



## Getting mining R&D Tax Incentive claims right

### Specific Issue Guidance

*What do companies and their tax advisers need to consider when self-assessing the eligibility of R&D activities specifically associated with developing mining flowsheets and mine design?*

This Guidance should be read in conjunction with the [R&D Tax Incentive: A Guide to Interpretation](#). The *Guide to Interpretation* should be read before and during the assessment of the eligibility of activities.<sup>1</sup>

The department publishes guidance on [business.gov.au](http://business.gov.au) to assist companies and tax advisers understand the eligibility requirements that apply to activities that are supported under the *R&D Tax Incentive*. Key benefits of following the guidance are:

- enabling companies to self-assess and register eligible R&D from the beginning
- helping companies avoid compliance reviews, which may involve additional legal fees and tax agent fees, and
- helping companies avoid potential repayment of the tax benefit.

### Introduction

The purpose of the *R&D Tax Incentive* is to encourage companies to conduct experimental R&D activities that might not otherwise be undertaken.

This guidance highlights key issues that companies and their tax advisers must consider when assessing the eligibility of specific mining-related activities for registration under the *R&D Tax Incentive*. In particular, it highlights issues relating to:

- developing process flowsheets
- general mine design, and
- other problem areas that companies and their R&D tax advisers most frequently get wrong.

To apply to register R&D activities, a company needs to consider each of the activities it has conducted and assess which of them are:

- eligible core R&D activities<sup>2</sup>

<sup>1</sup> The department's guidance on the *R&D Tax Incentive*, including the *Guide to Interpretation*, are available on [business.gov.au](http://business.gov.au).

<sup>2</sup> Under section 355-25(1) of the *Income Tax Assessment Act 1997*.

- eligible supporting R&D activities,<sup>3</sup> and
- ineligible activities that cannot be registered with the *R&D Tax Incentive*.

To self-assess the eligibility of their activities, companies must understand and apply the definition of eligible R&D activities under the *R&D Tax Incentive* to each of those activities.

Only activities that are self-assessed as eligible R&D activities can be registered with the Department of Industry, Innovation and Science (the department) under the *R&D Tax Incentive*.

Mining flowsheet development and mine design activities are subject to the same eligibility tests for the *R&D Tax Incentive* as non-mining activities with the exception of the exclusion on the 'prospecting, exploring or drilling for minerals'<sup>4</sup> under certain circumstances.

### Summary

Companies must describe in writing their eligible core R&D, in accordance with the definition of a core R&D activity listed in the *Income Tax Assessment Act 1997*. This may involve developing new ways to overcome specific technical or scientific challenges.

Eligible core R&D is not learning how to use existing products, technologies or techniques in the manner in which they are designed to be used. Eligible R&D is not using such products, technologies or techniques in a different location.

Eligible R&D does not involve deciding which of those known technologies to apply to the geology of interest.

When companies choose to register R&D activities relating to mining, they must demonstrate for each core R&D activity they wish to register:

- how the experimental activity was carried out
- that the activity was for the development of a new or improved product or process
- that the activity was conducted for a significant purpose of generating new knowledge
- how the activity applied a systematic progression of work, and
- that the outcomes could not be known or determined in advance on the basis of current knowledge, information or experience.

Companies must clearly explain the activities and support their explanation with evidence.

It will not be sufficient for a company claiming a core R&D activity to rely on propositions such as:

- a flowsheet has not been developed for a particular mineral deposit
- the proposed combination of processing methods is different to those combined elsewhere
- the only technical uncertainty is in the inherent geological risk of the ore body including:
  - not knowing the details of the specific site for the application of an established technique or

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<sup>3</sup> Under section 355-30 of the *Income Tax Assessment Act 1997*.

<sup>4</sup> See section 355-25(2)(b) of the *Income Tax Assessment Act 1997*.

- technology (an ‘Australian first’, or ‘unique deposit’) or
  - the unknown details of the specific test subject (such as a sample from a suspected ore body).
- the application of an established technique/technology in a way that is known to work but adjusting the technique/technology to account for different mineral composition.

Importantly, just because an activity is **exploratory as to resources** does not mean that the activity is necessarily experimental within the meaning of the *R&D Tax Incentive* legislation.

Companies and their advisors must be careful not to confuse tests that gather data with hypothesis-driven experiments. Using established techniques in the manner for which they were designed is not, of itself, experimental

## Activities that are eligible under the R&D Tax Incentive

### Core R&D activities

#### Role of the experiment and hypothesis

Activities that are eligible for support under the *R&D Tax Incentive* fall into two categories; core R&D activities<sup>5</sup> and supporting R&D activities.<sup>6</sup>

Core R&D activities are activities that involve an experiment that is conducted in a systematic and planned manner. They will be designed around a specifically targeted and developed problem statement—called a hypothesis—that proposes a relationship between variables which would be proven right or wrong by

observing and evaluating the results after conducting the experiment.

### *1. Standard testing activities are not experimental*

Activities cannot be core R&D activities where they are undertaken for the purpose of complying with statutory requirements or standards (see section 4, below—*Some activities are excluded*).

Mining projects generally involve resolving geological risks. This may require activities such as testing the nature and qualities of mineral deposits. Depending on the qualities of the ore and the desired characteristics of the final product, a range of different mineral processing tests may be carried out to determine the best processing method. The resulting sequence of operations or flowsheet is commonly developed by mining companies.

This regime of deposit testing and processing options may have the superficial appearance of being experimental within the meaning of the legislation (including activities such as sample ore acquisition and preparation, bench-scale testing, verification through pilot-scale testing, and performance testing at full-scale plant operation). However, when the tests being conducted are **standard practice** in the industry and are not hypothesis-driven, they do not generate new knowledge. They are part of the inherent geological risk of the project and use existing state-of-the-art technology (in the words of the legislation, they are part of the ‘existing knowledge, information or experience’)

<sup>5</sup> For the words used in the legislation see section 355-25(1) of the *Income Tax Assessment Act 1997*.

<sup>6</sup> For the words used in the legislation see section 355-30 of the *Income Tax Assessment Act 1997*.

and are also missing a key element of eligibility—a hypothesis.<sup>7</sup> For this reason, these tests would not meet the standard required by the legislation for eligibility as a core R&D activity.

Standard testing activities *may* meet the requirements for a supporting R&D activity where they meet the relevant eligibility criteria.

The relevant outcome of a hypothesis-driven experiment is whether the hypothesis is correct. The generation of data in and of itself (i.e. the general outcome of deposit testing) is not the relevant outcome of a core R&D activity. Similarly, the relevant outcome is not a solution to a general uncertainty about the success of the project, or the final form of a flowsheet.

A core mining related R&D activity could include, for example,<sup>8</sup> experiments necessary to develop and test new or improved products or processes in:

- remotely controlled mining technologies
- geo-sensing techniques
- biomining bacteria.

## 2. Mine design

The inherent attributes of a site will present some challenges and impact on mine design. These attributes can include topography, regional and local geology, structural siting of the deposit, shape and depth of the target deposit, hydrology, the tectonic stress regime, and regional

and local seismic activity. These factors are geotechnical considerations at all mine sites.

Mine design is an iterative process and generally comprises reviewing existing data, undertaking new investigations, using models to predict stability and performance, assessing the proposed workings, predicting likely ground responses during mining, and monitoring ground behaviour during mine development. These attributes are considered as part of the typical design cycle for a geotechnical engineer at any mine site.

These activities are not eligible as core R&D activities as they do not involve the testing of a technical or scientific idea (hypothesis) through experimentation. Experienced professionals who are familiar with defining and supervising test work programs from laboratory scale through to pilot-plant operation, will be able to apply the current knowledge, information and experience available to them to know that the outcome is achievable without conducting a hypothesis-driven experiment.

## 3. Specific problem areas

Companies and their advisers often make incorrect claims where:

- pure project risks (e.g. ore quality, inadequate cost estimations, process profitability etc) in themselves are confused with technical risk

<sup>7</sup> An experiment is specifically designed to test a hypothesis. Standard tests, by their nature, do not have or require a hypothesis. A standard test with a contrived hypothesis will not be a core R&D activity.

<sup>8</sup> These examples are not prescriptive and are only offered for illustrative purposes. The full eligibility criteria must be considered for each activity that is being self-assessed for eligibility as a core R&D activity.

- project risk with accompanying technical challenges are conflated with technical risk
- standard testing to collect data or to select solutions is claimed to be experimental.

### *Generating new knowledge*

Core R&D activities must be undertaken for at least a significant purpose of generating new knowledge about whether the problem statement is right or wrong.

A competent professional in the relevant field must not be able to know or determine the outcome of a core R&D activity in advance with the current knowledge, information or experience reasonably available to them.

Knowledge gaps of a geological nature are inherent to all mining projects. They arise because each site will have different geological characteristics to some extent. Geological knowledge gaps of a site are resolved through the application of the current knowledge, information, and experience available to competent professionals. This involves the use of standard methodologies to collect data about the geology and then decide how to mine and process.

Consequently, activities undertaken to resolve geological knowledge gaps are not likely to meet legislative requirements for core R&D activities.

Using existing knowledge, information or experience to determine outcomes is not eligible.

Most flowsheet development activities will:

- use data collected through industry standard tests
- apply existing engineering knowledge and expertise
- implement a systematic problem-solving approach to resolve knowledge gaps without the need to conduct experiments.

In some circumstances activities to develop a flowsheet will not be able to rely on existing knowledge, information or experience, and will therefore require an experiment, or set of experiments, to generate the new knowledge needed to complete the activity. Where this is the case, companies must be able to identify and distinguish those activities from activities where the outcome could be known or determined.

It is essential that companies are able to identify the specific technical knowledge gap that a hypothesis-driven experiment is conducted to overcome.

In the [Mount Owen](#) Administrative Appeals Tribunal case,<sup>9</sup> the Tribunal found that if activities are claimed to generate new knowledge by an original use of existing technologies in a new way, there must be a satisfactory explanation and evidence of how the combination of technologies meets the legislative criteria. Simply relying on the use of combinations of existing technologies is not sufficient. There must be uncertainty and the generation of new knowledge that could not have been known or determined in advance by a competent professional.

<sup>9</sup> *Mount Owen Pty Limited and Innovation Australia* [2013] AATA 573 (16 August 2013).

Design and predictive modelling activities use existing knowledge and expertise to determine outcomes and will also not be eligible core R&D activities on their own. However, design or modelling activities might lead to experimental activities if applying existing knowledge or expertise cannot give the required technical outcome.

Design and predictive modelling activities may be supporting R&D activities if they inform the design of an experiment in a core R&D activity. In a mining context, these activities will generally be directly related to the production of goods or services and so it is likely that the dominant purpose requirement would also need to be assessed.

The application of the legislated definition to the following activities commonly used in mining flowsheets establishes that they are not **of themselves** sufficient to establish a core R&D activity.

### *1. Qualification testing*

Qualification testing is a formally defined series of tests by which the functional, environmental, and reliability performance of a component or system are evaluated in order to satisfy the engineer, contractor, or owner as to its design and construction prior to final approval and acceptance. Qualification testing involves assessing the suitability of a piece of technology for the proposed purpose. It does not involve hypothesis-driven experimentation.

### *2. Mineral beneficiation*<sup>10,11</sup>

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<sup>10</sup> Mineral beneficiation refers to processes used to concentrate valuable constituents of an ore using known separation processes such as comminution, size classification, and concentration.

Selection of mineral beneficiation processes generally uses known techniques and does not usually involve experimentation. Any uncertainty is generally resolved through the application of existing knowledge and trial-and-error methodology.

### *3. Comminution processes*

Comminution processes such as the use of:

- crushers, including jaw, cone or hammer types
- mills, including semi-autogenous (SAG), ball or hammer types
- high pressure grinding rollers, etc

The selection of comminution processes does not usually involve experimentation. Determining optimal rock size by crushing and grinding of the ore is determined using established processes undertaken by all mining companies.

Any residual uncertainty in determining optimum rock size is usually resolved through a process of trial and error rather than hypothesis-driven experimentation.

### *4. Separation techniques*

Separation techniques such as gravity separation, froth flotation, heap, metallurgical or in situ leaching, magnetic separation, and automated ore sorting are well defined processes.

The general testing that is undertaken of these processes can be described as 'qualification testing'. As set out above,

<sup>11</sup> Note that the prospecting, exploring or drilling of samples for the purpose of analysing a mineral deposit is a listed exclusion under the legislation and cannot be a core R&D activity.



qualification testing assesses the suitability of a technology for a proposed purpose and does not involve hypothesis-driven experimentation.

### *5. Site-specific tests*

Site-specific tests usually involve applying known processes and techniques to the ore and conditions at a particular site. These tests are usually focused on the economic viability of the potential extraction from the site. They do not involve hypothesis-driven experimentation. The unknown characteristics of the sample can be determined through the application of those known processes and tests. For this reason, they will not meet the requirement that the outcome cannot be known or determined in advance by existing knowledge, information or experience.

### *6. Metallurgical testing*

Metallurgical testing to determine ore characteristics is common in mine development and is often claimed by companies as a core R&D activity. However, metallurgical testing uses known techniques and forms part of the existing knowledge-base available to mining professionals.

In addition, metallurgical testing does not involve the testing of a hypothesis; rather, it is conducted to collect data to analyse the ore body.

Activities that develop or test a new metallurgical testing procedure should be considered against the eligibility criteria.

### *7. Making changes to existing flowsheets*

At times an existing flowsheet may need to be revised to provide the most efficient and economical method of processing the ore through the life of the mine.

The development of an economically viable flowsheet might be a challenging activity for the company, but in most cases it is developed using existing knowledge, and an expert in the field would be able to develop such a flowsheet using data on the ore and the required product.

### *8. Specific problem areas*

Companies and their advisers often make incorrect claims where:

- activities that involve solving challenges by applying existing knowledge and expertise without experiments are claimed to be experimental
- activities are undertaken using existing design or modelling software in a manner for which it has been designed to be used.

### *Projects are not eligible*

Eligible activities must be specific activities; eligibility does not apply to projects.

When conducting research and development, companies tend to think in terms of projects and project outcomes rather than in terms of the specific activities that the company conducts within and as a component of a project. However, the eligibility criteria under the *R&D Tax Incentive* require eligibility to be assessed at the level of specific

activities.<sup>12</sup> The eligibility of activities associated with the development of a flowsheet, for example, cannot be assessed by considering the project as a whole.

The development of a flowsheet is unlikely to be a single, specific activity. Rather, it is likely to be achieved through a project that comprises many specific activities. Some activities may be core R&D activities that involve experiments, while other activities might be supporting R&D activities that are directly related to those core R&D activities and undertaken for the dominant purpose<sup>13</sup> of supporting a core R&D activity. Some or all activities may not be eligible at all and must not be registered.

For example, an activity registered as 'Overall process design and integration' by a mining company was examined by the department and found to be not eligible because the company was not able to substantiate that it was an activity that met the requirements of the legislation. In this particular case, the registered activity did not relate to specific activities where the eligibility criteria could be applied. No specific activity included experiments with outcomes that could not have been known or determined in advance and none had a direct relationship to an eligible core R&D activity. The key understanding here is that if it is a project that is being described, then it is very

likely that it will not be a specific eligible activity.

Uncertainty in projects comes from a number of both technical and non-technical sources (such as commercial viability), but the existence of uncertainty in a project will not be sufficient to satisfy the eligibility requirements.

For example, an activity that was claimed to be an experimental activity and found to be not eligible by the Innovation and Science Australia, was for testing a hypothesis of the form that: 'It will be economically and technically feasible to produce a [product] for export from the deposit [to meet particular customer specifications] using [specified] mining techniques whilst successfully storing the rejects without the use of a tailings dam and progressively rehabilitating the finished mine site'.

### *1. Specific problem areas*

Companies and their advisers often make incorrect claims where:

- a whole project is registered without the eligibility requirements being applied to each of the activities in the project
- specific experimental and supporting activities are not identified or described

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<sup>12</sup> The *R&D Tax Incentive* is governed by Division 355 of the *Income Tax Assessment Act 1997* and sections 26 to 32 of the *Industry Research and Development Act 1986*. The eligibility criteria for activities are set out in sections 355-20 to 355-30 of the *Income Tax Assessment Act 1997*. Activities should be described in detail on the *R&D Tax Incentive* registration form.

<sup>13</sup> Activities undertaken to develop a mining flowsheet will generally be directly related to the production of goods or services and will therefore need to be self-assessed for the dominant purpose of conducting those activities if they are being considered as prospective supporting R&D activities.



- eligibility requirements are not applied to specific activities to determine whether they are eligible.

### Some activities are excluded

Some activities are excluded from being core R&D activities by the legislation.<sup>14</sup> However, some excluded activities may still qualify as supporting R&D activities if they meet the relevant requirements and are also undertaken for the *dominant purpose*<sup>15</sup> of supporting a core R&D activity.

#### 1. Prospecting, exploring or drilling exclusion

Activities cannot be core R&D activities where they are prospecting, exploring or drilling for minerals or petroleum for the purposes of one or more of the following:

- discovering deposits
- determining more precisely the location of deposits
- determining the size or quality of deposits.

Examples of activities that are **unlikely** to be excluded as core R&D activities:

- experimenting with new exploration or drilling techniques in areas where relevant geological, mineralogical or petrological characteristics can be demonstrated to have been known prior to the commencement of the activities
- experimenting with new geo-sensing techniques in areas where relevant

geological, mineralogical or petrological characteristics are known.

Examples of activities that are **likely** to be excluded as core R&D activities:

- searching for a mineral or for petroleum or gas (regardless of whether it is found)
- drilling for samples for analysis of a deposit
- activities undertaken to determine the quality of a deposit or to characterise a deposit.

#### 2. Associated with regulatory compliance or standards exclusion

Activities cannot be core R&D activities where they are associated with complying with statutory requirements or standards.

When companies and their advisers are considering whether an activity falls into this exclusion, the purpose of conducting the activity will point the way:

- is the activity being done to satisfy a regulatory requirement, or
- is it being done for an R&D purpose and incidentally subject to regulation?

The former will be caught by the exclusion while the latter would not. The exclusion is not intended to impact on activities conducted for a genuine R&D purpose.

For example, companies have incorrectly claimed activities such as preparation of an environmental impact statement, or a site rehabilitation plan, where each of these was done specifically to satisfy a

<sup>14</sup> See section 355-25(2) of the *Income Tax Assessment Act 1997* for the list of excluded activities.

<sup>15</sup> The meaning of 'dominant purpose' is explored more fully on p20 of the *R&D Tax Incentive: A Guide to Interpretation* which may be found on [business.gov.au](http://business.gov.au).

statutory requirement. These activities are not eligible as R&D activities.

### Supporting R&D activities

Supporting R&D activities are activities that have a direct, close and relatively immediate relationship with a core R&D activity.

Activities that make a direct contribution to the conduct or evaluation of the experiment are likely to meet this requirement. Where an activity is:

- excluded from being a core R&D activity
- one that produces goods or services, or
- one that is directly related to producing goods or services

that activity will only be a supporting R&D activity if it is undertaken for the *dominant purpose* of supporting a core R&D activity. *Dominant purpose* means the ruling, prevailing or most influential purpose.

Examples of where a supporting R&D activity may be identified in the mining sector, where the correlating core R&D activity exists, could include:

- installation of experimental driverless truck technology into an appropriately limited number of test vehicles to enable an experiment in a core R&D activity that tests a new idea to extend the existing technology

- collection of a limited number of samples for the purpose of experimentally developing new:
  - geo-sensing techniques
  - tests for analysing matrix

Note that an activity that includes the collection of samples must be carefully assessed against the ‘prospecting, exploring or drilling for minerals’ exclusion (see above for more information on this and other exclusions that are particularly relevant to the mining sector).

- cultivation of a sufficient quantity of experimental biomining bacteria for a related core R&D activity.<sup>16</sup>

Some activities are excluded from being core R&D activities by the *Income Tax Assessment Act 1997*. However, some of these excluded activities may in fact be supporting R&D activities, but only in certain circumstances.

### Contemporaneous documentation and record keeping

If a company does not have contemporaneous evidence that an activity was conducted to meet all the eligibility criteria, then that activity is not eligible. This is a basic step in any company’s self-assessment of eligibility.

The Administrative Appeals Tribunal has consistently found that R&D activities claimed without evidence that substantiated eligibility are not eligible.

For example, it has stated that an ‘applicant cannot succeed in establishing [the eligibility] requirements in the absence of detailed documentation

supporting R&D activity, including, where necessary, whether the dominant purpose test is satisfied.

<sup>16</sup> These examples are not prescriptive and are offered for illustrative purposes only. The full eligibility criteria must be considered for each activity that is being self-assessed for eligibility as a

recording the process of each activity as it develops' (*Docklands Science Park Pty Ltd v Innovation Australia [2015] AATA 973* at 63).

When a company is self-assessing whether activities are eligible R&D activities, it cannot simply assert or effectively argue that it thinks an activity was eligible if it does not have evidence to support its self-assessment. If it does not have evidence to substantiate eligibility of an activity, then it will not be reasonably justifiable to register that activity or claim expenditure for it.

Documentation and records must demonstrate that all eligibility requirements are met and particularly:

- show how the experiments were undertaken
- show how the company assessed that the outcome of the activities could not be known or determined in advance
- be sufficient to verify the:
  - amount of the expenditure incurred on the registered activities, and
  - relationship of the expenditure to the activities
- show how expenditure was apportioned between eligible R&D activities and non-R&D activities.

It is the company's responsibility to demonstrate that it has used reasonable methods to differentiate between expenditure on R&D activities and expenditure on non-R&D activities

### Further assistance

To assist companies properly address their self-assessment obligations, both the department and the Australian Taxation Office provide detailed, plain English guidance about eligibility and record-keeping requirements necessary to support eligibility:

- [R&D Tax Incentive: A Guide to Interpretation](#)
- [R&D Tax Incentive: Record-Keeping and R&D Planning](#)
- [Research and development tax incentive: keeping records and calculating your notional deductions](#)

#### Disclaimer

This guidance document is intended to provide useful information for companies considering accessing *the R&D Tax Incentive*. However, it is not exhaustive and it is not legal or financial advice. It is your responsibility, with the assistance of any advice you wish to seek, to satisfy yourself about the eligibility of your activities for the *R&D Tax Incentive* as set out in the *Income Tax Assessment Act 1997*. The Commonwealth disclaims all liability for any loss or damage arising from you or anyone else relying on this document or any statement contained in it.

