Regulatory Impact Statement

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Information

When writing a RIS agencies should:

- Complete each relevant section in the RIS template sufficiently, to enable informed responses on the policy issue, objectives, options and impacts;
- In the consultation phase, ask questions which prompt respondents to confirm and challenge the analysis, including estimates of the magnitude, scope and range of the impacts. In addition, ask respondents if there are further problems, feasible options or further impacts that should be considered; and
- Ensure that any assumptions made are clearly defined.

Submissions and Queries

Name of Proposal	Proposed changes to airblast limits from blasting
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RIS Details

Comments and submissions are invited on the proposal, in response to information provided in this RIS. Agencies may elect to make all responses to the Consultation RIS publicly available. Written comments and submissions should be forwarded between the start and end dates, as detailed below. This document will then be developed into the Decision RIS.

Agencies should provide the following information at the relevant stages of RIS development

Consultation RIS Lodged	
Consultation Start Date	21 February 2011
Consultation End Date	23 May 2011
Consultation Web-Link	www.dec.wa.gov.au
Decision RIS Lodged	7 February 2013

Executive Summary

The issue addressed in this Decision Regulatory Impact Statement is the need for regulatory reform of the airblast limits for blasting, as currently specified under the Environmental Protection (Noise) Regulations 1997. Airblast noise is the rumbling sound accompanying blasting operations as carried out in mines and quarries and on some construction sites.

The current airblast provisions, as set down in noise regulation 11, fail to achieve the three objectives identified for this type of regulatory system: *protection* of the noise environment to a best practice standard; *fairness* to stakeholders; and *certainty* for industry, government and the community. The issue of adequacy of protection was raised at the time of gazettal of the regulations in 1997 through a disallowance motion in Parliament, proposing that the noise limits should be reduced by 5 dB in order to provide a better level of protection for sensitive receivers, in line with National best practice. The motion was withdrawn on an undertaking by the then Minister to review the airblast limits. Following review by an expert working group in 2000, an amendment proposing a 5dB reduction in airblast limits was included as part of a wider package of noise regulations amendments released for consultation in 2011.

The consultation of 2011 however highlighted several other issues with regulation 11; in particular, the requirement to comply with airblast limits at the *boundary* of the receiving premises – as opposed to the *sensitive site*, e.g. the dwelling – was considered to be unfair on blasters. This is because the measures needed to meet the airblast limits at the boundary may be costly and impracticable in many cases, and may 'overprotect' in those cases where no person is present at the boundary at the time of the blast. This situation results in considerable uncertainty in relation to compliance, and the overall issue can be described as a regulatory failure.

Three options have been evaluated in this Decision Regulatory Impact Statement to address the issue:

Option 1 – status quo – the current airblast limits and boundary compliance requirements would continue to apply.

Option 2 – reduce airblast limits – the current daytime airblast limits would be reduced by 5dB to provide greater protection in line with National best practice, but boundary compliance requirements would continue to apply. This option was developed from the original work between 1997 and 2000, as described above, and was the basis of the 2011 consultation.

Option 3 – optimise current regulation – the current daytime airblast limits would be reduced by 5dB at a 'sensitive site' (typically a dwelling and its curtilage); but would remain at current levels for less-sensitive sites, such as the paddocks of a farm or a commercial or industrial receiver. Airblast limits would not apply at locations where the blaster believed on reasonable grounds that no person was present at the time of the blast. This option was developed following the consultation of 2011, to provide increased protection at sensitive sites where it is most needed, and to recognise the boundary compliance and related issues.

The consultation of 2011 involved wide advertising in *The West Australian* and local and regional newspapers. Letters were sent to all local governments and 116 stakeholders including industry, government and community groups; and a series of seminars that were held to explore the proposed amendments were open to the public as well as stakeholders. Detailed information on the proposed changes to airblast limits was available on the Department of Environment and Conservation (DEC) website, including a Discussion Paper specifically addressing the airblast issues.

Of the 11 submissions received on airblast limits, 10 were from industry groups or operators, while one was from a local government supporting a reduction in airblast limits. No submissions or contacts were made by community groups or members on the airblast issue during or following the consultation period. Following from that consultation, Option 3 was developed to address the range of issues raised, and has received broad support from the industry.

The evaluation of the three options finds that Options 1 and 2, by failing to address the boundary noise issue, lack fairness for the industry. If strictly applied, these limits would result in additional costs in reducing airblast levels at the boundary; and would 'overprotect' in those cases where no person is present at the boundary at the time of the blast and where the 'sensitive site' is some distance away from the boundary. Further, many mines and quarries would not be able to practicably comply at the boundary; this would likely result in a series of noise regulation 17 applications for special Ministerial approvals, which would impose a processing cost on government.

Option 3 resolves the boundary compliance issue, while providing greater protection at the 'sensitive site'. It is also in line with National best practice, and is identified as the preferred option. Up to ten quarries and a small number of mines with residences nearby may need to improve blasting practices to achieve compliance with the new airblast levels, however this would be at a modest cost increase of about 8% in drilling and blasting costs. Four sites have been identified where possible non-compliance issues may result in noise regulation 17 applications; these operators have indicated that they would be prepared to undertake this process, and it is anticipated that these applications can be expedited.

The draft of the Option 3 proposed amendment to regulation 11 has been released to key stakeholders for final comments. The preferred option would be implemented as part of the current noise regulations amendments package, and accompanied by a set of guidelines for industry.

The proposed evaluation strategy will centre on a community consultation to be conducted over three months, two years after promulgation. This will include advertising to the general community and writing to local governments and industry stakeholders, seeking submissions on the operation and effectiveness of the revised regulation 11. If the review finds that the revised regulation 11 has failed to meet its objectives of protection, fairness and certainty, further amendments will be developed to address the issues.

1. Statement of the Issue

1.1 Summary of the issue

The regulatory system for control of airblast noise from blasting, as specified in regulation 11 of the Environmental Protection (Noise) Regulations 1997, fails to meet the three relevant performance criteria for an effective regulatory system under these regulations:

- *protection* of people's health and amenity in accordance with best practice National standards;
- *fairness* to industry, the community and government; and
- *certainty* for all parties, through robust, enforceable standards that industry is expected to meet, and a clear level of amenity that the community may expect.

This document proposes a regulatory reform to address this regulatory failure based on a proposed amendment to existing noise regulation 11.

1.2 What is causing the problem and why?

The problem is essentially a regulatory failure that can be described as follows:

Current airblast limits fail to provide best practice levels of protection –

It has been of concern for some time that the current regulatory settings in Western Australia fail to provide best practice in terms of protection for noise receivers from the adverse noise impacts of blasting.

Airblast (also known as overpressure) is the term used to describe the noise generated during a mining or construction activity when an explosive blast causes a wall of rock to be displaced, in turn causing a pressure pulse to travel through the air. This sound contains most of its energy in the low frequency range, and is generally either 'felt' by the receiver or heard as a 'rumble'. The pulse may also contain a contribution from direct venting of gases from the blast, and is often preceded by a perceptible ground vibration wave.

Airblast commonly causes a 'startle' reaction in humans, as adrenaline is released and an autonomic 'fight or flight' response ensues. This reaction becomes severe at high airblast levels, often being exacerbated by the rattling of lightweight building components such as windows and ceilings, which (together with the effect of accompanying ground vibration) often results in concern that the building is being damaged. Community reaction is likely to be greatest where there is a perception that the airblast levels are not being properly monitored and controlled, and that personal wellbeing and safety are at risk.

Airblast levels are measured as unweighted peak sound levels, instead of the A-weighted RMS levels used for other environmental noise assessments. Airblast levels above 120 dB are known to cause strong adverse human reaction, while building

damage criteria may be invoked at levels above 133 dB (Standards Australia, 2006). The airblast criteria used in environmental legislation in Australia mainly relate to human reaction, as protection of buildings is not considered as an environmental issue.

The current airblast criteria in regulation 11 of the noise regulations set a limit of 125 dB for any blast during daytime Monday to Saturday, while nine in any ten consecutive blasts must not exceed 120 dB. The limits for Sundays and public holidays are 5dB lower. The current Western Australian limits were based on limits that had been in use in licence conditions imposed on mines and quarries under the *Environmental Protection Act 1986* (the Act) prior to 1997, when the regulations were introduced.

The current limits in WA are generally some 5 dB higher than those recommended nationally in the Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration (ANZEC, 1990); and in Australian Standard 2187.2–2006 (Standards Australia, 2006). For a person exposed to noise from blasting, this 5 dB difference between Western Australian limits and national criteria is significant: noise such as airblast consists mainly of low frequency energy, thus an airblast level of 125 dB may sound about almost 'twice as loud' as an airblast level of 120 dB.

There have been few published studies into annoyance or disturbance from blasting in Australia, particularly in recent years, as airblast limits are now well established in most States. However it is worth noting a well-run study carried out in New South Wales in 1984 on behalf of the (then) State Pollution Control Commission involving interviews with 206 residents around a quarry in Eastwood, a residential suburb in Sydney (Wilkinson-Murray, 1984). The study found a significant correlation between airblast level and the percentage of respondents 'highly annoyed', with about 50% of respondents being highly annoyed at an airblast level of 115 dB. The report concluded that "The main aspects of blasting overpressure which appear to affect respondents around the quarry are the loud noise associated with it, the shaking and rattling of the house and things within it, the likelihood of damage and the fact that the blast startles the occupants".

An airblast level of 115 dB has thus been accepted within industry and government in Australia for many years as best practice in terms of providing a reasonable level of protection for people from the adverse effects of airblast overpressure and minimising community reaction. The current airblast limits in WA do not meet this standard of protection.

The issue of adequacy of protection was raised at the time of gazettal of the regulations in 1997 through a disallowance motion in Parliament, proposing that the noise limits should be reduced by 5dB. The motion was withdrawn on an undertaking by the then Minister to review the airblast limits. Following review by an expert working group in 2000, an amendment proposing a 5dB reduction in airblast limits was included as part of a package of amendments released for consultation in 2011.

Current airblast limits lack fairness and certainty –

The current wording of noise regulation 11 means that the airblast limits apply at *any point* on a receiving premises, not just at the noise-sensitive part, e.g. the dwelling. Thus for example, the paddocks of a farm currently receive the same level of protection as the homestead. Seven of the submissions to the 2011 consultation pointed out that current practice has generally been for monitoring to be carried out at a location that is representative of the nearest affected dwelling or sensitive site, rather than at the boundary. Airblast monitoring points may indeed be located well back from the boundary of a rural property.

By contrast, both the ANZEC Guidelines and AS2187.2–2006 recommend noise limits that apply at a 'sensitive site', such as a residence, hospital or school building. Common practice in WA therefore reflects the 'sensitive site' concept in the ANZEC guidelines and AS2187, although this does not necessarily conform to regulation 11.

In its response to the submissions of 2011, the Department of Environment and Conservation (DEC) acknowledged that there is a divergence between the requirements of regulation 11 and the current practice of monitoring at or near sensitive locations. It is accepted that there would be an inherent unfairness in requiring a mining company to meet the airblast limits at the boundary of a rural property where the receiver's level of activity was not as noise-sensitive as when in or near the dwelling, and where the receiver may not even be present at the time of the blast. As a result, the mine or quarry operator with adjacent neighbours has little certainty as to whether or not they are in compliance with the noise regulations, and can provide only limited assurance as to their compliance status.

This problem would be exacerbated if the airblast limits were to be reduced by 5dB as proposed in Option 2 as outlined in Section 3 below.

1.3 Who is affected and how significant is the issue?

The communities in WA most affected by noise from blasting are those in towns with mining operations close by, principally Kalgoorlie and Greenbushes; and in areas such as Gelorup, where residential development has encroached into areas affected by blasting in nearby quarries. There would also be many other rural properties that lie adjacent to operating mines or quarries.

The relatively small numbers of blasting-related noise complaints are an unreliable predictor of community acceptance. However, the stridency of complaints relating to high airblast levels supports the view that the impacts are significant. Current information does not enable a reliable estimate of the numbers of people likely to be exposed to the airblast levels of interest in Western Australia, nor their attitudes to airblast noise.

According to the Western Australian Mineral and Petroleum Statistics Digest 2011 (DMP, 2012) there are 966 operating mine sites in WA, many of which would be open cut operations that conduct blasting. Based on the data in the report prepared by Orica for the 2011 consultation to assess typical blasting scenarios, the current airblast limits for daytime Monday to Saturday would be exceeded at a distance of about 300m for a quarry and about 400m for a mine site (Orica, 2010). Thus, where blasting takes place

within these distances from the boundary of a neighbouring premises, there is likely to be an exceedance of the requirement of the current regulation 11 to comply at that boundary.

As blasting in quarries tends to be carried out close to the boundary in many cases, the above analysis would indicate that many quarries would have difficulty if required to comply at the boundary. Many mines would blast on a Sunday or public holiday, when the airblast limits are 5 dB more stringent than on a weekday; in these cases the compliance distance would be about 800m. While the more remote mine sites would have buffers greater than 800m (and some would be adjacent to vacant crown land), mines near rural properties or town sites may well have smaller buffers less than 800m.

With regard to construction blasting, the Orica scenarios would indicate that a typical construction blast that took place within about 200m of a boundary may result in an exceedance of the airblast limits, however such activities are less common, and airblast emissions from construction works are amenable to being managed.

The overall problem, while not large in the wider sense of the whole community, is significant in those cases where residences and rural properties exist in proximity to mines and quarries where blasting takes place.

1.4 What are the risks and consequences of maintaining the status quo?

Maintaining the status quo would mean leaving current noise regulation 11 unchanged.

There are two scenarios under the existing regulation 11 that lead to significant adverse risks/consequences.

Compliance is required at the boundary but there are no sensitive sites nearby –

If the compliance point continues to be the boundary of the neighbouring premises, rather than the 'sensitive site', then in the situation where there are no sensitive sites nearby, there exists the risk that the current regulation 11 is requiring an unnecessary level of 'over-protection'.

There are risks and consequences for industry and government in this scenario. Industry would need to take all practicable measures in order to attempt to comply at the boundary, resulting in potential increases in blasting costs. Where these measures failed to achieve full compliance, the mine or quarry operator would have little alternative but to apply under noise regulation 17 for the Minister's approval to exceed or vary from the prescribed airblast limits. The application would require assessment and processing, which would impose a cost on government under current arrangements.

While no such applications have been received to date, the discussion arising from the 2011 consultation would indicate that a number of such applications may ensue if the proposed reform does not progress. Based on experience with other noise regulation 17 assessments, it is estimated that the cost of completing a typical assessment of this nature may be in the order of $30,000 in officers' time, plus additional costs in the ongoing oversight of the approval. If (for example) 20 such applications were to be received, the cost to government would be of the order of $0.6m. In such a scenario DEC's view would be that a regulation amendment should be undertaken in preference to completing a large number of individual approvals. This would seem to be a

reasonably likely outcome in this case, and would in itself warrant consideration of a change in the current regulation 11.

There are sensitive sites near the boundary –

Where there are sensitive sites near the boundary, the current airblast limits may not provide the best practice levels of protection. Three types of adverse consequences may thus continue to result, due to unacceptable airblast levels that comply with regulation 11:

- *Existing mines/quarries with adjacent existing sensitive sites* – the impacts experienced at nearby sensitive sites may be difficult to resolve, as compliant airblast levels are still seen as unacceptable (at least four mine/quarry sites are known to have had blasting-related issues that have proven difficult to resolve);
- *Proposed new sensitive sites adjacent to existing mines/quarries* – the land use planning system may permit new noise-sensitive development within the affected area at locations that receive airblast levels up to the highest allowable airblast levels, with consequent noise impacts on the new residents; and
- *Proposed mines/quarries adjacent to existing noise-sensitive areas* – the current airblast limits would allow a new mine or quarry to operate within a distance where compliant blasting causes unacceptable impacts (many new mines/quarries avoid this problem by planning their blasting so as to achieve airblast levels 5 dB below the current limits).

In summary, the current system either overprotects, resulting in unnecessary costs to industry and government; or underprotects, resulting in costs to the community and to industry and government in dealing with unresolved issues.

2. Objectives

2.1 Policy objectives

The policy objective, as stated in Section 1.1 above, is to ensure that the regulatory system for controlling airblast levels in regulation 11 of the Environmental Protection (Noise) Regulations 1997 meets the following three relevant performance criteria:

- *protection* of people's health and amenity in accordance with best practice National standards;
- *fairness* to industry, the community and government; and
- *certainty* for all parties, through robust, enforceable standards that industry is expected to meet, and a clear level of amenity that the community may expect.

2.2 Desired outcomes

The regulatory system should provide a level of amenity that does not overprotect, but ensures that the majority of occupiers of noise-sensitive premises are able to tolerate and accept the airblast levels that they receive.

The airblast limits should be specified such that the technical requirements are clear; and should be practicably achievable and cost-effective for those carrying out blasting operations.

The regulatory system should facilitate land use planning decisions that create adequate buffers between noise-sensitive development and blasting operations such that both are protected against adverse outcomes.

The system should be capable of being implemented by government without requiring undue levels of intervention and enforcement, or excessive demand for special approvals, e.g. noise regulation 17 approvals.

2.3 How is the issue currently being addressed?

The current (1997) noise regulations provide the basis for managing airblast noise, and the problems associated with noise regulation 11 have been outlined above. In particular, current practice is commonly not to measure airblast levels at boundary of the receiving premises.

Where the blasting is done in accordance with an industry licence under the EP Act, the licence will specify a blast monitoring location that may be at the boundary or at another location determined by agreement between DEC and the licensee (and subject to appeals). Thus the 'non-boundary' location may be at a representative point near a sensitive site or a group of sensitive sites such as a townsite.

Where a blast is monitored at the 'sensitive site' rather than at the boundary of the neighbouring premises, there may be an arrangement between the blaster and the receiver that the part of the receiving premises between the sensitive site and the boundary, e.g. the paddocks of a farm, is to be unoccupied at the time of the blast. In these cases it is common for companies carrying out blasting to set a target level of 115dB, i.e. 5dB below the current limits for 9 out of 10 blasts, in order to meet community expectations. This approach is in line with the criteria recommended Nationally and in other States – these criteria are discussed in section 3.1 below.

The noise regulations have been under review for some years, and proposed amendments to regulation 11 are a part of that wider package of amendments. A proposed amendment to regulation 11 was consulted on as part of the 2011 consultation, and that proposal is identified as Option 2 below. The 2011 consultation has highlighted that the above practices are not strictly in accordance with the regulations, and has focused attention on the boundary compliance issue as a common regulatory failure.

As a result of the consultation seminar and submissions made on that proposal during 2011, a further proposal was developed in consultation with the industry submitters. The revised proposal forms Option 3 below.

3. Options to Address the Issue

3.1 What do other jurisdictions do to address the issue?

It is relevant at this point to note the policies and criteria in use in Western Australia, Nationally and in other States. All airblast levels given below are expressed in decibels (dB) as $L_{Z\ peak}$ levels (these are unweighted peak sound levels, and have the same meaning as the $L_{linear\ peak}$ levels in the current noise regulation 11).

Western Australian airblast criteria –

Current noise regulation 11 contains the following features for regulation of airblast levels when received at (the boundary of) any other premises:

Monday to Saturday 7am to 6pm – 125 dB for any blast or 120 dB for nine in any ten consecutive blasts.

Sunday or public holiday 7am to 6pm – 120 dB for any blast or 115 dB for nine in any ten consecutive blasts.

Outside 7am to 6pm on any day – 90 dB except where necessary under mining legislation, in which case the daytime limits apply.

National airblast criteria –

The national approach to airblast levels has been set forth through the Australian and New Zealand Environment Council Guideline of 1990 (ANZEC, 1990) and Australian Standard 2187, of which the most recent version is AS2187.2-2006 (Standards Australia, 2006).

ANZEC Guideline –

The airblast criteria recommended in Section 2 of the ANZEC Guideline to "minimise annoyance and discomfort to persons at noise sensitive sites", can be summarised as follows:

The recommended maximum level is 115 dB. This level may be exceed on up to 5% of the total number of blasts over a period of 12 months, however the level should not exceed 120 dB at any time.

Blasting should generally only be permitted between 9am and 5pm Monday to Saturday and should not be permitted outside these times. Blasting should generally take place no more than once per day.

These restrictions do not apply to premises where the effects of blasting are not perceived at noise sensitive sites, or to major underground mines. Under some circumstances where the limits cannot be complied with, acceptable variations may be required.

Measurements should be taken within the grounds of 'noise sensitive sites' e.g. residences, hospitals, schools, etc, which includes the land within 30m of any building.

AS 2187.2-2006 –

Table J5.4(A) of AS 2187.2-2006 details "Airblast limits for human comfort chosen by some regulatory authorities" which can be summarised as follows:

Sensitive site – operations lasting longer than 12 months or more than 20 blasts –

115 dB for 95% of blasts per year; or 120 dB maximum unless agreement is reached with the occupier that a higher limit may apply.

Sensitive site – operations lasting less than 12 months or less than 20 blasts –

120 dB for 95% of blasts; or 125 dB maximum unless agreement is reached with the occupier that a higher limit may apply.

Occupied non-sensitive sites such as factories and commercial premises–all blasting –

125 dB maximum unless agreement is reached with the occupier that a higher limit may apply.

A sensitive site includes houses and low rise residential buildings, hospitals, theatres, schools, etc, occupied by people.

Interstate airblast criteria –

A review of the various websites for relevant State Government departments in the mainland States indicates that the following airblast criteria are in use:

New South Wales and South Australia –

Recent mining approvals have contained conditions for airblast that reflect the criteria recommended in the ANZEC Guideline.

Victoria –

The Victorian approach as outlined in the 2001 Guidelines (DNRE, 2001) is loosely based on the ANZEC Guideline, as follows:

Existing mine sites – airblast received at sensitive sites – 120 dB at all times

New mine sites – airblast received at sensitive sites – 120 dB for any blast and 115 dB for 95% of all blasts

Outside 9am to 5pm Monday to Saturday – blasting only permitted (by approval) to address unforeseen circumstances; blasting between 10pm and 7am not normally approved

A "sensitive site" is defined as any land within 10 metres of a residence, hospital, school or other premises in which people could reasonably expect to be free from undue annoyance and nuisance caused by blasting.

Queensland –

The Queensland Eco-Access Guideline – Noise and Vibration from Blasting (DERM, 2006) recommends the following for blasting noise:

If noise propagates to a nuisance-sensitive or commercial place, then airblast levels must not exceed 120 dB for any blast and 115 dB for nine out of ten consecutive blasts.

Hours of blasting are from 9am to 3pm Monday to Friday and 9am to 1pm on Saturday, with generally no blasting Sundays or public holidays, except where impracticable or there is no likelihood of persons being affected.

The Queensland approach therefore is based on the ANZEC Guideline, except for some variations in the permitted times and the application of the lower limit to nine out of ten blasts, as in Western Australia.

3.2 What is the range of options to address the issue?

In identifying relevant options for addressing the issue, consideration has been given to a range of *types* of options that may be applicable for airblast levels from blasting. These include non-regulatory options, self-regulatory options, co-regulatory options and regulatory options.

Non-regulatory options –

Non-regulatory options for dealing with noise from blasting would essentially involve removal of current noise regulation 11 (and the associated airblast measurement requirements) from the noise regulations, and replacing these provisions with education campaigns and the like. Such programs are principally aimed at achieving changes in behaviour, and are generally applied to whole communities rather than to a specific group such as those who conduct blasting.

Further, blasting is a high-energy activity that by its very nature requires significant technical expertise and care in its planning, preparation, execution and monitoring; a non-regulatory system would not provide the necessary consistency and oversight that is needed to assure all parties that acceptable outcomes are being achieved. Given the intensity of blasting operations, it is unlikely that nearby communities would accept such an activity without an appropriate regulatory framework.

As discussed below, non-regulatory approaches would fail to provide the degree of protection, fairness and certainty needed to satisfy the objectives stated above. Non-regulatory options are therefore considered inappropriate for this type of activity and have not been developed further.

Self-regulatory options –

A self-regulatory option for dealing with noise from blasting would essentially involve removal of current noise regulation 11 (and the associated airblast measurement requirements) from the noise regulations, and replacing it with a non-mandatory industry guideline. The guideline could be based on providing the same approach as in the preferred Option 3 below, with reduced airblast limits for ‘sensitive sites’ and relaxation of the need to meet airblast limits at locations where no person is present at the time of the blast.

Self-regulatory options would normally involve an industry group that can exert control over its members. In the case of mines, quarries and construction sites, the industry bodies would have no ability to directly control how their members conducted their blasting operations. Reliance would thus be placed on the operators adhering to the guidelines.

Where the airblast levels being generated created problems in terms of complaints or community reaction, DEC would be able to take action for 'unreasonable noise' under s79 of the Act, or an 'unreasonable emission' under s49 of the Act. These types of actions would be based on subjective assessments of the airblast noise by complainants, as legally-admissible noise monitoring data may not be available.

It is difficult to identify any real benefits of such a system when compared with a regulatory system, in terms of the three-fold objectives of providing protection, fairness and certainty (see Section 2.1 above). In relation to protection of the community, the likelihood of sensitive sites receiving lower airblast levels would depend on the degree of care taken by mines and quarries in their blasting practices. It is unlikely that operators generally would take greater care over their blast preparation and monitoring under a self-regulatory system than under a regulatory one. If some operators were to take less care over their blasting, then a reduced level of protection may ensue.

A significant problem with a self-regulatory system for managing the impact of airblast levels from blasting is the lack of certainty. Industry could not be sure what constituted 'unreasonable noise' or an 'unreasonable emission': even if industry complied with the guidelines, community pressure or legal decisions may lead to adverse outcomes for industry based on alternative criteria.

Similarly, the lack of an authoritative standard is likely to lead to heightened community reaction based on fear that blasting is not under adequate control. From the government point of view, increased resources are likely to be required in dealing with complaints, monitoring airblast levels and taking time-consuming enforcement actions.

Furthermore, the land use planning system would lack an authoritative base for making orderly decisions in the planning of new residential developments near mines and quarries, leading to potential encroachment of residential development near mines and quarries.

Finally, there seems little point in removing a regulatory system that has been in place for many years and which – although exhibiting some failings – has been well accepted by industry and the community.

On this basis, self-regulatory options have not been developed further, and were not included in the consultation of 2011.

Co-regulatory options –

Co-regulatory options involve Government oversight, enforcement or ratification of self-regulatory instruments. Because the current National documents (as outlined above) are not sufficiently specific as to form the basis of a broad self-regulatory instrument for airblast levels, these instruments would need to be developed locally on either a premises or industry basis. Examples of such options can be envisaged to include –

- a noise regulation that required the blaster to implement an 'airblast management plan' that he had developed and that had been approved by Government; or
- a condition on the blaster's licence that required compliance with an industry guideline.

These types of options are capable of providing protection, fairness and certainty. The main disadvantage when compared with full regulatory options is that they require significant Government resource in either the assessment and approval of management plans for individual premises, or the development and maintenance of individual licence conditions. [It should also be noted in relation to some licences that the 'prescribed premises' area that is subject to licence conditions may not include the area where blasting occurs, thus it may not be possible to set licence conditions on blasting in some cases.]

There is also some risk with these types of options that the wording of the airblast management plan or the industry guideline may contain ambiguities that reduce certainty when compared with a full regulation that has been legally drafted. There is also a risk of lack of consistency between management plans. A 'management plan' approach would require establishing an appeals system, with consequent costs to government (the licencing system already supports an appeals system).

Co-regulatory options for managing the impacts of airblast levels from blasting are therefore not considered to provide any advantages over a full regulation option, and have not been developed further.

Full-regulatory options –

Full-regulatory options involve regulations that specify prescribed standards for airblast levels to all blasting operations, and specify airblast measurement procedures. These options involve either continuing with the current provisions in the noise regulations (status quo), or modifying the current provisions to better achieve the stated objectives of protection, fairness and certainty.

Regulatory options for managing the impacts of airblast levels from blasting are considered capable of best fulfilling the objectives identified in this paper, by providing the strongest degree of protection and the greatest level of certainty. While some regulatory options provide greater levels of fairness than others for industry, full regulatory options for airblast management tend to minimise the need for Government intervention and resource.

Full regulation also recognises that there has been a full regulatory system in place in WA for many years and that this system in a general sense has been well accepted by industry and the community.

The options that have been evaluated in this paper therefore involve various approaches based on full regulation.

3.3 What are the options to address the issue?

Three full-regulatory options have been identified as the basis for this Decision Regulatory Impact Statement, as follows:

Option 1 – Maintain status quo –

Noise regulation 11 would remain in its current form. The rationale for Option 1 is that it has been in place for some years and the current practices under regulation 11 have been generally accepted over this time.

Option 2 – Reduce airblast limits –

The airblast limits would be reduced by 5dB to provide a greater level of protection in line with best practice, as proposed in the 2011 consultation. The rationale for this option is that the reduction in noise levels should be achievable for industry, given the advances in blasting techniques over the years, thus improved protection should be able to be achieved at reasonable cost.

Option 3 – Optimise current regulation –

Stemming from the consultation of 2011, this option optimises current regulation 11 by reducing airblast limits at 'sensitive sites' only, and resolving the boundary compliance issue with the current regulation as highlighted during the consultation. This option recognises that imposing a reduction in airblast limits – without some resolution of the boundary compliance issue – lacks fairness for industry.

3.4 What are the key features of the options and their effect on regulatory structure?

Option 1 – Maintain status quo –

Noise regulation 2 defines 'blasting', and current noise regulation 11 sets a prescribed standard for airblast levels from blasting carried out on any premises or public place. Airblast levels, when received at (the boundary of) any other premises, must not exceed the following:

Monday to Saturday 7am to 6pm – 125 dB for any blast or 120 dB for nine in any ten consecutive blasts.

Sunday or public holiday 7am to 6pm – 120 dB for any blast or 115 dB for nine in any ten consecutive blasts.

Outside 7am to 6pm on any day – 90 dB except where necessary under mining legislation, in which case the daytime limits apply.

Option 2 – Reduce airblast limits to provide greater protection –

Option 2 provides for a 5 dB reduction in the daytime limits for airblast levels, and retains all of the other features of the current regulation 11. The reduced airblast limits would be as follows:

Monday to Saturday 7am to 6pm – 120 dB for any blast or 115 dB for nine in any ten consecutive blasts.

Sunday or public holiday 7am to 6pm – 115 dB for any blast or 110 dB for nine in any ten consecutive blasts.

Outside 7am to 6pm on any day – limits are unchanged.

This option increases the degree of protection by reducing the daytime limits to come into closer alignment with the National approaches.

The option retains the structure of the current regulation 11 and only changes the decibel limits. It does not change the requirement to determine airblast levels at the boundary of the receiving premises.

This Option was included in Draft 6 of the Environmental Protection (Noise) Amendment Regulations 2010 on which the consultation of 2011 was based.

Option 3 – Optimise current regulation –

This option optimises current regulation 11, based on the outcomes of the 2011 consultation. The consultation process and outcomes are documented in the Report on the Public Consultation, which describes the issues raised and the DEC responses (DEC, 2011).

The key features are as follows:

Non-sensitive site, all days 7am to 6pm – 125 dB for any blast or 120 dB for nine in any ten consecutive blasts. Non-sensitive sites include the part of the noise-sensitive premises that is more than 30m from the dwelling, e.g. the paddocks of a farm; and commercial and industrial receivers.

Sensitive site, all days 7am to 6pm – 120 dB for any blast or 115 dB for nine in any ten consecutive blasts. The 'sensitive site' means a building on noise-sensitive premises that is directly associated with a noise-sensitive use, e.g. a house, and any other location on the premises that is within 30m of the building.

Outside 7am to 6pm on any day – airblast limits are unchanged, i.e. 90 dB except where necessary under mining legislation, in which case the daytime limits apply.

Where the blaster believes on reasonable grounds that no person is present at a receiving location at the time of the blast – airblast limits do not apply.

This option targets the 'sensitive sites' that need greatest protection by providing a 5 dB reduction in the airblast limits at these locations. As noted above the sensitive site means a building directly associated with a noise-sensitive use – such as a house, school or hospital – and the land within 30 metres of it. The option maintains the current airblast levels at less-sensitive receivers such as the paddocks on a farm, and at commercial and industrial premises. The option removes the need to comply with the limits for receiving locations where the blaster believes on reasonable grounds that no person is present at the time of the blast, thus enabling the blaster to arrange to blast at times when no person is present in the affected area.

Draft 9 of regulation 11 under Option 3, prepared by the Parliamentary Counsels Office, is presented with Explanatory Notes in Appendix 1.

Figure 1 below illustrates the operation of Option 3.

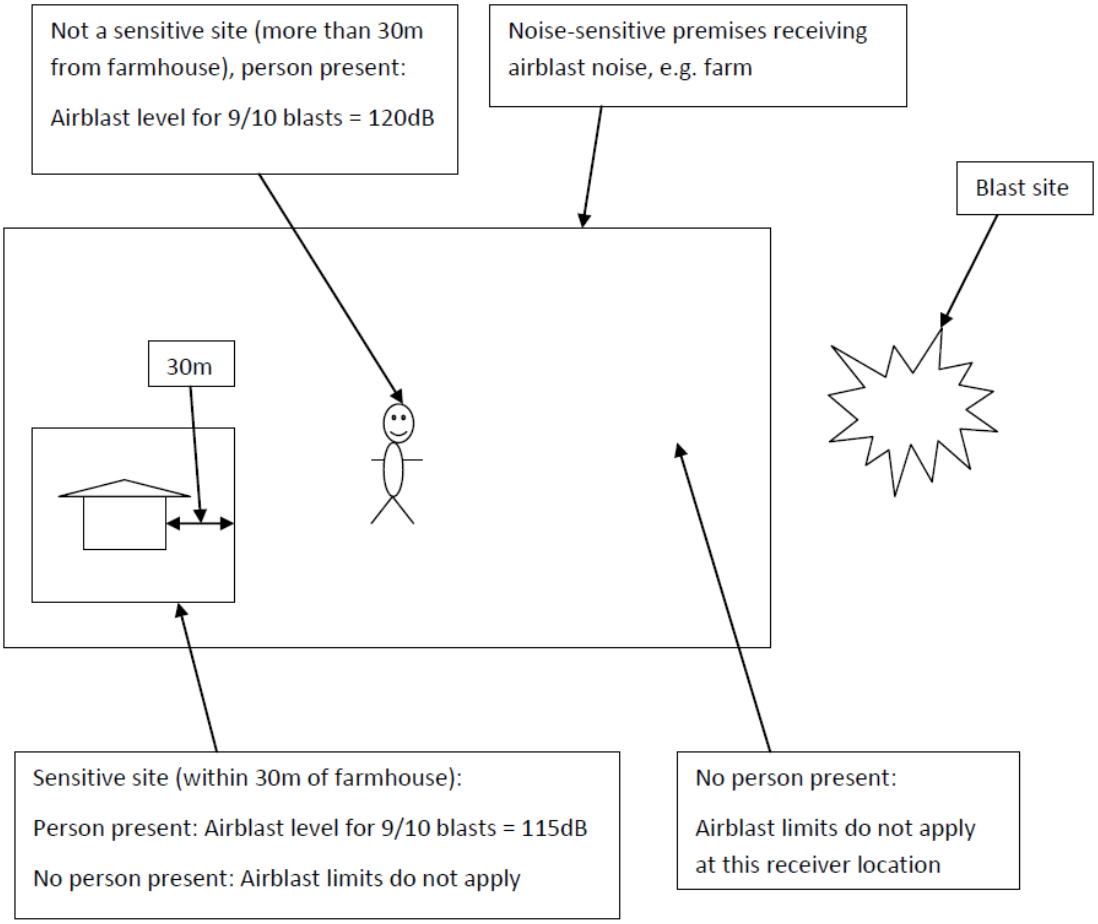

Figure 1: Option 3 for regulation of airblast noise

This option changes the structure of current regulation 11 somewhat, as follows:

- while current regulation 11 sets different requirements for Mondays to Saturdays than for Sundays and public holidays, Option 3 sets the same limits for all days;
- the airblast limits recognise the sensitivity of the noise receiving location; and
- the regulation provides relief from the need to comply with the airblast limits if no person is present at a receiving location at the time of the blast.

Option 3 does not change the airblast measurement requirements.

4. Impact Analysis

4.1 Option 1 – Maintain status quo

Impacts on mining industry costs –

Under the current noise regulation 11 airblast levels are often monitored at the sensitive site, rather than at the boundary of the receiving premises, as strictly required. Thus, while the vast majority of mines would comply with the current limits when measuring at the sensitive site, there would be an additional cost if compliance had to be achieved at the boundary.

In this case, the blaster would either need to meet the additional cost, or if this was not practicable, apply under noise regulation 17 for approval to vary from the prescribed standard.

In order to provide some quantitative assessment of these impacts, some typical cost estimates have been developed by Orica Australia Pty Ltd (Orica, 2010) to assess the likely implications for mining, quarrying and construction sites in achieving airblast limits at typical distances. These results can be used to estimate distances from the boundary of the receiving premises at which blasting would need to take place in order to achieve compliance at the boundary.

Table 4.1 presents rough estimates of the distances from a blast at which compliance with a given airblast limit may be achieved, based on the Orica predictions. These estimates include a 'normal blast' with no specific measures to control airblast levels; an 'enhanced blast' where additional measures have been taken to reduce airblast levels at a typical increase of 8% in the blasting cost; and an 'extreme control' case where the cost increase may be 212%, and which would be considered impracticable.

Table 4.1: Estimated distances from blasts for compliance with current limits

Site	Airblast limit (dB) (Any blast / 9 of 10 blasts)	Estimated distance from blast (m)		
		'Normal blast'	'Enhanced blast'	'Extreme control'
Quarry	125/120 (Mon-Sat)	300	200	100
	120/115 (Sun/P-hol)	600	400	200
Mine	125/120 (Mon-Sat)	400	300	150
	120/115 (Sun/P-hol)	800	600	300

The distances estimated in Table 4.1 are greater for Sundays and public holidays than for weekdays, in order that the lower limits are met. While many mine sites would blast on Sundays, few quarries would do so. However, many quarries would have

boundaries with adjacent premises that are within 300m of the blast location, and some mine sites would have boundaries within 800m.

These distances can be reduced by about 25% by using enhanced blasting techniques, at an increase in the blasting cost of about 8%, or about 1.2% in the overall running costs of a quarry. This cost increase, while it may be considered practicable, may represent a minimal benefit if there is no sensitive site in the area near the boundary of the receiving premises. It would still be the case that many quarries would have boundaries with adjacent premises that are within 200m of the blast location, and that some mine sites would have boundaries within 600m.

The 'extreme control' scenario indicates that, while the distances reduce by some 50% from the 'enhanced blast' scenario, bringing almost all mine sites and most quarries into compliance at the boundary, the associated costs may render this degree of contol impracticable, especially if there is no sensitive site in the area near the boundary of the receiving premises.

Where compliance at the boundary cannot practicably be achieved, the mine or quarry operator would need to seek relief under noise regulation 17. The assessment of a noise regulation 17 approval would involve the applicant incurring the costs involved in achieving the best practicable airblast levels, as well as the costs of completing the approval process.

The distance from the blast site to the boundary will vary as the blast location moves around within the mine or quarry site, thus it is difficult to estimate how many mines or quarries may be impacted by increased costs and/or the need to apply under noise regulation 17, and to what extent. As noted above, there would be many quarries, and some mine sites, where the minimum distances from the blast sites to the boundaries of the receiving premises are less than those given in Table 4.1 for the 'normal blast' scenario.

In relation to construction blasting, very little construction blasting takes place in WA on a large scale, such as for road construction projects. Small scale blasting, e.g. constructing a leach drain or demolishing a concrete pad, occurs frequently but is increasingly done using alternatives to explosives such as mechanical plant or chemical methods.

The analysis of likely costs by Orica shows that for a typical construction blast with receivers 100m away, some modifications to blasting methods would be needed to meet the current airblast limits for Sunday or public holiday. Reducing airblast emissions from construction sites would require either that the charge weight be reduced or that artificial burden be placed over the blast to create a longer stemming deck. Construction blasting sites near public areas would have a 'zero flyrock' requirement, thus artificial burden would serve the dual purpose of reducing both airblast and flyrock. Additional costs are therefore not considered significant.

It can be concluded from the above indicative analysis that full compliance with the current airblast limits at the boundary of the receiving premises is likely to impose significant costs on many quarries and some mine sites. The associated benefits would be limited if there are no sensitive sites in the area near the boundary. Compliance at the boundary would prove impracticable for some mine sites and many quarries. In such cases, in addition to incurring these costs, many of these sites would

be likely to need to apply under noise regulation 17 for approval to vary from the current limits.

Impacts on community –

The community would experience a benefit if industry were required to achieve strict compliance with the current airblast limits at the boundary of the receiving premises, inasmuch as the resulting airblast levels at the sensitive site (e.g. house) may be lower than the levels at the boundary. This benefit would mostly apply on the larger rural properties, where the homestead may be at some distance from the boundary, and in many of these cases enforcing strict compliance at the boundary may be considered as 'overprotection'.

There is also a benefit for the person receiving the airblast level if they occupy a location near the boundary at the time of the blast, as the airblast levels here may currently exceed the limits, if the limits are only enforced at the homestead. However this benefit may disappear if the blaster is able to obtain approval under noise regulation 17 to exceed the current airblast limits at the boundary.

Where the sensitive site is located close to the boundary, this Option provides no additional benefit to the community, as the airblast levels at the boundary may be much the same as at the senstive site. Further (as noted above under section 1.4) in this situation the current airblast levels may not provide the desired level of protection, leaving some issues with high airblast levels unresolved.

Impacts on government –

Option 1 is likely to create some enforcement costs on government, if strict compliance with the noise limits is enforced at the boundary. This may involve government agencies taking airblast measurements at the boundary and using the results as the basis for enforcement action. These types of actions are resource-intensive and any recoupment through fines is unlikely to cover the costs.

A further cost impact on government, should a mine or quarry be able to demonstrate that it is not practicable to comply at the boundary, would be the resources required to process a noise regulation 17 approval.

On the basis of previous noise regulation 17 approvals, it is estimated that processing an approval to exceed the airblast limits at the boundary of a receiving premises would involve a cost to government of about $30,000 in officers' time. Under the proposed amendments to noise regulation 17 this cost could be recouped from the applicant. However, given the circumstances under which these applications would be being made, it is also possible that some cost sharing may occur between industry and government, in which case there would be a cost to be borne by government.

Summary of impacts of Option 1 –

Option 1 involves maintaining the status quo, that is, the current airblast limits in noise regulation 11 would continue to apply. As these limits apply at any point on the receiving premises, and as current practice has generally been to achieve compliance at the sensitive site only, there is likely to be widespread non-compliance with airblast limits for noise received at the boundary of the receiving premises.

In terms of costs to industry, full compliance with the current airblast limits at the boundary of the receiving premises is likely to impose significant costs on many quarries and some mine sites. In addition to incurring these costs, many of these sites would be likely to need to apply under noise regulation 17 for approval to vary from the current limits.

The community would receive some benefits in the form of lower airblast levels, mainly on larger rural properties where the house is at some distance from the boundary, if the regulation was strictly applied. In many cases, this benefit could be classed as overprotection.

The main impact on government would be in providing the resources required to carry out enforcement actions and – where the mine or quarry could not practicably comply – to process a noise regulation 17 approval. There are likely to be significant numbers of such cases if the current provisions were strictly enforced; and the costs to government are therefore likely to be significant.

In effect, Option 1 perpetuates a regulatory failure that has been unresolved for some years, where the level of protection at the sensitive site does not meet best practice, and where there is likely to be widespread non-compliace at the boundary of the noise receiver with consequent significant costs if this requirement is enforced. Resolving the current non-compliance at the boundary is likely to be costly and clumsy, and will provide limited benefits to the community.

Given that the consultation of 2011 has provided the basis for reform, Option 1 is not recommended.

4.2 Option 2 – Reduce airblast limits

Impacts on mining industry costs –

Those mines, quarries or construction companies that need to make further modifications to their blasting practices in order to meet reduced airblast limits may incur additional costs in the following areas:

- increased costs in implementing specific blasting techniques needed to control airblast levels to the lower limits; and
- increased costs in accessing new mining areas or construction sites adjacent to nearby properties, e.g. costs of alternatives such as ripping or temporarily relocating residents.

It is not possible to estimate potential additional costs relating to accessing new mining areas, since these costs will be known only to the individual mining company. DEC is aware of a small number of mining companies that may experience increased costs of this nature.

There are practicable and cost-effective measures available today to reduce airblast emissions, through good blast design and use of current technology such as electronic detonators. The typical cost estimates that have been developed by Orica can be used to assess the likely implications for mining, quarrying and construction sites in amending their blasting practices to meet the proposed airblast limits (Orica, 2010).

The results of the Orica study indicate that the proposed change to the airblast limits for blasting on Monday to Saturday is likely to require a quarry with noise receivers within about 600m to modify typical blasting practices. This may be achieved through an 'enhanced blast', involving an increase of some 8% in the drill and blast costs (about $1000-1500 for a typical 20 kilotonne blast), or an increase in overall operating costs of some 1.2%. For sites at greater distances, compliance should be achievable with good blasting practice.

The Option 2 airblast limits for Sunday and public holidays are 5 dB lower than for weekdays, and the costs to meet these limits would be greater. The results of the Orica study indicate that for a quarry with noise receivers within about 600m, the proposed criteria would pose significant practical difficulties and the typical cost increase for the 'extreme control' blast scenario is estimated to be 212% of the drill and blast cost, or 32% in overall operating costs. For mines and quarries with receivers at more than 600m, the cost increase for drilling and blasting would be about 8% (as for the 'enhanced blast'), but this is provided it is practicable to split the front row of holes into decks.

The reduced limits for Sunday/public holiday blasting would be difficult for some mines to meet, with the result that some may consider ceasing blasting on Sundays and public holidays, and this may translate to an operational cost. Quarries tend to blast only during the week so would not be affected by the Sunday limits.

Option 2 does not resolve the problem highlighted under Option 1, i.e. the requirement to comply at the boundary of the receiving premises. Table 4.2 presents rough estimates of the distances from the blast location to the boundary of the receiving premises in order to achieve compliance with the reduced airblast limits under Option 2, for a 'normal blast', an 'enhanced blast' and an 'extreme control' blast.

Table 4.2: Estimated distances from blasts for compliance with reduced limits

Site	Airblast limit (dB) (Any blast / 9 of 10 blasts)	Estimated distance from blast (m)		
		'Normal blast'	'Enhanced blast'	'Extreme control'
Quarry	120/115 (Mon-Sat)	600	400	200
	115/110 (Sun/P-hol)	1200	800	400
Mine	120/115 (Mon-Sat)	800	600	300
	115/110 (Sun/P-hol)	1600	1200	600

The distances estimated in Table 4.2 are basically double those in Table 4.1 (for Option 1), indicating that a larger number of mines and quarries are likely to require measures for reducing airblast levels, and/or approval to exceed the airblast limits at the boundaries of nearby premises under noise regulation 17, when compared with Option 1.

In relation to other noise management costs, a reduction in airblast limits would not require major changes in monitoring equipment/procedures, thus in many respects

mining and quarrying companies would continue to monitor and report on airblast levels in the same manner as at present. Operators would review their blast procedures in the light of their monitoring results to ensure that their blasting operations were in compliance with the new limits. For those mining companies where a step change in blast procedures was needed, there may be additional one-off training costs for shotfirers.

In relation to construction blasting, the analysis of likely costs by Orica shows that for a typical construction blast with receivers 100m away, some modifications to blasting methods would be needed to meet the proposed airblast limits for Monday to Saturday. Reducing airblast emissions from construction sites would require either that the charge weight be reduced or that artificial burden be placed over the blast to create a longer stemming deck. Construction blasting sites near public areas would have a 'zero flyrock' requirement, thus artificial burden would serve the dual purpose of reducing both airblast and flyrock.

Additional costs are therefore not considered significant in relation to construction blasting.

It can be concluded from the above indicative analysis that, as with Option 1, full compliance with reduced airblast limits at the boundary of the receiving premises is likely to impose significant costs on many quarries and some mine sites. Because of the greater buffer distances involved when compared with Option 1, the numbers of mines and quarries incurring additional blasting costs would increase. Compliance at the boundary would prove impracticable for greater numbers of mine sites and quarries than for Option 1. In such cases, in addition to incurring these costs, many of these sites would be likely to need to apply under noise regulation 17 for approval to vary from the current limits. The associated benefits would again be limited if there are no sensitive sites in the area near the boundary.

Impacts on community –

The community would experience a significant benefit if industry were to achieve compliance with the reduced airblast limits at the boundary of the receiving premises, both from the lower airblast levels received at the sensitive site (e.g. house) and at the boundary. This benefit would apply, not only on the larger rural properties as in Option 1, but on all receiving premises, including commercial and industrial premises.

There is also a benefit for the person receiving the airblast level if they occupy a location near the boundary at the time of the blast, since the reduced levels would apply at the boundary as well as at the house. Where the sensitive site is located close to the boundary, this Option similarly provides a benefit, by causing a reduction in airblast levels. The 5 dB reduction is considered significant, as discussed under Section 1 above. These additional benefits distinguish Option 2 from Option 1.

However, these benefits may reduce to be the same as for Option 1 if the blaster is able to obtain approval under noise regulation 17 to exceed the reduced airblast limits at the boundary.

Impacts on costs to Government –

Option 2, as with Option 1, is likely to create enforcement costs on government, to achieve compliance with the reduced noise limits, especially if compliance is enforced

at the boundary. This may involve government agencies taking airblast measurements at the boundary and using the results as the basis for enforcement action. These types of actions are resource-intensive and any recoupment through fines is unlikely to cover the costs. As Option 2 is likely to result in a greater number of non-compliant operators, the enforcement costs are likely to be greater than for Option 1.

A further cost impact on government, should a mine or quarry be able to demonstrate that it is not practicable to comply at the boundary, would be the resources required to process a noise regulation 17 approval. Again, the greater number of non-compliant operators under Option 2 for whom compliance is not practicably achievable would result in an increase in the possible costs in relation to noise regulation 17 assessments (as identified under Option 1).

Summary of impacts of Option 2 –

Option 2 involves reducing all of the daytime airblast limits by 5dB from their current levels as specified in noise regulation 11. As with Option 1, these limits would apply at any point on the receiving premises, and as current practice has been to achieve compliance at the sensitive site only, there is an area of likely non-compliance with airblast limits for noise received at the boundary of the receiving premises.

In terms of costs to industry, full compliance with reduced airblast limits at the boundary of the receiving premises is likely to impose significant costs on many quarries and some mine sites, with a greater number of sites being impacted under Option 2 than under Option 1. These costs are particularly emphasised in relation to the stringent limits that would apply on Sundays and public holidays under Option 2. In addition to incurring these costs, many of these sites would likely need to apply under noise regulation 17 for approval to vary from the current limits.

The community would receive significant benefits in the form of lower airblast levels for all premises receiving noise from blasting.

The main impact on government would be in providing the resources required for enforcement and to process a large number of noise regulation 17 approvals, with a greater number of enforcement and approval activities being required under Option 2 than under Option 1. While the cost would be recoverable under proposed amendments to regulation 17, there is a possibility that some cost sharing could be agreed upon between industry and government.

In effect, Option 2 provides the benefit of the additional protection for the community that stems from the reduced airblast limits. However this comes at the expense of fairness, as it does not resolve the regulatory failure relating to compliance at the boundary, as highlighted during the consultation of 2011. Resolving the current non-compliance at the boundary becomes more costly and clumsy under Option 2 than under Option 1, and these impacts are considered to outweigh the benefits to the community of the lower airblast levels. The consultation of 2011 has identified the types of further reforms that are needed to address this issue.

Thus, Option 2 is not recommended.

4.3 Option 3 – Optimise current regulation

Impacts on mining industry costs –

Option 3 provides a series of reforms that address the areas of significant impact in Options 1 and 2, while providing the desired additional targeted protection for the community through reduced airblast limits that would apply only at the sensitive site (a building directly associated with a noise-sensitive use). The airblast limits for Sundays and public holidays have been kept at the current levels under Option 3, and thus are the same as the reduced levels for Monday to Saturday. The airblast limits have been kept at the current levels for noise received on commercial and industrial sites, and for the non-sensitive parts of noise-sensitive premises. Further, the airblast limits would not apply in areas where the blaster believed on reasonable grounds that no person was present at the time of the blast – this would enable the blaster to minimise the impact/achieve compliance by ensuring that blasts only take place at times when the blaster is assured that no persons are present in the affected areas identified in Tables 4.1 and 4.2 above.

The cost impacts to industry under Option 3 therefore relate to the costs of reducing airblast levels at the sensitive sites where monitoring and control efforts are currently focused. These costs are identified in the discussion on Option 2 above, with the costs for Monday to Saturday now applying to blasting on all days. (It is noted here that applying the same airblast limits to all days of the week simplifies the counting of the '9 out of 10 consecutive blasts', since the same airblast limit applies to all blasts – this resolves an issue raised during the 2011 consultation.)

The results of the cost estimates by Orica indicate that the proposed change to the airblast limits for blasting under Option 3 is likely to require a quarry with sensitive sites within about 600m to modify typical blasting practices. This may involve an increase of some 8% in the drill and blast costs (about $1000-1500 for a typical 20 kilotonne blast), or an increase in overall operating costs of some 1.2%. Similar percentage cost increases would apply to a mine site with sensitive sites within about 750m. For sites at greater distances, compliance with the reduced airblast limits should be achievable with good blasting practice.

It is understood that, during the period since the reduction in airblast limits was first proposed in 1999/2000, mining companies with noise issues have incrementally adjusted their practices to reduce airblast levels. Most are now understood to be aiming at meeting the reduced level of 115 dB.

It is estimated that up to 10 quarries (those with sensitive sites within a few hundred metres) may need to review blasting practices to achieve the reduced airblast limits. There would be an even smaller number of mine sites with sensitive sites within 750m.

From submissions to the 2011 consultation, two mine sites and two quarries were identified as having potential compliance issues with the airblast limits as proposed under Option 3. In each case, there are built-up areas within several hundred metres of the blasting areas, and even with best practice it may not be practicable to avoid occasional exceedances. These operators have indicated that they would see noise regulation 17 as a viable avenue to deal with any such exceedances.

In relation to other noise management costs, as with Option 2, a reduction in airblast limits applying only to sensitive sites would not require major changes in monitoring equipment/procedures, thus in many respects mining and quarrying companies would continue to monitor and report on airblast levels in the same manner as at present. Operators would review their blast procedures in the light of their monitoring results to ensure that their blasting operations were in compliance with the new limits. For those mining companies where a step change in blast procedures was needed, there may be additional one-off training costs for shotfirers.

In relation to construction blasting, the analysis of likely costs by Orica shows that for a typical construction blast with sensitive sites 100m away, some modifications to blasting methods would be needed to meet the proposed airblast limits under Option 3. As with Option 2, airblast emissions could be reduced by reducing the charge weight and placing artificial burden over the blast. Further, the blaster may be able to ensure that no persons are present in the affected area under Option 3. Any additional costs are therefore not considered significant.

Impacts on community –

The impacts of Option 3 on the community are summarised in Table 4.3.

Table 4.3: Summary of impacts on community for Option 3

Receiver	Impact of Option 3	Comment
Monday to Saturday		
Sensitive site	5dB reduction	Community benefit
Non-sensitive site	No change	
Commercial/industry	No change	
Sunday and public holiday		
Sensitive site	No change	
Non-sensitive site - Quarry blasting	5dB increase No impact	Quarries rarely if ever blast on Sunday/public holiday
Non-sensitive site - Mine blasting	5dB increase Some impact	Mines with non-sensitive sites close enough can reduce impact by arranging to blast when affected area is vacant
Commercial/industry	5dB increase	May affect some sites in towns near mines. Many of these businesses would not operate on a Sunday or public holiday, and if operating would be less noise-sensitive than a residence.

As shown in Table 4.3, under Option 3 the community benefit of increased protection resulting from reduced airblast levels would be experienced at the sensitive sites on the receiving premises, for blasting on Monday to Saturday. Where blasting was carried out on a Sunday or public holiday, the sensitive site would experience no change in impact, as the airblast limits remain the same as the current levels.

For less-sensitive areas (the parts of a noise-sensitive premises that are more than 30m from the homestead, and commercial and industrial premises), the airblast levels would remain at their current levels for blasting carried out on a Monday to Saturday.

Where blasting is carried out on a Sunday or public holiday, these less-sensitive areas would be subject to an increase of 5dB in the allowable airblast levels. In the case of a quarry, this is unlikely to be significant, as it would only be very rarely that a quarry would blast on a Sunday or public holiday. Many mines that work on a 7-day basis would blast on a Sunday or public holiday, as these would be seen as normal production days. There would be few mine sites with receivers close enough to be adversely affected by an allowable 5 dB increase in airblast levels; in cases where a problem was encountered, the blaster could minimise the impact/achieve compliance by ensuring that blasts only take place at times when the blaster is assured that no persons are present in the affected area.

With regard to indigenous communities, it is expected that there would be discussions between the mining company and the community to ascertain those areas that may be classed as 'sensitive sites' in accordance with the definition in the regulations. The sensitive sites would receive the proposed reduced airblast limits, while for other areas where persons may be present at the time of a blast, the same limits would apply as at present. Again, the mining company could minimise the impact/achieve compliance by ensuring that blasts only take place at times when the blaster is assured that no persons are present in the affected area. Thus the impacts on indigenous communities are likely to be lower than under the existing regulation 11.

Where a remote mine site was situated adjacent to vacant crown land which was not regarded as a 'premises', regulation 11 would not apply to the airblast limits (as these limits only apply to noise received on 'premises'), thus it could be argued that persons nearby would be unprotected from the effects of high airblast levels. This situation would apply under the existing regulation 11, and the proposed changes under Option 3 would make no change to this situation. This has not been reported as an issue to this time, and no submissions mentioned it during the 2011 consultation. It is proposed that the guidelines to regulation 11, to be produced to accompany the amendment regulations, would address this by recommending the same procedures be followed as for airblast levels received on neighbouring premises.

One specific scenario warrants further comment, and that is where the sensitive site is located on a large noise-sensitive premises, e.g. a farm, where it is set well back from the boundary nearest to the blasting location. In this case the received airblast level would be lower at the sensitive site than at the boundary. If it is practicable for the blaster to achieve compliance with the current airblast limits at the boundary, then the airblast level at the boundary is likely to be at or within about 5dB above the current airblast limits, and the level at the sensitive site would be at or below the current limit. Under Option 3, the current limit would apply at the boundary and the reduced limit at

the sensitive site, thus there is likely to be little difference between the existing regulation and Option 3 in this case.

If on the other hand it is not practicable for the blaster to achieve compliance at the boundary under the current regulations, then it would be possible to seek regulation 17 approval to exceed the limits at the boundary, and the blaster would then comply with the current limits at the sensitive site. Under Option 3, the blaster would need to reduce noise levels at the sensitive site to meet the new limits, and as discussed above, this should be generally achievable, given that the sensitive site in this scenario is well back from the boundary. Thus Option 3 may provide a benefit in this case.

In summary, Option 3 can be seen to target the benefits so as to apply at the most sensitive receiving locations, and is effectively neutral at other locations.

Impacts on costs to Government –

The possible costs in relation to noise regulation 17 assessments (as identified under Options 1 and 2) are significantly reduced under Option 3, as there are likely to be only four approvals required. For these cases it is likely that DEC would conduct the approvals without seeking to recover assessment costs, thus there may be a cost of some $120,000 to government associated with Option 3. This cost would be met within existing resources. Other costs may include additional enforcement costs incurred by DEC (or local governments in very rare cases) in taking action over exceedances of the reduced airblast limits. These actions are likely to be based on airblast monitoring data collected by the blaster, rather than the enforcement agency having to collect the data.

On the basis that the vast majority of mines and quarries should be able to manage their blasting activities to comply with the reduced airblast limits, and that there are likely to be less community complaints, DEC considers that such enforcement activity is unlikely to be a resource-intensive activity, thus any additional costs associated with such action are likely to be minimal.

Summary of impacts of Option 3 –

Option 3 represents a significant reform of noise regulation 11 that addresses both the need for increased protection at sensitive sites, as well as the fundamental issues raised in the consultation of 2011. Option 3 targets the benefits of reduced airblast levels to the receivers who are at sensitive sites, while maintaining the current levels of protection for less-sensitive areas. The increase in allowable levels in the less-sensitive areas for blasting on a Sunday and public holiday is not considered to be a significant community disbenefit. In eliminating the problems with achieving compliance at the boundary of the receiving premises, Option 3 is inherently fairer on the industry than Options 1 and 2.

The cost increases associated with reducing airblast levels for sensitive sites nearby are likely to be modest – of the order of 8% increase in blasting cost or 1.2% in overall operating cost. These cost increases would only apply to up to about 10 quarries, and to an even smaller number of mine sites. Two mine sites and two quarries that have been identified as having potential compliance issues with the airblast limits as proposed under Option 3 have indicated that they would see noise regulation 17 as a viable avenue to deal with any exceedances.

Option 3 is therefore identified as the preferred option.

5. Consultation

5.1 2011 consultation on amendment regulations package

The amendment package (Environmental Protection (Noise) Amendment Regulations 2013) was developed over a number of years beginning with a series of expert working groups in 2000, including a Blasting Working Group. The amendments were developed to improve noise management in several areas of key stakeholder interest. The report of the working groups was subject to a consultation process at that time, however further consultation was not possible until the consultation draft of 2010.

Apart from the proposed changes to airblast limits, the main themes of the amendments are to provide specific regulatory avenues for noise from motor sports venues, shooting clubs, major concert venues, and essential services activities through special new regulations; and to clarify and update the current regulations in a number of areas.

The Department of Environment and Conservation (DEC) released Draft 6 of the Environmental Protection (Noise) Amendment Regulations 2010 for public comment from 21 February to 23 May 2011. The package included the Option 2 changes to airblast limits.

An Explanatory Notes document was provided which outlined each amendment regulation, together with an explanation of its derivation and purpose. Additional information and consultation on airblast limits was provided as outlined in Section 5.2 below.

The broad consultation program involved –

- running an advertising program involving newspaper advertisements in *The West Australian* and local newspapers;
- sending letters to all local governments and 116 key industry and community stakeholders;
- providing explanatory materials on the DEC website;
- hosting some 42 hours of seminars on the various amendments;
- holding meetings with working groups on key issues where further development was needed (for motor sports and shooting venues in particular); and
- conducting correspondence and discussions with concerned individuals.

The overall theme of the seminars was that the amendments should be optimised so as to achieve the objectives of protection, fairness and certainty. All of the amendment regulations, including the airblast limits, were open to further changes as identified from the comments and submissions.

In all, 123 submissions were received on the proposed amendments. Many of these were detailed and all were thoroughly assessed. The Report on the Public Consultation presents a summary of the submissions and DEC's responses to the issues raised. This report was placed on the DEC website early in 2012, and copies were sent to those who had made submissions.

Following on from the consultation report, further drafts of the amendment regulations have been prepared and circulated to interested stakeholders as needed, leading to a final draft of the full package of amendments, including the preferred option for regulation 11 on airblast limits.

5.2 Consultation on proposed changes to airblast levels

The consultation on the proposed changes to airblast levels was conducted as part of the wider consultation described above. The changes proposed at that time were those described in Option 2 above, that is, a 5dB reduction in the existing airblast limits for daytime.

In addition to the general explanatory materials that were provided in the 2011 consultation, a DEC discussion paper 'Proposed Changes to Airblast Limits' was released. This paper incorporated the Orica paper on costings for various blasting scenarios.

During the consultation period, face-to-face contact with the industry was made through a presentation to the Environmental Management in Mining Conference and a three-hour seminar hosted by DEC attended by about 20 representatives of the mining industry and relevant consultants. The seminar was open to any interested person. It was during this seminar that many of the issues were raised that generated the reforms encapsulated in Option 3.

Eleven submissions were received on the proposed changes to airblast limits by the close of the consultation period. Ten of these were from industry organisations or individual companies and one was from a local government. No submissions were received on the proposed changes to regulation 11 from community members.

Some of the submissions provided significant detail to support the views that had been put forward in the seminar. In order to develop a further option for reform that would be fairer for industry and provide more focused protection for the community, DEC conducted further discussions with key stakeholders. These included the Association of Minerals and Exploration Companies (AMEC) and several operators who were expected to have difficulties in complying with the reduced airblast limits.

The outcome of this process was a revised proposal for changes to airblast limits that resolved the basic concerns of the industry.

This revised proposal for changes to airblast limits – essentially Option 3 – was documented in the Report on the Public Consultation. A further opportunity to present the revised proposal occurred in April 2012, through a presentation to the Institute of Quarrying, where the revised proposal was positively received.

The revised proposal in Option 3 has been amended slightly through the drafting process for the amendment regulations, and the features of Option 3 as described above reflect this approach.

This Decision Regulatory Impact Statement and the new draft of regulation 11 (Draft 9) have been prepared in support of the submission of the final package of amendments to the Minister.

DEC proposes to produce a series of guidelines to accompany the overall amendments package, and this series will include a guideline on implementing the amended requirements for airblast levels from blasting. Consultation with industry will take place over the preparation of the guidelines to ensure their relevance to the users.

6. Preferred Option

6.1 Identification of preferred option and why selected

The preferred option is Option 3, as described in section 3.4 above. Draft 9 of regulation 11, prepared by Parliamentary Counsels Office in February 2013, is presented in Appendix 1 together with Explanatory Notes on each clause.

This option was preferred over Options 1 (status quo) and 2 (reduced airblast limits) as it resolves the regulatory failure issue relating to the current requirement to achieve compliance at the boundary, while focusing on providing protection for the noise-sensitive site where it is most needed. This option best meets the triple objectives of providing protection, fairness and certainty. These aspects are discussed further below.

6.2 How is this option the most effective and efficient in attaining policy objectives?

The relationship between the preferred option and the triple policy objectives of protection, fairness and certainty is discussed below.

Fairness –

The primary advantage of Option 3 over Options 1 and 2 is that it provides the fairness that is lacking in the other options. Options 1 and 2 require that the airblast limits be complied with at any point on the receiving premises, regardless of the level of sensitivity of the receiving point and even whether a person is present at that point at the time of the blast. These options present difficulties for a blaster who seeks to manage the impact of a particular blast by clearing an area to ensure no person is exposed to the blast – in this case the blaster is still in non-compliance under Options 1 and 2.

Option 3 resolves this problem by focusing the lowest airblast limits on the 'sensitive site' and specifying less stringent limits at the less-sensitive receivers; and by removing the need to comply with the limits where the blaster believes on reasonable grounds that no person is present at the time of a blast. It also minimises costs to industry and government, as discussed in section 4 above.

As the analysis in section 4 shows, Option 3 is considerably fairer overall for the industry than are the other two options.

Protection –

The levels of protection provided by the airblast limits for nine out of ten consecutive blasts under the three options are presented in Table 6.1. (The airblast limits for 'any blast' are 5dB higher than those shown in the table.)

Table 6.1 Levels of protection from blasting noise under three options

Receiver sensitivity	Day of week	Airblast limit for 9 of 10 consecutive blasts, dB		
		Option 1	Option 2	Option 3
Sensitive site, e.g. house	Mon - Sat	120	115	115
	Sunday or public holiday	115	110	115
Less-sensitive receiver, e.g. paddocks	Mon - Sat	120	115	120
	Sunday or public holiday	115	110	120

Compared with Option 1 (status quo), Option 3 provides a higher level of protection for the 'sensitive site' receiver for blasting on Monday to Saturday, and the same level of protection for Sundays and public holidays. For less-sensitive sites Option 3 provides the same level of protection as Option 1 for Monday to Saturday but a lower level of protection on Sundays and public holidays.

Compared with Option 2, Option 3 provides the same level of protection for the 'sensitive site' receiver for blasting on Monday to Saturday, but a lower level of protection on Sundays and public holidays and at the less-sensitive sites. As discussed in detail in section 4.3 above, the negative impacts of this increase are minimal.

There is a general acceptance in the mining and quarrying industry, evident through the consultation, that there is value in providing a higher level of protection for the sensitive site than is currently provided. Many are aiming to achieve 115dB for this reason. However, there was a strong case put forward that 110dB would be costly, and in many cases impracticable, to achieve on a Sunday or public holiday.

Few, if any, quarries would blast on a Sunday or public holiday, although many mine sites that operate on a 7-day basis would blast on a Sunday or public holiday. Many of these would be remote from sensitive sites. The industry also pointed out that the current system of different limits for Sunday and public holidays created difficulties in auditing compliance with the '9 out of 10 consecutive blasts' limits, when some blasts had been conducted on Sundays under different airblast limits.

The existing regulations for noise (other than blasting) provide higher levels of protection for Sundays and public holidays than for weekdays, but this is only for the continuous types of noise that are present for more than 1% of the time: for 'one-off' noises, the maximum noise level limit is the same for Sundays and public holidays as for weekdays. The ANZEC guideline and AS2187 both discourage blasting on Sundays and public holidays, without giving reasons, but presumably because a higher level of noise amenity is valued at sensitive sites on those days.

Option 3, by setting the same limits for all days, recognises all of the above. Option 3 maintains the current limits for Sundays and public holidays at the sensitive site, but relaxes the limits for Sundays and public holidays at the less-sensitive sites, to the same levels as for Monday to Saturday. These less-sensitive sites are not considered to necessarily require the same level of protection on a Sunday or public holiday as is needed at a sensitive site.

Option 3 is therefore focused on providing a good level of protection at the sensitive sites, while maintaining the current level of protection at less-sensitive sites, and an adequate level of protection for blasting on Sundays and public holidays.

Certainty –

Option 3 provides improved certainty compared with that currently obtaining under Options 1 and 2. As described in section 4 above, this mainly stems from the clarity that Option 3 creates by setting airblast limits for the sensitive sites and the less-sensitive sites, rather than just at the boundary as at present; and by making allowance when no person is present at the time of the blast.

In terms of measurement certainty, there is no significant difference between the three options.

6.3 Are compliance, administrative or enforcement costs justifiable?

The preferred option may involve some increases in costs of controlling airblast levels for those mines with sensitive sites within about 800m, or quarries with sensitive sites within about 600m (where persons are likely to be present at the time of the blast). Airblast levels can be reduced at modest cost, e.g. improved blasting methods that would increase drilling and blasting costs by about 8% may result in a reduction of about 3-5dB compared with a 'typical' blast, corresponding to a reduction in the above distances by about one-third.

It is estimated that up to 10 quarries may need to review blasting practices to achieve the lower limits, and that two of these may have difficulty meeting the lower limits for sensitive sites. These two operators have both indicated that they would be open to applying under noise regulation 17 for a special approval if they find they are unable to meet the new limits.

The operators of two mine sites where compliance is unlikely to be practicably achievable with best practice methods have indicated that an application under regulation 17 would be made if compliance cannot be achieved.

The costs to a small number of mines and quarries in employing improved blasting methods may amount to an 8% increase in drilling and blasting costs, which would amount to only about a 1.2% increase in overall operating costs. The costs are therefore considered to be justifiable.

Enforcement costs are unlikely to change under Option 3, as mines and quarries would continue to carry out their monitoring and reporting regimes, and government agencies such as DEC would conduct the same scrutiny of the results.

Administrative costs are unlikely to change on an ongoing basis, however there is likely to be a one-off cost of up to $120,000 to be borne by government in processing the three anticipated noise regulation 17 applications. This cost would be met from existing resources.

6.4 Is the preferred option appropriate?

The preferred option, by reforming the current system under regulation 11, is considered appropriate in a number of respects:

- it avoids restrictions on competition or market failures by setting the same airblast limits for all mines, quarries and construction sites;
- it corrects a regulatory failure, as outlined above;
- it fits into the current regulatory framework which has been well accepted by industry, government and the community;
- it co-exists with other regulatory activity such as licences issued under the EP Act, without creating inconsistencies; and
- it is closely consistent with National policies as outlined in the ANZEC guideline and AS2187.

In the end Option 3 represents the best fit to the objectives of the regulation amendments strategy, by providing an important improvement in the level of protection for the community where it is most needed, while resolving a regulatory failure in the current system.

7. Implementation and Evaluation Strategy

The preferred option would be implemented as an amendment to the current noise regulation 11. The reduced airblast limits would not take effect immediately, but after a three-month period from the date of Gazettal, primarily to allow mining companies to adjust their monitoring and reporting procedures. It is not considered that a specific education campaign would be required, since mining companies are aware of their current obligations and would be made aware of the amendments to airblast limits at the time of promulgation. This would occur though guidelines on regulation 11 that DEC proposes to produce as part of a series of guidelines to accompany the overall amendments package.

A comprehensive review of the amended airblast limits is proposed to be undertaken two years after promulgation, centering on a three-month public consultation period. This will include advertising to the general community and writing to local governments and industry stakeholders, seeking submissions on the operation and effectiveness of the revised regulation 11. The objectives of the review will be to identify:

- changes in acoustic amenity as perceived in the community as a result of the changes in airblast levels;
- changes in blasting procedures and associated costs attributable to the changes in airblast levels;
- the factors relevant to unresolved compliance issues;
- increased costs to government attributable to increased resources needed for regulatory activities related to noise from blasting;
- outcomes of noise regulation 17 applications relating to airblast levels and associated costs; and
- further amendments that may be needed to regulation 11 to address outstanding issues.

The consultation with mining and quarrying companies and any construction companies that have undertaken blasting would comprise a review of airblast monitoring data; review of noise complaint data related to blasting; and identification of cost impacts due to changes to blasting practices needed to meet the new regulations.

If the review finds that the revised regulation 11 has failed to meet its objectives of protection, fairness and certainty, further amendments will be developed to address the outstanding issues.

REFERENCES

Australian Environment Council Draft Technical Basis for the Control of Noise and Vibration from Blasting – Explanatory Paper, Australian Environment Council, Feb 1987

Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration, Australian and New Zealand Environment Council, September 1990

Environmental Guidelines – Ground Vibration and Airblast Limits for Blasting in Mines and Quarries, Department of Natural Resources and Environment, Victoria, 2001

Eco-Access Guideline – Noise and Vibration from Blasting, Environmental Protection Agency, Queensland, March 2006 (Ref: www.derm.qld.gov.au)

Report of the Environmental Protection Authority on the Operation and Effectiveness of the Noise Regulations, Environmental Protection Authority, October 1999

Australian Standard 2187.2–2006 Explosives–Storage and use, Part 2: Use of explosives, Standards Australia, 2006

Survey of Community Reaction to Overpressure from Blasting, Wilkinson-Murray Consulting Pty Ltd, NSW, May 1984

Proposed Environmental Protection (Noise) Amendment Regulations 2010 – Explanatory Notes, Department of Environment and Conservation, WA, January 2011

Proposed Changes to Airblast Limits – Discussion Paper, Department of Environment and Conservation, WA, January 2011 (Ref: www.dec.wa.gov.au)

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Proposed Environmental Protection (Noise) Amendment Regulations 2010 – Report on Public Consultation, Department of Environment and Conservation, WA, December 2011 (Ref: www.dec.wa.gov.au)

Western Australian Mineral and Petroleum Statistics Digest 2011, Department of Minerals and Petroleum, WA (Ref: www.dmp.wa.gov.au)

Appendix 1

Preferred Option – Option 3

Draft 9 of Regulation 11: Airblast levels due to blasting

With Explanatory Notes

Environmental Protection (Noise) Amendment Regulations 2013

DRAFT 9 OF REGULATION 11 – AIRBLAST LEVELS DUE TO BLASTING

Clause	Comment
(1) In this regulation —	
airblast level means a noise level resulting from blasting;	
blaster, in relation to blasting on any premises or public place, means —	Definition of 'blaster' has been added to enable a distinction between airblast levels received on properties owned by the blaster as distinct from those not owned by the blaster.
(a) in the case of premises — the occupier of the premises; or	
(b) in the case of a public place — the person who under regulation 6(1)(b) is to be treated as the occupier of the public place;	
building has the meaning given in regulation 8(1);	
$L_{Z\,peak}$ means the peak sound pressure level in decibels (dB) obtained using the "Z" frequency weighting characteristic as specified in AS IEC 61672.1-2004 Electroacoustics-Sound level meters Part 1: Specifications with sound level measuring equipment that complies with the requirements of Schedule 4;	The change in terminology from current regulation 11 has no effect on airblast levels.
sensitive site, in relation to noise sensitive premises, means —	Definition of 'sensitive site' has been added to enable a distinction between airblast levels received near the dwelling or other sensitive building, as distinct from the boundary of the receiving premises. The 30m distance is taken from the ANZEC guidelines for blasting.
(a) a building, or a part of a building, on the premises that is directly associated with a noise sensitive use; or	
(b) any other location on the premises within 30 metres of that building or that part of the building.	
(2) For the purposes of paragraph (a) of the definition of sensitive site in subregulation (1), a building, or a part of a building, that is inhabited in contravention of the *Health Act 1911* section 136 or 144, or any other enactment relating to the use of buildings for human habitation, is taken not to be directly associated with a noise-sensitive use.	This clause is added to prevent a non-habitable building, e.g. a shed that is not approved as a residence, being classed as a 'sensitive site'. A similar provision has also been included in the amendment regulations in relation to non-blasting noise.
(3) The provisions of this regulation have effect in relation to airblast levels in place of regulation 7.	No change from current regulation 11.

Clause	Comment
(4) Subject to subregulation (5), no airblast level resulting from blasting on any premises or public place, when received at any other premises between 0700 hours and 1800 hours on any day, may exceed — (a) for an airblast level received at noise-sensitive premises— (i) when received at a sensitive site — 120 dB $L_{Z\ peak}$; or (ii) when received at a location other than a sensitive site — 125 dB $L_{Z\ peak}$; or (b) for an airblast level received at any other premises — 125 dB $L_{Z\ peak}$.	This clause sets the maximum allowable airblast level for any blast. In effect this means 120dB at a sensitive site on noise-sensitive premises; and 125dB at other locations. These levels apply during daytime (7am to 6pm) on any day of the week. The limit of 120dB at a sensitive site on noise-sensitive premises represents a 5 dB reduction from the current airblast limit for any blast in regulation 11, while for other receivers the limit is unchanged. In those cases where blasting is carried out on a Sunday or public holiday, the current limit is 5dB below that for Monday to Saturday. The revised limit is thus the same on Sundays and public holidays for sensitive sites, but 5dB higher than the current level for other receivers.
(5) The levels specified in subregulations (4) do not apply in respect of an airblast level when received at premises, or a part of premises, on which the blaster believes on reasonable grounds no person is present at the time of the blast.	Where the blaster is effectively able to ensure that no person is present at a location at the time of the blast, then the limits in subregulation (4) will not apply.
(6) Despite subregulation (4), airblast levels for 9 in any 10 consecutive blasts (regardless of the interval between each blast), when received at any other single premises between 0700 hours and 1800 hours on any day, must not exceed — (a) for airblast levels received at noise-sensitive premises — (i) when received at a sensitive site — 115 dB $L_{Z\ peak}$; or (ii) when received at a location other than a sensitive site — 120 dB $L_{Z\ peak}$; or (b) for airblast levels received at any other premises — 120 dB $L_{Z\ peak}$.	This clause sets the allowable airblast level for 9 in any 10 blasts received on any ‘single’ premises. In other words, only the blasts received on a particular premises are to be counted towards the 10 blasts. The distinctions are the same as in subregulation (4), that is, the limits effectively mean, for 9 out of 10 blasts, 115dB at a sensitive site on noise-sensitive premises; and 120dB at other locations. The limit of 115dB represents a 5dB reduction from the current airblast limit for 9 out of 10 blasts in regulation 11, while the 120dB limit remains at the current level. In those cases where blasting is carried out on a Sunday or public holiday, the current limit is 5dB below that for Monday to Saturday. The revised limit is thus the same on Sundays and public holidays for sensitive sites, but 5dB higher for other receivers.

Clause	Comment
(7) For the purposes of subregulation (6), an airblast level for a blast that would, but for this subregulation, exceed a level specified subregulation (6)(a)(i) or (ii), or (b) is taken not to exceed that level when received at premises, or a part of premises, on which the blaster believes on reasonable grounds no person is present at the time of the blast.	If the airblast level exceeded the limit in subregulation (6) it is not counted as one exceedance in the 10 consecutive blasts, if the blaster had ensured that no person was present at the time of the blast.
(8) Subject to subregulation (9), no airblast level resulting from blasting on any premises or public place, when received at other premises outside the periods between 0700 hours and 1800 hours on any day, may exceed 90 dB $L_{Z\ peak}$ except where that blasting is carried out in accordance with the *Mines Safety and Inspection Regulations 1995* regulation 8.28(4).	The night blasting limit is unchanged from that in current regulation 11.
(9) The level specified in subregulation (8) does not apply in respect of an airblast level when received at premises, or a part of premises, on which the blaster believes on reasonable grounds no person is present at the time of the blast.	The night airblast limit does not apply if the blaster has ensured that no person was present at the time of the blast.
(10) Where blasting is carried out in accordance with the *Mines Safety and Inspection Regulations 1995* regulation 8.28(4) outside the periods between 0700 hours and 1800 hours on any day – (a) the blasting is taken to be carried out between 0700 hours and 1800 hours; and (b) subregulations (4), (5), (6) and (7) apply accordingly.	The daytime airblast limits apply to out-of-hours blasting that is carried out for mine safety reasons.
(11) For the purposes of this regulation, an airblast level may be determined by — (a) measurement at its point of reception when, to the extent practicable, other noises that would contribute to the measured airblast level are not present; or (b) calculation of the airblast level at its point of reception based on measurement of the airblast level at a reference point determined by the inspector or authorised person to be a point where the relationship between the airblast level as measured at the reference point and at the point of reception can be established.	This new provision mirrors that in regulation 7, which enables a noise level to be determined by calculation from a level measured at a reference point. This means that monitoring of a blast from a single reference point may be used to determine airblast levels at other points of interest.

Certification

By certifying this form, you are agreeing that,

- this RIS has been prepared in compliance with the Western Australian Government's requirement for Regulatory Impact Assessment and to facilitate consultation and decision making effectively.
- to the best of your ability, all information provided within this document is true and correct.

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