



URBAN EP

Review of regulatory and licence requirements for the management of waste mining tyres in Western Australia, New South Wales & Queensland

Final project report

for

Australian Tyre Recyclers Association (ATRA)

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Executive Summary

This project collated information on the conditions placed on mining licence holders – through licence conditions, legislation, regulation and other statutory tools – that govern how large mining tyres are managed at their end of life in Western Australia, New South Wales, and Queensland. The scope of work mainly involved literature review with some stakeholder engagement.

Its purpose is to inform ATRA of:

- The key regulatory tools that shape and regulate how waste mining tyres may be managed in each state
- What conditions are currently placed on their management
- What processes are followed by regulators when seeking to alter the conditions that drive waste tyre management practices
- The constraints that limit the specific purposes and contents of regulatory and licence provisions which may be imposed on waste mining tyre practices.

This report aims to position ATRA and its members to engage with regulators in each state, on the degree that regulatory and licence settings affect the uptake of tyre recycling by mining companies; and on options to explore and apply amended settings to engender higher uptake.

The role of different regulatory tools

This research project examined mining legislation, major project planning legislation and environment protection legislation in each state as it pertains to the management of mining sector waste streams, along with subsidiary regulation and administrative tools (e.g. guidelines) as relevant. Individual approval documents were also reviewed, for eight large scale mining operations in each jurisdiction.

New mining operations and existing mining operations that undergo significant modifications in activity require approvals from mining regulators and planning authorities. Such approvals will typically include conditions that aim to improve operations and management standards, and to ensure that the premises is suitably remediated after mine closure. By and large, these conditions are general in nature, and do not go into detail in how specific waste streams are to be managed. They may include some requirements for annual disclosure and reporting however.

In contrast, permissions granted under environment protection legislation tend to be more specific in how solid waste streams are to be managed, including (in some cases) waste mining tyres. Such permissions include:

- In Western Australia, environment protection licences (EP licences) issued by Department of Water & Environmental Regulation (DWER)
- In New South Wales, EP licences issued by NSW EPA
- In Queensland, environmental approvals (EAs) issued by Department of Environment, Tourism, Science & Innovation (DETSI).

Further details on the use of EP licences and the application of licence conditions in each state are provided below.

Western Australia

The WA *Environment Protection Act 1986* (WA EP Act) makes it an offence for occupiers of prescribed premises to cause an emission from a prescribed premises, unless they hold a licence for that premises. Licences contain conditions to protect the environment or public health from emissions from the premises.

The WA EP Act contains provisions for the emplacement of conditions on EP licences, and some kinds of conditions that may be imposed. These conditions can include specified manners in which a waste is disposed or made available for reuse (WA EP Act, S. 62A (j) and (k)), and can include measures to investigate options to prevent, control or abate pollution or environmental harm (WA EP Act, S. 62A (l)). In all cases the overarching framing for such conditions must relate back to addressing risks to the environment and human health. DWER officers have clarified that these risks are interpreted as being those in the vicinity of the prescribed premises.

DWER has the power to update licences, to reflect a revised understanding of potential risks and harms associated with a given premises and/or activities occurring on that premises. The procedure for this process, is laid out in the DWER's *Procedure: Prescribed premises works approvals and licences*. DWER may make risk-based decisions on amendment applications submitted by licence holders, and may also make amendments on its own initiative.

There is no requirement for the scope of conditions placed in an EP licence (issued to a mine operator or other prescribed premises occupier) to link with or cross reference activities or conditions placed on an Approvals Statement issued by Department of Mines, Petroleum and Exploration (DMPE), that is necessary to permit development of the premises for mining purposes. While the Approvals Statement and its conditions may inform DWER as to on site activities (i.e. the 'activity envelope') and their potential impacts, DWER is strictly guided and bounded by provisions laid out in the EP Act and subsidiary instruments.

New South Wales

Mining and related processing operations are listed as activities in Schedule 1 of the NSW *Protection of the Environment Operations Act 1997* (NSW POEO Act), requiring regulation through the issuance of an environment protection licence (EP licence). In cases where a Development Consent must be granted by a suitable planning authority (i.e. including major mining operations), an EP licence cannot be issued unless a Development Consent is in force.

The NSW EPA is the regulatory authority for all scheduled activities and scheduled development work. The NSW EPA's risk-based licensing system aims to make sure all EP licence holders receive an appropriate level of regulation based on the level of risk they pose to human health and the environment. When assessing an EP licence application and applying conditions to an issued licence, NSW EPA may pay regard to:

- Any protection of the environment policies
- The statutory objectives of the EPA
- The pollution caused or likely to be caused by carrying out the proposed work
- The likely impact of that pollution on the environment
- Practical measures that could be taken to prevent, control, abate or mitigate the pollution and protect the environment from the impact of that pollution
- Any green offset schemes, tradeable emission schemes or other economic measures

- Whether the applicant is considered to be a fit and proper person
- The 'environmental values of water' that may be affected by the activity or work
- Any relevant environmental impact statement and any other documents accompanying the application
- Any waste strategy in force under the *Waste Avoidance and Resource Recovery Act 2001*
- Public submissions.

Under the NSW POEO Act, the NSW EPA may vary a licence, including attaching, substituting, omitting or amending conditions of the licence. This variation may be undertaken in response to a request by the licence holder or may be initiated by the NSW EPA itself.

According to NSW EPA licensing officers, in order to include or update EP licence conditions that centre on a specific area of activity, there needs to be a direct reference to that activity in the Development Consent in force for that operation. Thus, if the Development Consent does not mention the activity in question, the NSW EPA is constricted in its ability to regulate practices through EP licence conditions. This clearly creates a necessary point of connection between the licensing framework and development approval processes.

Queensland

Environmental approvals (EAs) issued by DETSI are functionally equivalent to EP licences granted by NSW EPA and WA DWER. As in the cases of WA and NSW, a prescribed set of activities that require EAs are laid out by the Queensland Government. These activities are designated as 'environmentally relevant activities' or ERAs, and include mining activities which are designated a 'resource activity' under the Queensland *Environment Protection Act 1994* (Qld EP Act). The Act carries provisions for granting EAs that are specific to ERAs that are resource activities, with additionally specialised provisions for mining activities in particular.

The Queensland EP Act recognises ERAs according to whether they fit certain criteria, in which case EA applications may follow standard, variation or site-specific application processes. Mining activities that are eligible for standard or variation EA conditions are limited to those that are small in operation, and are not located in sensitive areas. Larger mining activities are required to undergo a site specific EA application process.

In making a determination for granting or refusing an EA, DETSI applies three broad categories of requirements, i.e.:

1. Matters that need to be complied with in order for an EA to be granted, and conditions that are needed to ensure legislated environmental outcomes are met by the activity
2. Prohibitions against activities affecting groundwater and surface water bodies, including aquifers and wetlands – which are grounds for refusal against granting an EA
3. Assessments of the activity in relation to meeting legislated environmental objectives, covering both land use and operational activities.

Guidance released by DETSI goes into considerable detail on how DETSI may apply these requirements in making an EA determination.¹ A Waste Objective is among the environmental objectives that need to be considered in EA decisions, which is framed as follows:

'Any waste generated, transported, or received as part of carrying out the activity is managed in a way that protects all environmental values.'

The following Performance Objectives for waste, as set out in the Queensland *Environment Protection Regulation 2019* (Qld EP Regulation), also apply:

- (a) Waste generated, transported or received is managed in accordance with the waste and resource management hierarchy under the *Waste Reduction and Recycling Act 2011*
- (b) If waste is disposed of, it is disposed of in a way that prevents or minimises adverse effects on environmental values.

The above points suggest that there should be an explicit and meaningful exploration of non-disposal options for major waste streams when preparing and submitting EA applications. However, in practice, it appears that the assessment of solid waste management practices at mine sites is largely concerned with local environmental risks such as land and water contamination, and risks that may come to compromise land rehabilitation.

DETSI guidance on the EA process explains circumstances in which the authority may amend an EA's conditions without prior application by the EA holder. These circumstances are somewhat limited compared to similar provisions to alter EP licences in WA and NSW. In effect, DETSI may alter an EA when conditions set out in Section 215 of the Queensland EP Act are satisfied.

Examples of such conditions include but are not limited to the following:

- A contravention of the EP Act or an environmental offence committed by the holder
- The authority was issued or schedule was approved because of a materially false or misleading representation or declaration
- The EA was issued on the basis of a miscalculation of the environmental values affected or likely to be affected by the relevant activity, or the quantity or quality of contaminant permitted to be released into the environment, or the effects of the release of a quantity or quality of contaminant permitted to be released into the environment
- The approval of an environmental protection policy or the approval of an amendment of an environmental protection policy
- A change in the way in which, or the extent to which, the activity is being carried out
- A report made by or for, or approved by, a *recognised entity* if the report:
 - Is relevant to the authority or schedule, or a relevant activity carried out under the authority or schedule; and
 - If the administering authority is not the chief executive—has been accepted by the chief executive.

The EA holder must be sent details of any proposed amendment and given an opportunity to make written representations about the change. After considering any written representation, DETSI may make the amendment if it still believes a ground exists to make the amendment.

¹ https://www.des.qld.gov.au/policies?a=272936:policy_registry/era-gl-approval-process.pdf

Licence conditions & their influence on managing waste tyres

This research included an examination of conditions relevant to the management of waste mining tyres as placed in EP licences (in WA and NSW) and in environmental authorities (in Qld), to understand the regulatory expectations placed on mining companies in each state. A total of eight mining sites' licences and environmental authorities from each state were examined.

Western Australia

- In WA, some EP licences do not directly or explicitly mention waste mining tyres at all, but instead provide some general provisions for disposing of more general categories of waste (inclusive of waste mining tyres).
- Other EP licences explicitly apply conditions for the on site disposal (burial) of waste tyres. These conditions are mainly devoted to ensuring safety, fire management and water quality standards.
- In general, the licence requirements do not unduly prevent or impede on site burial, nor do they encourage mining companies to explore or implement alternative options.
- Some annual volume limits for waste tyres, inert waste, and general waste are imposed on EP licences. However, in general, these volume limits are not so restrictive as to require mining companies to require off site solutions for a residual volume of tyres.
- None of the eight EP licence conditions examined in this study involve references to exploring, testing the feasibility of, or implementing options to manage waste mining tyres in a way that accords with the waste hierarchy or circular economy principles.

WA legislation allows for EP licence conditions to direct licence holders on waste disposal and making waste streams available for reuse. EP licences will be granted where the licence holder can show that it will manage risks to human health and the environment (i.e. in the near vicinity), based on approaches put forward in its licence application. The application must include all activities that may involve environmental and human health risks, including waste management.

EP licence conditions can be put in place to prevent or mitigate those risks, but cannot be used to coerce the licence holder to adopt an entirely different approach that does not appreciably alter the risk profile of licensed activities. Thus, if DWER determines that the licence holder's method to dispose of waste mining tyres is adequate in managing human health and environmental risks, it cannot use licence conditions to dictate an alternative method.

New South Wales

- Waste tyres are permitted to be disposed at each mining site examined during this study, although additional conditions have been applied in the case of some EP licences. In most cases, these conditions set safety, fire management and water quality standards.
- Annual volume limits are also mentioned in some cases, but do not appear to be set at levels that would obstruct on site burial of an annual volume of tyres used on site.
- Some coalmining operations are required to submit Annual Heavy Plant Tyre Disposal Reports to NSW EPA with their Annual Returns, detailing volumes, locations, and identifying features of each tyre disposed on site.

- A smaller set of coalmine operators are required to perform a review of available recycling options for waste heavy plant tyres at least once every two years, and provide NSW EPA with a report covering the review findings. It is left to those licence holders to apply their own judgement as to whether tyre recycling or recovery is feasible compared to business as usual on site burial practices.
- There is no imperative in the licence conditions for the mining company to adopt tyre recycling, in response to this exploration of options.
- Even in the case where waste mining tyre recycling options must be investigated and reported on, EP licence conditions centre on the continued use of onsite burial (pending report findings that tyre recycling is not feasible) rather than on stipulations to engage recycling services and/or adopt offsite management practices.

NSW EPA licence compliance officers explained that, in some cases, EP licences for mines did not address waste mining tyres directly because there was no reference to the management of waste mining tyres in the Development Consent issued for that mine. Planning authorities may update Development Consents when the occupier submits a Development Consent Modification Application (for example, to allow expansions, upgrades, or changes to onsite activities), and can include updated conditions that were outside the areas of modification sought by the occupier.

NSW EPA is now coordinating with planning authorities to ensure that modified Development Consents for mining activities include reference to waste mining tyres, as this will then enable direct reference to waste mining tyre management requirements in EP licence conditions.

NSW EPA officers explained that a similar limitation to that occurring in WA is also in play in NSW, when looking to apply stricter controls on the management of waste mining tyres. That is, once a minimum standard of environmental risk and human health risk is addressed through licence conditions, the NSW EPA cannot then impose conditions that call for a different set of activities. Thus, the NSW EPA can require an exploration of alternatives to onsite disposal of waste mining tyres, but efforts to mandate recycling can be challenged as overreach.

Queensland

- Waste mining tyres or bulk rubber are explicitly mentioned in each of the environmental authorities for mining sites examined during this study. Some EAs have conditions stating that waste tyres can be disposed of in specified locations using prescribed methods. These conditions do not materially affect the EA holder's practical opportunity to dispose of mining tyres on site instead of seeking recycling options.
- Some EAs reference the *Operational policy – Disposal and storage of scrap tyres at mine sites ESR/2016/2380*. This paper provides that, for new applications, EA conditions should stipulate that waste tyres are to be managed in preference according to the waste hierarchy. The paper omits any binding features or repercussions arising from failing to implement waste management solutions beyond on site burial, and does not set out guidance for how to apply the waste hierarchy via a decision flow chart or similar.
- In some mining operation EAs, the requirement to at least nominally explore waste tyre recycling or recovery is implied – with conditions allowing for on site burial where 'no feasible recycling or waste-to-energy options are available.' There is no direction as to what constitutes a legitimate investigation in this area or what threshold should be used to determine feasibility, nor what evidence needs to be shared with DETSI to satisfy this condition.

- In one mining operation EA, the holder is required to demonstrate to DETSI that 'no use higher in the waste hierarchy can be practicably implemented' before proceeding to dispose of waste tyres underground. But there is no further detail as to how this finding is to be demonstrated.
- DETSI compliance officers explained that EA conditions involving solid waste management are seldom updated in line with evolving perspectives, so long as environmental risks are prevented or mitigated. The conditions present in existing EAs may have been in place since the EA was first issued to the site in question.

Pathways & constraints in shaping future licence conditions

From the above paragraphs, it is clear that current restrictions placed on mining companies' disposal of mining tyres, where they exist, mainly relate to safety, fire management and water quality concerns. Some conditions faced by mining companies require recordkeeping and reporting activity, adherence to annual volume limitations, and the exploration of alternatives to on site burial including practices that better align with the waste hierarchy.

There are some variations across the three states in these requirements, although the common result is that no licence conditions or environmental authority conditions meaningfully pressure mining companies to adopt waste tyre recycling. This is not to say that there is an absence of pressure, but that such pressure does not come from licences or environmental authorities, nor does it come from other pieces in the regulatory arsenal available to mining, planning and environmental protection bodies.

Legislative provisions in each state may provide a pathway for the environment protection authority to revise licence conditions or pursue other stratagems in order to apply this pressure. The sections below cover some of the pathways available in each state, although the discussion should not be read as exhaustive.

Moreover, the discussion is mainly limited to measures that work within the existing environment protection permission, development approval and mining regulation framework. It does not explore wider instruments such as landfill bans, disposal fees, or new regulatory instruments. Equally, the discussion explores what may be possible given a 'face value' interpretation of the law, as opposed to an authoritative discussion of which options are more likely to succeed in driving change. However, some commentary regarding potential hurdles and challenges is provided where suitable to the discussion.

Western Australia

Amendment to Part 6 of the WA EP Regulations

Part 6 of the WA EP Regulations is devoted to provisions for the management of waste tyres, with requirements covering storage, handling, burial etc.

At present, it does not include any requirements specific to mining operations nor does it require that responsible parties have a duty to align waste tyre management with the waste hierarchy, other than to flag that storage of waste tyres at licensed premises is disallowed except where permitted in EP licence conditions for those premises.

This part of the WA EP Regulations may be a suitable place to introduce higher expectations in the management of waste mining tyres. This amendment could bring these provisions into closer

alignment with other legislation, including the Western Australian *Waste and Resource Recovery Act 2007*. The waste hierarchy stands as a stated Object of that Act (per Schedule 5).

Any new rules would become universal for all covered activities and liable parties to which they apply. However, the regulation amendment process is somewhat onerous and involves a number of stages – it is not certain that the state would entertain the notion of amending Part 6 of the WA EP Regulations unless there was a wider driver to update other parts of the regulation.

Revised EP licence conditions

DWER has the capacity to update EP licences, based on its revised understanding of potential risks and harms associated with a given premises and/or activities occurring on that premises. The procedure for this process is laid out in the DWER's *Procedure: Prescribed premises works approvals and licences*.

Further to this, Section 62A of the WA EP Act allows for conditions:

- That specify manners in which a waste is disposed or made available for reuse
- That impose measures to investigate options to prevent, control or abate pollution or environmental harm.

A review of current EP licences for mines suggests that new licence conditions are signed off by the Manager, Resources Industries at DWER. However, any process to update licence conditions in this manner is likely to require input from the EPA, the WA Waste Authority, DMPE and other teams within DWER. The licence amendment process is legislated to include provisions for appeal by the licence holder, which may provide a path to contest new or amended conditions.

This work has confirmed that EP licence conditions are strictly applied to ensure risks to human health and the environment are prevented, mitigated or managed. This has tended to be interpreted in terms of risk *in the vicinity of* the premises in question.

If a mine operator can show that such risks are adequately addressed while undertaking on site burial of mining tyres, DWER does not have the means to impose an entirely different approach (such as recycling) through amended licence conditions. It may be simpler if some other measure motivated mining companies to adopt waste mining tyre recycling, which was then complemented (as opposed to directly enforced) through EP licences issued for the mining site.

Development of and reference to a waste mining tyres policy or guideline

There may be the option for DWER to prepare a more detailed framework that progresses and elaborates on the department's expectations for mining companies to investigate waste tyre management options, and to implement those that are deemed feasible.

There may be barriers to referencing this guideline as a prescriptive licence condition imposed on mining companies (i.e. EP licences are first and foremost concerned with nearby environmental and human health risks). Yet it may serve as a reference to place within EP licence conditions for those mining companies that *voluntarily* want to:

- Formally and actively explore beyond on site mining tyre disposal
- Show that they are taking a best practice approach to this exploration

- Use findings from the investigation to then engage with DWER on supporting measures to bring preferred tyre recycling options into reality.

The key idea is that one or more mining companies could opt to accept obligations to explore mining tyre recycling according to a given method, in exchange with DWER gaining access to abridged (i.e. commercially non-sensitive) findings and using those findings to explore support for one or more solutions.

Ideally, a subset of mining companies operating within a defined cluster (e.g. iron ore mines in the Pilbara, gold and polymetallic mines in the Goldfields) would sign on to this arrangement, to capture the benefits of scale economies. However, given that mining companies are generally adverse to more strict conditions (i.e. any proactive efforts may be more conveniently framed as going beyond compliance), there may be limited interest.

New South Wales

Modification to Development Consents under NSW EP&A Act

There are provisions for a planning authority to revoke or modify individual Development Consents issued to mining companies, under limited circumstances (including when a mining company has submitted a modification application). This could provide a means to introduce tighter recycling requirements into mining operations, including for mining tyres. Development Consents for mining activities presently include some reference to preferred waste management practices, although these are somewhat generic and do not provide imperatives towards adopting circular economy practices nor enforcing the waste hierarchy.

Failing the opportunity to explicitly include recycling requirements for mining tyres, Development Consent modification is needed to note the potential environmental impacts of waste tyre disposal, and to note the need to follow licence conditions placed on the management of waste mining tyres. Some reference to waste mining tyres as a source of environmental impacts in Development Consents is important, as it allows the NSW EPA to then take an explicit stance in EP licence conditions as directed to the mining site in question.

There is the separate question of timing and prioritisation of individual Development Consents that are to be modified in this manner – as roll out of these changes may only be practical as and when mining companies seek modifications to existing Development Consents for other purposes.

It is understood that NSW EPA and NSW planning authorities are aware of the interactions between EP licence conditions and Development Consents for mines, and are coordinating the update of Development Consents to include reference to waste mining tyre management.

Revised EP licence conditions

EP licence conditions are currently the main way in which practices in the management of waste mining tyres are regulated in NSW. It therefore stands to reason that licence condition amendment be explored as a pragmatic approach to setting more ambitious requirements for mining companies to consider and implement waste mining tyre recovery solutions.

The NSW POEO Act allows for the NSW EPA to update licence conditions without requiring an amendment application to be issued by a licence holder. This could enable a range of approaches to reset how waste mining tyres should be managed, including for example,

influencing how tyre recycling feasibility should be assessed; more prescriptively requiring a shift to tyre recycling; or placing hard limits on what volume of tyres may be stored or buried on site.

The NSW POEO Act provides that an EP licence may carry 'conditions relating to the storage, handling, treatment and processing of waste.' The law also makes clear that waste processing includes 'non-thermal treatment of waste tyres, meaning the receiving of waste tyres from off site and their processing otherwise than by thermal treatment.' Thus, it may be interpreted that the NSW Act allows for conditions that require a given method of waste tyre processing, although this interpretation may require further confirmation.

To support stronger licence conditions, some level of independent research and industry engagement would be needed, to show that such conditions deliver materially improved environmental outcomes without introducing unreasonable costs to affected parties. (See the above section on WA licence condition amendment for further discussion in a similar area. In all likelihood, mining companies may contest tyre recycling requirements in licences, on the grounds that well managed on site disposal satisfactorily avoids significant environmental damage.)

Consideration may need to be given as to whether such amendments could be pursued on an individual basis, or whether a regional strategy towards licence amendment is needed. A regional approach may be useful in driving sufficient economies of scale as needed to drive the cost affordability of waste tyre recycling in critical areas of mining activity, while helping to improve the long term viability of one or more solutions that serve the region. Arguably, such a regional approach may better protect sensitive environmental features associated with a given location, compared to a more ad hoc approach to amending licence conditions.

Note: Under the discussion for WA above, the idea of a policy or guideline that covers more details for what is expected of mining companies in managing their waste tyres is presented, with the view that this could be referenced in EP licence conditions. This approach could possibly be applied in NSW.

Introduction of regulatory provisions to require waste mining tyre recycling

There could also be the option to introduce new sections of the NSW POEO Regulation that specifically deals with waste tyres, analogous to a revised version of the Part 6 of the WA *Environment Protection Regulations 1987* (discussed above). However, as an amendment to regulation, this would need to follow a prescribed regulation amendment process incorporating regulation impact analysis and extensive industry and stakeholder consultation. It may be reasonable to expect considerable industry resistance to this approach.

Queensland

Arrangements in Queensland are at least explicit in mentioning that the issuance of EAs and formulation of EA conditions should at least have regard to specified Environmental Objectives, including a Waste Objective, as set out in the Queensland EP Regulation. This objective provides that *both* the following requirements are met:

- Waste generated, transported or received is managed in accordance with the waste and resource management hierarchy under the *Waste Reduction and Recycling Act 2011*
- If waste is disposed of, it is disposed of in a way that prevents or minimises adverse effects on environmental values.

While there is an 'in principle' requirement for DETSI to consider and enshrine the waste hierarchy in issuing EAs and incorporating EA conditions across the board, this has not had meaningful effect with respect to how these conditions are implemented for waste mining tyres. The following headings cover some areas in which amendments may be sought, in order to strengthen provisions towards the recovery of waste mining tyres.

Clarifying how 'accordance with the waste hierarchy' will be assessed in relation to the Queensland Environmental Objectives and their application to mining tyres

The Queensland EP Regulations requires that, when assessing activities, the administering authority will assess whether 'waste generated, transported or received is managed in accordance with the waste and resource management hierarchy.' As noted, this has had little effect in relation to waste mining tyres.

Separately, the Queensland EP Regulation require the administering authority (DETSI) to comply with the following provisions:

The administering authority must, for making an environmental management decision relating to an activity, consider whether to impose conditions about each of the following matters:

- Recycling, storing, transferring or disposing of waste in a particular way
- If under an environmental objective assessment, the assessor is not satisfied an environmental objective has been achieved—implementing measures for minimising the adverse effects of not achieving the environmental objective.

Together, these provisions place an onus on DETSI to substantiate its decisions in relation to wastes arising from practices such as waste tyres arising from mining activities – particularly for those streams that are not managed through methods that are higher in the waste hierarchy.

DETSI may be requested to clarify how it makes an assessment on the above points, and for this to be published as an explanatory note or guidance note.² While this in itself may not drive change in how waste mining tyres are managed, such clarification is important in disclosing a decision making process and evidence standard that can be contested or influenced.

Such transparency is of benefit to DETSI as it sets out a clear basis for where and when mining tyre recovery would be appropriate, and the EA conditions that are needed to enforce mining tyre recycling pending suitable investment in mining tyre recovery capabilities in Queensland. Pending this investment, new EAs could be issued with suitable conditions to enforce mining tyre recycling from the outset.

Revised EA conditions

As in the cases for amending EP licences in WA and NSW, DETSI can amend EAs in Queensland. The discussion above makes clear that EA conditions may be put in place for ERAs, that mandate a given method for dealing with particular waste streams, and/or that ensure that a given Environmental Objective is met with minimal adverse effect on the environment.

² While the *Guideline – Application requirements for activities with waste impacts* provides some details as to how the Waste Objective Assessment is performed when undertaking EA approvals, these details are still somewhat general in nature.

However, the circumstances under which DETSI may amend an EA without receiving an application from the EA holder are somewhat limited, compared to similar provisions to alter EP licences in WA and NSW (refer to p. iv above).

One circumstance through which DETSI may amend an EA follows from the preparation of a report made by or for, or approved by, a *recognised entity* if the report:

- Is relevant to the authority or schedule, or a relevant activity carried out under the authority or schedule; and
- If the administering authority is not the chief executive—has been accepted by the chief executive.

This is likely to be one of the more suitable and practical grounds under which DETSI may choose to revise EA conditions relevant to mining tyre disposal. ATRA may seek to engage with DETSI on its willingness to commission a study or similar, that investigates the impacts of waste mining tyre disposal compared with other solutions, and the comparative viability of each solution. The Qld EP Act provides clarity as to the types of public bodies and institutions that may be treated as *recognised entities*.

However, engagement with DETSI suggests that there has been a historic disinterest in revising EA conditions that target solid waste management practices (outside of hazardous mining wastes) undertaken by mining companies. In most cases, EAs have undergone little revision with respect to their solid waste management conditions, and remain unchanged from the date of issuance. ATRA's engagement may therefore need to build a strong case for why EA condition amendment is necessary, in line with the roles and responsibilities of mining companies as significant generators of solid waste.

Update to *Operational policy – Disposal and storage of scrap tyres at mine sites* ESR/2016/2380

Some EA conditions cite a separate operational policy explaining how scrap tyres at mine sites are to be disposed and stored. While this 2014 document refers to the waste hierarchy, it does not appear to have been effective in driving practices other than on site burial of mining tyres in Queensland.

Arguably, with the document now more than ten years old and with substantial updates to waste and resource recovery policy and legislation, the case can be made that the policy should be reviewed to make it more effective in driving the uptake of tyre recycling (and other measures that accord with the waste hierarchy). Such an update may involve repurposing the document to serve as a practical handbook for how mining companies are to show that their management of waste tyres accords with the waste hierarchy (i.e. referencing the legislated Waste Objective), and clarifying how DETSI proposed to evaluate compliance with respect to the waste hierarchy.

Once updated, the case can be made that new mining activity EAs should contain conditions that refer to the revised policy. Existing EAs could also be amended to reference the policy, noting that such EA amendments are subject to restrictions as set out above. This particular challenge in Queensland – i.e. where new mine EAs may adopt 'modern' conditions for managing waste tyres, while existing EA conditions face obstacles to modernisation – has ramifications for driving sufficient demand for waste tyre recycling in individual mine precincts that would otherwise have sufficient volumes of tyres to justify investment in local recycling facilities.

Concluding remarks

This investigation has identified the key pieces of legislation used to govern the management of waste mining tyres in three states, along with conditions imposed on individual mining sites. The general shape and intents of the regulatory frameworks applied in each state are roughly equivalent, with differences coming into focus when the finer details are investigated.

EP licence and EA conditions appear, at face value, to be the most immediately available means to update the requirements placed on mining companies in managing their waste tyres. However, in each state there are limitations in the extent that such conditions can be used to encourage mining tyre recycling.

Some of these limitations are procedural in nature, while other limitations depend on the extent that existing on site burial practices are viewed as continuing to impose risks on the surrounding environment. Engagement with state regulators may be most constructive when it acknowledges both the opportunities and limitations to effect change via EP licence and EA reform processes.

Moreover, it may be inefficient and lack pragmatism to tackle EP licences and EAs on a case-by-case basis, and it would be more effective to take on the process in a 'whole-of-sector' manner. This may take the form of an evidence-based process that recommends a set of model conditions to apply across all mines in each jurisdiction, which is then implemented through amendments according to a suitable roll out strategy (ideally coupled to the location, timing and capacity of OTR tyre processing infrastructure investment). This roll out would recognise the procedural requirements and dependencies present in each jurisdiction.

As a final point, this project is dedicated to reviewing the regulatory frameworks involved in governing waste mining tyre management practices across WA, NSW and Queensland. This task aimed at:

- Identifying the current obligations on mining companies
- Describing implications in how these obligations enable or continue to hinder greater levels of tyre recycling
- Uncovering change processes that may provide ATRA with a path to influence future regulatory settings.

The project scope was less concerned with the types of conditions and legislative provisions that may drive a desired result for ATRA, and did not require the project team to map out a strategy to engage with regulatory bodies on a given reform process, nor to plan out a method to gather the necessary evidence and arguments to substantiate such reforms.

These activities may be considered by ATRA as potential next steps, following from an initial engagement with relevant authorities to test their interest in setting higher regulatory expectations on the mining sector. This engagement may also be coupled with corresponding discussions with each state's circular economy policy teams, based on the observations i) that existing EP licence and EA conditions do not incorporate circular economy drivers into compliance requirements; and ii) other circular economy measures such as waste levies and landfill standards fail to interact with the mining sector and its major streams including waste mining tyres.

1. Introduction

ATRA approached Urban EP to complete a body of work, gathering information on the conditions placed on mining licence holders – through licence conditions, legislation, regulation and other statutory tools as relevant – that govern how large mining tyres are managed at their end of life. As requested by ATRA:

'The critical question and the answer coming from this work is: at what point in either licencing, re-licencing, regulations or legislation is it available for ATRA and/ or its members to 'intervene' and elicit changes in either a per-licence or overall regulatory review to stop in-pit/ onsite disposal of OTR's by miners?

'Is there a time horizon when this disposal is no longer permitted? Will it go on forever until the Minister intervenes? How could the Minister intervene? Is it licence by licence or is it possible for a change in regs to start to phase out all on site disposal?'

1.1. Interpretation of request

This review of regulatory and licence settings should set out:

- The stated purpose(s) (if and where such purposes are explicit in legislation, explanatory notes and other documents) of legal provisions relating to the management of waste OTR mining tyres
- Details of relevant provisions in mine licence, legislation, regulation and other statutory tools as relevant
- An interpretation of said provisions in relation to obligations placed on mining companies and relevant third parties, and limitations and qualifications to said provisions
- Commentary as to where said provisions provide strict controls versus a degree of latitude to mining companies and relevant third parties, in how they manage waste OTR mining tyres
- Commentary as to where said provisions provide discretionary judgement to EPA executives and/or relevant Ministers and/or other public authorities, in how licence holders and regulated entities are to meet compliance requirements
- A statement of findings on the implications of the above in terms of:
 - i) Divergence between stated purposes of relevant provisions, and activities legally permissible in managing waste OTR mining tyres under those provisions
 - ii) Impacts on circular economy outcomes at the state level, noting goals, targets and objectives enshrined by relevant state governments
 - iii) Impacts on the tyre recycling sector, e.g. through deferred investment and/or placement of existing / planned investments and workforces at risk
 - iv) Timelines and dependencies (to the extent known) enabling change in the management of waste OTR mining tyres, i.e. towards recycling / recovery.
- Opportunities to influence activities permissible through current relevant provisions and/or through scheduled amendment processes (i.e. including sunset provisions and licence expiration dates), and key stakeholders / authorities to target towards change.

The project should set out distinct areas of activity regulated by different instruments, and the interactions (cross-references) and hierarchy displayed between those instruments.

1.2. Scope of analysis

- Waste OTR mining tyres, including open cut and underground vehicle tyres.
- Review of publicly available documents spanning:
 - active licences, permits, legislation, regulation and other statutory tools governing the management of waste mining OTR tyres (including records of amendment processes, explanatory notes and other documents as relevant and available to the public).
- Mining activities occurring in and subject to the laws of Western Australia, Queensland and New South Wales.
- Main focus on document review and synthesis of findings from this review. Stakeholder engagement will form a minor part of the work, focused on relevant administering authorities and TSA (as an interested stakeholder).

1.3. Key stages of activity

1. Inception meeting
2. Literature review
3. Synthesis of initial findings
4. Engagement with state regulatory bodies (online meetings) & update to findings
5. Submission of report and briefing to ATRA

1.4. Stakeholder engagement

The following bodies were engaged with (online meetings) during the course of this project. Engagement provided a means to confirm interpretations of relevant legislative provisions and licence conditions, while gaining further intelligence on regulatory practices and outlooks.

- Western Australia Department of Water & Environmental Regulation (DWER)
- New South Wales Environment Protection Authority (NSW EPA)
- Queensland Department of Environment, Tourism, Science & Innovation (DETSI)

1.5. Structure of report

The remaining chapters of this report are dedicated to discussions and findings as they relate to individual jurisdictions in scope for this analysis – Western Australia, New South Wales and Queensland. A final chapter provides a high level set of conclusions in response to the key questions quoted from ATRA, set out at the opening of this introduction chapter.

2. Western Australia

2.1. Overview

In Western Australia, legislation governing the management, transport, disposal and potential recovery of tyres used in the mining industry falls into two areas, with administrative responsibility delegated to departments as follows:

- WA *Mining Act 1978* (WA Mining Act), administered by Department of Mines, Petroleum and Exploration (DMPE)
- WA *Environment Protection Act 1986* (WA EP Act), administered by Department of Water & Environment Regulation (DWER).

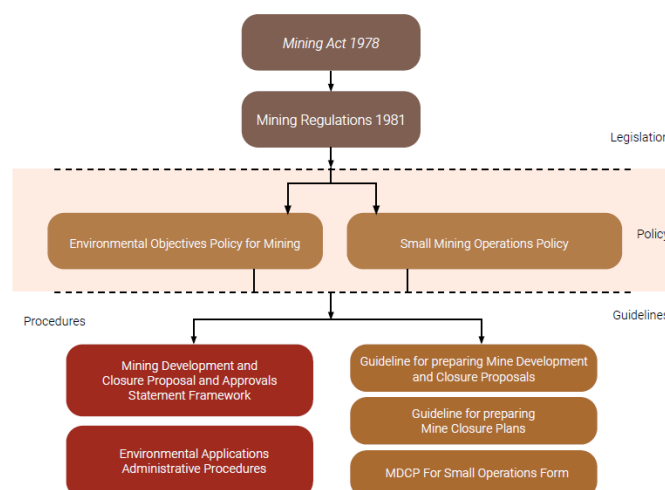
This chapter considers key provisions under each piece of legislation and subsidiary instruments belonging to mining regulation and environment protection legislation respectively, as they apply to the management of waste mining tyres. The chapter concludes with a more general interpretation of these provisions, particularly focused on exploring how ATRA and its members may work with existing provisions to drive a greater interest in mining tyre recovery.

2.2. Relevant provisions under the WA Mining Act

The regulation of mining activities in WA is legislated through the WA Mining Act. This Act provides for the environmental requirements stipulated for prospecting, exploration, mining operations and mine closure activities and associated outcomes, and sets out the resource management conditions and regulations for petroleum and geothermal industries.

The WA Mining Act sits on top of a legislative hierarchy of statutory instruments and administrative tools, according to the diagram below. The Act is joined by the *Mining Regulations 1981* (WA Mining Regulations) to form a legislative layer above a set of subsidiary tools that variously provide further necessary detail, explicate procedural requirements, and otherwise communicate guidance in support of greater compliance, improved certainty of interpretation, and enhanced efficiency in performing regulatory functions.

Figure 1. Document hierarchy under the *Mining Act 1978*



While the WA Mining Act and the WA Mining Regulations are comprehensive in setting out the regulatory framework and compliance requirements across a wide range of mining-related activity (e.g. exploration, prospecting, fossicking, operation etc.), the discussion in this report will be narrowly focused on arrangements relevant to the use and disposal of large mining tyres. In general, these pertain to mining development, operation and closure provisions in the WA legislation and related administrative tools (i.e. at the Policy, Procedures and Guidelines layers in the above diagram).

Mining development and closure proposals

A *mining development and closure proposal* (MDCP) is the main application document used to obtain approval for mining activities under the WA Mining Act, following after recent amendments. The MDCP functions as the targeted approval vehicle required before undertaking any activities for the purpose of, or in preparation for, mining operations on a mining lease under the WA Mining Act. It is assessed by DMPE in deciding whether the proposed mining activities can be authorised and on what conditions.

An MDCP's main purpose is to show that the proposed mining activities (collectively comprising a precisely defined 'activity envelope') can be carried out in accordance with DMPE's *Environmental Objectives Policy for Mining* (see text box below). It must include detailed information on the proposed operations and integrated mine closure planning, so that closure has been properly considered at the time mining approval is sought. This removes the need for a separate standalone mine closure plan at that initial approval stage.

Once an MDCP is assessed and approved, DMPE issues an Approvals Statement that records the approved scope and limits of mining activities, and any conditions or required environmental outcomes. The MDCP is thus the proposal that feeds into that Approvals Statement, and any future changes or expansions outside the recorded 'activity envelope' or to closure outcomes must be supported by a new or revised MDCP.

Environmental Objectives Policy for Mining

In submitting an MDCP, mining operation proponents must have regard to how the proposed mining activities will align with and preserve a prescribed set of environmental objectives for mining. These objectives are published by DMPE with the intent to:

- Clearly identify the DMPE objectives for environmental regulation and decision making under the WA Mining Act.
- Inform the development of environmental and closure outcomes.
- Provide to industry and the community DMPE's expectations relating to the environmental acceptability of proposed mining activities.

The principal objective for environmental regulation as published by DMPE in the Policy is:

Resource industry activities are designed, operated, closed, decommissioned and rehabilitated in an ecologically sustainable manner, consistent with agreed environmental outcomes and post-mining land uses without unacceptable liability to the State.

DMPE's key environmental objectives are listed in Table 1 [of the Policy], covering the key environmental factors that are relevant to mining activities. DMPE will consider these environmental objectives when determining whether proposed mining activities are acceptable.

The above-stated environmental factors accounted for in the Environmental Objectives include:

- Flora, vegetation and fauna
- Inland waters
- Terrestrial environmental quality
- Rehabilitation and mine closure.

The WA Mining Regulations set more details as to what needs to be included in MDCPs, including the following:

- A list of requirements arising under any written law or any Commonwealth Act that affect or will affect:
 - The management strategies to be applied to minimise adverse environmental impacts and mitigate environmental risks of the relevant activities
 - Closure outcomes
 - The use(s) to which each location will be put after completing relevant activities
- Details of any consultation that the relevant lodging party has undertaken in relation to relevant activities, closure outcomes, and the use(s) to which each location will be put after completing relevant activities
- A description of the environment that will or may be affected by the relevant activities, including: appropriate measurements of the features of that environment, and an analysis and interpretation of environmental data
- A comprehensive risk assessment, including:

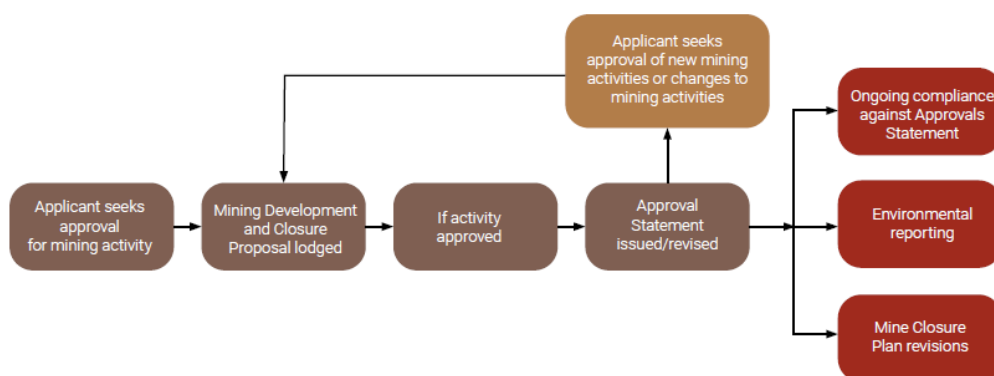
- Details of all environmental impacts and risks of the relevant activities
- An evaluation of the environmental impacts and environmental risks
- Details of the management strategies to be applied to minimise adverse environmental impacts and mitigate environmental risks
- Details of the environmental outcomes, objectives and goals to be achieved while the relevant activities are carried out
- Details of the monitoring that will be undertaken while the relevant activities are carried out to establish whether the environmental outcomes are being achieved
- Details of the monitoring that will be undertaken after the relevant activities have ceased to establish whether the closure outcomes are being achieved
- Details of the use(s) to which each location at which relevant activities are carried out will be put after those activities have ceased and the location has been rehabilitated

DMPE issuance of Approvals Statements

Following assessment of a MDCP, should the proposed activities be approved, an Approvals Statement will be issued to the tenement holder. The Approvals Statement defines the scope and limits of the mining activities approved, any relevant conditions (environmental outcomes), closure outcomes and date for submission of the MCP.

It is a requirement of the WA Mining Act that standalone MCPs are submitted to DMPE to demonstrate planning and progress of the mining operation towards successful closure and achievement of the closure outcomes recorded on the Approvals Statement.

The interaction between MDCPs, Approvals Statement and MCPs is also represented visually in the figure below.



Standard conditions specified in Approvals Statements

In accordance with section 103AP of the Mining Act, the following information will be recorded on an Approvals Statement:

- Approval given to an activity proposed in a mining development and closure proposal
- Any conditions attached to the approval (see section 5.2 on page 10)
- Any relevant information (i.e. that is 'relevant to the nature and extent of the activity')

- The closure outcomes
- The date by which a mine closure plan must be lodged.

The Mining Regulations establish that a MDCP must include environmental outcomes that will be met during the life of the project. Environmental outcomes are used to establish the acceptable level of impact that must not be exceeded, or the level of protection/performance that must be achieved for the site to be compliant throughout the mine life.

Environmental outcomes will be recorded on the Approvals Statement as a 'Condition of Approval.' DMPE has developed a list of standard environmental and closure outcomes which can broadly be applied to many mining operations (Appendix 5 of the Guideline for Preparing Mining Development and Closure Proposal). Applicants will have the opportunity to develop site-specific environmental or closure outcomes where the standard outcomes are not appropriate for their operation. Site-specific outcomes will also be recorded as Approvals Statement conditions.

The Approvals Statement will record standard conditions relating to environmental monitoring and reporting. This includes, but is not limited to, conditions requiring submission of an environmental report to demonstrate that environmental outcomes are being met and progress is being made towards meeting closure outcomes.

Making amendments to Approvals Statements

For operations with an existing Approvals Statement, a MDCP will need to be submitted to DMPE for assessment in the following circumstances:³

- When new mining activities are proposed or when changes, expansions or alterations are proposed to mining activities beyond what is recorded on the Approvals Statement
- When any mining activities are proposed outside of the activity envelope recorded on the Approvals Statement
- To amend a closure outcome.

Following assessment of the MDCP, the Approvals Statement will be updated to reflect the changes and the amended statement provided to the tenement holder/s. Only one Approvals Statement will be issued for a mine covering all tenements, however the Approvals Statement will be updated over the life of mine to reflect approved amendments to the mining operation.

As a condition of approval, tenement holders will need to provide an environmental report to DMPE demonstrating compliance with environmental and closure outcomes/conditions recorded on the relevant Approvals Statement/s or prior approval documents.

All Approvals Statements will contain a standard condition requiring tenement holders to notify DMPE of any reportable environmental incidents within 24 hours of detection. A reportable environmental incident is defined as:

- An incident that breaches any environmental outcome/condition recorded on the relevant Approvals Statement or has the potential to cause such a breach.

³ This is somewhat analogous to the Development Consent modification process as used in NSW.

Failure to notify DMPE of a reportable incident constitutes a breach of conditions and renders the tenement/s liable for forfeiture under the Mining Act.

Note: The above description for seeking amendment is proponent driven, i.e. it is activated when a proponent seeks to initiate a change, expansion, or addition to the envelope of activities at a given mining operation. There does not seem to be a pathway for DMPE to unilaterally revise an Approvals Statement or for third parties to advocate for updated or revoked Approvals Statements, separate to actions that may be initiated by the proponent.

Application of Approvals Statements to waste management and waste tyre disposal

There is evidence of conditions and outcomes centring on waste management in a subset of publicly searchable Approvals Statements issued for mining operations in WA. During this project Approvals Statements for the following mines were examined:

- Newmont Boddington gold mine (under Boddington Gold Environmental Group), issued on 14 November 2025 (in southwest WA)
- Focus Operations' Bonnievale underground gold mine, issued on 5 December 2025 (in the goldfields)
- Northern Minerals' Browns Range rare earths mine (under Browns Range Environmental Group), issued on 24 October 2025 (in the eastern Kimberley).

The following conditions were found to be in place in all three of the Approvals Statements, suggesting that they are standard conditions used in all Approvals Statements where such conditions are relevant.

Code	Condition details
T2.0	All environmentally hazardous chemicals, rubbish and materials are removed from site or stored in a manner that prevents detrimental impacts to the surrounding environment.
C5.0	All environmentally hazardous chemicals, rubbish and contaminating materials have been removed, treated, managed and disposed in a manner consistent with the post mining land use.

These conditions are framed strictly in relation to the Environmental Objectives for Mining Policy (see textbox above), which in this case may be interpreted as responding to terrestrial environmental quality and rehabilitation and mine closure factors.

Preparation and submission of AERs

An Annual Environmental Report (AER) is required for all mining projects that have an AER condition imposed under the WA Mining Act, i.e. following the approval of a mining proposal. Failure to submit an AER is a breach of the tenement condition that renders the affected tenement(s) liable for forfeiture pursuant to Section 96(1) or Section 97(1) of the WA Mining Act.

The objectives of the AER are to:

- Document mining activities for the reporting year and proposed activities for the following year.

- Document environmental management and rehabilitation activities for the reporting year, and proposed activities and developments in the following year.
- Provide environmental monitoring results.
- Document analysis of monitoring data to report against the progress and status of achieving environmental outcomes and closure criteria for the site.
- Provide an assessment of compliance with conditions.

AER guidelines issued by DMPE provide a breakdown of sections that need to be filled in, and the contents that need to be supplied to satisfy each section. These cover:

- Site Activity Summary
- Site Summary Table
- Site Plan
- Area of Activity
- Landform Datasheets
- Rehabilitation and Closure Planning
- Research and Trials
- Future Work Programme
- Compliance details (with sub-sections)

A Mine Activity Type is defined as a feature created during mining or exploration activity (e.g. waste dumps, haul roads, access roads, ROM, plant site, TSF, borrow pits, drill pads, stockpiles, office blocks, accommodation village, etc.). The AER guidelines advise that in filling out Area of Activity and Landform Datasheets details, the AER needs to set out information on waste dumps and tailings storage facilities.

Issuance of Directions under the WA Mining Regulations

Under Section 120H of the WA Mining Regulations, an inspector or senior inspector may issue a written direction to modify mining operations to the mining tenement holder, where it is believed that any activity in connection with that mine is likely to have or is having a significant adverse effect on the environment.

A direction to modify mining operations must:

- Be in writing
- Specify the operation or activity to be modified, and its effect or potential effect on the environment
- Set out the reason for that effect or perceived effect
- Specify a time and date within which compliance with the direction must take place
- Indicate that a review of the decision to issue that direction, or of the terms of that direction, may be sought within seven days of the receipt of that direction (in accordance with WA Mining Regulations, Section 120J).

These provisions could in principle be invoked to require a change in the practices used in managing waste mining tyres. However, the intent of this clause and related clauses may be to

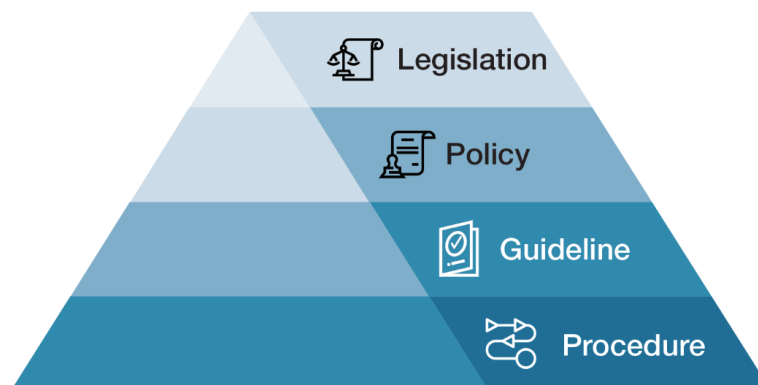
enforce an urgent change in mine site practices, e.g. due to one or more emerging developments and/or unforeseen disclosures uncovered during site inspection. Presumably the preferred course to introduce updated practices in the management of waste mining tyres, would be to call upon more deliberative amendment processes (irrespective of whether this is covered by mining regulation or environment protection legislation).

2.3. Relevant provisions under the WA EP Act

The Department of Water and Environmental Regulation (DWER) is responsible for environmental and water regulation, in line with legislation and machinery of government delegations. This includes:

- Works approvals and operating licences for prescribed industrial premises
- Native vegetation clearing permits
- Water licence and permit approvals.

DWER also provides services to the WA Environmental Protection Authority (EPA), which conducts assessments under Part IV of the *Environmental Protection Act 1986* (WA EP Act). Similar to DMPE, a hierarchical approach is used in the application of legislation, legislative tools, and subsidiary measures.



DWER employs regulation as a tool for achieving the government's social, economic and environmental objectives. Certain premises are regulated through a works approval and licensing process to prevent, control, abate and mitigate pollution or environmental harm, under Part V of the WA EP Act.

These premises with potential to cause pollution or environmental harm to the environment, water resources, public health and/ or amenity are known as 'prescribed premises'. Prescribed premises categories are outlined in Schedule 1 of the *Environment Protection Regulations 1987* (WA EP Regulations).

In this schedule, Category 5 includes activities involving:

Processing or beneficiation of metallic or non-metallic ore: premises on which —

- (a) metallic or non-metallic ore is crushed, ground, milled or otherwise processed; or
- (b) tailings from metallic or non-metallic ore are reprocessed; or

(c) tailings or residue from metallic or non-metallic ore are discharged into a containment cell or dam.

The schedule similarly carries provisions relating to coalmining and gas and oil processing as prescribed premises.

Best practice regulatory principles

DWER ostensibly applies best practice regulatory principles to its regulatory functions, to support effective and efficient water resource management and environmental regulation, and provide a high level of consistency and transparency. These principles are:

- Risk based
- Evidence based
- Transparent
- Collaborative
- Consistent
- Responsive.

Works approvals and licences

The WA EP Act makes it an offence for occupiers of prescribed premises to cause an emission from a prescribed premises, unless they hold a licence for that premises. Licences contain conditions to protect the environment or public health from emissions from the premises.

The WA EP Act provides for amending works approvals and licences.⁴ DWER assesses and makes decisions on amendment applications submitted by instrument holders (i.e. licence holders), and may also make amendments on its own initiative. DWER undertakes risk-based reviews on existing premises and licences to ensure the licences are effective in controlling risks posed to public health and the environment.

The above process indicates that DWER has the capacity to update licences, to reflect a revised understanding of potential risks and harms associated with a given premises and/or activities occurring on that premises. The procedure for this process, along with general procedures for applying for a licence or works approval, is laid out in the DWER's *Procedure: Prescribed premises works approvals and licences*.

Section 59 of the WA EP Act provides additional detail on this process. Sections 62 and 62A of the WA EP Act contain provisions for the emplacement of conditions on licences issued by DWER, and some kinds of conditions that may be imposed. These conditions can include specified manners in which a waste is disposed or made available for reuse (WA EP Act, S. 62A (j) and (k)), and can include measures to investigate options to prevent, control or abate pollution or environmental harm (WA EP Act, S. 62A (l)).

The power to amend a licence on DWER's initiative is found in Section 59(2) of the WA EP Act. In determining when a licence review is warranted, DWER will consider the following:⁵

⁴ <https://www.wa.gov.au/system/files/2020-09/DWER-Regulatory-services-factsheet.pdf>

⁵ DWER, *Industry Regulation Guide to Licensing Part V Environmental Protection Act 1986*.

- Incident or event reports provided under Section 72 of the WA EP Act
- Information submitted in accordance with licence reporting requirements (e.g. Annual Environmental Reports or monitoring data)
- New information relevant to the risk assessment for the premises
- DWER's compliance inspections
- Complaints received
- Enforcement action taken
- Publication of Environmental Standards or other relevant guidance material
- Whether a DWER-initiated amendment to a licence has occurred
- Any other matters DWER considers relevant.

Based on engagement with DWER officers, there is no requirement for the scope of conditions placed in an EP licence (issued to a mine operator or other prescribed premises occupier) to link to or cross reference activities or conditions placed on an Approvals Statement for that same premises. While the Approvals Statement and its conditions may inform DWER as to activities and their potential impacts, DWER is strictly guided by provisions laid out in the EP Act and subsidiary instruments.

Part 6 of the WA EP Regulations

Part 6 of the WA *Environment Protection Regulations 1987* specifically deals with the management, transport and disposal of used tyres (i.e. waste tyres).

- It defines what counts as a 'used tyre' and explains how to calculate quantities, including how shredded or broken tyres are converted into a number-equivalent for regulatory purposes (in short, 2 m³ of shredded or broken tyres is estimated as being equivalent to 100 EPU, which roughly comes to about 0.4 tonnes/m³).
- It sets legal limits and conditions for storing, transporting and disposing of those tyres so they do not create environmental or safety risks.
- It sets conditions that are to be met to allow the incineration or burial of used tyres.

This part of the Regulations concludes with stipulations that used tyres must not be stored on licensed premises otherwise than in accordance with the conditions of the licence issued in relation to those premises.

Licensed premises (including mining tenements where mining operations occur) must have the conditions necessary for the storage of used tyres explicitly included in their licence provisions. However, it is not clear whether storage as a term necessarily overlaps with (in full or in part) or is distinct from permanent burial or disposal, as opposed to being confined to temporary storage.

The Regulations also include a Tyre Landfill Exclusion Zone, covering local government areas where placing used tyres in landfill is restricted, attached as Schedule 5 to the Regulations. This zone is generally restricted to the Greater Perth Metropolitan Area and parts of the Peel Region.

2.4. Application to managing waste mining tyres

Treatment of waste tyres in Approvals Statements

As indicated above, conditions and outcomes are placed on mine operators through Approvals Statements, based on a given activity envelope and the measures that are needed to meet a specific set of environmental objectives as defined and published by DMPE. Those activities and measures are informed by the proponent's Mine Development and Closure Proposal.

The conditions and outcomes in relation to waste management are somewhat general and give reference to environmental quality and mine closure considerations. No direction or detailed conditions are set out in Approvals Statements (as reviewed in this project), that might influence or instruct a mining operation towards any one particular waste management path – for tyres as for any other solid waste stream – involving disposal, recycling or recovery.

As such, the standard conditions in Approvals Statements provide a very large degree of latitude in terms of how the proponent opts to manage waste tyres, so long as those conditions are met.

Similar findings apply to minerals title conditions issued on mining tenements, as identified during an exploration of mineral titles.⁶ Typically, such conditions cover the need to dispose rubbish and scrap in a suitable manner; and to ensure that waste material is placed such that the final footprint after rehabilitation will not be impacted by pit wall subsidence or instability.

Options to amend Approvals Statement conditions that cover the management of waste tyres

There are limited pathways for driving a change in Approvals Statement conditions – either specific or standard – that influence how mining companies manage waste tyres.

In particular, DMPE does not appear to have recourse to initiate a review or amendment to a given Approvals Statement, without the proponent's submission of a MDCP (or Mine Closure Proposal, MCP, towards the end of the operating lifespan of an operating mine). So any update to an existing mine's Approval Statement needs to await a process activated by the proponent.

Further and even allowing for an opportunity to amend Approvals Statement conditions or issue new Approvals Statements, the conditions placed on a mining operation through an Approvals Statement are there to ensure that mining activities align with and preserve a prescribed set of environmental objectives for mining. These objectives are set out in the Environmental Objectives Policy for Mining and centre on local environmental factors as follows:

- Flora, vegetation and fauna
- Inland waters
- Terrestrial environmental quality
- Rehabilitation and mine closure.

In seeking to encourage waste tyre recycling or recovery, it is not clear that these are the only tyre waste management activities that would align with the environmental objectives. For example, as the environmental objectives are concerned with physical and ecological factors within or proximate to the mining tenement, any activity that involves removing waste tyres from

⁶ <https://minedex.dmirs.wa.gov.au/Web/home>

the tenement would provide equivalent outcomes to tyre recycling – including, for example, offsite disposal. It is not evident that the existing objectives require consideration or adoption of the waste hierarchy or circular economy principles within the activity envelope.

At best, conditions might be modified to prescribe offsite management of some waste streams such as waste tyres, on the view that this better aligns the mine's activities with the environmental objectives. Yet this assertion may be contested by proponents that argue that waste tyres undergo little to no breakdown in an onsite landfill setting. DMPE may need to conduct investigation and research ahead of the use of revised waste management conditions.

Licence conditions restricting the management of waste mining tyres

Consequent to Part 6 of the WA EP Regulations, this project has reviewed a cross-section of environment protection licences imposed on premises in which major mining operations (as opposed to small scale mining operations) take place. This review examined any references to waste tyre storage, and more general categories of waste that include waste tyres, in compliance with Part 6 of the WA EP Regulations.

The analysis shows that a range of different terms and expressions are used to allow for the onsite disposal of waste mining tyres in various onsite landfills, waste dumps and other engineered storage structures. By and large, they reflect a level of permissiveness in storing or burying waste tyres onsite ('in pit'), noting the annual volume limits in place for each licence.

These volume limits are expressed explicitly in terms of waste tyres (or used tyres), or are expressed in terms of Inert Waste Type 2 (which includes waste tyres among other streams), or are expressed in overall volumes of waste permitted for disposal (comprising multiple types of waste including Inert Waste Type 2).

The different terms used to refer to waste tyres is presented below in Table 1. In most licences, waste tyres are singularly referenced (within general waste or Inert Waste Type 2, or as a specific reference to waste tyres).

The Roy Hill iron ore mine is an unusual exception where there are limits and conditions on the storage of used tyres (i.e. *not disposed*) as well as the landfilling of Inert Waste Type 2 (i.e. including used tyres). Presumably this is an explicit permission for the mine operator to temporarily store up to 8,000 tyres at any one time, ahead of including some or all of these tyres in a total volume of wastes disposed of on site (capped to an annual limit of 12,500 tonnes across all Inert Wastes Type 1 and Type 2). Engagement with DWER officers confirms this interpretation.

There were no instances of environment protection licences identified in this list, in which the stated conditions provided for any of the following:

- The requirement to investigate tyre recycling or recovery options
- The requirement to adopt waste hierarchy or circular economy principles where practicable
- The requirement to consider, study, monitor or report on the effects of burying waste tyres on premises in a manner that complies with conditions for on site disposal
- The requirement to remove waste tyres from the premises as part of appropriate waste tyre management.

However, the Newmont Boddington gold mine is notable in having a license to store a maximum of only 100 tyres, with a separate limit of disposing up to 2,000 tonnes per annual period of solid wastes excluding tyres. This implies that Newmont's operations team is not disposing of tyres onsite, and has instead taken on some alternative arrangement involving offsite management.

The licence conditions do not provide further detail as to whether this entails disposal or some form of recovery. However this strict limit of 100 tyres plus the explicit exclusion of waste tyres from the 2,000 tonne annual limit on onsite disposal, together work as a de facto requirement to manage waste tyres through offsite activity.

Table 1: EP licence conditions cited from a selection of mining site licences downloaded from WA DWER website. Cited conditions include those that give direction to the management of waste tyres or waste streams that include waste tyres (e.g. Inert Waste Type 2). Other relevant conditions also provided for context.

EP Licence & duration	Licence Holder	Premises	Management condition	Limit condition
L8306/2008/3 1/05/2023 to 30/04/2043	Newmont Boddington Gold Pty Ltd	Boddington gold mine (southwest WA)	The licence holder must ensure that waste disposed within the Contaminated Rock Facility and waste tyre disposal area... must only comprise of: (a) Waste rock, including hydrocarbon contaminated waste rock; (b) Conveyor belt; (c) Oversized tyres, if: (i) They are placed on the bottom of each bench with one batch height per bench; (ii) Batches are no more than 3 oversize tyres; (iii) Batches are separated from one another by at least 1m; (iv) No oversized tyres are deposited within 50 m of the final toes of each bench; and (v) Each bench shall be covered with 15 m of waste rock.	Design capacity limit for used tyre storage: 100 tyres (annually?) 2,000 tonnes per annual period of Inert Waste Type 1, Inert Waste Type 2 (excluding tyres) and clean fill.
L9221/2019/1 4/12/2019 to 12/03/2039	Fortescue Ltd	Eliwana iron ore mine (Pilbara)	• Used tyres buried within waste rock dumps and mined pit voids meeting the following criteria: - In batches separated from each other by at least 100 mm of soil and each batch consisting of not more than 1,000 whole tyres; and - Buried under a final soil cover of not less than 500 mm • Maximum number of used tyres stored onsite at any one time awaiting burial within waste rock dumps and mined pit voids must not exceed 5,000 • Used tyre stacks must not exceed 1,000 used tyres per stack • Each used tyre stack must not exceed 5 m in height • Used tyre stacks must be positioned in windrows with at least a 3 m separating distance between each windrow to allow access by fire-fighting equipment	Design capacity limit for used tyre storage: 5,000 tyres annually

L8249/2008/3 27/09/2013 to 28/09/2042	Focus Operations Pty Ltd	Three Mile Hill gold mine (goldfields)	The licence holder must ensure that the following criteria are met when used tyres are buried: • Used tyres from the premises shall only be buried at the Dreadnaught waste rock dump. • The location of all tyre burial areas within the Dreadnaught waste rock dump shall be accurately recorded with GPS coordinates. A minimum depth of 500 mm of soil is maintained over the buried tyres following disposal.	Not more than 2000 tyres are to be buried within the Dreadnaught waste dump within any 12 month period.
L8117/2006/9 27/11/2021 to 26/11/2041	Hamersley HMS Pty Ltd	Hope Downs 1 iron ore mine (east Pilbara)	Tyre waste is not explicitly mentioned and there are no conditions that directly apply to waste tyres. Instead, the licence refers to Inert Waste Type 2 (as defined in <i>Landfill Waste Classification and Waste Definitions 1996</i>): Inert Waste Type 2 is 'waste consisting of stable non-biodegradable organic materials such as tyres and plastics which require special management to reduce the potential for fires' The licence requires that all waste (in both putrescible and inert landfills, wherein Inert Waste Type 2 is mentioned as suitable for both types of landfill) falls within a total quantity limit of 11,500 tonnes per annual period. Waste must be covered with inert and incombustible material when practicable and to at least 200 mm at final landform.	All waste falls within a total quantity limit of 11,500 tonnes per annual period.
L4762/1972/14 21/05/2015 to 27/05/2036	Pilbara Iron Company (Services) Pty Ltd	Greater Tom Price iron ore mine (Pilbara)	• No more than 8,500 tonnes per annual period of all waste types cumulatively shall be disposed of to the Putrescible Landfills and Waste Dump Landfills as shown in Schedule 1, Figure 9. • This includes Inert Waste Type 2 (including tyres and plastics) and other waste types.	Class II putrescible landfill site to accept no more than 8,500 tonnes per annual period.
L8859/2014/1 22/12/2014 to 21/12/2036	Mineral Resources Ltd	Iron Valley iron ore mine (Pilbara)	Tyres and Rubber (Inert Waste Type 2): Tyres and rubber shall be landfilled within the Tyre Disposal Areas and landfill areas (within dedicated tyre disposal cells) as shown within Figure 4 in Schedule 1.	No more than 2,500 tonnes per Annual Period of all waste types.
L8621/2011/1 26/03/2012 to 25/3/2034	Roy Hill Iron Ore Pty Ltd	Roy Hill iron ore mine (Pilbara)	Storage of used tyres: • Used tyres stored in areas as shown on the Premises map in Schedule 1, Figure 2 and Figure 9	Not more than 8,000 used tyres stored at the premises at any one time

			- Storage of used tyres must only occur in units of not more than 100 tyres - Used tyres must be either stacked on their side walls; or if stored on treads, secured with a device made of non-combustible material - A separation distance of 6 m must be maintained between units Inert Waste Type 1 and Inert Waste Type 2: - Disposal of waste by landfilling must only take place within the Bravo, Delta, Echo, Golf, Sierra, Tango and Zulu mined pits - Tyres disposed of in batches separated from each other by at least 100 mm of soil and each consisting of not more than 1,000 whole tyres	Disposal of Inert Waste Type 1 and Inert Waste Type 2 must not exceed 12,500 tonnes per annual period
L4412/1987/8 12/11/2015 to 16/11/2035	BHP Billiton Iron Ore Pty Ltd	Nimingarra iron ore mine (Pilbara)	Inert Waste Type 2 – Tyres: To be stored in piles of up to 100 units with a 6m separation distance between piles.	Up to 7,000 tonnes per annum of waste accepted for burial at the landfill.

Options to amend EP licence conditions that cover the management of waste tyres

As shown above, the EP licences serve as the dominant instruments for dictating the compliant management of waste tyres. This primarily takes the form of setting limits for how many waste tyres or what tonnage of tyres may be stored or disposed on a mining site, which may involve terms in which the waste tyre volume is subsumed into a more general category (i.e. Inert Waste Type 2).

Licences examined for this project indicate a somewhat inconsistent and ad hoc framing for onsite waste management in general, and for tyre waste management in particular. Language variously adopts differentiated terms such as:

- Landfill versus waste dump versus tyre disposal area versus mined pit void
- Landfilling versus burial (versus storage, which may imply temporary holding).

While DWER adopts regulatory principles in the setting of licence conditions, it is not as tightly bound as DMPE is in the setting of conditions in Approvals Statements. DWER may set conditions on how a waste is disposed or made available for reuse, and can include measures to investigate options to prevent, control or abate pollution or environmental harm – both of these areas would appear to be relevant to setting conditions for the management of waste tyres.

It is an open question as to whether DWER could explicitly prescribe the recycling of mining tyres in licence conditions, as the literature suggests that conditions need to be justified in terms of risk to human health and the environment, with sufficient evidentiary backing. Engagement with DWER officers appears to confirm that this constraint is indeed in place.

That is, if a mining company intends to dispose of its waste mining tyres on site and can satisfy a burden of proof that its methods adequately manage risks to human health and the environment, DWER licence approval officers have few options other than to permit this activity, with conditions as may be deemed appropriate.

As an in principle example, there may be a path for DWER to set conditions that require waste mining tyres to be disposed of offsite, while also inserting conditions for the mining company to investigate and report on options to prevent, control or abate environmental harms from the disposal of mining tyres. The results of such reporting could then be used to update licence conditions (across multiple licensed mining sites where the findings are generally applicable). Similarly, stricter conditions could be imposed should any investigation and report be deemed to reflect an insufficient standard. However, the above requirement to base decisions to issue a licence on strict human health and the environment grounds may prevent this approach.

As a separate issue, Section 59(2) of the WA EP Act makes clear that DWER has the power to initiate a licence review and update licence conditions, based on its own judgement (within limits) and without the submission of a licence amendment application. DWER may therefore be amenable to being directly approached with regard to proactively improving the consistency, clarity and adequacy of licence conditions for managing waste mining tyres, in a way that DMPE is less positioned to respond to.

This could take place on a case-by-case basis although it may be more constructive for DWER to develop a standardised, evidence-based treatment of waste tyres in mining sector EP licences, which is then successfully introduced as updated licence conditions, on a rolling basis. However, these conditions may need to operate in complement to other measures that more forcefully and directly stimulate waste tyre recycling, given the above stated constraints in the application of licence conditions.

3. New South Wales

3.1. Overview

Mining activities are tightly controlled in NSW, with a range of authorisations required before operations can commence. The regulation of large scale mining activity for the purposes of protecting the environment in New South Wales, is founded on three distinct areas of legislation and subsidiary measures spanning:

- The issuance of Development Consents for mining activities (among other activities) under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (NSW EP&A Act)
- The granting of mining leases under Part 5 of the NSW *Mining Act 1992* (NSW Mining Act) and issuance of directions to responsible persons under Part 11 of the NSW Mining Act
- The issuance of environment protection licences (EP licences) under Chapter 3 of the NSW *Protection of the Environment Operations Act 1997* (NSW POEO Act).

This chapter explains the workings of these areas in general and in their application to the management of waste mining tyres. The chapter concludes with commentary on potential pathways to influence activities regulated under the relevant legislative provisions, with the aim of lifting the uptake of mining tyre recycling and recovery in NSW.

3.2. Relevant provisions under the NSW EP&A Act

The EP&A Act establishes the development assessment and approval framework for exploration and mining activities, as well as other land uses. All new mining projects, and modifications to existing projects, require approval from the NSW Department of Planning, Housing and Infrastructure (DPHI) or under the NSW EP&A Act before they can commence.

As part of this approval process, the proponent must prepare an Environmental Impact Statement (EIS). This is a comprehensive document that covers issues such as air quality, noise, transport, flora and fauna, surface and ground water management, methods of mining, landscape management and rehabilitation. The development assessment process requires extensive public consultation, with community members encouraged to make submissions on the application.

All new coal mines, mineral sand mines, proposed mines in environmentally sensitive areas of state significance and mines with capital investment of more than \$30 million are considered state significant development (SSD) and require approval from the Minister for Planning or the Independent Planning Commission (see the *State Environmental Planning Policy (Planning Systems) 2021*).⁷ Smaller metalliferous, non-coal, clay and limestone mines usually require Development Consent from a local council.

⁷ <https://pp.planningportal.nsw.gov.au/development-and-assessment/state-significant-development>

Details as to the process to submit a development application and gain Development Consent are available on the NSW Government website,⁸ while guidelines have also been prepared and are available to proponents to guide the necessary application documents.⁹

The comprehensive assessment process considers a range of environmental issues including water, aquifers, alternative land uses and whether the proposed development is in the state's best interests. The assessment also considers the ecological sustainability of the development, including inter-generational equity and environmental, social and economic factors.

If a project is approved, DPHI imposes conditions on the approval to minimise potential environmental impacts. In addition, NSW Resources attaches rehabilitation and environmental performance conditions to all mining leases issued under the NSW Mining Act.

Making modifications to Development Consents

Under Section 4.55 or Section 4.56 of the NSW EP&A Act, an applicant may seek approval to modify a State significant development (SSD) Development Consent at any time. These modifications may be necessary to improve the design of the project or to vary the conditions of consent. The modification process will vary depending on the scale and nature of the proposed modifications, and any statutory requirements.

Modifications fall into one of the following three categories:

- Modifications involving minor error, misdescription or miscalculation
- Modifications involving minimal environmental impacts
- Other modifications involving greater than minimal environmental impact.

A modification application must be accompanied by a modification report which details the nature of the proposed modification. The applicant must have regard to *the State Significant Development Guidelines - Preparing a Modification Report (Appendix E)* when preparing the modification report.

Once received, DPHI will publish the modification application and modification report on the NSW planning portal. DPHI is required to exhibit modification applications involving greater than minimal environmental impact as well as applications to modify a consent granted by the Court.

If DPHI exhibits the modification application, the exhibition period will generally be for a minimum of 14 days. This is to give the community an opportunity to read the modification report and make a submission on the merits of the modified project. DPHI will publish any public submissions online and ask the applicant to prepare a submissions report to respond to the issues raised in submissions. This may involve amendments to the modification application.

DPHI will complete its assessment of the merits of the modifications in accordance with any relevant legislation, plans, policies and guidelines and consider the issues raised in submissions and the applicant's response to those issues (if the modification report is exhibited). DPHI will summarise the findings of its detailed assessment of the modification application in a whole-of-

⁸ <https://www.planningportal.nsw.gov.au/major-projects/assessment/state-significant-development/ssd-process>

⁹ https://shared-drupal-s3fs.s3.ap-southeast-2.amazonaws.com/master-test/fapub_pdf/state-significant-development-guidelines.pdf

government assessment report, which will include any recommended changes to the existing conditions of the SSD Development Consent. Once complete, the department will publish its assessment report and ask the consent authority to determine the application.

Anyone may seek a judicial review of the decisions on a modification application within 3 months of the public notice of the determination. The proceedings will be heard by a judge of the Land and Environment Court and will consider the legality or validity, not the merits of the decision.

Section 4.57 of the NSW EP&A Act includes provisions for a local council or development authority to revoke or modify a Development Consent, i.e. without a corresponding modification application being submitted by the proponent. However, there are conditions limiting this process and, depending on impacts, there may be a cause for the proponent to be compensated for any financial impact.

General conditions placed on mining activity Development Consents

DPHI has prepared indicative standard conditions for mining activities that have received Development Consent in NSW.¹⁰ These conditions were published in August 2018, and may be read as indicative content to place as conditions in a Development Consent only. The relevant approval body is under no obligation to adopt any conditions presented in this publication.

An examination of these standard conditions suggests that they mainly of an administrative nature, i.e. covering requirements to establish an environmental management strategy and management plan, and to set up auditing and reporting processes. It also puts forward the establishment of Community Consultative Committees and other arrangements in support of strengthening stakeholder relationships and improving compliance standards.

However, unlike the case for Approvals Statements as legislated in WA, it appears that an approvals body in NSW is not narrowly constrained in how it sets conditions on a Development Consent. A Development Consent therefore has considerable latitude in terms of the compliance obligations that may be placed upon a given mining lease holder.

¹⁰ <https://www.planning.nsw.gov.au/sites/default/files/2023-02/standard-conditions-for-ssd-mining-projects.pdf>

3.3. Relevant provisions under the NSW Mining Act

Issuance of mining leases by NSW Resources

A mining lease gives the holder the exclusive right to mine for minerals over a specific area of land. In NSW, NSW Resources grants mining leases under the provisions of Part 5 of the NSW Mining Act 1992. To be granted a mining lease, applicants must demonstrate that:

- There is an economically mineable mineral deposit within the area of the proposed lease
- They have the financial and technical resources to carry out mining in a responsible manner.

A mining lease applicant must have Development Consent in force under the NSW EP&A Act before NSW Resources can grant a mining lease (per Section 65 of the NSW Mining Act).

Mining operations in NSW are required to meet strict environmental management standards. The Resources Regulator within NSW Resources regulates these standards to ensure compliance with the NSW Mining Act 1992 and the associated *Mining Regulation 2016* (NSW Mining Regulation). This includes:

- Reviewing environmental impact assessments for proposed exploration and mining activities
- Promoting compliance through site inspections, audits (both mandatory and voluntary) and regular reporting
- Regulating rehabilitation and supervising mine closures
- Investigating complaints and incidents
- Taking appropriate enforcement action for non-compliance
- Coordinating with other relevant government departments and agencies to respond to non-compliances
- Reviewing environmental performance prior to the granting of an authorisation.

Mines can be classified as being in a state of 'suspended mining operations' if they stop production. Title holders can only suspend mining operations with the written consent of the department and must continue to undertake progressive rehabilitation and environmental monitoring, unless specifically stipulated in the consent to suspend. More information about suspension of mining operations can be found in the Suspension of Mining Operations Policy.

Mining lease general conditions

All exploration licences, assessment leases and mining/production leases granted under the NSW Mining Act and *Petroleum (Onshore) Act 1991* are subject to a set of general conditions and if applicable, special site-specific conditions. These conditions are in addition to any other conditions directly imposed in the Mining Act or *Petroleum (Onshore) Act 1991*, or other relevant legislation for the particular activity permitted and being carried out.

The conditions impose obligations on the holder to ensure effective regulation of the activity. Matters they may relate to include but are not limited to:

- The development and conduct of exploration and mining operations

- Environmental management, protection and rehabilitation
- Compliance with codes of practice to ensure public safety
- The establishment and maintenance of a security deposit
- Activities in conducting community relations.

A breach of a mining lease condition is an offence under the NSW Mining Act and *Petroleum (Onshore) Act 1991* and penalties apply. Mining leases issued under the NSW Mining Act are also subject to prescribed standard conditions in Schedule 8A of the NSW Mining Regulation (below).

NSW Mining Regulation, Schedule 8A, Part 2

This schedule of the NSW Mining Regulation specifies standard mining lease conditions that are to be upheld in operating a mine in NSW. In general, they cover requirements placed on a mining lease holder to:

- Take all reasonable measures to prevent or minimise harm to the environment caused by activities permitted under the mining lease
- Rehabilitate land and water in the mining area that is disturbed by activities under the mining lease as soon as reasonably practicable
- Ensure that rehabilitation of the mining area achieves the final land use for the mining area, identify and record any reasonably foreseeable hazard that presents a risk to the holder's ability to complete this rehabilitation
- Conduct a rehabilitation risk assessment that:
 - Identifies, assesses and evaluates the risks that need to be addressed to achieve the rehabilitation objectives of the mining tenement
 - Identifies the measures that need to be implemented to eliminate, minimise or mitigate the risks
- Implement the measures identified in the rehabilitation risk assessment, according to a rehabilitation management plan.

The above requirements may need to align with a final land use for the mining area that may be stipulated as a condition of Development Consent (either when the Development Consent was first issued or in response to a modification application).

To clarify, before the commencement of a major mining operation, both a Development Consent (from an appropriate planning authority) *and* a mining lease (from NSW Resources) must be granted. Either or both of these authorisations that are necessary to undertake mining activity may include conditions that directly refer to waste management obligations imposed on the lease holder, additional to the standard conditions for mining leases (discussed above) specified in the NSW Mining Regulation, Schedule 8A.

Directions under Part 11 of the NSW Mining Act

Part 11 of the NSW Mining Act includes additional provisions to protect the environment. Of particular interest to the present work, Section 240 provides for the Secretary of the Department of Regional NSW or an appointed inspector to give direction to a mine operator ('a responsible person') to:

- Give effect to a condition of an authorisation (such as a mining lease or Development Consent)
- Address any adverse impact that activities carried out under, or purportedly carried out under, an authorisation have had on any aspect of the environment
- Address a risk of there being such an impact
- Conserve the environment, protect it from harm as a result of activities under the authorisation, or prevent, control or mitigate any such harm
- Rehabilitate land or water that is or may be affected by activities under the authorisation.

Reference to the environment, land and water in the above list of potential directions includes the environment, land and water in a place regardless of whether the environment, land and water is within or outside an authorisation area. (That is, the impacts and/or harms to the environment may fall anywhere within or beyond the authorised mining area.)

Directions enabled through this part of the NSW Mining Act can include directions to suspend one or more activities (so-called suspension notices), although there are limitations in the use of such directions.

3.4. Relevant provisions under the NSW POEO Act

Mining and related processing operations¹¹ are listed as activities in Schedule 1 of the NSW POEO Act, requiring regulation through the issuance of an environment protection licence (EP licence) as provided for in Chapter 3 of the NSW POEO Act. In cases where a Development Consent is necessary (which includes major mining operations), an EP licence cannot be issued unless a Development Consent is actively in force.

Under the NSW POEO Act, the NSW EPA is the regulatory authority for all scheduled activities and scheduled development work. The NSW EPA's risk-based licensing system aims to make sure all licence holders receive an appropriate level of regulation based on the level of risk they pose to human health and the environment.

Considerations informing conditions placed on EP licences

There are a range of matters the EPA will take into consideration when determining an EP licence application and applying conditions to an issued licence. These include:

- Any protection of the environment policies
- The statutory objectives of the EPA
- The pollution caused or likely to be caused by carrying out the proposed work
- The likely impact of that pollution on the environment
- Practical measures that could be taken to prevent, control, abate or mitigate the pollution and protect the environment from the impact of that pollution

¹¹ References to mining and mining-related activities in Schedule 1 of the POEO Act include, for example, coal works; crushing, grinding or separation; mineral processing; mining for coal; mining for minerals; etc.

- Any green offset schemes, tradeable emission schemes or other economic measures
- Whether the applicant is considered to be a fit and proper person
- The 'environmental values of water' that may be affected by the activity or work, and the practical measures that could be taken to restore or maintain those values
- Any relevant environmental impact statement and any other documents accompanying the application
- Any waste strategy in force under the *Waste Avoidance and Resource Recovery Act 2001*
- Public submissions.

On issuance of an EP licence, licence holders must:

- Comply with the conditions of their licence
- Prepare pollution incident response management plans
- Publish and/or make pollution monitoring data available
- Pay annual administrative fees and, in some cases, additional fees
- Submit annual returns.

Options to vary EP licences

Under Section 58 of the NSW POEO Act, the NSW EPA may vary a licence, including attaching, substituting, omitting or amending conditions of the licence. This variation may be undertaken in response to a request by the licence holder, or may be initiated by the NSW EPA itself. A variation may be undertaken at any point while an EP licence is in force.

The NSW EPA website has an online EP licence search function, enabling site visitors to search for documents relating to licence applications, licence amendments, licence decision notices, compliance audits, and current licence versions.¹²

The project team checked on the NSW EPA's scope of activity when opting to amend licences. It was explained by operational officers with experience managing mining company compliance that, in order to include or update EP licence conditions that centred on a specific area of activity, there needed to be a direct reference to that activity in the Development Consent for that operation. This is a matter of legal interpretation, rather than being explicitly codified in law.

Thus, if the Development Consent does not mention the activity in question, the NSW EPA is hampered in its ability to influence relevant practices through EP licence conditions. The reasoning behind this is that, in order for an activity to be permissible at a prescribed premises, it first needs to be explicitly approved through a Development Consent, and cannot be addressed at a later point such as through a licence condition. Thus, unless the Development Consent actively mentions how waste mining tyres are to be disposed, this activity may be illegal irrespective of whether it is referenced in a mine's EP licence conditions.

From this standpoint, it is in the interests of mining companies for their Development Consents to explicitly permit the management of waste mining tyres (within a set of bounded activities), and for their EP licences to then clarify specific conditions.

¹² <https://apps.epa.nsw.gov.au/prpoeoapp/>

3.5. Application to managing waste mining tyres

The main instruments issued to regulated mining operations in NSW – Development Consents, mining leases, and environment protection licences – are all geared to have some openness towards the placement of conditions to protect the environment. Their suitability as a vehicle for environmental protection is enshrined in their legislation (discussed above), and their scopes allow for conditions specific to the management of different waste streams.

Mining lease conditions

A subset of eight NSW mining operations (as defined by their mining leases) has been examined in terms of how the corresponding Development Consents, mining leases, and EP licences treat the management of waste tyres (see Table 2 below for a list of mines). While each mining lease could have conditions governing waste management (additional to NSW Mining Reg Section 8A), in practice no additional conditions were evident in the mining lease documents examined. It would appear that, irrespective of the potential content that may be included in a mining lease, the NSW Government has opted to only include very high level governance-related provisions.

Development Consent conditions

With respect to Development Consents, in seven out of the eight mining operations the most recent modification¹³ to the consent typically limits waste management requirements to a generic set of provisions that deals with waste management in broad terms. An indicative set of provisions used in these Development Consents is set out in the textbox below.

The Applicant/Proponent must:

- Take all reasonable steps to minimise the waste generated by the development
- Classify all waste in accordance with the *Waste Classification Guidelines*
- Ensure that the waste generated by the development is appropriately stored, handled and disposed of
- Monitor and report on the effectiveness of the waste minimisation and management measures in an Annual Review

Except as expressly permitted in an applicable EP licence, specific resource recovery order or exemption under the NSW POEO Act, the Applicant must not receive waste at the site for storage, treatment, processing, reprocessing or disposal.

As shown, conditions governing waste management are generally focused on waste minimisation; classification; ‘appropriate’ storage, handling and disposal; and monitoring and reporting measures. The Development Consents generally do not steer or pressure the consent

¹³ Across the eight mining operations, it was typical for the current Development Consent to be a product of multiple modification application and approval cycles. Currently downloadable ‘Consolidated Consents’ for a given mine uses colour-coded text to indicate the iterative amendments made to an originally-issued Development Consent.

holder towards solutions that may more closely adhere to the waste hierarchy or circular economy principles.

For the one remaining NSW mine examined in this exercise – the New Hope coalmine in Bengalla, Muswellbrook Shire – waste tyres are expressly mentioned in the Development Consent, using text additional to the standard text described above. These provisions require the holder to 'ensure that waste tyres generated on site are appropriately stored, handled and disposed of, and beneficial reuse/recycling options implemented in accordance with any requirements of an EPL.' In short, any specific conditions relating to the management of waste tyres simply make reference to relevant EP licence conditions.

It is understood, from engagement with EPA compliance officers, that the NSW EPA is advocating for planning authorities to explicitly reference waste mining tyre management when modifying Development Consents. This explicit treatment is understood to make it easier for the NSW EPA to issue or amend licences in a way that directly imposes conditions on how waste mining tyres are to be managed. Development consent modification typically follows on from a modification application requested by mining companies, and is therefore incrementally rolled out across mining sites.

(The lack of mention of mining tyre disposal in Development Consents may be argued as an indication that this aspect of mining operations does not carry any significant environmental impact, and therefore does not require attention in EP licence conditions. This regulatory ambiguity may be addressed through an ongoing process that progressively includes mining tyre disposal in Development Consents updated through legislated modification procedures.)

EP licence conditions

EP licences issued to mining companies in NSW demonstrate a wider range of conditions imposed on waste management, compared to Development Consents and mining leases. In some cases, conditions explicitly target the management of waste mining tyres. For the most part, these conditions do not impose onerous requirements on mining companies, beyond what may be described as efficient and safe housekeeping activities.

The EP licence conditions directed at solid waste management are set out in Table 2, excluding rock waste and process waste streams (e.g. tailings and overburden). As a general observation, waste tyres are generally permitted to be disposed at each mining site, although additional prescriptions have been applied in the case of some EP licences. More detailed observations on these conditions include the following:

- Of the six mines involved in coalmining in and between the Hunter Valley and central northern NSW, licence conditions explicitly refer to the management of waste mining tyres. The two mineral producing mines examined in this project (operating in Parkes Shire and Blayney Shire) are not subject to conditions that explicitly mention waste mining tyres, i.e. their conditions are more generically framed.
- All six NSW coalmines examined in this project are permitted to undertake on site disposal of waste mining tyres (sometime referred to as heavy plant tyres), with a range of conditions governing location, height limit, spacing etc. In some cases, annual volume limits are also mentioned.
- Five of the six coalmines are required to submit an Annual Heavy Plant Tyre Disposal Report to NSW EPA with their Annual Returns. This report must detail:
 - Each tyre serial number, supplier and purchase date

- Disposal date for each tyre
 - Co-ordinates of the locations where each tyre was disposed of by burial
 - The real level (RL) in metres AHD of each tyre emplacement location
 - The number of tyres buried within each emplacement location
 - The cumulative total number and tonnage disposed of at the premises each year.
- Two of the six coalmines are required to perform a review of available recycling options for end of life heavy plant tyres at least once every 2 years, and provide NSW EPA with a report covering the review findings. Both of these coalmines must include in the review's scope:
 - An analysis of the current capacity of recycling facilities that can accept end of life mining heavy plant tyres for processing in NSW and other neighbouring states
 - Evidence of enquiries made by the proponent in the previous 24 months to actively seek recycling options for end of life heavy mining plant tyres generated at the premises
 - Analysis of any pre-treatment options that can be performed at the premises to reduce costs associated with the transport and recycling of end of life mining heavy plant tyres.
- One of these two coalmines must include additional scope in its review of tyre recycling options as follows:
 - Analysis of the specific costs to the licensee associated with the transport and delivery/acceptance of waste heavy plant tyres at the nearest capable recycling facilities
 - The current costs associated with the continued on site burial of end of life mining heavy plant tyres
 - A full cost benefit analysis of continued on-site burial of end of life mining tyres compared to their transportation from the site and their recycling / reprocessing.
- In neither of these two cases is the mining company prescribed to engage waste mining tyre recycling services as a result of their review of recycling options. Specifically, their EP licence conditions allow for continued on site disposal of waste mining tyres if the report determines that recycling is not feasible, but it is seemingly left to the mining company to unilaterally determine terms and thresholds that define such feasibility.

The above observations indicate that the NSW EPA has some degree of discretion as to how it may impose conditions on the management of waste tyres at mining sites, and has been willing to exercise that discretion up to a point.

However, there were no examples where the NSW EPA actively prescribes mining tyre recycling through EP licence conditions. Even in the case where waste mining tyre recycling options must be investigated and reported on, EP licence conditions centre on the continued use of onsite burial (pending report findings that tyre recycling is not feasible) rather than on stipulations to engage recycling services and/or adopt offsite management practices.

To a degree, this limited regulatory pressure may be related to the lack of attention on mining tyre disposal found in each mine's Development Consent. NSW EPA officers explained that their ability to apply stringent EP licence conditions is in part due to this gap in Development Consent details,, which may allow the licence holder to contest the condition (i.e. if mining tyre disposal

carried sufficient impacts as to warrant onerous EP licence conditions, then this area of mining activity would have been flagged in the Development Consent process).

Options to amend EP licence conditions that cover the management of waste tyres

The above findings suggest that the simplest path to elicit a change in the regulatory permissions for managing waste mining tyres in NSW could involve EP licence condition amendments. The track record for conditions used in other NSW instruments – i.e. mining leases and Development Consents – indicate that these are not seen by planning and resources authorities as being an appropriate place to prescribe specific waste management activities.

However, as indicated above, it may be necessary for Development Consents to at least make passing reference to waste mining tyres, so that it becomes harder for licence holders to challenge or contest more onerous conditions placed on mining tyre waste in EP licences.

Similar to the case in WA, EP licences conditions serve as the main instruments for restricting and regulating the management of waste mining tyres in NSW. Thus far, NSW EPA has demonstrated a willingness to set conditions on:

- How and where waste mining tyres may be stored and buried on mining sites
- What annual volumes of waste mining tyres may be buried in a given annual period
- What details must be reported to the NSW EPA as an attachment to Annual Returns
- The extent and scope of investigations into alternative solutions such as tyre recycling.

As a general observation, greater levels of detail and attention on waste tyre disposal appears to be placed in the conditions for coalmining operations in northern NSW and the Hunter Valley, compared to mining operations located elsewhere and/or involving other commodities.

Section 58 of the NSW POEO Act allows for the NSW EPA to update licence conditions in its own right, i.e. without requiring an amendment application to be issued by a licence holder. This could open a range of stratagems for changing how waste mining tyres may be managed through licence conditions, including for example, influencing how tyre recycling feasibility should be assessed (rather than relying on the mining company to make its own unilateral judgement); or more prescriptively requiring a shift to tyre recycling (or, at the very least, an end to onsite disposal).

Consideration may need to be given as to whether such amendments could be pursued on an individual basis, or whether a regional strategy towards licence amendment is needed in order to drive sufficient economies of scale as needed to drive the cost affordability of waste tyre recycling in critical areas of mining activity (e.g. the Hunter Valley, northern NSW, the Illawarra region and/or central NSW).

Table 2: EP licence conditions cited from a selection of mining site EAs downloaded from NSW EPA website. Cited conditions include those that give direction to the management of waste tyres or waste streams that include waste tyres. Other relevant conditions also provided for context. Relevant approvals documents for Development Consents and mining leases additionally provided.

Mine details	Governing documents	EP licence conditions
Mach Energy Mount Pleasant coalmine Muswellbrook Shire	SSD10418 ML1645 EPL 20850	Disposal of used heavy mobile equipment tyres at approved on-site locations may not exceed a limit of 50 tonnes of used tyres per dump location. The licensee is authorised to dispose of heavy plant waste tyres generated on the premises, in the pit. The licensee must: • Ensure heavy plant waste tyres are reused on the premises as much as practical • Ensure that any surplus waste tyres can be emplaced by being spread out on the pit floor and be buried as deep as is reasonably practical • Ensure buried waste tyres are covered by at least 20 m of inert material beneath any final rehabilitated surfaces • Place the waste tyres at least 10 m away from coarse reject material or tailings emplacement areas • Not place waste tyres near heated material • Not place any waste tyres in an area likely to leach to any waters. The licensee must retain a copy of a Heavy Plant Tyre Disposal Report as required by Condition O2.3 for 3 years from the date this record is made. The report must include the following information for each waste tyre: • The size and type • Disposal date • Cumulative tonnage of waste tyres disposed in each disposal area • GPS coordinates (easting and northing) of the disposal location • The Real Level (RL) in metres of the burial depth • Where reasonably available the purchase date, supplier and serial number.
New Hope Bengalla coal mine Muswellbrook Shire	SSD5170 EPL6538 ML1397	The licensee is authorised to dispose of heavy plant tyre waste generated on the premises, in the waste rock/overburden emplacements. The licensee must: • Ensure that heavy plant waste tyres are re-used on the premises as much as practical • Ensure that any surplus heavy plant waste tyres can be emplaced by being spread out within the waste rock/overburden emplacements and buried as deep as practical, but covered by at least 20m of inert material beneath any final rehabilitated surface

		- Place heavy plant waste tyres at least 15m away from coarse reject material or tailings emplacement areas - Not emplace any heavy plant waste tyres directly on the pit floor, or in a location that is likely to impede or contaminate saturated aquifers - Not emplace any heavy plant waste tyres in a position that compromises the stability of the final rehabilitated landform - Not place any heavy plant waste tyres within 15 metres of heated or potentially acid forming materials - Not place any heavy plant waste tyres in an area likely to leach to any watercourse - Record the co-ordinates (easting, northing and elevation) of each disposal location.
Whitehaven Tarrawonga coalmine Narrabri Shire Note: Development Consent Modification Application 9 – Tyre disposal (link)	MP11_0047 ML1579 EPL12365	The Licensee is authorised to dispose of heavy plant-tyre waste generated on the premises in accordance with condition L3.4, in the waste rock/overburden emplacements. The Licensee must: - Ensure that heavy plant waste tyres are re-used on the premises as much as practical - Ensure that any surplus heavy plant waste tyres can be emplaced by being spread out within the waste rock/overburden emplacement and buried as deep as practical, but covered by at least 20m of inert material beneath any final rehabilitated surface - Place heavy plant waste tyres at least 15 metres away from coarse reject material or tailings emplacement areas - Not emplace any heavy plant waste tyres directly on the pit floor or in a location that is likely to impede or contaminate saturated aquifers - Not emplace any heavy plant waste tyres in a position that compromises the stability of the final rehabilitation landform - Not emplace any heavy plant waste tyres within 15m of heated or potentially acid forming materials - Not place any heavy plant waste tyres in an area likely to leach to any watercourse - Record the co-ordinates (easting, northing and elevation) of each disposal location. The licensee must provide the EPA with an Annual Heavy Plant Tyre Disposal Report. The report must be submitted with the licence Annual Return each year. The Annual Heavy Plant Disposal Report must include and not be limited to: - Each tyre serial number. - Supplier of each tyre. - Purchase date of each tyre - Disposal date of each tyre. - Co-ordinates (easting and northings) of the locations where each tyre was disposed of by burial in accordance with condition O4.1. - The real level (RL) in metres AHD of each tyre emplacement location.

		• The number of tyres buried within each emplacement location and • The cumulative total number and tonnage of tyres disposed of at the premises each year. The licensee must undertake a review of available recycling options for end of life heavy plant tyres at least once every 2 years and provide a report to the EPA that contains and is not limited to the following: 1. Analysis of the current capacity of recycling facilities that can accept end of life mining heavy plant tyres for processing in NSW and other neighbouring states 2. Evidence of enquiries made by the proponent in the previous 24 months to actively seek recycling options for end of life heavy mining plant tyres generated at the premises 3. Analysis of any pre-treatment options that can be performed at the premises to reduce costs associated with the transport and recycling of end of life mining heavy plant tyres 4. Analysis of the specific costs to the licensee associated with the transport and delivery/acceptance of site generated end of life mining heavy plant tyres at the nearest capable recycling facilities 5. The current costs associated with the continued on site burial of end of life mining heavy plants tyres 6. A full cost benefit analysis of continued on-site burial of end of life mining tyres compared to their transportation from the site and their recycling / reprocessing.
Glencore Bulga Coal Singleton Shire	SSD_4961 ML1547 EPL563	The licensee is authorised to dispose of heavy plant tyre waste generated on the premises, in the pit. The licensee must: • Ensure that heavy plant waste tyres are re-used on the premises as much as practical • Ensure that any surplus heavy plant waste tyres can be emplaced by being spread out on the pit-floor and buried as deep as practical, but, covered by at least 20m of inert material beneath any final rehabilitated surface • Place heavy plant waste tyres at least 10m away from coarse reject material or tailings emplacement areas • Not place any heavy plant waste tyres near heated material • Not place any heavy plant waste tyres in an area likely to leach to any watercourse • Tyres must not be stacked greater than 2 tyres in height. The licensee must provide the EPA with an Annual Heavy Plant Waste Tyre Disposal Report. The Report must be submitted with the Annual Return each year and must include a plan of the disposed heavy plant waste tyres on the premises for the period that includes: • Each tyre serial number • Supplier of each tyre • Date the tyre was delivered to site

		• Date that the tyre was disposed • Co-ordinates (eastings and northings) of the location of each tyre emplacement burial extent • The Relative Level (RL), in metres AHD, of each tyre disposed • The number of tyres buried in each emplacement location • The total number, and tonnage, of tyres disposed at the premises in each reporting period.
Idemitsu Boggabri coalmine Narrabri Shire	PA09_0182 ML1755 EPL12407	The licensee may dispose of up to 400 end-of-life mining heavy plant tyres in each annual return year period until 11 January 2027. Should the report provided in accordance with condition R3.5 (see below): 1. Be submitted to the EPA's satisfaction at intervals of 2 years; and 2. Find that recycling options are not feasible; Then the onsite disposal of the end-of-life heavy mining plant tyres may continue for the subsequent 2 annual reporting periods. Only waste tyres generated at the premises may be disposed of in accordance with this condition. The Licensee is authorised to dispose of heavy plant-tyre waste generated on the premises in accordance with condition L3.3, in the waste rock/overburden emplacements. The Licensee must: • Ensure that heavy plant waste tyres are re-used on the premises as much as practical • Ensure that any surplus heavy plant waste tyres can be emplaced by being spread out within the waste rock/overburden emplacement and buried as deep as practical, but covered by at least 20m of inert material beneath any final rehabilitated surface • Place heavy plant waste tyres at least 15 metres away from coarse reject material or tailings emplacement areas • Not emplace any heavy plant waste tyres directly on the pit floor or in a location that is likely to impede or contaminate saturated aquifers • Not emplace any heavy plant waste tyres in a position that compromises the stability of the final rehabilitation landform • Not emplace any heavy plant waste tyres within 15m of heated or potentially acid forming materials • Not place any heavy plant waste tyres in an area likely to leach to any watercourse • Record the co-ordinates (easting, northing and elevation) of each disposal location. The licensee must provide the EPA with an Annual Heavy Plant Tyre Disposal Report. The report must be submitted with the licence Annual Return each year. The Annual Heavy Plant-Tyre Disposal Report must include and not be limited to: • Each tyre serial number • Supplier of each tyre

		• Purchase date of each tyre • Disposal date of each tyre • Co-ordinates (easting and northings) of the locations where each tyre was disposed of by burial in accordance with condition O5.1 • The real level (RL) in metres AHD of each tyre emplacement location • The number of tyres buried within each emplacement location • The cumulative total number and tonnage of tyres disposed of at the premises each year. The licensee must undertake a review of available recycling options for end of life heavy plant tyres at least once every 2 years and provide a report to the EPA that contains and is not limited to the following: 1. Analysis of the current capacity of recycling facilities that can accept end of life mining heavy plant tyres for processing in NSW and other neighbouring states 2. evidence of enquiries made by the proponent in the previous 24 months to actively seek recycling options for end of life heavy mining plant tyres generated at the premises 3. analysis of any pre-treatment options that can be performed at the premises to reduce costs associated with the transport and recycling of end of life mining heavy plant tyres.
Newmont Cadia goldmine Blayney Shire	PA06_0295 ML1405 EPL5590	Waste generated on site [as described below] may be disposed of on site at the premises where there is no viable recycling alternative. This waste must only be disposed of within the Potentially Acid Forming (PAF) encapsulation cell of the southern waste rock dump. Wastes described in condition O4.1 comprise: • General construction and demolition waste • Contaminated soil • Damaged equipment • Waste concrete • Rubber lined steel pipes • Geological wastes (including drill cores) • Heavy off-road vehicle waste tyres.
Evolution Northparkes polymetallic mine (Cu, Au, Ag) Parkes Shire	MP11_0060 ML1247 EPL4784	The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled "Waste" and meeting the definition, if any, in the column titled "Description" in the table below. Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled "Activity" in the table below. Any waste received at the premises is subject to those limits or conditions, if any, referred to in

		relation to that waste contained in the column titled "Other Limits" in the table below. This condition does not limit any other conditions in this licence.
Yancoal Warkworth coalmine Singleton Shire	SSD_6464 ML1412 EPL1376	The licensee must not store more than 100 tonnes (equivalent to 30 heavy plant tyres) of heavy plant waste tyres on the premises at any one time. The licensee is authorised to dispose of heavy plant tyre waste generated on the premises, in the pit. The licensee must: • Ensure that heavy plant waste tyres are re-used on the premises as much as practical • Ensure that any surplus heavy plant waste tyres can be emplaced by being spread out on the pit-floor and buried as deep as practical, but, covered by at least 20m of inert material beneath any final rehabilitated surface • Place the tyres at least 10m away from coarse reject material or tailings emplacement areas • Not place any tyres near heated material • Not place any tyres in an area likely to leach to any watercourse. The licensee must provide the EPA with the Annual Return a Heavy Plant Tyre Disposal Report. The Report must include a plan of the disposed heavy plant waste tyres on the premises for the period that includes: • Each tyre serial number • Supplier of each tyre • Purchase date of each tyre • Disposal date of each tyre • Co-ordinates (easting and northings) of the disposal of each tyre • The Relative Level (RL) in metres AHD of each tyre placed in the pit • The number of tyres buried in a particular area • The cumulative tonnage of tyres disposed of at the premises each year.

4. Queensland

4.1. Overview

The operation of large scale mines in Queensland is contingent on the issuance of a mining lease, which is a type of resources authority legislated by the Queensland Government under the Queensland *Mineral Resources Act 1989* (Queensland MR Act).¹⁴

Prior to being granted a mining lease or other resources authority, the proponent must apply for and be issued an *environmental authority* (EA) for environmentally related activities in the resources sector.¹⁵ EAs for mining are issued by Department of the Environment, Tourism, Science and Innovation (DETSI) under Chapter 5, Part 5 of the Queensland *Environment Protection Act 1994* (Queensland EP Act).¹⁶ The role of EAs in Queensland is roughly analogous to the role of EP licences in other Australian jurisdictions such as WA and NSW.

In the case of resource project proposals such as mining activities, there is no need for the project to undergo a development assessment (DA) process under the Queensland *Planning Act 2016*. Other types of projects, i.e. in other industries, may require a DA and an EA approved through a combined process, prior to site development and commissioning.

This chapter explains the relevant provisions under Queensland legislation, and how those provisions are currently applied to the management of waste mining tyres in Queensland. Initial commentary is provided as to how the legislation and subsidiary instruments can be worked with to engender stronger provisions towards the use of mining tyre recycling services.

4.2. Relevant provisions under the Queensland MR Act

Mining Leases are granted and administered under Chapters 6 and 7 of the Queensland MR Act and Chapter 2, Part 4 of the Queensland *Mineral Resources Regulation 2025* (Queensland MR Regulation).¹⁷

A mining lease is mainly granted for large scale mining of resource commodities such as precious metals, industrial metals, critical minerals, or coal. Mining leases may also be granted for purposes associated with mining. These are *specific purpose mining leases* and include:

- The construction of infrastructure to support mining operations
- The establishment of plant sites, a mining camp or a tailings dam
- The processing of minerals and coal
- The establishment of workshops, stockpiles, and various types of water storage devices, treatment plants, storage sheds, explosive magazines
- Rehabilitation and remediation associated with these activities.

¹⁴ <https://www.business.qld.gov.au/industries/mining-energy-water/resources/minerals-coal/authorities-permits/applying/authorities/mining-lease>

¹⁵ <https://www.business.qld.gov.au/running-business/environment/licences-permits/applying/activities>

¹⁶ <https://www.business.qld.gov.au/industries/mining-energy-water/resources/environment-water/environmental-authorities>

¹⁷ https://www.nrm.mrd.qld.gov.au/data/assets/pdf_file/0003/217893/mining-lease-guide.pdf

To allow the Minister for Natural Resources and Mines to make a determination on granting a mining lease, proponents need to provide evidence that the area of land applied for is mineralised and there will be an acceptable level of development and utilisation of the mineral resources within the area applied for. (Refer to Section 245 of the Queensland MR Act.)

The mining lease application needs to substantiate the size and shape of the area being applied for and provide evidence in respect of the quality and quantity of the mineral occurrence in the area. The Queensland Government additionally recommends the following as inclusions in a mining lease application:

- A report that complies with the requirements of the JORC Code 8 or another national instrument or code¹⁸ for the mineral or coal resources and ore reserves that are planned to be mined on the mining lease
- Maps, cross-sections and diagrams that show the geology, resource and ore reserve areas with the respective resource or ore reserve classification
- Statements with maps that demonstrate the geological evidence for the mineral or coal resource estimate categories within the area of the mining lease application
- The relevant feasibility study undertaken to determine ore reserves
- A statement regarding the method of proposed mining and associated metrics (e.g., machinery to be used, annual mining rate, ore and waste tonnages, strip ratios)
- A mine plan with maps (including mining schedule) for the area applied for the term of the mining lease
- A statement about potential infrastructure requirements and a map of their location in relation to the area applied for
- A statement on the economic viability of the proposed mining activities
- A statement with maps about environmental constraints and how they impact the size and shape of the application area applied for.

In short, there should be sufficient information to give confidence that the mining operation will be viable and that there are sufficient resources within the area of application to justify the development and operation of a full scale mining project.

It is not evident that the proponent needs to provide environmental impact information in its mining lease application, nor does the Minister need to take account of any such impacts in granting a mining lease (except where the mining lease has been referred to the Land Court). This may be reasonable given that environmental considerations should have been weighed up in granting an EA during an earlier stage of obtaining approvals.

There is provision under Section 265 of the Queensland MR Act for the mining lease application and other related documents to be referred to the Land Court, should there be any objections to the mining proposal in gaining an EA under the Queensland EP Act. The Land Court's role is to then provide recommendations to the Minister on whether or not to grant a mining lease, and to recommend conditions attached to the mining lease, based on the evidence at hand.

¹⁸ As set out in the Queensland MR Regulation, 'JORC' code means the professional code of practice called the 'Australasian code for reporting of exploration results, mineral resources and ore reserves' published by the Australasian Joint Ore Reserves Committee.

Considerations for the Land Court in making these recommendations are covered in Section 269 of the Queensland MR Act, and include the nature and extent of adverse environmental impacts.

Once a mining lease is granted, a number of standard conditions set out in Schedule 1 to the Queensland MR Regulation need to be followed, which are largely operational in nature and do not appreciably relate to waste management.

Business Queensland also advises that a range of compliance requirements need to be met by mining lease holders,¹⁹ indicatively covering the following areas:

- Reporting on operations through online Queensland Government reporting platform
- Reporting on water-related operations²⁰
- Payment of relevant local government rates and charges
- Payment of relevant rents and royalties to the Crown
- Additional compliance requirements as they may relate to administration and future site development planning²¹
- Compliance with EA conditions (see below)
- Other compliance requirements.

Finally, Section 276 of the Queensland MR Act also sets out a number of standard conditions for mining leases. Section 276 (1)(d) holds that the mining lease is subject to:

'a condition that the holder must keep the surface of the area of the mining lease tidy during the term of the lease, including, for example, ensuring that—

(i) rubbish and debris are removed from the surface and waste is properly stored; and

(ii) equipment is stored in an orderly way.'

No other reference is made to solid waste (apart from waste rock) in the primary mining legislation. It may be surmised that Queensland mining legislation is, as a whole, somewhat peripheral to how the Queensland Government regulates environmental impacts of mining activities – apart from provisions concerning the use of the Land Court to review relevant matters and make recommendations to the Minister.

¹⁹ <https://www.business.qld.gov.au/industries/mining-energy-water/resources/minerals-coal/authorities-permits/complying-resource-authority>

²⁰ <https://www.business.qld.gov.au/industries/mining-energy-water/resources/minerals-coal/reports-notices/water-reporting>

²¹ <https://www.business.qld.gov.au/industries/mining-energy-water/resources/minerals-coal/authorities-permits/applying/development>

4.3. Relevant provisions under the Queensland EP Act

As mentioned at the beginning of this chapter, environmental approvals (EAs) issued by DETSI are functionally equivalent to EP licences granted by NSW EPA and WA DWER. As in the cases of WA and NSW, a prescribed set of activities that require EAs are laid out by the Queensland Government.

These activities are designated as 'environmentally relevant activities' or ERAs, and include mining activities which are designated a 'resource activity' under Section 107 of the Queensland EP Act. The Act carries provisions for granting EAs that are specific to ERAs that are resource activities, with additionally specialised provisions for mining activities in particular.

Types of environmental authorities issued by DETSI

The Queensland EP Act recognises ERAs according to whether they fit certain criteria, in which case EA applications may follow standard, variation or site-specific application processes. (See Sections 121 through 124 of the Queensland EP Act.)

- In effect, EAs are issued with standard conditions if and when the ERA in question falls within an eligible set of activities.
- Variation conditions are attached when similarly eligible activities are the subject of the EA application, and the proponent has requested one or more variations to the standard conditions.
- Where the one or more of the activities in question are not within the set of activities eligible for a standard EA, a site-specific EA application process must be followed. Conditions attached to an EA granted for this activity will similarly be specific to the site, rather than relying on standard conditions. Model conditions which have been developed for specific industries will be applied where appropriate, alongside any other conditions which are required or considered necessary or desirable by the administering authority.

The DETSI website publishes criteria for mining activities to be eligible for standard EA conditions, along with those standard conditions.²² For the purposes of the current project, some of the more pertinent criteria driving eligibility are:

- The mining activity does not, or will not, at any one time, cause more than 10 hectares of land to be significantly disturbed
- The mining activity does not, or will not, at any one time, cause more than 5 hectares of either of the following to be significantly disturbed:
 - a riverine area
 - mine workings
- The mining activity is not, or will not, be carried out by more than 20 persons at any one time
- Only the following types of mining are, or will be, authorised under the relevant mining lease:
 - Alluvial mining

²² <https://environment.qld.gov.au/management/activities/mining/eligibility-criteria/mining>

- Clay pit mining
- Dimension stone mining
- Hard rock mining
- Opal mining
- Shallow pit mining.

This suggests that eligible mining activities are those that are relatively modest in operation, with larger mining activities required to undergo a site specific EA application process. A dedicated section on waste management is included as part of the standard conditions attached to EAs granted for eligible mining activities. These are summarised in the textbox below. Notably, onsite waste disposal is capped at 50 tonnes of waste per year, and the holder is advised to take all general waste to a licensed waste facility when practical to do so.

Condition B5: The holder of the environmental authority must not directly or indirectly release waste from the project area to any watercourse, waterway, groundwater, wetland or lake.

Note 27 – When managing waste materials the following strategy should be adopted:

- Avoid creating excess waste
- Reuse waste materials
- Recycle waste
- Create and utilise energy from waste
- Treat waste; and
- Dispose of waste (e.g. provide rubbish containers on site).

Note 28 – Where practical take all General Waste to a Licensed Waste Disposal Facility.

Condition B6: The holder of an environmental authority must not dispose of more than 50 tonnes of general waste per year on the mining lease.

Note 29 – Up to 50 tonnes of general waste may be buried on the mining lease per year. When burying general waste the following measures or similar measures should be used:

- Locate the waste pit so as to ensure that the waste will not contaminate any watercourse, waterway, groundwater, wetland or lake
- Divert stormwater runoff from entering the pit
- Make the pit safe and protect it from scavengers
- Crush drums and other containers to reduce the volume of waste
- Backfill the pit when the level of rubbish in the pit is not less than 1m below the surface and
- Sufficiently overfill the pit to allow for settlement.

Note 30 – Limited Regulated Waste may be disposed of to a licensed general waste disposal facility provided the annual volume of limited regulated waste does not exceed 10% of the annual volume of general waste (e.g. tyres).

Environmental Authority application and approval processes

DETSI has issued guidance on the EA approval process for mining activities that require site specific assessment, i.e. that are not eligible for standard or variation EAs.²³ The overall process involves four stages including:

- **Application stage**, where the application must meet requirements set out in Section 125 and Section 126A of the Queensland EP Act.
- **Information stage**, in which the responsible authority (DETSI) confirms that the necessary information has been supplied and issues, if necessary, a request for additional information (this may include a Progressive Rehabilitation and Closure Plan for mining activities, where the EA application was not accompanied by such a plan).
- **Notification stage**, in which the applicant issues a public notice in relation to its EA application and makes relevant documents available to the public, in order for interested members of the public to prepare submissions in relation to the EA process.²⁴
- **Decision stage**, in which a decision is made on whether to issue an EA, and on the conditions to which the EA is subject. In the case of a mining activity EA, a decision notice and draft EA is provided to the applicant and any submitters from during the Notification stage.

At the Decision stage, if the applicant is dissatisfied with the decision they are able to request the application be referred to the Land Court. A submitter can also request that their submission be taken to be an objection to the application, also requiring referral to the Land Court.

The Land Court processes then commence and an objections decision is made. If after this process the EA is approved, the applicant will be issued the EA and details will be added to the EA register. If the application is refused, the applicant will be provided with a refusal notice.

Regulatory requirements used in making EA decisions

In making a determination for granting or refusing an EA, DETSI applies three broad categories of requirements, i.e.:

1. Matters that need to be complied with in order for an EA to be granted, and conditions that are needed to ensure legislated environmental outcomes are met by the activity
2. Prohibitions against activities affecting groundwater and surface water bodies, including aquifers and wetlands – which are grounds for refusal against granting an EA
3. Assessments of the activity in relation to meeting legislated environmental objectives, covering both land use and operational activities.

²³ https://www.des.qld.gov.au/policies?a=272936:policy_registry/era-gl-environmental-authority-approval-process.pdf

²⁴ For all EA applications for a mining lease, the application notice must be given and published simultaneously with the public notice for a resource tenure application. That is, the public notification for the resource tenure application and the EA application occurs at the same time.

Guidance released by DETSI goes into considerable detail on how DETSI may apply these requirements in making an EA determination.²⁵ A Waste Objective is among the environmental objectives that need to be considered in EA decisions, which is framed as follows:

'Any waste generated, transported, or received as part of carrying out the activity is managed in a way that protects all environmental values.'

The following Performance Objectives for waste, as set out in the Queensland *Environment Protection Regulation 2019* (Queensland EP Regulation), also apply:

(a) waste generated, transported or received is managed in accordance with the waste and resource management hierarchy under [Section 9 of] the *Waste Reduction and Recycling Act 2011*

(b) if waste is disposed of, it is disposed of in a way that prevents or minimises adverse effects on environmental values.

The above points suggest that there should be an explicit and meaningful exploration of non-disposal options (i.e. in alignment with the waste hierarchy) for major waste streams when preparing and submitting EA applications. An information sheet *Guideline – Application requirements for activities with waste impacts* released by DETSI clarifies this point, as cited in the text box below. This guidance applies to mining ERAs and other prescribed ERAs alike.

'It is a regulatory assessment requirement that activities which will generate, transport, or receive waste do so in accordance with the waste and resource management hierarchy in the Waste Reduction and Recycling Act 2011.'

'Measures proposed for minimising and managing waste should be considered in line with this hierarchy. Importantly, applicants who identify waste disposal as a final option are required to outline why the other, more desirable, waste management strategies were unsuitable.'

However, engagement with DETSI compliance officers that work with the mining sector suggests that the waste hierarchy is not generally called upon when assessing EAs and attaching conditions. It was explained that solid waste management is principally assessed in terms of land and water body contamination risks, and risks in compromising site rehabilitation during the care and maintenance phase.

In this sense, the Waste Objective as stated, is only partly adhered to. One interpretation of the reference to the waste hierarchy (as framed above) is that it is *aspirational* but not *enforceable*. So far as the Waste Objective is concerned, there is no standard of compliance in having mining operations accord with the waste hierarchy and interpretation is left to the applicant's discretion.

²⁵ https://www.des.qld.gov.au/policies?a=272936:policy_registry/era-gl-approval-process.pdf

Amendment to EAs initiated by administering authority

DETSI guidance on the EA process explains circumstances in which the authority may amend an EA's conditions without prior application by the EA holder. These circumstances are somewhat limited compared to similar provisions to alter EP licences in WA and NSW.

In effect, DETSI may alter an EA when conditions set out in Section 215 of the Queensland EP Act are satisfied. Examples of such conditions include but are not limited to the following:

- A contravention of the Queensland EP Act or an environmental offence committed by the holder
- The authority was issued or schedule was approved because of a materially false or misleading representation or declaration, made either orally or in writing
- The EA was issued on the basis of a miscalculation of the environmental values affected or likely to be affected by the relevant activity, or the quantity or quality of contaminant permitted to be released into the environment, or the effects of the release of a quantity or quality of contaminant permitted to be released into the environment
- The approval of an environmental protection policy or the approval of an amendment of an environmental protection policy
- A significant change in the way in which, or the extent to which, the activity is being carried out
- A report made by or for, or approved by, a *recognised entity* if the report
 - Is relevant to the authority or schedule, or a relevant activity carried out under the authority or schedule; and
 - If the administering authority is not the chief executive—has been accepted by the chief executive.

Where the administering authority proposes to amend an EA, the EA holder must be sent details of the proposed amendment and given an opportunity to make written representations about the proposed change. After considering any written representation the administering authority may make the amendment if it still believes a ground exists to make the amendment. The holder must be advised of the decision made on whether to make the amendment or not.

DETSI compliance officers explained that, as far as EA conditions applied to the management of solid wastes on mining sites are concerned, there have been few precedents in amending those conditions. By and large, such conditions in current mining site EAs are reflective of the conditions that were in place when the licence was first issued.

Broadly speaking, conditions are updated in response to emerging environmental risk or changes in the scientific knowledge concerning risks from a given mining operation or come at the request of mining companies that are undergoing operational changes at their mining site. There do not appear to be major interests, on behalf of DETSI regulators, to proactively modernise EA conditions that apply to solid waste management activities at mining sites.

4.4. Application to managing waste mining tyres

The preceding sections provide evidence that, similar to the case with WA and NSW, environment protection provisions provide the ready-most path to set explicit conditions for the management of waste mining tyres.

In the case of Queensland, the need to seek a separate Development Assessment under planning legislation does not apply to large mining projects.²⁶ Provisions for the issuance of a mining lease under the Queensland MR Act appear to involve scant treatment of environmental issues, except where reference is made to the need to gain an EA approval under the Queensland EP Act, and where reference is made to the Land Court to resolve issues and make recommendations to the Minister for Natural Resources and Mines (i.e. in relation to mining lease issuance and conditions attached to those leases).

The Queensland Government provides for public online searches²⁷ of EAs and relevant documents, allowing for an examination of conditions placed on the management of waste mining tyres, imposed on mining companies. Corresponding mining leases do not appear to be accessible via online search, although mining titles and other identifiers can be found via the Queensland GeoResGlobe spatial tool (i.e. without providing the functionality to download the actual title documents in question).²⁸

Drawing on the EA search tool, a subset of eight mining operations have been reviewed for their EA conditions as may be relevant to waste tyre management (Table 3). This subset is skewed towards coal mining operations in and near the Bowen Basin (six EAs) plus two other mines in northwestern Queensland, given the predominance of metallurgical coal as a mining commodity.

The EAs are structured according to relevant environmental themes / outcomes, typically with one schedule wholly dedicated to waste management conditions. Waste tyres are mentioned in explicit terms, although 'bulk rubber' waste is also used as a more general term covering tyres and other equipment and consumables mainly composed of rubber (i.e. 'Bulk rubber means tyres, conveyor belt, and other similar rubber waste').

As with other jurisdictions, there is a range of approaches as to how waste mining tyres are to be dealt with, according to EA conditions. Waste mining tyres or bulk rubber are explicitly mentioned in each of the EAs, with conditions allowing for and regulating their on site disposal. Some EAs actively mention that this waste can be disposed of 'in pits or voids', 'in spoil emplacements', 'left in situ below ground level' or 'in waste rock dumps.' Other conditions may also be imposed that, by and large, would not materially affect the EA holder's practical opportunity to dispose of mining tyres on site instead of seeking recovery options.

In two cases, reference is made to an official *Operational policy – Disposal and storage of scrap tyres at mine sites ESR/2016/2380 Version 2.02*.²⁹ This short 2014 paper provides that, for new applications, EA conditions should stipulate that waste tyres are to be managed according to a decreasing order of preference as follows:

Avoidance > Recycling > Waste-to-energy > Disposal.

²⁶ In WA, mining developments need to obtain an Approvals Statement from DMPE; in NSW, mining developments need to obtain a Development Consent from the relevant planning authority.

²⁷ <https://apps.des.qld.gov.au/public-register/search/ea.php>

²⁸ <https://georesglobe.information.qld.gov.au/>

²⁹ https://www.des.qld.gov.au/policies?a=272936:policy_registry/rs-op-scrap-tyres-mine-sites.pdf

No further guidance is provided to: support navigating decisions across this hierarchy; set thresholds of evidence to inform such decisions; or explain consequences where an EA holder fails to show that the waste hierarchy is being adopted or is actively being progressed.

In four of the eight EAs, conditions stipulate that:

'Scrap tyres stored awaiting disposal or transport for take-back and recycling, or waste-to-energy options must be stored in stable stacks... Where no feasible recycling or waste-to-energy options are available, disposing of scrap tyres resulting from the authorised mining activities in spoil emplacements is acceptable.'

This language at least acknowledges the potential for take-back and recycling of tyres, although admittedly may encompass mining tyres as well as car and truck tyres (other jurisdictions tailor their EP licence conditions to 'heavy plant tyres'). The condition provides no impetus for mining companies to proactively investigate the feasibility of recycling or recovery according to a prescribed scope, and presumably allows for a cursory treatment of such options.

A single EA (for the MMG Dugald mine) includes the following condition:

'Subject to demonstrating to the administering authority that no other use higher in the waste hierarchy can be practicably implemented, waste tyres generated from the mining activity may be disposed of at the licensed place in the underground mine workings.'

However, the condition is not clear in terms of the threshold of evidence required for the EA holder to demonstrate the finding that 'no other use higher in the waste hierarchy can be practicably implemented.' It may be argued that the EA holder has reasonable discretion in how it chooses to demonstrate this finding to the authorities.

In summing up the findings from reviewing EA conditions concerned with the management of waste tyres (whether for mining vehicles or other vehicles), there is a sense that modest additional effort is imposed on the mining companies, beyond what they would do in the absence of such conditions. By and large, the conditions enable a continuance of business as usual practices, albeit requiring a minimum standard of orderliness and safety, without serious progression towards other options that could involve recycling or recovery.

Table 3: Environmental Authority (EA) conditions cited from a selection of mining site EAs downloaded from Queensland DETSI website. Cited conditions include those that give direction to the management of waste tyres or waste streams that include waste tyres (e.g. bulk rubber). Other relevant conditions also provided for context. Relevant approvals documents for mining leases additionally provided.

Mine details	Governing documents	EA conditions
BHP Mitsubishi Alliance Peak Downs mine Metallurgical coal Isaac Regional Council NB: Similar or identical Waste Management conditions placed on other BHP Mitsubishi Alliance coalmines in Queensland	ML1775 EPML00318213	A Waste Management Plan must be developed by an appropriately qualified person and implemented. The Waste Management Plan must include components as set out in the EA [excluded for brevity]. The environmental authority holder must submit the Waste Management Plan to the administering authority prior to commencing a new process, or varying an existing process, for reprocessing any waste. The only waste permitted to be reprocessed is: Spoil or overburden; vegetation; water or sediment containing hydrocarbons; fuels, oils, lubricants and coolants; bulk rubber; inert waste; poly-pipe and other plastic; fibreglass; treated and untreated timber; and asphalt. The following types of waste are permitted to be disposed of within the mining leases listed on this environmental authority: Bulk rubber; inert waste; poly-pipe and other plastic; fibreglass; treated and untreated timber; asphalt; and asbestos. These types of waste may be disposed of: • In pits or voids • In spoil emplacements • Left in situ below ground level.
QCoal Sonoma mine Metallurgical coal Whitsunday Regional Council	ML10325 EPML00707713	Tyres must be stored and disposed of in accordance with the latest version of the Operational policy - Disposal and storage of scrap tyres at mine sites (ESR/2016/2380). The holder of the environmental authority must keep a record of the number and location of tyres disposed of in accordance with condition C4. The holder of this environmental authority must develop, document, and implement a non-mineral waste management plan for all authorised activities. The Waste Management Plan must include components as set out in the EA [excluded for brevity]. The non-mineral Waste Management Plan must be regularly reviewed and updated at intervals of no greater than five (5) years. Regulated waste records must be kept for five (5) years, and must include the following information: • Date of pickup of waste • Description of waste • Cross reference to relevant waste transport documentation • Quantity of waste

		• Origin of the waste • Destination of the waste • Intended fate of the waste, for example, type of waste treatment, reprocessing, or disposal. Records of trade and regulated wastes or material leaving the mining lease for recycling or disposal, including the final destination and method of treatment, must be in accordance with the Waste Reduction and Recycling Act 2011. Except as otherwise provided by the conditions of this authority, all waste removed from the site must be taken to a facility that is lawfully allowed to accept such waste under the provisions of the Environmental Protection Act 1994.
Jellinbah Group JV Jellinbah East mine Metallurgical coal Central Highlands Regional Council	ML2418 EPML00516813	Scrap tyres stored awaiting disposal or transport for take-back and recycling, or waste to energy options must be stored in stable stacks and at least 10 metres from any other scrap tyre storage area, or combustible or flammable material, including vegetation. All reasonable and practicable fire prevention measures must be implemented, including removal of grass and other materials within a 10 metre radius of the scrap tyre storage. Where take-back, recycling or waste-to-energy is impracticable and all other stages (options) in the waste hierarchy have been considered, scrap tyres resulting from the mining activities may be disposed of on the mine site in accordance with conditions F4 to F5. Disposing of scrap tyres resulting from the mining activities in spoil emplacements is acceptable, provided tyres are placed as deep in the spoil as reasonably practicable. Scrap tyres resulting from the mining activities disposed within the operational land must not impede saturated aquifers or compromise the stability of the consolidated landform. The Waste Management System and waste management arrangements must be reviewed annually and managed in accordance with the Waste Management Plan. The Waste Management Plan must include components as set out in the EA [excluded for brevity]. The non-mineral Waste Management Plan required under condition F6 must be regularly reviewed and updated at intervals of no greater than five (5) years. A designated area must be set aside for the segregation of economically viable, recyclable solid and liquid waste.
Anglo American Australia Dawson mine Metallurgical coal Banana Shire	ML5657 EPML00565813 EPML00657413	EPML00565813 and EPML00657413: A Waste Management Plan must be developed by an appropriately qualified person and implemented. The Waste Management Plan must include components as set out in the EA [excluded for brevity]. The environmental authority holder must submit the Waste Management Plan to the administering authority prior to commencing a new process, or varying an existing process, for reprocessing any waste. The non-mineral Waste Management Plan required under condition F6 must be regularly reviewed and updated at intervals of no greater than five (5) years. The only waste permitted to be reprocessed is:

		Spoil or overburden; vegetation; water or sediment containing hydrocarbons; fuels, oils, lubricants and coolants; bulk rubber; inert waste; poly-pipe and other plastic; fibreglass; treated and untreated timber; and asphalt. The following types of waste are permitted to be disposed of within the mining leases listed on this environmental authority: Bulk rubber; inert waste; poly-pipe and other plastic; fibreglass; treated and untreated timber; asphalt; and asbestos. These types of waste may be disposed of: • In pits or voids • In spoil emplacements • Left in situ below ground level.
Stanmore Isaac Plains mine Metallurgical coal Isaac Regional Council	ML700016 EPML00932713	Scrap tyres stored awaiting disposal or transport for take-back and recycling, or waste-to-energy options must be stored in stable stacks and at least ten (10) metres from any other scrap tyre storage area, or combustible or flammable material, including vegetation. Where no feasible recycling or waste-to-energy options are available, disposing of scrap tyres resulting from the authorised mining activities in spoil emplacements is acceptable, provided tyres are placed as deep in the spoil as reasonably practicable. A record must be kept of the number and location for tyres disposed. Scrap tyres resulting from the authorised mining activities disposed within the operational land must not impede saturated aquifers or compromise the stability of the consolidated landform. Waste, other than any tyres, spoil, tailings or overburden removed as part of the authorised mining activity or permitted by another condition of the environmental authority, must not be disposed of within any void created by this activity. A Mining Waste Management Plan must be developed and implemented by a suitably qualified person for every stage of the mining activities. The Mining Waste Management Plan must be submitted to the administering authority by 31 December 2021 for review and comment. The Waste Management Plan must include components as set out in the EA [excluded for brevity]. Within twenty (20) business days of receiving comments from the administering authority as per Condition E6, the Mining Waste Management Plan must be updated to address the comments, amended to adopt any recommendations and submitted to the administering authority for approval.
Pembroke Resources Olive Downs mine Metallurgical coal Isaac Regional Council	EA0001976 ML700032	Tyres must be stored and disposed of in accordance with the Operational policy - Disposal and storage of scrap tyres at mine sites ESR/2016/2380 Version 2.02, or the most recent revision available.
Glencore Mount Isa Mine Polymetallic mine	ML2484 EPML00977513	If waste tyres are disposed of in the waste rock dumps, a record of the disposal location of waste tyres in the waste rock dumps.

Mount Isa City Council		Tyres stored awaiting disposal or transport for take-back and recycling or waste-to-energy options must be stockpiled in volumes less than three (3) metres in height and 200 square metres and at least ten (10) metres from any other tyre storage area. Fire prevention measures must be implemented including the removal of all combustible materials, including grass and vegetation, within a ten (10) metre radius of any tyre storage area. Subject to demonstrating to the administering authority that no other use higher in the waste management hierarchy can be practicably implemented, bulk rubber waste generated from the mining activities may be disposed of on site, preferentially • In non-acid forming materials within the waste rock dumps; or • In underground stopes; or • In the Existing Landfill at the Mount Isa Mines landfill. [Other conditions are more peripheral to the management of waste tyres and have not been referenced here.]
MMG Dugald River mine Polymetallic mine Cloncurry Shire	MDL79 EPML00731213	A Waste Management Program must be developed and implemented by the environmental authority holder and submitted to the administering authority upon request. All general and regulated waste (other than waste authorised in condition G3) must be removed from the licensed place to a facility that is lawfully able to accept the waste. The only waste that can be disposed of on the licensed place is waste generated on the licensed place and is limited to: • waste rock • tailings • tyres • plastic • SIPEX and Sodium Metabisulphite containers. Tyres stored awaiting disposal or transport for take-back and recycling or waste-to-energy options – must be stockpiled in volumes less than three (3) metres in height and 200m² in area and at least ten (10) metres from any other tyre storage area. Fire prevention measures must be implemented including the removal of all combustible materials, including grass and vegetation, within a ten (10) metre radius of any tyre storage area. Subject to demonstrating to the administering authority that no other use higher in the waste hierarchy can be practicably implemented, waste tyres generated from the mining activity may be disposed of at the licensed place in the underground mine workings.

5. Conclusions

5.1. Current requirements placed on mining tyre disposal

This research looked into the legislation plus subsidiary instruments (such as guidelines and policies) that govern the management of waste mining tyres generated in WA, NSW and Queensland. The research also looked at individual EP licences and environmental authorities across a subset of mines operating in each state, to investigate the conditions imposed on holders and how those conditions encouraged or enabled the recovery of waste mining tyres.

Mining and planning law provisions

In each jurisdiction, planning, mining and environmental protection law may in principle have a place in directing practices associated with managing waste mining tyres. In the case of planning laws, the study shows that Approvals Statements (as used in WA) and Development Consents (as used in NSW) tend to only have a passing mention of waste management, with the use of standard language geared towards requiring practices that are safe and have minimal local environmental impacts. In the case of Queensland, planning requirements for mining projects are rolled into the EA approval process, and separate Development Assessments are not issued.

NSW mining lease conditions are similarly sparse in terms of their treatment of waste management in general. These conditions tended to focus on administration, governance, financial prudence, and stakeholder consultation matters. Similar findings apply for mineral title conditions issued by WA Government. Mining leases were not available for download from the Queensland website, but the mining laws of Queensland do not substantially involve environmental protection considerations when making decisions to approve mining leases (with these considerations instead streamlined into EA approvals processes).

None of the three states apply planning provisions or mining regulation to achieve alignment with the waste hierarchy or circular economy principles in the management of mining equipment and consumable waste streams. This is perhaps due to a convention of consigning environment-related matters to EP licences (in WA and NSW) and EAs (in Queensland) where possible.³⁰

Environmental law provisions – EP licences and environmental authorities

An analysis of eight mining EP licences in each of WA and NSW, and eight EAs issued to mining operators in Queensland provides insight into the current status quo for managing waste mining tyres in each jurisdiction. In essence, there is some diversity in how waste management is framed in EP licences and EAs within each state, as summarised below.

Because the current requirements placed on mining companies are, by and large, imposed through EP licence and EA conditions, these requirements are in effect until the relevant instrument expires. That is, they are in place until a licence or EA is no longer required for the activities occurring at the mine site. However, there are options for the relevant administering

³⁰ There are some instances of mining regulations requiring standard conditions in mining leases, that focus on closure and rehabilitation planning requirements, but this is distinct from explicitly preferring recovery or other higher order circular economy outcomes over on site burial of mining tyres.

authority to revise conditions – this is discussed for each state in the next section of this chapter.

Western Australia

- In WA, some EP licences do not directly or explicitly mention waste mining tyres at all, but instead provide some general provisions for disposing of Inert Waste, Type 2 or General Waste (which may include tyres).
- Other EP licences explicitly apply conditions for the on site disposal (burial) of waste tyres, involving safety and fire management requirements that would not unduly prevent or impede on site burial, nor drive mining companies towards alternative options.
- Some volume limits for waste tyres, Inert Waste, and General Waste are imposed on EP licences. There was only one example of a mine where the tyre disposal limit may oblige the licence holder to have the waste tyres disposed or recovered off site. This mine is some 120 km away from the Greater Metropolitan Perth area.
- None of the EP licence conditions examined in this study involve references to exploring, testing the feasibility of, or implementing options to manage waste mining tyres in a way that accords with the waste hierarchy or circular economy principles.
- DWER officer engagement provided clarity that EP licence conditions could explicitly direct licence holders on waste disposal and making waste streams available for reuse. However, it was also explained that licences generally needed to be granted where the licence holder can show that it will manage risks to human health and the environment, when adopting a given approach to on site activities such as waste tyre management. Licence conditions can be emplaced to prevent or mitigate those risks, but cannot coerce the licence holder to adopt an entirely different approach.

New South Wales

- As a general observation, waste tyres are permitted to be disposed at each mining site, although additional prescriptions have been applied in the case of some EP licences. EP licence conditions may govern waste tyre burial location, height limit, spacing, and so on. In some cases, annual volume limits are also mentioned, but do not appear to be set at levels that would obstruct on site burial of an annual volume of tyres used on site.
- Coalmines operating in northern NSW and the Hunter Valley may be required to submit Annual Heavy Plant Tyre Disposal Reports to NSW EPA with their Annual Returns. (This condition was in place in EP licence conditions more often than not.)
- A smaller set of coalmine operators are required to perform a review of available recycling options for end of life heavy plant tyres at least once every two years, and provide NSW EPA with a report covering the review findings. By and large, it is left to those licence holders to apply their own judgement as to whether tyre recycling or recovery is feasible compared to business as usual on site burial practices.
- Even in the case where waste mining tyre recycling options must be investigated and reported on, EP licence conditions centre on the continued use of onsite burial (pending report findings that tyre recycling is not feasible) rather than on stipulations to engage recycling services and/or adopt offsite management practices.
- NSW EPA officers explained that mining companies may have grounds to contest EP licence conditions on waste mining tyre management, if this aspect of mining escapes mention in the relevant mine's Development Consent. As a general rule, most mine Development Consents do not mention waste mining tyres at all, and this may have led

the NSW EPA to adopt a softer approach towards mining tyre waste licence conditions than would otherwise be the case.

- At the same time, mining companies that do not have coverage to dispose of waste mining tyres in their Development Consents may, strictly speaking, be acting outside the law. This is because the case can be made that mining tyre disposal causes adverse impacts if not managed appropriately, so the mining operator needs to gain permission through a Development Consent before undertaking this activity.
- It is understood that the NSW EPA is working with planning authorities to progressively update Development Consents to mention waste tyre management, which will grant the NSW EPA greater latitude in amending EP licence conditions.

Queensland

- Waste mining tyres or bulk rubber are explicitly mentioned in each of the EAs examined during this study. Some EAs have conditions stating that waste tyres can be disposed of in specified locations using prescribed methods. These conditions do not materially affect the EA holder's practical opportunity to dispose of mining tyres on site instead of seeking recovery options.
- Some EAs reference the *Operational policy – Disposal and storage of scrap tyres at mine sites ESR/2016/2380*. This paper provides that, for new applications, EA conditions should stipulate that waste tyres are to be managed in preference according to the waste hierarchy, yet the paper omits any binding features or repercussions for failing to implement waste management solutions beyond on site burial, and does not set out guidance for how to apply the waste hierarchy via a decision flow chart or similar.
- In some mining operation EAs, the requirement to at least nominally explore waste tyre recycling or recovery is implied – with conditions allowing for on site burial where 'no feasible recycling or waste-to-energy options are available.' However, there is no direction as to what constitutes a legitimate investigation in this area or what threshold should be used to determine feasibility.
- In one mining operation EA, the holder is required to demonstrate to DETSI that 'no use higher in the waste hierarchy can be practicably implemented' before proceeding to dispose of waste tyres underground. But there is no further detail as to how this finding is to be demonstrated.

General conclusions

Across the three states' use of EP licence and EAs for mining operations, provisions for the management of waste tyres are not systematic. Individual mines may be subject to conditions covering, to varying degrees:

- Annual caps on the amount of waste tyres that may be stored or buried
- How and where tyres are to be buried on site
- Details that must be reported to administering authorities
- Requirements to investigate off site recovery options – with scant detail as to what threshold of effort is required, what methods are suitable, and what constitutes a reasonable judgment of feasibility in adopting options other than on site burial.

Notably, cases in which there is more specific attention on waste mining tyres (as opposed to inert waste or general waste) and more stringent conditions across the bullet points above, have not yet equated to greater levels of activity in recycling mining tyres.

Across the three states, there is no indication that regulatory pressure (as enacted through EP licence and EA conditions) is progressively working towards implementing the waste hierarchy or adopting circular economy practices for waste mining tyres, over foreseeable timeframes. This is irrespective of recent developments and investments in mining tyre recovery equipment.

Arguably, the conditions that most evidently attempt to drive the implementation of waste tyre recycling are those that require the licence holder or EA holder to investigate tyre recycling options in the market, and assess the feasibility of those options, prior to being allowed to dispose of waste tyres via on site burial. All instances of such conditions grant the licence or EA holder full discretion as to how much effort this involves, and as to how they determine feasibility.

But the unique treatment of waste tyre burial on site – involving no gate fees paid to a third party, minimal landfill engineering standards, and no waste levies paid to the state – means that any recycling options will be compared against BAU burial involving near zero costs.³¹ A WA Government publication in 2025 estimated that BAU on site burial of mining tyres costs in the order of \$50 per tonne.³² This cost is well below costs faced by other businesses in the disposal of their car and truck tyres, and may be an unsuitable reference point for a feasibility study.

Thus, the licence or EA holder is broadly motivated to find waste tyre recycling to be unfeasible from a narrow private cost perspective (i.e. compared to BAU on site burial), and will tend to continue on site burial when legally permitted to do so.

Moreover, the licence holder may argue that their fiduciary duty to shareholders compels them to continue to dispose of mining tyres on site, whenever this is legally permitted and involves lower costs than alternative options.

Following this train of logic, the conditions requiring licence and EA holders to explore the feasibility of mining tyre recycling – as they are currently framed and in the current regulatory environment – are not expected to drive any meaningful progress towards mining tyre recycling across the three states. If the intent of such conditions is to foster an increased use of recycling instead of burying mining tyres on mine sites, they have not been effectual thus far and there are no grounds to expect them to be effectual in future.

5.2. Options to amend conditions placed on mining tyre disposal

The content put forward for individual states (i.e. in Chapters 2 through 4) includes a discussion of regulatory instruments governing the management of waste mining tyres, and how those instruments may be updated. By and large, these instruments fall within the sphere of environmental regulation, rather than planning and mining regulation.

Each state uses different instruments to achieve a given regulatory outcome, and has different avenues in terms of eliciting a change in relevant regulatory and/or licence (or EA) conditions.

³¹ Further to this point, activities for on site burial will involve on site storage, movement and handling prior to burial, that are likely to be duplicated when undertaking recycling via third party services (and thus will involve similar costs before including transport and processing expenses).

³² WA Government, *National End-of-Life Tyres Options project – Investigation report*, 2025, p. 9.

Potential areas to influence change are covered in this section, addressing each state in turn. This report is limited to a discussion of where such opportunities lie, as opposed to the development of a detailed strategy or plan to campaign for specific changes in legislation, subordinate instruments, or individual EP licence / EA conditions.

Western Australia

Details laid out in Chapter 2 suggest a number of intervention points to drive change in environment protection / waste management instruments that ultimately govern how waste mining tyres are managed. These are set out below, with accompanying commentary.

Amendment to Part 6 of the WA EP Regulations

Part 6 of the WA EP Regulations is devoted to provisions for the management of waste tyres (including car, truck and coach, and OTR vehicle tyres), with requirements covering storage, handling, burial etc.

At present, it does not include any requirements specific to mining operations nor does it require that responsible parties have a duty to align waste tyre management with the waste hierarchy, other than to flag that storage of waste tyres at licensed premises is disallowed except where permitted in EP licence conditions for those premises. DWER officers have confirmed that storage is different to disposal – if tyre disposal is to take place, the site needs to be licensed in accordance with premises in which disposal takes place.

Arguably, there is a case that Part 6 of the WA EP Regulations may be a suitable place to introduce higher expectations in the management of waste mining tyres. Moreover, the case could also be made that this amendment would bring this part of the Act into closer alignment with other legislation, including the Western Australian *Waste and Resource Recovery Act 2007*. The waste hierarchy stands as a stated Object of that Act (per Schedule 5).

As a regulatory provision, any new rules would become universal for all activities and liable parties to which they apply. However, the regulation amendment process is somewhat onerous and involves a number of stages – it is not certain that the WA Government would entertain the notion of amending Part 6 of the WA EP Regulations unless there was a wider driver to update other parts of the regulation.

Revised EP licence conditions

DWER has the capacity to update EP licences, based on its revised understanding of potential risks and harms associated with a given premises and/or activities occurring on that premises. The procedure for this process is laid out in the DWER's *Procedure: Prescribed premises works approvals and licences*.

Further to this, Section 62A of the WA EP Act allows for conditions:

- That specify manners in which a waste is disposed or made available for reuse
- That impose measures to investigate options to prevent, control or abate pollution or environmental harm.

A review of current EP licences for mines suggests that new licence conditions are signed off by the Manager, Resources Industries at DWER. However, any process to update licence conditions

in this manner is likely to require input from the EPA, the WA Waste Authority, DMPE and other teams within DWER. The licence amendment process is legislated to include provisions for appeal by the licence holder, which may provide a path to contest new or amended conditions.

On engaging with the Manager, Resources Industries, it has been clarified that EP licence conditions are strictly applied to ensure risks to human health and the environment are prevented, mitigated or managed. This has tended to be interpreted in terms of risk *in the vicinity of* the premises in question.

Thus, if a mine operator can show that such risks are adequately addressed while undertaking on site burial of mining tyres, DWER does not have the means to impose an entirely different approach (such as recycling) through amended licence conditions. From this standpoint, it may be simpler if some other measure or instrument motivated mining companies to adopt waste mining tyre recycling, which was then complemented (as opposed to directly enforced) through EP licences issued for the mining site.

Development of and reference to a waste mining tyres policy or guideline

Although this may be read as an administrative tool or guideline, there may also be the option for DWER to prepare a more detailed framework that progresses and elaborates on the department's expectations with respect to investigating waste mining tyre management options including recycling and recovery, and implementing options that are deemed feasible.

For reasons explained above, there may be barriers to referencing this guideline as a licence compliance condition imposed on mining companies (i.e. EP licences are first and foremost concerned with nearby environmental and human health risks). Yet it may serve as a reference to place within EP licence conditions for those mining companies that *voluntarily* want to:

- Formally and actively explore beyond on site mining tyre disposal
- Show that they are taking a best practice approach to this exploration
- Use findings from the investigation to then engage with DWER on supporting measures to bring preferred tyre recycling options into reality.

The key idea is that one or more mining companies could opt to accept obligations to explore mining tyre recycling according to a given method, in exchange with DWER gaining access to abridged (i.e. commercially non-sensitive) findings and using those findings to explore support for one or more solutions. Ideally, a subset of mining companies operating within a defined cluster (e.g. iron ore mines in the Pilbara, gold and polymetallic mines in the Goldfields) would sign on to this arrangement, to capture the benefits of scale economies.

New South Wales

The review of legislation and subordinate instruments presented in Chapter 3 points to a number of intervention points to drive change in environment protection / waste management instruments that ultimately dictate how waste mining tyres are managed. These are set out below, with accompanying commentary.

There may be avenues to update Development Consents and EP licence conditions for mining activities in particular, as is covered below.

Although NSW Resources' decision making in the issuance of mining leases allows for environment protection considerations, the form and content of current mining leases (based on a selection reviewed during this project) indicates that the NSW Government is disinclined to incorporate significant detail into mining lease environment protection and land rehabilitation conditions beyond matters specified in NSW Mining Regulation, Schedule 8A, Part 2.

There could also be the option to introduce new sections of the NSW POEO Regulation that specifically deals with waste tyres, analogous to Part 6 of the WA *Environment Protection Regulations 1987*. However, as an amendment to regulation, this would need to follow a prescribed regulation amendment process incorporating regulation impact analysis and extensive industry and stakeholder consultation.

Modification to Development Consents under NSW EP&A Act

There are provisions for a planning authority (e.g. DPHI) to revoke or modify individual Development Consents issued to mining companies, under limited circumstances (refer to Section 4.57 of the NSW EP&A Act). This could provide a means to introduce tighter recycling requirements into mining operations, although this may be an unusual process in the absence of a modification application from the mining company. At present, Development Consents for mining activities typically include some reference to preferred waste management practices, although these are somewhat generic and do not provide imperatives towards adopting circular economy practices nor enforcing the waste hierarchy.

Current conditions in Development Consents are generally framed at a high level, and it may be unusual to attempt to stipulate specific actions as they relate to waste mining tyres. Nonetheless, based on discussions with NSW EPA officers, some general reference to waste mining tyres as a source of environmental impacts in Development Consents is important, as it allows the NSW EPA to then take a stronger stance in its EP licence conditions.

There is the separate question of timing and prioritisation of individual Development Consents that are to be modified in this manner – as roll out of these changes may only be practical as and when mining companies seek modifications to existing Development Consents for other purposes; and this may need to overlap with locations where mining tyres are most amenable for recycling (rather than across the entire state).

For these reasons, it may be better to view slight modifications to Development Consents as a step to undertake, in coordination with (i.e. leading) other measures that establish tyre recycling as common practice in mining industry. Such modifications may be limited to a standard set of clauses that directly implicate onsite waste mining tyre disposal as an activity of concern due to their environmental impacts, which then necessitates attention through the EP licensing process.

Revised EP licence conditions

As shown in Chapter 3, EP licence conditions are currently the main way in which practices in the management of waste mining tyres are regulated in NSW. It therefore stands to reason that licence condition amendment be explored as a pragmatic approach to setting more ambitious requirements for mining companies to consider and implement waste mining tyre recovery solutions.

The NSW POEO Act (Section 58) allows for the NSW EPA to update licence conditions without requiring an amendment application to be issued by a licence holder. This could enable a range of approaches for resetting how waste mining tyres should be managed, including for example,

influencing how tyre recycling feasibility should be assessed (rather than relying on the mining company to make its own unilateral judgement); more prescriptively requiring a shift to tyre recycling; or placing hard limits on what volume of tyres may be stored or buried on site. In all likelihood, some level of independent research and industry engagement would be needed, to show that such conditions deliver better environmental outcomes without introducing unreasonable costs to affected parties. (See the above section on WA licence condition amendment for further discussion in a similar area).

More specifically, Section 75(5)(a) of the NSW POEO Act provides that an EP licence may contain 'conditions relating to the storage, handling, treatment and processing of waste.' This may be a suitable reference point for including requirements with respect to waste tyre recovery. Section 41 of the POEO Act makes clear that waste processing includes 'non-thermal treatment of waste tyres, meaning the receiving of waste tyres from off site and their processing otherwise than by thermal treatment.' This makes clear that the NSW Act allows for licence conditions that require a given method of waste tyre processing (other than by thermal treatment).

Consideration may need to be given as to whether such amendments could be pursued on an individual basis, or whether a regional strategy towards licence amendment is needed. A regional approach may be useful in driving sufficient economies of scale as needed to drive the cost affordability of waste tyre recycling in critical areas of mining activity, while helping to improve the long term viability of one or more solutions that serve the region. Arguably, such a regional approach may better protect sensitive environmental features associated with a given location, compared to a more ad hoc approach to amending licence conditions.

Note: Under the discussion for WA above, the idea of a policy or guideline that covers more details for what is expected of mining companies in managing their waste tyres is presented, with the view that this could be referenced in EP licence conditions. This approach could possibly be applied in NSW.

Queensland

The exploration of instruments and conditions for regulating waste mining tyres in Queensland identified some areas where change could be advocated for. The regulatory situation in Queensland is somewhat different to those in NSW and WA, as there is no separate planning approval process for large scale mines, and no distinct equivalent to Approvals Statements (WA) and Development Consents (NSW).

As in the case of NSW, the Queensland EP Regulation does not have a specific section or provisions dealing with the generation of waste tyres (as distinct from the case in WA). It may therefore be unrealistic to expect the opportunity to introduce such provisions through a regulatory amendment process.

However, arrangements in Queensland are at least explicit in mentioning that the issuance of EAs and formulation of EA conditions should at least have regard to specified Environmental Objectives, including a Waste Objective, as set out in the Queensland EP Regulation. Restating from Chapter 4, this objective provides that *both* the following requirements are met:

- Waste generated, transported or received is managed in accordance with the waste and resource management hierarchy under the *Waste Reduction and Recycling Act 2011*
- If waste is disposed of, it is disposed of in a way that prevents or minimises adverse effects on environmental values.

So while there is an 'in principle' requirement for DETSI to consider and enshrine the waste hierarchy in issuing EAs and incorporating EA conditions across the board, this has not had meaningful effect with respect to how these conditions are implemented for waste mining tyres. DETSI compliance officers responsible for enforcing mining company EA conditions have confirmed that, in practical terms, the waste hierarchy is not especially referenced in conditions when issuing EAs nor when checking compliance. The current framing of the waste hierarchy, in its absence of compliance standards and/or evaluation methods, may be unenforceable.

With the above in mind, the following headings cover some areas in which amendments may be sought, in order to strengthen provisions towards the recovery of waste mining tyres.

Clarifying how 'accordance with the waste hierarchy' will be assessed in relation to the Queensland Environmental Objectives and their application to mining tyres

Going into further detail on the above, Part 3 of Schedule 8 of the Queensland EP Regulations requires that, when assessing activities, the administering authority will assess whether 'waste generated, transported or received is managed in accordance with the waste and resource management hierarchy.' As noted, this has had little effect in relation to waste mining tyres.

Separately, Section 36(1) (j) and (m) of the Queensland EP Regulation require the administering authority (DETSI) to comply with the following provisions:

The administering authority must, for making an environmental management decision relating to an activity, consider whether to impose conditions about each of the following matters:

- Recycling, storing, transferring or disposing of waste in a particular way
- If under an environmental objective assessment, the assessor is not satisfied an environmental objective has been achieved—implementing measures for minimising the adverse effects of not achieving the environmental objective.

Together, these provisions place an onus on DETSI to substantiate its decisions in relation to wastes arising from ERAs such as waste tyres arising from mining activities – particularly for those streams that are not managed through practices that are higher in the waste hierarchy.

ATRA may be in a position to request greater explanation or clarification from DETSI in how it makes an assessment on the above requirements, and for this to be published as an explanatory note or guidance note.³³ DETSI may be in a position to develop a waste hierarchy handbook that specifies methods for mining companies to follow in evaluating how its practices accord with the waste hierarchy. While this in itself may not drive change in how waste mining tyres are managed, such clarification and guidance is important in setting out a decision making process and evidence standard that can be contested or influenced at specific points.

³³ While the *Guideline – Application requirements for activities with waste impacts* provides some details as to how the Waste Objective Assessment is performed when undertaking EA approvals, these details are still somewhat general in nature.

Such transparency benefits DETSI as it sets out a basis for where and when mining tyre recovery is appropriate, and the EA conditions that are needed to enforce mining tyre recycling pending suitable investment in mining tyre recovery capabilities in Queensland. Pending this investment, EAs could be modernised with suitable conditions to enforce mining tyre recycling from the outset, based on evidence accumulated through the use of standard methods of evaluation.

Revised EA conditions

As in the cases for amending EP licences in WA and NSW, DETSI can amend EAs in Queensland (per Part 6 of the Queensland EP Act). The discussion above makes clear that EA conditions may be put in place for ERAs, that mandate a given method for dealing with particular waste streams, and/or that ensure that a given Environmental Objective is met with minimal adverse effect on the environment.

However, the circumstances under which DETSI may amend an EA without receiving an application from the EA holder are somewhat limited, compared to similar provisions to alter EP licences in WA and NSW. DETSI may alter an EA when conditions set out in Section 215 of the Queensland EP Act are satisfied. Some examples of such conditions include the following:

- A contravention of the Queensland EP Act or an environmental offence committed by the holder
- The EA was issued or schedule was approved because of a materially false or misleading representation or declaration, made either orally or in writing
- The EA was issued on the basis of a miscalculation of the environmental values affected or likely to be affected by the relevant activity, or the quantity or quality of contaminant permitted to be released into the environment, or the effects of the release of a quantity or quality of contaminant permitted to be released into the environment
- The approval of an environmental protection policy or the approval of an amendment of an environmental protection policy
- A significant change in the way in which, or the extent to which, the activity is being carried out
- A report made by or for, or approved by, a *recognised entity* if the report:
 - Is relevant to the authority or schedule, or a relevant activity carried out under the authority or schedule; and
 - If the administering authority is not the chief executive—has been accepted by the chief executive.

The last condition listed above is likely to be the most suitable and practical grounds under which DETSI may choose to revise EA conditions relevant to mining tyre disposal. To clarify, in this provision, a *recognised entity* may be one of the following as defined in the Queensland EP Act:

- The administering authority (i.e. DETSI)
- The department in which the *Fisheries Act 1994* or *Water Act 2000* is administered
- A local government
- A public authority
- An agency established under a corresponding law with similar functions to the functions of the DETSI chief executive

- A ministerial council established by the Council of Australian Governments
- CSIRO
- A cooperative research centre completely or partly funded by the Commonwealth
- An Australian university.

Should ATRA want to explore this path to drive a change in the regulatory conditions for the management of waste mining tyres in Queensland, it may need to seek assistance from one or more of the above entities to produce a report that makes the case for revised EA conditions. This report would then need to be accepted by the DETSI CEO prior to being used as a basis to enact EA condition amendments.

As reported in Chapter 4, there is not a strong precedent in amending mining site EA conditions in the absence of factors such as a request from the mining company; emerging environmental risks; and/or an updated body of scientific evidence pointing to the impacts arising from the mining activities in question. Solid waste management conditions (apart for the management of hazardous mining wastes) placed in mining site EAs do not appear to undergo substantial modernisation. Significant advocacy efforts may be needed in order to drive change in this area.

***Update to Operational policy – Disposal and storage of scrap tyres at mine sites
ESR/2016/2380***

As covered in Chapter 4, some EA conditions cite a separate operational policy explaining how scrap tyres at mine sites are to be disposed and stored. While this 2014 document refers to the waste hierarchy, it does not appear to have been effective in driving practices other than on site burial of mining tyres in Queensland. The document also contains some prescriptions relating to the storage and disposal of waste tyres on mine sites, which may at least be a source of guidance to EA holders.

Arguably, with the document now more than ten years old and with substantial updates to waste and resource recovery policy and legislation, the case can be made that the policy should be reviewed to make it more effective in driving the uptake of tyre recycling (and other measures that accord with the waste hierarchy). One option may be to develop a revised document as a practical handbook to evaluate options to manage waste mining tyres in accordance with the waste hierarchy, including an explanation of how DETSI will evaluate compliance with the Waste Objective.

Once updated, the case can be made that new mining activity EAs should contain conditions that refer to the revised policy. Existing EAs could also be amended to reference the policy, noting that such EA amendments are subject to restrictions as set out above.

Concluding remarks

This investigation has identified the key pieces of legislation used to govern the management of waste mining tyres in Western Australia, New South Wales and Queensland, along with conditions imposed in EP licences and EAs. In the main, the general shape and intents of the regulatory frameworks applied in each state are roughly equivalent, with differences coming into focus when the finer details are investigated.

These differences are only partly due to differences in naming conventions, with other differences involving approvals criteria; authorising bodies; grounds for making amendments to different authorising instruments; and other matters.

EP licence and EA conditions appear, at face value, to be the most immediately available means to update the requirements placed on mining companies in managing their waste tyres. However, in each state there are limitations in the extent that such conditions can be used to encourage mining tyre recycling.

Some of these limitations are procedural in nature, while other limitations depend on the extent that existing on site burial practices are viewed as continuing to impose risks on the surrounding environment. Engagement with state regulators may be most constructive when it acknowledges both the opportunities and limitations to effect change via EP licence and EA reform processes.

Moreover, it may be inefficient and lack pragmatism to tackle EP licences and EAs on a case-by-case basis, and it would be more effective to take on the process in a 'whole-of-sector' manner. This may take the form of an evidence-based process that recommends a set of model conditions to apply across all mines in each jurisdiction, which is then implemented through amendments according to a suitable roll out strategy (ideally coupled to the location, timing and capacity of OTR tyre processing infrastructure investment).

In the case of Queensland, some sort of report – by DETSI itself or by some other recognised entity – is likely to be a necessary precondition to allow for the types of EA condition amendments as may be required to achieve a greater level of mining tyre recovery. The Queensland situation also requires that the historic inactivity shown towards amending solid waste management conditions be addressed. In the case of New South Wales, EP licence amendments may need to be coordinated with Development Consent modifications.

In all cases, the link between EA and EP licence conditions imposed on mines, and state circular economy policy objectives, seems tenuous or non-existent. Conditions applied to solid waste management at mines largely focus on localised environmental risks, whereas many of the net impacts of recycling play out at a distance from the mine site. In the absence of other policy measures including but not limited to product stewardship measures that may be applied to wastes generated by mining activity, this places mining activities and their waste streams wholly outside the scope of national and state circular economy policy.

Updates to planning and mining regulation legislative provisions are likely to be peripheral opportunities at best, both in finding sufficient interest in attending to waste tyre recovery among administering authorities, and in fitting desired changes to existing legislation and subsidiary tools.

There may be a stronger case to pursue environmental regulation amendments in selected parts of existing regulations (as explored above), although this will require the relevant authority to take on a prescribed regulation amendment process with specific evidence thresholds and stakeholder engagement requirements. Revised regulations carry the additional disadvantage in

that they are difficult to readjust over shorter timeframes, as may be necessary during periods of shifting market and technology landscapes.

As a final point, this project is dedicated to reviewing the regulatory frameworks involved in governing waste mining tyre management practices across WA, NSW and Queensland. This task aimed at:

- Identifying the current obligations on mining companies
- Describing implications in how these obligations enable or continue to hinder greater levels of tyre recycling
- Uncovering change processes that may provide ATRA with a path to influence future regulatory settings.

The project scope was less concerned with the types of conditions and legislative provisions that may drive a desired result for ATRA, and did not require the project team to map out a strategy to engage with regulatory bodies on a given reform process, nor to plan out a method to gather the necessary evidence and arguments to substantiate such reforms. These activities may be considered by ATRA as potential next steps, following from an initial engagement with relevant authorities to test their interest in setting higher regulatory expectations on the mining sector.