managed adequately provided that:

(a) the proponent prepares detailed engineering and construction plans to address the on-going integrity of groundwater monitoring and to mitigate against the risk of damage to bauxite residue areas or the loss of alkaline water to the environment;

(b) an agreement is reached between Alcoa and the State in relation to on-going management of groundwater affected by the residue areas;

(c) the proponent maintains ongoing liaison with Alcoa and the Planning Liaison Group in respect of construction works on or adjacent to bauxite residue areas; and

(d) detailed drainage plans are prepared in liaison with Alcoa.

4. Conclusions

Summary and Recommendations

The Western Australian Sports Centre Trust proposes to construct a motor sports facility (the Kwinana International Motorplex) adjacent to Rockingham Road between Anketell and Thomas Roads, Kwinana. The EPA is aware that the Government has evaluated a number of sites and has chosen Kwinana as the preferred option.

Section 44 of the *Environmental Protection Act 1986* requires the Environmental Protection Authority (EPA) to report to the Minister for the Environment on the environmental factors relevant to the proposal and on the conditions and procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit. This report provides the EPA's advice and recommendations to the Minister for the Environment on the environmental factors relevant to the proposal.

The proposed Motorplex facility raises the issues of societal risk and appropriateness of locating such facilities within the Kwinana industrial buffer zone. The EPA considers that these are largely planning issues. The EPA has provided advice to the Western Australian Planning Commission (WAPC) for its consideration in the land use decision-making process for the proposal in a separate document, in accordance with Section 16(j) of the *Environmental Protection Act 1986* (EPA Bulletin 949).

Relevant environmental factors

Although a number of environmental factors were considered by the EPA in the assessment, it is the EPA's opinion that the following are the environmental factors relevant to the proposal, which require detailed evaluation in the report:

(a) Noise;

(b) Individual Risk;

(c) Vegetation Communities, Declared Rare and Priority Listed Flora; and

(d) Water Management.

Conclusions

The EPA has considered the proposal by Western Australian Sports Centre Trust to build and operate a motor sport facility (Kwinana International Motorplex) adjacent to Rockingham Road between Anketell and Thomas Roads, Kwinana.

The EPA notes that the proposal would enable the closure of the Claremont Speedway and the Ravenswood Raceway facilities which have been the cause of some public complaint in relation to noise.

The EPA considers that noise and individual risk are the environmental factors of highest importance. With respect to noise there are a number of issues which need to be considered:

(a) The noise levels generated by the Motorplex would be of the same order as in the current speedway and dragway sites at Claremont and Ravenswood. However, it is not reasonable to take the view that current noise levels at Claremont and Ravenswood are acceptable for a new site since there is a significant difference between enabling the on-going operation of a long established noisy activity and the introduction of such an activity into a community which has hitherto not been exposed to such noise. In

addition, the Motorplex would bring together noises which currently impact on separate communities.

(b) If the Motorplex proceeds it would substantially exceed the *Environmental Protection (Noise) Regulations 1997* and the proposal may well be judged under Section 49 of the Environmental Protection Act to "unreasonably interfere with the health, welfare, convenience, comfort or amenity" of adjacent residential communities. The noise would have negative environmental impacts on adjacent communities, although the impact of speedway noise would be less than that for the dragway.

(c) The noise impacts on the community could be ameliorated, at a cost, by fully enclosing the Motorplex, and this is the EPA's preferred approach if the facility were to proceed on the Kwinana site. Other mitigation action includes noise limits on cars and time restriction on events.

(d) If the proposal is to be implemented without immediate enclosure, consideration should be given to a staged development such that a speedway complex is constructed and trialled before making a decision to also locate the dragway at the site. A trialled approach would enable community reaction to noise from the facility to be understood, and would allow further consideration of the benefits of complete enclosure.

(e) The area of greatest noise impact would be Hope Valley which has been recommended to be zoned "special industrial" under the preferred zoning strategy set out in the FRIARS report. If in addressing the FRIARS recommendations the Government took early action to change the residential nature of the Hope Valley area, there would be a substantial reduction in the level of impact from noise on the community. However, the Motorplex as proposed would still have significant negative impacts on the communities of Wattleup and Medina.

In making a decision on the proposal, a judgement needs to be made between the environmental cost to the community through a reduction in the amenity of social surroundings and the financial cost of adopting noise mitigation options.

A peer review of the proponent's risk report has indicated that the level of individual fatality risk at the proposed site is likely to be greater than previous estimates, and may be approaching, or exceed, the EPA's recommended criterion. This is because previous estimates have not included all possible risks associated with near-field effects, or recent developments in the Kwinana area, including transport of dangerous goods. Further risk assessment should be undertaken to better estimate the current level of individual fatality risk over the site to ascertain whether the risk to patrons would reasonably meet the EPA's criterion. If further risk assessment showed that the risk to patrons would not reasonably meet the EPA's criterion, the proposal should not be implemented unless risk reduction measures were demonstrated which would reduce the risk to acceptable levels. If the proposal is implemented, future expansion of the Kwinana industry may need to be constrained to continue to meet acceptable risk levels at the facility.

The proposal would also result in the removal or disturbance of about 7 ha of vegetation included in Perth's Bushplan Site 349. If the proposal is implemented, provisions should be made for an addition to Perth's Bushplan equivalent to the loss in Site 349.

The proposal site includes an area used by Alcoa for residue storage If the proposal is implemented, agreement would need to be reached between Alcoa and the State in relation to on-going management of groundwater affected by the residue areas.

Recommendations

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

1. That the Minister notes that the project being assessed is a motor sport facility (Kwinana International Motorplex) adjacent to Rockingham Road between Anketell and Thomas Roads, Kwinana.

2. That the Minister considers the report on the relevant environmental factors as set out in Section 3 and the conclusions reached by the EPA in Section 4.

3. That the Minister notes that the proposal, if implemented, would have negative environmental impacts on the adjacent communities, and that as a social issue, a judgement needs to be made between the environmental cost to the community through reduction in the amenity of the social surroundings and the financial cost of adopting noise mitigation options.

4. That the Minister, in her consideration as to whether or not the proposal may be implemented, take into account:

   a) if approved, the possibility of funds being available either immediately or at a future date to reduce noise levels by taking such action as enclosing the facility;

   b) if approved without enclosure, the possibility of a staged approach to the development of the proposal such that a speedway complex be constructed and trialled before a decision is taken on a dragway track; and

   c) if approved, the adoption of other mitigation actions such as noise limits on cars and time restrictions on events.

5. That the Minister encourages the Government to consider at an early date the matter of zoning of the Hope Valley area as well as the associated action in relation to the affected land holders.

6. That the Minister notes that the level of individual fatality risk to patrons at the site is likely to be greater than previous estimates, and that it may be approaching, or exceed, the EPA's recommended criterion. Further risk assessment should be undertaken to better estimate the current level of risk over the site and ascertain whether the risk to patrons would reasonably meet the EPA's criterion. If further risk assessment showed that the risk to patrons would not reasonably meet the EPA's criterion, the proposal should not be implemented unless risk reduction measures were demonstrated which would reduce the risk to acceptable levels. Any plans for future expansion of the Kwinana industrial area would need to ensure that acceptable levels of risk continued to be met.

7. That the Minister determines that if a decision is taken that the proposal may be implemented, such approval be subject to the conditions set out in Appendix 4, which include the proponent's commitments.

Appendix 1

List of submitters

Government Agencies:

Department of Minerals and Energy
Department of Conservation and Land Management
Department of Resources Development
Fire and Emergency Services Authority
Health Department, EHS
Health Department, Radiation
Landcorp
Worksafe Western Australia

Organisations:

Alcoa of Australia
BP Refinery
Chamber of Commerce and Industry
City of Rockingham
Claremont Speedway
Conservation Council
Coogee Chemicals
CSR Readymix
Hope Valley Progress Association
Kwinana Chamber of Commerce and Industry
Kwinana Industries Council
Kwinana Power Station
Kwinana Watchdog Group
Nufarm-Coogee Pty Ltd
Ravenswood International Raceway together with 2519 letters of support and 16 objections
Tiwest Joint Venture
Wattleup Citizens' Association (inc.)
Western Power

Individuals:

A Barnes
AP Lupgens
B & K Lever
B Fitzpatrick
B Kent
B Mcgowan
CA Lawler
Cr. T Maiolo
D Gaschk
Dr M Pitt
Dr S Ashford
E Stamatiou
EL & T Rogers
F Pillage
G Horsfield
G Rogers
G Syson
I Kent
J Scott
JR & DF Oliver
K Bremner
K Robinson
K Senior
L Toussaint
LD Roberts
M Franklin
M Luger
M Waddington
Mr & Mrs CN Pratt
Mr G Murray
Mr G Randell
Mr G Robinson
Mr G Tame
Mr GE & Mrs A Kieran
Mr GJ Thurgood
Mr GR Simpson
Mr I & Mrs K Low
Mr I Anderson
Mr I Earl
Mr I Parker & Ms G Paine
Mr I Wilkinson
Mr J & Mrs A Allcock
Mr J & Mrs JA Traynor
Mr J & Mrs K Carless
Mr J & Mrs M Herron
Mr J Blount
Mr J Buchanan
Mr J Dell
Mr J Gardener
Mr J Hill
Mr J Limerick
Mr J Mcginniss
Mr J Scott
Mr J Smith
Mr J Yates
Mr J, Ms A & Ms S Wakefield
Mr JC & Mrs J Rosendale
Mr K & Mrs H Fijolek
Mr S Marriott
Mr S O'Sullivan
Mr S Rowland
Mr S Spiers
Mr S Webster
Mr T & Mrs B Kitching
Mr T & Mrs H Harvey
Mr T & Mrs K Gavin
Mr T Power
Mr T Toster
Mr V Corlett
Mr W & Mrs I Trawinski
Mr W & Mrs T Stobie
Mr W Coleman
Mr W Locker
Mr W Radford
Mr WS Toon
Mrs A Flexman
Mrs GM Rigden
Mrs J Moore
Mrs J Nieuwhof
Mrs J Reilly
Mrs JA Stevenson
Mrs L Robbins
Mrs M Lardner
Mrs MT Veal
Mrs S Almen
Mrs S Bonser
Mrs T Moyle

Mr & Mrs D & C Griffioen
Mr & Mrs D Burton
Mr & Mrs G Taylor
Mr & Mrs GA Hedge
Mr & Mrs J Moodie
Mr & Mrs Laitinen
Mr & Mrs Oehme
Mr & Mrs R Hall
Mr & Mrs Reynolds
Mr & Mrs Trent
Mr A & Mrs KM Hoehn
Mr A & Mrs M Barnett
Mr A & Mrs S Suiter
Mr A Borwick & Ms K Green
Mr A Kelly
Mr A Solonel
Mr A Breed
Mr AW & Mrs J Hassock
Mr B & Mrs B Vidovich
Mr B Anderson
Mr B De San Miguel
Mr B Dickman
Mr B Forbes
Mr B Jackson
Mr B & Mrs C Osborne
Mr BJ & Mrs JC Brown
Mr D & Mrs A Dobson
Mr D Dean
Mr D T Rigden
Mr D Turnball
Mr D Walsh
Mr DP & Mrs HV Hersey
Mr ET & Mrs J French
Mr EW Foster
Mr F & Mrs S Napier
Mr F Edwards
Mr FD & Mrs WS Burletson
Mr G & Mrs M Chamberlain
Mr G Chaisty
Mr G Davey
Mr G Miocevich
Mr K Hawley
Mr K Judd
Mr KJ Pond
Mr L & Mrs E Pay
Mr L Hoy
Mr L Rowe
Mr LE & Mrs EM Discombe
Mr M & Mrs E Richardson
Mr M & Mrs E Salt
Mr M & Mrs M Stones
Mr M Allen
Mr M Baker
Mr M Foan
Mr M Stephens
Mr M Thompson
Mr MF & Mrs V Roberts
Mr MP Jackson
Mr N & M Stevens
Mr N & Mrs R Glaby
Mr N Anderson
Mr N Butler
Mr NJ Coyne
Mr P & Mrs M Harness
Mr P Domasz
Mr P Rokich
Mr P Shaw
Mr P Southall
Mr R & Mrs J Camilleri
Mr R & Mrs M Murray
Mr R & Mrs P Bird
Mr R Batley
Mr R Boyce
Mr R Maraldi
Mr R Plush
Mr R Stubbert
Mr RJ St Lawrence
Mr RM & Mrs HE Willington
Mr S Allen
Mr S Caratti
Mr S Earl
Mr S Hesse
Mrs T Tihol
Ms A Nel
Ms A Roberts & Mr H Smith
Ms A Watson
Ms E Quinn
Ms E Zumbo
Ms H Glasby
Ms HA Gaskin
Ms Hazel Duggan
Ms J Allan
Ms J Blount & Mr R Plush
Ms J Laudehr
Ms J Lawler
Ms J Parker
Ms J Vander Berg
Ms K Gavin
Ms K Lucas
Ms K Roberts
Ms L Gaskin
Ms L Keys
Ms M Easchk
Ms M Foster
Ms M Pickard
Ms M Whitehurst
Ms MP Walker
Ms NA Neeson
Ms P Berglund
Ms P Moreton
Ms R Murray
Ms R Siewert
Ms SM Hall
Ms V Williams
P & B Cross
P Hickson
P Maraldi
PS Pollard
RM Jeans
SC Moulton
V Foster

Appendix 2

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Appendix 3

Information on Noise Mitigation Measures provided by the DEP

Noise Management

The PER does not provide any commitments on specific noise management measures, but suggests that an exemption of some kind would be sought, supported by a noise management plan which is only outlined in the briefest of terms.

Possible noise mitigation measures include:

(a) Measure A - Complete enclosure - 20 dB reduction

The only means by which a positive and significant reduction in noise emissions can be achieved is by provision of a roof to enclose the facility, combined with acoustic control of race vehicle access points. The facility would need to be provided with a ventilation system capable of effectively removing exhaust fumes of race vehicles from the venue. Large enclosures have been provided in the past for sporting complexes, such as the Boondall Sports Centre in Queensland. If the enclosure roof was very well designed (for example, double skin of suitable weight, with an air gap between skins, and reasonably air-tight) a reduction of up to 25dB may be possible, but this would need to be confirmed through design.

The cost of this measure could be significantly reduced by removal of the drag strip from the facility, such that only the speedway area required enclosure. The end result would be a high quality, all-weather, multi-purpose facility.

(b) Measure B - Finish events by 10.00 pm - 5dB reduction

If all events were to conclude before 10 pm then the evening assigned noise levels (for the period 7 pm to 10 pm) would apply, rather than the night-time assigned levels, resulting in an effective 5dB reduction of exceedances. The proponent is seeking to operate to 10.30 pm, however, experience at the existing facilities has been that events occasionally finish after this time due to accidents causing delays.

(c) Measure C - Quieter cars - up to 5dB reduction

With suitable muffling and careful adjustment of engines to cope with the increased back pressures, sound levels could be reduced by up to 5dB at the source. Such a requirement would place strong operational constraints on the proponent and competitors (especially interstate entrants). The proponents have indicated that, at least in terms of drag racing, such measures had been investigated in the USA and cannot be successfully implemented, because the machines are so high powered and light in weight that the addition of noise control measures would add substantial weight and bulk resulting in unacceptable loss of performance. Speedway racing tends to operate on a sound level limit of 95 dB(A) at 30m, which is nationally accepted by speedways. There would be significant resistance to reduction of this level. Such measures as reduced sound level limits would also be difficult to enforce on an ongoing basis by the DEP.

The implications of the above noise control measures are summarised in Table 1 below.

TABLE 1: Implications of noise control measures

Race/vehicle type	Adjusted Predicted noise level dB(A)	Exceedance - dB(A)			
		Motorplex as proposed	Measure A (20 dB)	Measure A+B (25 dB)	Measure A+B+C (25 dB)
Hope Valley - southerly wind (most common ~66%)					
Top fuel drags	104	**40**	**20**	**15**	**10**
Top comp drags	89	**35**	**15**	**10**	**5**
Super gas drags	80	**26**	**6**	**1**	Complies
Speedway	80	**36**	**16**	**11**	**6**
Wattleup - southerly wind (most common ~66%)					
Top fuel drags	86	**22**	**2**	Complies	Complies
Top comp drags	71	**27**	**7**	Complies	Complies
Super gas drags	62	**8**	Complies	Complies	Complies
Speedway	62	**18**	Complies	Complies	Complies
Medina - southerly wind (most common ~66%)					
Top fuel drags	74	**19**	Complies	Complies	Complies
Top comp drags	59	**14**	Complies	Complies	Complies
Super gas drags	50	**5**	Complies	Complies	Complies
Speedway	50	**15**	Complies	Complies	Complies
Medina - northerly wind (rare ~2%)					
Top fuel drags	92	**37**	**17**	**12**	**7**
Top comp drags	74	**24**	**4**	Complies	Complies
Super gas drags	68	**23**	**3**	Complies	Complies
Speedway	68	**33**	**13**	**8**	**3**

The adjusted predicted noise levels in Table 2 are based on the noise contours presented in the PER and include a +5dB(A) adjustment for tonality. It must be stressed that Table 2 is based on the existing influencing factors for Hope Valley and Wattleup, and removal of the 9 dB(A) factor included in the Table in the review of the regulations would see some of the complying scenarios become exceedances.

Appendix 4

Recommended Environmental Conditions and Proponent's consolidated commitments.

Statement No.

RECOMMENDED ENVIRONMENTAL CONDITIONS

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED (PURSUANT TO THE PROVISIONS OF THE ENVIRONMENTAL PROTECTION ACT 1986)

KWINANA INTERNATIONAL MOTORPLEX, ADJACENT TO ROCKINGHAM ROAD BETWEEN ANKETELL & THOMAS ROADS, TOWN OF KWINANA

Proposal: **The construction and operation of a motor sport facility**

Proponent: **WA Sports Centre Trust**

Proponent Address: **PO Box 502, Claremont WA 6010**

Assessment Number: **1261**

Report of the Environmental Protection Authority: Bulletin 948

The proposal to which the above report of the Environmental Protection Authority relates may be implemented subject to the following administrative procedures and environmental conditions:

Administrative procedures

1 Implementation

1-1 Subject to these conditions and procedures, the proponent shall implement the proposal as documented in schedule 1 of this statement.

1-2 Where the proponent seeks to change any aspect of the proposal as documented in schedule 1 of this statement in any way that the Minister for the Environment determines, on advice of the Environmental Protection Authority, is substantial, the proponent shall refer the matter to the Environmental Protection Authority.

1-3 Where the proponent seeks to change any aspect of the proposal as documented in schedule 1 of this statement in any way that the Minister for the Environment determines, on advice of the Environmental Protection Authority, is not substantial, those changes may be effected.

2 Proponent Commitments

2-1 The proponent shall implement the consolidated environmental management commitments documented in schedule 2 of this statement.

2-2 The proponent shall implement subsequent environmental management commitments which the proponent makes as part of the fulfilment of conditions and procedures in this statement.

3 Proponent

3-1 The proponent for the time being nominated by the Minister for the Environment under section 38(6) or (7) of the Environmental Protection Act 1986 is responsible for the implementation of the proposal until such time as the Minister for the Environment has exercised the Minister's power under section 38(7) of the Act to revoke the nomination of that proponent and nominate another person in respect of the proposal.

3-2 Any request for the exercise of that power of the Minister referred to in condition 3-1 shall be accompanied by a copy of this statement endorsed with an undertaking by the proposed replacement proponent to carry out the proposal in accordance with the conditions and procedures set out in the statement.

3-3 The proponent shall notify the Department of Environmental Protection of any change of proponent contact name and address within 30 days of such change.

4 Commencement

4-1 The proponent shall provide evidence to the Minister for the Environment within five years of the date of this statement that the proposal has been substantially commenced.

4-2 Where the proposal has not been substantially commenced within five years of the date of this statement, the approval to implement the proposal as granted in this statement shall lapse and be void. The Minister for the Environment will determine any question as to whether the proposal has been substantially commenced.

4-3 The proponent shall make application to the Minister for the Environment for any extension of approval for the substantial commencement of the proposal beyond five years from the date of this statement at least six months prior to the expiration of the five year period referred to in conditions 4-1 and 4-2.

4-4 Where the proponent demonstrates to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority that the environmental parameters of the proposal have not changed significantly, then the Minister may grant an extension not exceeding five years for the substantial commencement of the proposal.

5 Compliance Auditing

5-1 The proponent shall submit periodic Performance and Compliance Reports, in accordance with an audit program prepared in consultation between the proponent and the Department of Environmental Protection.

5-2 Unless otherwise specified, the Chief Executive Officer of the Department of Environmental Protection is responsible for assessing compliance with the conditions, procedures and commitments contained in this statement and for issuing formal, written advice that the requirements have been met.

5-3 Where compliance with any condition, procedure or commitment is in dispute, the matter will be determined by the Minister for the Environment.

Environmental conditions

6 Noise Management Plan

6-1 Prior to operation, the proponent shall prepare a Noise Management Plan to manage noise impacts on the amenity of nearby residents resulting from activities associated with the proposal, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

This Plan shall address:

1 noise mitigation measures;

2 noise limits at specified external locations;

3 noise monitoring and complaints procedures; and

4 limitations on the days and times of motorsport events.

6-2 The proponent shall implement the Noise Management Plan required by condition 6-1.

6-3 The proponent shall make the Noise Management Plan required by condition 6-1 publicly available, to the requirements of the Environmental Protection Authority.

7 Individual fatality risk

7-1 Prior to construction of the facility, the proponent shall carry out further individual fatality risk assessment to the requirements of the Minister for the Environment, on the advice of the Environmental Protection Authority, to demonstrate that the risk to patrons would meet acceptable levels. The risk assessment shall include the risk associated with near-field effects, recent industrial developments in the Kwinana area and the transport of dangerous goods.

7-2 Based on the further risk assessment, the proponent shall, if necessary, make modifications to the design of the facility, to reduce risk to acceptable levels.

8 Bushplan Site

8-1 Within 12 months following the commencement of construction, the proponent shall identify and secure for conservation purposes an area of land equivalent in conservation value to the area lost within Perth's Bushplan Site 349, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

9 Decommissioning Plan

9-1 At least six months prior to decommissioning, the proponent shall prepare a Decommissioning Plan to ensure that the site is left in a suitable condition, to the requirements of the Environmental Protection Authority on advice of the Department of Environmental Protection.

This Plan shall address:

1 removal or, if appropriate, retention of plant and infrastructure;

2 rehabilitation of all disturbed areas to a standard suitable for agreed new land uses; and

3 identification of contaminated areas, including provision of evidence of notification to relevant statutory authorities.

9-2 The proponent shall implement the Decommissioning Plan required by condition 8-1 until such time as the Minister for the Environment determines that decommissioning is complete.

9-3 The proponent shall make the Decommissioning Plan required by condition 8-1 publicly available, to the requirements of the Environmental Protection Authority.

Schedule 1

The Proposal

The proposal is to construct and operate a motor sport facility on a 70 hectare site in the Town of Kwinana, approximately 28 kilometres from Perth.

The site is east of the Kwinana heavy industry area and approximately 1.5 kilometres north-west of the Medina residential area, and is adjacent to Rockingham Road between Anketell and Thomas Roads. (See Figure 1).

The key proposal characteristics are summarised in Table 1.

Table 1 – Summary of key proposal characteristics

Element	Quantities/Description
Key proposal characteristics of the approved project to be included in this Table.	

Figures (attached)

Figure 1 site location plan

Schedule 2

Proponent's Consolidated Environmental Management Commitments

September 1999

KWINANA INTERNATIONAL MOTORPLEX, ADJACENT TO ROCKINGHAM ROAD BETWEEN ANKETELL & THOMAS ROADS, TOWN OF KWINANA (1261)

WA Sports Centre Trust

Proponent's Consolidated Environmental Management Commitments

No.	Condition	Objective	Action	Timing	To Whose Satisfaction	Compliance Criteria
1	The proponent will prepare and implement an Environmental Management System prior to the commissioning of the Motorplex.	To ensure sound environmental management of the Motorplex operations	Develop the EMS	Prior to operation	DEP	Meet the requirements of ISO 14001
2	The proponent will develop and implement a rehabilitation and landscape plan.	To ensure that regionally significant vegetation and flora are protected in accordance with the principles of Bushplan	Prepare the Rehabilitation and Landscape plan using endemic vegetation and including on-going management and weed control	Prior to construction	DEP	Acceptance of plans
3	The proponent will conduct a flora survey targeting threatened flora species.	To determine whether any threatened flora species occurs in the study area	Conduct the field survey Comply with CALM directives	During Spring - prior to construction	DEP CALM	Survey completed, results forwarded to DEP and CALM. CALM directives complied with.
4	The proponent will ensure the study area boundary is clearly marked.	To minimise disturbance of adjacent vegetated areas, particularly Bushplan Site no 349	Clearly mark study area boundary	Prior to construction	DEP	No disturbance of vegetation outside boundary

No.	Condition	Objective	Action	Timing	To Whose Satisfaction	Compliance Criteria
5	The proponent will implement dust control measures during the construction of the facility in the event that strong winds and dry conditions make dust generation likely.	To control any dust generation as a result of construction activities	Apply water spray where required	During construction as required	DEP	No justified complaints from residents
6	The proponent will prepare a dust management plan for on-going operation of the facility.	To ensure dust generation is adequately managed	Prepare plan	Prior to operation	DEP	Acceptance of plan

No.	Condition	Objective	Action	Timing	To Whose Satisfaction	Compliance Criteria
7	The proponent will undertake an Aboriginal heritage survey of the study area prior to commencing construction.	To determine if any significant Aboriginal heritage sites occur in the study area	Commission a consultant to undertake the Aboriginal heritage assessment	Prior to construction	AAD and DEP	Compliance with the Aboriginal Heritage Act, 1972
8	The proponent will prepare detailed engineering and construction plans.	To ensure the on-going integrity of groundwater monitoring and to mitigate against the risk of damage to bauxite residue areas or the loss of alkaline water to the environment.	Liaise with Alcoa and DRD Develop plans	Prior to construction On-going liaison	DEP and WRC	Acceptance of plans
9	The proponent will develop a drainage strategy to ensure that the development does not interfere with ongoing groundwater contamination management within the RSAs.	To ensure the spread of existing groundwater contamination is controlled	Liaise with Alcoa and DRD Develop a drainage strategy	Prior to construction	DEP and WRC	Compliance with Government Agreement.
10	The proponent will provide facilities to assist in recycling waste products.	To comply with the EPA objective	Include recycling policies in the EMS	Ongoing	DEP	Compliance with the DEPs waste management hierarchy

No.	Condition	Objective	Action	Timing	To Whose Satisfaction	Compliance Criteria
11	The proponent will provide a roofed and bunded area with impervious floor for the storage of fuel and chemicals.	To reduce the risk of groundwater contamination.	Design facility	Prior to operation	DME WRC DEP	Facility meets requirements
12	The proponent will develop a contingency plan for accidental spills of hazardous chemicals.	To avoid contaminating ground and surface water	Prepare contingency plan as part of the EMS	Prior to operation	DEP	Compliance with DEP requirements
13	The proponent, in conjunction with the operators of the facility, will develop a comprehensive Emergency Response Plan.	To minimise the individual risk to patrons at the Motorplex	Prepare a comprehensive emergency response plan	Prior to operation	DEP	Acceptance of plan
14	The proponent will provide traffic management measures.	To ensure that the impact on normal traffic movement is minimised including Armstrong Rd.	Develop signage and provide traffic marshals.	Prior to operation	DEP DoT	Acceptance of plans
15	The proponent will develop a noise management plan to address the noise emission impacts.	To effectively manage noise impact	Prepare noise management plan	Prior to operation	DEP	Accepted by the DEP

No.	Condition	Objective	Action	Timing	To Whose Satisfaction	Compliance Criteria
16	The proponent will continue discussions with the DEP with regards to obtaining appropriate approval or exemption for noise emissions	To effectively manage noise impact	Liaise with the DEP	Prior to operation	DEP	Compliance with the approval on exemption conditions
17	The proponent will establish a complaints handling procedure	To provide the general community with a means of registering complaints	Establish a telephone number and advertise it locally	Prior to operation	DEP	Telephone number established and advertised

Appendix 5

Issues Arising During the Public Submission Period
Proponent's Response to Submissions

The following text sets out the DEP's summary of issues raised during the public submission period (italic text) followed by the proponent's response.

1. AIR QUALITY

1.1 and 1.2 Industry Impact – Normal Operations and Upset Conditions

What is the possible air quality impact of the nearby Kwinana Industrial Area on the facility during normal industry operations?

The proposal is located well within the buffers delineated by the Environmental Protection (Kwinana) (Atmospheric Wastes) Policy. This policy allows SO_2 levels of up to 1000$\mu g/m^3$ (1 hour average); higher concentrations of SO_2 could occur for short periods. Ten minute average levels have been recorded as high as 2316$\mu g/m^3$ at Hope Valley and 1882$\mu g/m^3$ at Wattleup over the past 10 years and both centres have experienced levels over 1000$\mu g/m^3$ on five occasions in that time period.

The NHMRC has recently revised its Public Health Air Quality Goals to include a cautionary note that "at these recommended levels (570$\mu g/m^3$ 1hr and 700$\mu g/m^3$ 10 min), there may still be some people (for example, asthmatics and those suffering chronic lung disease) who will experience respiratory symptoms and may need further medical advice or medication".

Elevated levels of other pollutants such as NO_x and odorous compounds are likely to occur. What effect will such levels have on sensitive patrons such as small children and asthmatics? What management measures can be taken to protect them?

What is the possible air quality impact of the nearby Kwinana Industrial Area on the facility under a range of industry upset conditions? The risk analysis which has been undertaken has only considered risks involving fatality. There is likely to be a higher frequency of occurrence of less serious incidents involving upset conditions in various plants which may not be serious enough to trigger an emergency response plan but which cause levels of various air pollutants to exceed normally acceptable levels. What effect will such levels have on sensitive patrons. What management measures can be taken to protect them?

To describe the effects of levels of sulphur dioxide on sensitive patrons is difficult because each individual, or group of individuals, may react differently. In the event that emission levels from the industrial area exceed normally acceptable levels (as has occurred on only 5 occasions in the past 10 years) potential effects on sensitive patrons, such as small children the elderly and asthmatics, could be minimised by providing filtered air refuge areas for these patrons. The presence of a ventilated first aid room containing respirators and appropriately trained medical staff will also assist in reducing any effect on sensitive patrons should such an event occur.

The Department of Environmental Protection (DEP) and emitting industries in the area are responsible for monitoring sulphur dioxide and particulate levels in the area. Monitoring results for sulphur dioxide have shown that air quality in the Kwinana EPP buffer has improved since 1989. These results have shown that sulphur dioxide concentrations in the Wattleup and Hope Valley areas have declined from 507$\mu g/m^3$ and 477$\mu g/m^3$ to 134$\mu g/m^3$ and 116$\mu g/m^3$ respectively. The DEP uses the 99.9^{th} percentile to assess compliance with the EPP standard which is 500$\mu g/m^3$ for the area (Western Australian Planning Commission, 1999.) The modelling procedure predicts the ground level concentration for every hour of the day for each receptor point under the prevailing meteorological conditions. This represents 8,760 individual predictions for each point. The DEP accepts the 99.9^{th} percentile as the predicted maximum to minimise the level of inaccuracy associated with predictions of absolute maximum values.

The proposed Motorplex development will operate in the evenings, on the weekends and occasionally during the week. The operating times may be indicative of shutdown or reduced work practices at the surrounding industrial facilities which implies that the sources of sulphur dioxide, particulate, odorous compounds and nitrogen oxides may be at reduced levels. Although not all industries operate at reduced capacity during this time, any reduction in pollutant emissions will help reduce the impacts at ground level.

The close proximity of existing residential areas of Wattleup and Hope Valley to the industrial area implies that concentrations of pollutants experienced are acceptable at these locations for residential development. The concentrations of air pollutants at the proposed Motorplex site will be no different to those experienced in the nearby residential areas.

The surrounding industrial facilities are responsible for the preservation of the air quality within the industrial and surrounding airspace. We anticipate that most, if not all, of the facilities are licensed to discharge pollutants to the atmosphere and incumbent with the licence conditions are emission monitoring requirements. In most cases, the industrial facilities will require continuous process or ambient monitoring equipment. This equipment ensures that emissions associated with normal and upset conditions are recorded and mitigation strategies associated with unacceptable air quality implemented to protect the surrounding environment.

1.3 Dust – Race Track

It has been suggested that track watering is not fully effective in dust suppression at other racing venues. What different measures will be taken to ensure it is effective?

Mitigation measures for dust control have been detailed in the PER. A wide variety of options exist to control dust during construction and operation of the facility. Available options span broad ranges in terms of cost, efficiency and practicability. In the case of the Motorplex facility there are several options available for dust suppression. These include:

- minimise exposed areas around the track;
- ensure all car parking areas are paved or grassed;
- ensure all sand and sand clay particles on tracks have a large particle size (above 100μm); and
- use watering on all exposed surfaces to reduce dust emissions.

The watering system proposed for the facility is an automatic sprinkler reticulation system. Unlike the bowser watering method currently used at other speedway tracks, the reticulation system can be operated as frequently as required.

Particle size has been recognised as important in dust management. What measures will be taken to manage the build up of smaller particle sizes caused by abrasion resulting from racing vehicles on the track and from patrons vehicles on un-sealed surfaces?

It is anticipated that small dust build up caused by abrasion resulting from racing vehicles on the track and in the car park will be minimal. The finer particles will eventually work their way to the bottom layer where they will not be influenced by wind or car movements. Mitigation measures to ensure that the build up of fine material does not cause undue annoyance include:

- regular monitoring of particle size distribution of the track and remove and resurface the track if fine dust levels accumulate to high levels; and
- ensure all carpark areas are paved or grassed.

Red mud has a very fine particle content and contains deleterious active ingredients. What measures will be taken to ensure that red mud is not exposed on the site and that patrons are not exposed to red mud dust blowing from adjacent disposal areas?

No red mud will be exposed within the study area following construction of the facility. Any areas of red mud exposed during the construction of the facility will be capped with at least half a metre of clean soil. The existing residue areas to the east of the study area are capped with at least half a metre of clean soil which prevents any wind erosion of the red mud. Red mud dust is therefore not considered to be an issue.

***Will a detailed dust management plan be developed*?**

As stated in the PER, no unacceptable dust impacts are anticipated. A number of measures to manage potential impacts of dust generation during construction and operation of the facility have been outlined in the PER. The preparation of a detailed dust management plan is therefore not considered necessary.

1.4. Radiation

Red Mud is a radiation source. What management procedures will be put in place to ensure radiation safety? Has the Radiological Council been consulted?

Negotiations between Alcoa and the Government are currently in progress to determine who will be responsible for the ongoing management of the red mud. The Radiological Council has set conditions for the rehabilitation of the Residue Storage Areas (RSAs). The conditions include preparation of a Residue Management Plan (RMP) and submission to the Radiological Council for approval. The RMP is required to address the following radiation issues:

- the quantity, chemical, physical and radiological characteristics of the bauxite residues;
- proposals for decommissioning and rehabilitating the RSAs;
- a commitment to a gamma levels and a commitment to complete detailed gamma radiation monitoring after rehabilitation;
- a commitment for radon and thoron monitoring;
- a commitment for monitoring of radionuclides in groundwater; and
- administrative and planning controls to prevent the mud from being exposed.

1.5. Odour

It has been suggested that tyre burnout generates substantial quantities of odorous smoke which is likely to affect nearby residents.

The prevailing wind direction, distance from the source to receptor and dispersion characteristics will determine whether odour will affect nearby residents. The prediction of ground level odour at sensitive receptors is difficult in this situation due to the spasmodic nature of emissions. Odour modelling was not a requirement for the PER. It is however considered likely that, due to infrequent occurrence and the small resulting plume of smoke associated with tyre burnout, atmospheric dispersion will be adequate to ensure that odour impact downwind is minimal. Also, the nearest residential area of Hope Valley is approximately 1.5 kilometres to the north from the centre of the complex which should allow appropriate time and distance for adequate dispersion. The stadium structure also provides necessary turbulence to aid dispersion.

2. ALTERNATIVES

It has been suggested that, for the site selection process to be credible, there needs to be more detail on the environmental issues associated with alternative sites. For instance:

Forrestfield public transport can be easily provided
would the potential noise levels be higher than those expected at Hope Valley?

Jandakot since the site is only 5km from the proposed site the 'remoteness from patrons' argument is specious.

Since the primary issues that arise are risk and noise, there needs to be some comparison of these issues between the sites, e.g how many people would be affected by what levels of noise at each site? Please comment.

The site selection process for the Motorplex was conducted over an extended period of time. During this period options, or groups of options, were identified and assessed having consideration for the broad range of social, environmental, operational, financial and regulatory issues outlined in Chapter 3 of the PER. The Alcoa site is a Cabinet endorsed site, subject to environmental and planning approvals.

As each option was identified, a preliminary assessment of key issues was undertaken. This resulted in some options being excluded prior to any further detailed assessment. For example, the Water and Rivers Commission indicated that the potential impacts on groundwater at the Gnangara site were considered to be significant and it would not receive approval. Therefore some sites were excluded on the basis of a 'fatal flaw'. The site identification and assessment process was dynamic and it is difficult to compare all sites equally.

It is not the case that noise and risk are important factors for every site. Each site has been compared on the basis of the constraints that exist for that site. For example, for Jandakot it is the flora and fauna, for Gnangara it is the groundwater.

However, it was determined that a greater number of residents would be affected by noise from a motor sport site located at Forrestfield than would be the case at Kwinana given the greater density of the population in close proximity to the marshalling yards.

The Jandakot site contains an EPP wetland and good quality bushland in secure tenure in a botanic park which made this site unlikely to receive environmental approval.

3. FLORA/FAUNA

3.1. Flora Survey

The adequacy of a half day survey of the site has been questioned in terms of the size of the site and the absence of reference to other site specific surveys. Please comment.

Three vegetation communities within the 17 hectares of remnant vegetation contained within the study area were identified through aerial photographic interpretation and a review of existing information. The half day field survey was designed to verify the information obtained through aerial photographic interpretation and a review of existing information and to describe the dominant flora species within each vegetation community.

The survey involved traversing each vegetation community on foot along a transect which passed approximately through the centre of the community. At a location considered to be representative of the community, the dominant species in the canopy, shrub layer and ground cover were identified within a 20 by 20 metre quadrat. It was not the purpose of the survey to identify all flora species within the study area, nor was it to identify the presence of declared rare flora due to the time of year the survey was undertaken. A survey targeting threatened flora will be undertaken in spring, when threatened flora, if present, are more likely to be encountered. Conducting a threatened flora survey during spring was included as a commitment in the PER.

With these issues in mind, a half day survey was considered adequate for the information required for the PER.

In view of the need to begin construction works, will the proposed survey be late enough to encounter the spring flowering required for positive identification?

The threatened flora survey will be undertaken in late September to coincide with the middle of the known flowering period for the declared rare flora species, King Spider Orchid (*Caladenia huegelii*), which has been recorded in the region. At this stage, construction work is not proposed to commence until November.

Approval for site works in vegetated areas will be required from CALM under the Wildlife Conservation Act, 1950. Staging of construction will need to allow time for the DRF survey and a contingency should any DRF be located. Please comment.

If any declared rare flora species are identified within the study area, CALM will be notified and approval for construction will be sought. Preliminary discussions with CALM regarding this issue indicate that, unless a substantial population of *Caladenia huegelli* is located on site, an application to remove individuals from the site would likely be granted. CALM has also indicated that the approvals process for the removal of declared rare flora may take up to 5 working days. As the survey is proposed to be conducted in late September and construction is not expected to commence until October/November, there will be sufficient time for the approvals process for the removal of DRF, should any DRF species be identified. In addition, it is likely that the Motorplex construction will be undertaken in stages; the first stages of construction will be within the Alcoa residue storage areas, which are predominantly cleared of native vegetation. A staged construction process will ensure adequate time is available to seek approvals for DRF removal and implement appropriate contingency plans if required.

3.2. Perth's Bushplan Site

The PER foreshadows negotiations with the MFP on appropriate action in respect of Site 349, including the option of protection of a similar sized area of vegetation in compensation. Have these negotiations yet reached any outcome?

Negotiations between the MfP, the proponent and the DEP regarding issues associated with the removal of vegetation from Site 349 identified in the Draft Bushplan are in progress. No outcome has been determined to date.

It is not clear whether the 17 hectares is the total area to be disturbed or whether 17 hectares of the Cottesloe Central and South complex is to be disturbed plus an additional 7 hectares of Bushplan site 349 nor whether the areas nominated include edge effects and isolation of small areas. Please comment.

As stated in the PER, approximately 17 hectares of remnant vegetation occurs within the study area. All 17 hectares falls within the Cottesloe Central and South vegetation complex. Of this 17 hectares, approximately 7 hectares is contained within Bushplan site 349. The proposed development will result in a *maximum* of 17 hectares of remnant vegetation in the study area being removed or disturbed.

As shown on *Figure 2.3* in the PER, the facility will not require all remnant vegetation within the study area to be removed, particularly in the southern section. The PER has, however, discussed potential impacts and management measures as though the whole 17 hectares of vegetation within the study area will be affected, either directly through clearing, or indirectly through disturbance. This is because the staging of construction and detailed construction requirements were not known.

There needs to be a commitment to ongoing management of remnant vegetation including weed control.

There is a commitment in the PER for the proponent to develop and implement a rehabilitation and landscape plan for the facility. Requirements for weed management will be included in this plan. This plan will be subject to the approval of the DEP.

3.3. Alternative Layout

CALM have questioned whether any alternative layouts of the facility could result in less impact on the remnant vegetation on the site. Please comment.

A number of alternative layouts for the Motorplex have been considered including shifting the whole facility further to the north. The key factors in considering layout options were the need to avoid impacts on the clay liners of the residue storage areas, topography and stability of the substrate. The need to locate the speedway track on solid ground between lakes A and C determined the final layout for the facility. The current layout is considered to be the most appropriate option given the issues associated with the expanse and nature of the mud lakes on which the development is to be constructed.

As outlined in the PER, the current layout will result in a maximum of 7 hectares of remnant vegetation contained within the Bushplan site 349 being disturbed.

3.4. Fauna

The fauna survey concentrated on habitat rather than identification of the abundance and species diversity and therefore does not appear to meet the PER guidelines. Minimising the impact on fauna during construction and operation will be difficult in the absence of information. Please comment.

The main impact on fauna during construction and operation of the facility will result from the permanent loss of habitat. Therefore, the impact assessment and management measures proposed have focussed on habitat loss.

The aim of the fauna habitat assessment was to identify the types of fauna habitats provided in the study area and determine whether the habitats present are suitable for threatened fauna species. The survey determined that the study area contained suitable habitat for the Southern Brown Bandicoot (*Isoodon obesulus fusciventer*) and the Brush Wallaby (*Macropus irma*). Neither of these species are listed as threatened under the *Wildlife Conservation Act, 1950.*

Due to the time of year in which the survey was to be undertaken, in winter when fauna species are less active, a trapping program to assist identification of the abundance and species diversity within the study area was not considered to be appropriate. However, a relocation program for the Southern Brown Bandicoot is currently being developed for the study area. It is envisaged that this program will involve local environmental groups and will be conducted in consultation with CALM.

Will fauna be affected by changes to the configuration of habitat as well as its removal eg the dissection of vegetation by the drag strip and fences or designed to prevent access to actively used areas.

Isolating small areas of vegetation and the erection of barriers to fauna movement such as fences may have an impact on the behaviour of fauna. However, removing habitat from the study area will have the most significant effect on fauna currently utilising the site. As stated in the PER, the study area is isolated from other vegetated areas in the region by the existing road network to the north, west and south and the Alcoa residue storage areas to the east. These existing barriers would limit fauna movement into surrounding areas.

In addition, only limited vegetation occurs to the west of Rockingham Road and therefore it is unlikely that an east-west fauna movement corridor currently exists at this location. Erecting a fence around the proposed facility is therefore unlikely to interfere with any east-west fauna movement.

Remnant vegetation retained in the southern section of the study area may provide a refuge for fauna moving out of the study area during construction. This section of the study area falls within Bushplan site 349 which continues south to Millar Road and may form part of a north-south fauna movement corridor.

The small areas of native vegetation which may be retained between the drag strip and Rockingham Road are not expected to be large enough to sustain viable populations of vertebrate fauna species.

4. LANDUSE

It has been suggested that the proposal is not an appropriate use of the buffer zone and is not consistent with the 1996 "Towards Optimising Kwinana" report which had earmarked the area for general industry. Please comment.

The "Towards Optimising Kwinana" Report was released in August 1996 and focussed primarily on optimising land use within the KIA. However, the report indicated that the Alcoa Residue Storage Areas (RSAs A, B and C) could be used for general industrial purposes. Appropriate land use/s for the area outside the KIA, including the Alcoa RSAs, is currently being considered as part of a more recent study, the Fremantle Rockingham Industrial Area Regional Strategy (FRIARS). A draft of this report was released for public comment in March 1999.

The FRIARS report reflects a Cabinet decision to endorse the Alcoa site as a potential location for the Motorplex, subject to planning and environmental approvals.

5. NOISE

Lifestyle of at least 2500 people in Hope Valley and Medina may be affected by intolerable noise emissions

About 6500 people may be exposed to noise, which unreasonably interferes with their health, welfare, convenience, comfort or amenity

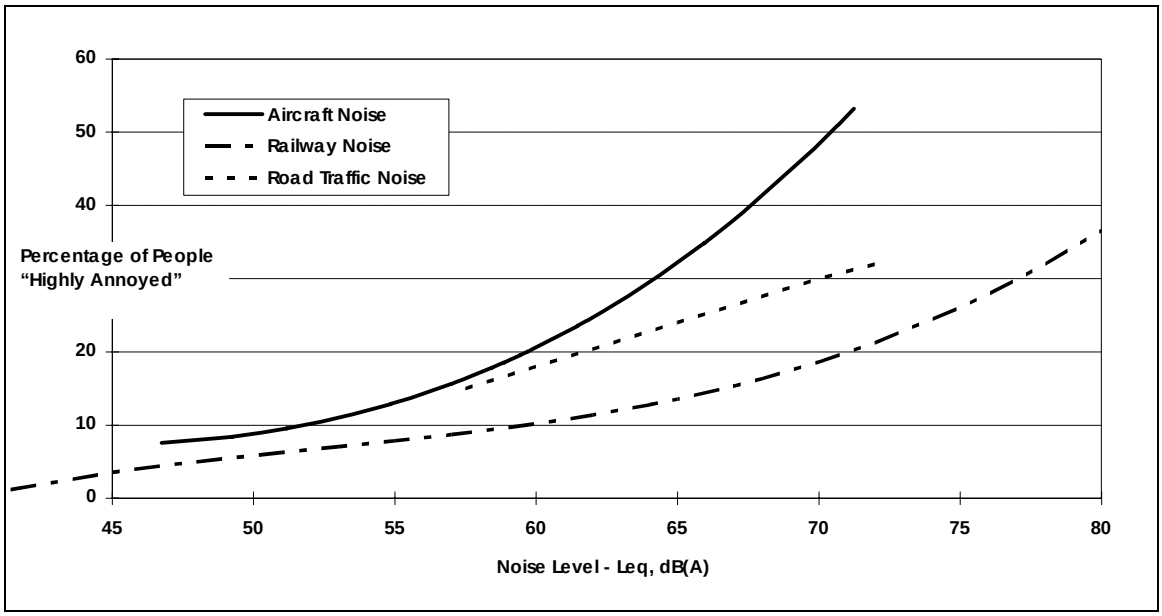
The numbers of people quoted in the submissions are a direct estimation of the population within the noise prediction contours as calculated by the Town of Kwinana. However, the numbers do not take into consideration the ways in which people respond to noise. Reaction to a noise source is dependent on the person's attitude to the noise producer. (Taylor, Hall & Birnie, 1980; Fields & Walker, 1982). Where people support this proposal they are likely to be more accepting of the noise levels resulting from its operation. The results of a survey undertaken by the Bosche Group (1999) indicate that 72% of the population in the immediate area support the Motorplex proposal and that 6% are unsure. It could, therefore, be argued that a minority percentage of the population within the noise prediction contours would be affected.

Current research into annoyance, as a result of noise exposure, considers the long-term L_{Aeq} (average) noise levels and not maximum noise levels; the PER calculated maximum noise levels. To determine the percentage of people likely to be annoyed as a result of the predicted noise levels, calculated long-term L_{Aeq} noise levels over a period of seven days and one year, provided below, should be compared against the reproduced graph provided in *Section 5.5* of the PER.

Long Term L_{Aeq} Noise Levels for Motorplex

Location	Predicted Noise Levels	
	7 Day L_{Aeq}	1 Year L_{Aeq}
Medina	32 dB(A)	23 dB(A)
Hope Valley	57 dB(A)	48 dB(A)
Wattleup	40 dB(A)	32 dB(A)

Figure 5.23 PERCENTAGE OF PEOPLE "HIGHLY ANNOYED" BY VARIOUS NOISES



As a comparison, for aircraft noise which results in the highest reactions, the percentage of highly annoyed people considered acceptable, when planning for residential areas, is 13% (Australian Standard AS2021 – *Acoustics-Aircraft noise intrusion-Building siting and construction*). This corresponds to the Australian Noise Exposure Forecast (ANEF) 20 line or approximately L_{Aeq} 55 dB(A). It can be seen that except for Hope Valley, which is approximately equal ANEF 20 during the busiest seven days only, the long-term noise levels calculated for the Motorplex is generally much lower than this criterion.

The magnitude and duration of the maximum noise levels predicted to Hope Valley and Medina, although above the allowable levels specified in the noise regulations, are still consistent with noise levels experienced in residential areas living in close proximity to transportation routes. An example would be the Town of Albany, where residential premises are located within 20 metres of the freight train line and level crossings. Noise levels in excess of 100 dB(A), as freight trains sound their horn on approach to the crossing, have been measured at 2:00am (ERM, 1998). In respect to aircraft noise, measurements carried out in the northern suburbs of Sydney have shown levels exceeding 94 dB(A) (DoT, 1995) at regular intervals at most affected residences.

The information presented above must be taken into consideration when assessing the effect this proposal has on the health, welfare, convenience, comfort or amenity of the residences.

More than 17000 people may be exposed to noise, which exceeds the legal limits.

Regulations are not legal limits, they are prescribed values to which variations are permitted under certain circumstances. It is through the exemption process that appropriate variations to the prescribed values are determined.

A noise curfew should be set at 10:00pm since this is the accepted time (eg in the noise regulations) after which lower noise levels are needed.

It is acknowledged that setting a curfew at 10:00pm may reduce the overall noise impact to residences and, indeed, sleep disturbance studies generally consider 10:00pm as the time when people are contemplating sleeping (Bullen, 1996). However, there are a number of curfews that consider 11:00pm as acceptable, one of which is the curfew on aircraft movements at Sydney's Kingsford Smith Airport which has a curfew from 11:00pm to 6:00am. In addition to this, it may not be logistically possible to achieve a 10:00pm finish when staging racing events. In respect to Speedway events, as these are staged on a Friday evening, the starting time must provide people with sufficient time to attend the meeting after work. Also, for events on the weekend, during the summer, people are reluctant to stand in the heat for too long. It has, therefore, proved necessary to start the main events

at approximately 6:30pm, when the temperature has cooled. During exhibition drag racing events, the racing teams have to dissemble and assemble the engines between races, which takes a minimum of two hours. As there are three exhibition races, a 10:00pm finish would not provide enough time to enable this to happen.

The low percentage of noise time for drag races is irrelevant since the regular bursts of noise have the potential to add to their annoyance

The percentage of noise time for drag racing was determined for two reasons. The first was to establish which of the noise level criteria detailed in the Regulations applies to the various vehicles racing. The second reason was to demonstrate that the high noise levels from the top performance vehicles are not present for the whole racing period and therefore, should not be the main focus of this study. This provides people with a true picture of the impact of the noise and allows them to make an informed decision as to how it may affect them.

Many residents are shift workers requiring sleep outside of normal sleep hours;

Sleep-disturbed shift workers will be more susceptible to errors which may result in plant upsets;

When assessing the noise impacts from proposed developments, the impact on shift workers would generally not be taken into consideration. This is due to the very small percentage of the population expected to be sleeping during the day. For example, noise curfews placed on large airports restricts aircraft travelling over populated areas during the night time period (Sydney airport curfew is 11:00pm to 6:00am). The low proportion of people expected to be sleeping during the day is also reflected in the allowable levels set in the noise regulations, which clearly permits higher noise levels during the day time hours and lower noise levels at night.

Noise levels in some areas will exceed occupational health levels - exposure of the general population to such levels is unreasonable

Occupational health standards for noise are based on the average noise level over a period of an eight-hour working day. This is represented by the expression $L_{Aeq,8h}$. For Western Australia, the standard for occupational noise is $L_{Aeq,8h}$ 85 dB(A).

The $L_{Aeq,8h}$ noise level for Hope Valley, which is the worst case scenario, is approximately 69 dB(A) during drag racing events and 63 dB(A) during Speedway racing events. Both these noise levels are considerably below the occupational health standard and therefore the events would not pose a risk to hearing.

Noise, particularly sudden loud noise such as that from drag cars, will upset domestic/commercial animals including horses and chickens which may damage themselves, others or property.

Stress caused to domestic animals as a result of loud or sudden noises can certainly occur in some instances. However, information provided in the Kwinana Town Council report on the proposed Motorplex site, stated that many of the horses in Hope Valley are accustomed to attending noisy equestrian events and to travelling in floats on busy roads and are, therefore, less likely to be spooked by loud noises. Also, that some of the horses may initially be distressed by the noise but they are likely to accept the noise over time. This is reinforced by the fact that there is, currently, livestock located at the Claremont showgrounds.

There is little relevant information relating to the effects of noise on poultry, however, many fauna species adapt well to human presence and associated noises. In fact, some species of crows, pigeons and seagulls have been known to take advantage of human activity by tolerating extremely loud noise (Busnel, 1978). It would be expected that chickens would adapt to an environment quickly, especially if they were raised in the area from chicks.

The extent of exceedance of the assigned noise levels is beyond what would be expected to be addressed by a regulation 17 approval. Any exemption from compliance with the noise regulations where the predicted noise is more than eight times the assigned noise level will bring the credibility of the noise regulations into question.

The Regulations do not specifically address the issue of noise from motor racing, as is the case for other sporting activities like football. This is a major concern to Motorplex venue operators. At present, there are however, a number of processes within state law that the proposed Motorplex could operate under, including:

- an approval under Regulation 17 of the Environmental Protection (Noise) Regulations;
- an approval under Section 6 of the Environmental Protection Act; or
- a special act of parliament.

In all cases where exemptions on the grounds of noise are sought, the noise levels from the proposal in question would exceed the Regulations by a certain amount. A decision is, therefore, required as to whether the gain to the community, as a whole, outweighs the loss of amenity to affected noise sensitive premises. An example of this would be football stadiums that have been considered to have a beneficial community use and therefore, permitted to exceed the noise Regulations. These are all special cases and the credibility of the noise Regulations, which apply to the community as a whole, would not be brought into question.

Industry has pointed out that current noise levels in Medina and North Rockingham only just comply with the assigned levels and that industry (particularly CBH and WMC) are investing considerable sums of money to reduce noise emissions at the request of the DEP. It is suggested that the introduction of such a noisy operation as this proposal appears odd in such circumstances.

It is acknowledged that the noise levels in Medina and North Rockingham, resulting from industry operations only just comply with the assigned levels and that noise mitigation is being implemented by these major industries to ensure the Regulations are complied with. The introduction of the proposed Motorplex, which would result in higher background noise levels during race meetings, could be seen to erode this effort by the Kwinana industries. However, noise from sporting venues (e.g. Subiaco Oval) has always required special consideration and is generally not considered to be part of the general noise environment for a particular area. This is mainly a result of the short-term impacts associated with sporting events. To ensure that the noise levels associated with race meetings do not result in additional pressure on industry to reduce their noise emissions, a provision to exclude the noise contribution from the Motorplex, when assessing other premises against the noise regulations, would be required.

Industry has further expressed the concern that noise from the proposal will result in the community becoming more sensitive to noise generally, resulting in demands for further attenuation of noise from industrial activities.

This comment is plausible, however, the opposite may be just as plausible. People already exposed to high noise levels will be less sensitive to increases in the general noise level. Current research into community response to noise concludes that overall noise reaction is best described by the sum of reactions to individual sources, rather than including any interactive effects (Taylor, 1982.)

The proposal includes minimal noise mitigation measures (lowering of ground levels, provision of bunds). In view of the level of exceedance of the assigned levels, the proponent needs to demonstrate that a range of mitigation measures has been investigated (eg full or partial roofing, closure of the north end of the drag track, noise absorbent fencing, restraints on noise from individual vehicles) and that all practicable measures have been included.

Details of the noise mitigation measures incorporated in the design of the Motorplex are provided in Chapter 7 of the PER. The attenuation provided in the design is considered to be the maximum that can be achieved within the budget allowance for the project. The measures include:

- lowering the drag racing strip as much as possible, thus enhancing the barrier effects from the natural land contours surrounding the Motorplex;
- the placement of eight metre high barriers around the entire speedway track; and

- the careful design of the stadium to ensure the maximum practical noise attenuation can be achieved.

The following additional noise control options have also been investigated:

Barriers Heights

The grandstands and barriers have been designed to provide the optimum noise attenuation within the constraints of the project budget. Due to the orientation of the Motorplex, raising the heights of the barriers above the current design would result in minimal additional noise attenuation.

Absorptive Barriers

The use of noise absorbent barriers was investigated. The area available to introduce absorption combined with the orientation of the Motorplex, in respect to the residential areas, resulted in minimal noise attenuation.

Roofing System

The use of a roofing system has been investigated, however, at an estimated cost of $12 million, is beyond the budget allocated for the construction of the Motorplex. However, in terms of acoustic attenuation, a roof would provide significant reductions in noise levels to residential areas.

Vehicle Silencing

The silencing of vehicles has been investigated. It is our understanding that the Top Fuel, Top Comp and Mini Jets drag racing vehicles would require a silencer box that is approximately the same size as the vehicle to achieve a reduction in noise levels and is, therefore, not practicable. In respect to speedway racing, all vehicles must be muffled and these mufflers are tested periodically to ensure compliance with the appropriate standards.

6. RISK

6.1. Emergency Response

Concern has been expressed that it would be virtually impossible to avoid and move to safety large numbers of untrained patrons, including small children, elderly and disabled people, within the short time-frame available for emergency notification. Please comment

It is recognised that control of large crowds in an emergency situation is a major task. However, sporting venues are typically specifically designed to deal with large numbers of people in an efficient and effective manner. The preparation and implementation of an effective emergency response plan will ensure that the exposure of the public to potential risks are minimised. It is should be noted that from the list of potential accidents provided by the DEP, incidents that could potentially impact the Motorplex are those which may involve the release of very large quantities of the hazardous substance (e.g. catastrophic rupture of equipment). The frequencies of such events occurring in conjunction with the peak periods at the Motorplex are judged to be very low.

Based on the scenarios provided by the DEP, it is foreseen that scenarios involving toxic releases would give rise to more concerns. In such cases, it is proposed that the more vulnerable population (i.e. small children, elderly and disabled people) be provided with shelter within the Motorplex while the rest of the patrons take shelter in their cars. The presence of external emergency services at the Motorplex facility during major events would greatly assist evacuation efforts. It is not foreseen that the emergency scenarios expected would cause immediate fatalities, therefore the increased presence of medical services on standby will go toward providing the necessary assistance to susceptible groups of people.

Conversely, patrons may panic at the sight or smell of an industry emission which is innocuous. Please comment.

The provision of simple emergency response procedures, for example evacuation instructions printed on entry tickets, will give patrons forewarning of what actions to take in case of an emergency. In general, people are less likely to panic if they are given prior warning of what is expected.

Public submissions have expressed concern that no emergency response plan has been included in the PER and there has therefore been no opportunity to assess the likely effectiveness of such a plan. Please comment.

A commitment to prepare an Emergency Response Plan prior to operation of the Motorplex facility was included in the PER. It is unusual for such a plan to be developed prior to granting approval for a project. A conceptual emergency response plan has however been developed and is included as an attachment to this document.

Industry has expressed concern that no account has been taken of the expense to industry generated by the need to revise their emergency response plans to take account of the proposal and the ongoing cost of inclusion of the proposal in such plans. Please comment

There should be very little expense to industry to update their ERP (assuming these ERP's are already up to standard and have defined "offsite incidents" etc) as they will only have to add an extra contact number to call and provide warnings in the event of an incident. This is no different to any new development (including industrial) being added nearby and the Motorplex should be included as part of the regular ERP update/review process.

The concept of requiring industry to modify their operations to reduce potential risks during major events is considered to be impractical. Please comment.

There is no suggestion of modifying normal daily operations. The control and management of intermittent operations (such as weekly deliveries of certain raw materials or certain maintenance procedures)that have some flexibility in timing should take into account the few days when there is a large number of people present. The Motorplex would need to provide adequate warning (a number of months) and this could be built into the delivery schedule. The days of high population are likely to be weekends when such operations are likely to be avoided anyway.

6.2. Industry Expansion

Concern has been expressed that the presence of the proposal will form an additional constraint on expansion of existing industries or the introduction of new industries in conflict with the Towards Optimising Kwinana report adopted by Government. Please comment.

The Motorplex will certainly impact industrial developments in the area nearby and reduce flexibility in the industrial estate. Certainly the full plan for 2020 development (in FRIARS) would have to be amended based on both individual risk and societal risk, and the sites nearest to the Motorplex would probably need to be used for non-hazardous industries. The actual impact on expansion plans for existing industry is very difficult to evaluate without knowledge of what is planned.

The ALARP principle is usually applied to any new industrial proposal. How does this proposal reflect ALARP principles?

The ALARP principle is usually applied to a facility from which risk is generated due to its activity. As the Motorplex development is not foreseen to give rise to increased risk (in terms of fatality) to the surrounding population, the ALARP principle therefore does not really apply.

As QRA has been used for a number of years in the Kwinana Industrial Area (KIA), it is expected that each existing facility is presently operating in the ALARP regime. This is supported by the cumulative curves for the KIA being below the "Tolerable for New Plants if ALARP" for 1994 without the Motorplex (AEA and ERS reports). The Motorplex may affect the ALARP calculation if Cost Benefit Analysis (CBA) and Cost to Avert a Fatality (CAF) is used because of the larger number of persons potentially affected. However given low frequency of changes shown in the ERS report, the affect on the ALARP calculation is likely to be marginal.

6.3. Injury Risk

It has been pointed out that the risk analysis only looks at events which are likely to cause death. There is a much higher frequency of incidents which may cause injury (eg asthma attacks from air pollution). Some assessment is needed of this aspect of risk.

This issue has been addressed in Section 1.1 and 1.2 above.

Industry has expressed concern that injuries resulting from an industrial incident may expose them to class actions for compensation far in excess of that likely under current land-uses. Please comment.

A review of individual risk was included as an environmental factor to be assessed through the Environmental Assessment and Approvals process for the Kwinana International Motorplex PER. However, class action suits involve multiple people and are considered societal risks which are not included in the scope of this PER. Societal risks were however included in the Societal Risk report which was prepared as a separate document for the project.

7. TRAFFIC

7.1. Armstrong Road

Residents of Hope Valley have expressed concern that traffic will use Armstrong Road to avoid traffic lights in driving to the facility and to avoid the inevitable delays on Anketell Road when leaving the facility. How will this possibly be managed without interfering with local residents' access convenience?

The traffic engineers for the project are well aware of the issues concerning Armstrong road. At the time of the release of the PER, the proposed entrance for the facility was directly opposite Armstrong Road. Since then, a number of alternative alignments for the entrance to the facility have been considered to discourage traffic using Armstrong Road. The options include placing the entrance to the east of Armstrong road or placing the entrance to the west of Armstrong Road. Placing Traffic Marshals at either end of Armstrong Road during significant events will be used to discourage non-local through traffic.

7.2. Anketell Road

Industry has drawn attention to the significant, 24-hour use of Anketell Road for industrial transport and has expressed concern that congestion for several hours after major events could cause disruption of vital transport operations. Please comment.

Local authorities and Main Roads WA have only permitted normal access to and from the facility to be located along Anketell Road. The traffic congestion time predictions have been based on a worst case scenario which is expected to occur only during the major events. Although it is acknowledged that Anketell Road is a freight transport route and that traffic along Anketell Road, including industrial transport, may be affected during these major events, there are a number of alternative routes which vehicles could use during these periods. Alternative routes to Rockingham Road include Abercrombie Road, Thomas Road, Stock Road and Forrest Road. Thomas Road is also a designated freight transport route and could be used as an alternative route for freight vehicles during major events at the facility.

Alcoa has advised that the proposed secondary exit, west of the main access road is likely to interfere with its operational access to its disposal sites. Please comment.

Interference with Alcoa's operations resulting from the proposed second exit have been recognised and liaison with Alcoa regarding this issue has been undertaken during the facility design process. The second exit has been proposed to assist with alleviating the traffic congestion which may occur after an event. Therefore, Alcoa would be able to continue to use this access to enter the disposal area but may need to use an alternative access route to the east of the facility to exit the site, should the

existing route be required after an event. Liaison with Alcoa will continue until this issue has been adequately resolved.

7.3. Emergency Vehicles

Concern has been expressed that traffic congestion caused by the facility may delay the response of emergency vehicles such as fire engines and ambulances in the event of an industrial emergency arising when patrons are arriving at or leaving the facility. Please comment.

A separate access into the facility specifically for use by emergency vehicles is proposed. This emergency vehicle access will be located at the northern end of the dragstrip (giving access to the middle of the facility) and will emerge onto Rockingham Road adjacent to the median cross-over. The access point will only be used by emergency vehicles to enter and exit the facility. Additional emergency access routes are being considered and are discussed in Section 6.1.

Emergency vehicles are able to use whatever means available, including driving on the road shoulder, along the median strip and on the wrong side of the road, to reach an accident in an emergency. Potential traffic congestion associated with major events at the proposed facility would predominantly be in only one direction as patrons are driving to or exiting from the facility. Should traffic congestion prevent emergency vehicles from using one side of the road, as mentioned above, the opposite side of the road may be available for use.

8. WATER

Alcoa has advised that it cannot provide water for construction or operational purposes from existing bores since these are fully committed. Please comment.

Tenders to be let for the construction of the facility will include a requirement that a dedicated groundwater supply bore be installed for construction and operational purposes. It may be necessary to establish an initial supply located outside the construction area and this decision would be contingent on the construction programme. The Water and Rivers Commission have been approached and they have indicated that there are sufficient groundwater resources to obtain and licence a suitable supply.

It is important that on-going management of groundwater is not compromised. What agreements have been reached with Alcoa in relation to groundwater management for construction and ongoing activities?

Liaison between Alcoa and the State Government regarding responsibility for the ongoing management of groundwater within the Alcoa residue storage areas is currently being undertaken. No decision has at this stage been reached.

What are the proposals for stormwater drainage at the southern end of the site? Will this result in further disturbance to the vegetation?

Drainage from the relatively small paved area at the southern end of the dragstrip will infiltrate into swale drains. The swale drains are located adjacent to the dragstrip but within the bunded area and are therefore isolated from the vegetation outside the perimeter fence. No disturbance of the vegetation will occur.

9. OTHER

9.1. FRIARS

How does the project integrate with the FRIARS conclusions that the "KIA should be zoned 'Special Industry' to indicate the nature of its heavy and risk generating industries" and "the Hope Valley

townsite ...should be zoned 'Special Industry' to reflect the expansion of the KIA"? Why is it appropriate to have a major recreation facility constrained on two sides by 'Special Industry'.

The FRIARS draft report reflects the Cabinet decision to endorse the Alcoa site subject to environmental and planning approvals. The activities associated with the Motorplex proposal are high noise generating activities. Industrial areas are regarded as far more suitable sites for such activities given the higher ambient noise levels.

The site meets the applicable individual risk criteria and should Government decide to locate the Motorplex at this site then future proposals for industrial development in the general area would need to take the site into account.

9.2. Employment

It is claimed that the proposal will generate the equivalent of 363 full-time jobs. Does this estimate take into account the loss of jobs at Claremont Speedway and Ravenswood Raceway?

The potential economic benefits of the proposed Motorplex were quantified in a report prepared by Economic Research Associates (ERA, 1999). This report only considered the likely employment generation of the proposed Motorplex facility. It did not estimate the economic impacts of closing down operations at Claremont Speedway or Ravenswood Raceway.

9.3. Compensation

It is claimed that the presence of the facility and its associated noise will devalue properties in the vicinity. In this event, will the proponents compensate property owners?

There is currently no evidence to suggest that there will be a change in the values of properties in the vicinity of the proposed Motorplex. Therefore, no compensation to property owners has been considered.

9.4. Alcohol Consumption

Concern has been expressed that consumption of alcohol by patrons will lead to increased traffic hazards. Will alcohol be available for purchase at the venue? Will alcohol be permitted to be brought into the venue.

It is proposed that alcohol will be served at the Motorplex facility. An alcohol management policy is currently in place at Claremont Speedway and Ravenswood Raceway and will be implemented at the new facility. The policy will promote responsible alcohol consumption and will include bans on alcohol being brought into the facility. Random checks of bags and cars to ensure no alcohol is brought into the facility will be undertaken. Alcohol will only be permitted to be served and consumed within licensed bars at the facility.

9.5. Future Development

The proposal is seen as the 'thin end of the wedge' and that the racing times will expand and the facility will steadily become a venue for other activities resulting in increased community disturbance. Please comment.

As outlined in the PER, the site does have the potential to accommodate other recreational activities although no specific proposals have been identified to date. However, any additional proposals would be subject to separate planning and environmental approvals from the WAPC and EPA. These regulatory agencies would consider all potential impacts and determine whether these would be acceptable.

9.6. Previous Proposals

It is claimed that several previous proposals for motor sports facilities in the region have been refused as being an inappropriate activity in the buffer zone and likely to cause unacceptable noise. Why is such a proposal now deemed acceptable?

It is difficult to respond to this question without the details of the other proposals. However, the Motorplex is a regional proposal involving the relocation of the Claremont Speedway and the Ravenswood Drag Racing to a location which has been identified, through a detailed site selections process, as being suitable, given the industrial activities of its nearest neighbours.

9.7. Red Mud

What waste disposal sites are appropriate for disposal of any excess bauxite residue which may need to be excavated?

It is not envisaged that any excess red mud will be generated through the construction of the Motorplex facility. Any red mud to be excavated for the facility will be placed within the existing red mud lakes to the north and east of the facility and capped with clean soil.

Should there be a requirement to remove excess bauxite from the site, an appropriate location for its disposal would be determined through consultation with the Waste Management Division of the DEP and in accordance with their Landfill Waste Classification and Waste Definitions (DEP, 1996). In order to classify the waste for disposal, it is likely that further analysis of the red mud would be required before an appropriate landfill site could be identified.

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Kwinana Motorplex Conceptual Emergency Response Plan (ERP)

EMERGENCY SCENARIOS

The basis of Motorplex ERP will be a suitable set of accident scenarios. The right level of severity of scenarios will be selected and will cover a range of potential emergency events.

The ERP must be capable of dealing with the largest incidents than can reasonably be foreseen, but detailed planning should concentrate on those events that are most probable. Therefore, the ERP will cover a range of scenarios with variations to adapt to a particular scenario, which can be scaled up or scaled down, depending on the level of the incident.

Typical scenarios that will need to be included in the ERP will include the following:

- Flammables
  - threat of escalation after some delay;
  - imminent escalation;
  - sudden event.

- Toxics
  - slow leak;
  - a containment under threat;
  - a transient leak which could be brought under control;
  - a sudden massive release.

Note: Based on the list of representative events sent through, effort should be expended on planning for response to toxic events.

EXTERNAL EMERGENCY SERVICES

In practice, off site effects of industrial emergencies are handled mainly by the police and the fire and medical services. Some important functions of the police during an emergency would include the control of bystanders, maintenance of access for essential traffic and evacuation of the public.

The Motorplex ERP will need to identify the level of preparedness of the external emergency service required, particularly during major events when large crowds are expected to be present.

The nearest medical facilities will need to be identified and to ascertain the facilities available to handle all potential emergencies. The plan should include not only the accommodation and treatment of the injured, but also their conveyance to hospital.

COMMUNICATIONS AND CONTROL SYSTEM

Communication is a crucial factor in handling an emergency. When there is imminent danger of an incident from the industrial area affecting the Motorplex, it is necessary immediately to raise the alarm, to declare an emergency and effect evacuation as required.

A location within the Motorplex will be identified as the Emergency Control Centre (ECC). It should be located in a position of minimum risk. The ECC should be linked by telephone to all essential points within the Motorplex and to outside industries as well as emergency services.

It is necessary to provide different types of alarm to distinguish between an emergency event involving flammables as opposed to one involving toxic chemicals. Note that the alarm will only need to be raised at the Motorplex when an emergency on any of the industrial sites is assessed (by the industry or external emergency services) to have potential off site effects (i.e. an emergency level 2 or higher at the industrial site).

ESSENTIAL FUNCTIONS AND NOMINATED PERSONNEL

The Motorplex ERP should identify key personnel who will have specific responsibilities for coordinating the emergency response actions. The Emergency Team in general will comprise the Main Emergency Director who will be in charge of the overall plan for the Motorplex. The Director will need to be supported by an appropriate number of personnel who will be allocated specific duties at various locations within the Motorplex. These will include traffic controllers, first aiders, etc.

EMERGENCY PROCEDURES - EVACUATION AND SHELTER

Fire and explosion events tend to occur over such a short time scale that evacuation may not be practical. Initial assessment of the Motorplex design show that half of the people within the complex will be sheltered (i.e. those present at the terraced seats with their backs to the industrial area) from the effects of fire or an explosion due to the topography of the area. (Note that this conclusion was arrived by examining the cross-section of the facilities layout). In addition a fireball occurring in the industrial area will need to rise a considerable height to provide line of sight to impact people seated on the terrace facing the industrial area.

The principal event where evacuation may be in question is a large release of toxic gas (i.e. ammonia, hydrogen fluoride, hydrogen cyanide). In this case an alternative means of mitigation is shelter within buildings. It is obvious that it will not be possible to provide shelter for a crowd of 10,000. As a proportion of the crowd will comprise children, the elderly and disabled people, the priority would be to provide shelter for this particularly vulnerable group. Published data has shown that a building with a ventilation of 2 air changes/hour offers a degree of protection which reduces the toxic load for persons indoors compared with that for someone outdoors by at least an order of magnitude. It should be noted though that protection offered by the shelter is much reduced if the ventilation rates are higher. The possibility of getting people to shelter in their cars could be investigated.

In regards to evacuation, the following two cases may be distinguished:

- Evacuation after a toxic release has taken place; and
- Evacuation when a toxic release is expected.

It needs to be appreciated that after a toxic leak has taken place, the cloud may travel quite rapidly. Even at a low wind speed of 2 m/s the cloud may travel 1.2 km in 10 minutes, whilst at a higher wind speed of 5 m/s it will travel 3 km in 10 minutes. It has been noted that an assumption made in one ERP for a large chemical site in the UK is that it would take 40 minutes after the start of an incident before a police car arrives in a nearby housing estate. Hence for the Motorplex, the presence of external emergency services at the complex is vital during major events.

Therefore events in which evacuation is most likely to be considered is where a tank or vessel is under threat and there is a potential for loss of containment. Measures that will enable quick and orderly evacuation of the crowd should be highlighted in the ERP, such as adequate number of exits, signs indicating escape routes, etc.

Post incident measures will need to be in place to provide assistance to anyone who may suffer from toxic effects of the gas.

SOME FURTHER THOUGHTS

One simple way of handling movement of large crowds of people would be to print simple emergency response instructions on the back of their entry tickets. Coordination of evacuation efforts could be facilitated by using colour-coded tickets. There will also need to be adequate provision of traffic marshals or ushers to guide people's movement to reduce panic movement of large crowds.

The use of the public address system for communication of an incident should be discussed. It is important that any announcements made over the system do not raise confusion and panic to the crowd.