

Valuer General

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Valuation of land used for extractive industries

Guidance Note

February 2024



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Published by the NSW Valuer General

valuergeneral.nsw.gov.au

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Revised: February 2024

ISSN: 2981-9873

Department reference number: VG23/79

More information

Enquiries relating to this guidance note should be addressed to the office of the Valuer General via email to valuergeneral@dpie.nsw.gov.au.

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Contents

Introduction	4
1.1 Purpose	4
1.2 Background.....	4
Recommended Approach	5
1.3 Scope	5
1.4 Identification of a quarry.....	5
1.5 Assumptions and considerations.....	6
1.6 Valuation rationale	6
1.7 Royalties.....	7
1.8 Life of a quarry	7
1.9 Saleable value of material	8
1.10 Further considerations.....	9
1.11 Residual/surface land.....	10
1.12 Valuation Methods	12
1.13 Administration	14
References.....	15
Definitions.....	15
Related documents and legislation.....	18

Introduction

1.1 Purpose

This document is intended to provide guidance to valuers on the methods to use, and factors to consider, when valuing land used for extractive industries (a quarry) for rating and taxing purposes.

This guidance note will ensure that the Valuer General's valuations of land used for a quarry are:

- consistent and accurate
- transparent
- in line with the *Valuation of Land Act 1916* (the Act).

1.2 Background

In NSW, the Act establishes the Valuer General as the independent statutory officer responsible for ensuring the integrity of land valuations in NSW.

Valuation NSW carry out functions on behalf of the Valuer General under formal delegations. Some valuation services may also be contracted out to private valuation firms. All valuation services are subject to a rigorous quality assurance process prior to issue to landholders.

Recommended Approach

1.3 Scope

1.3.1 Land used for a quarry

Use this guidance note to assess the value of land that is being used for or could be used for a quarry. A quarry is any land that is being used for the extraction of a material from the earth other than minerals identified as requiring a mining lease under the *Mining Act 1992*.

Generally, quarry operations include:

- sand
- gravel
- stone or
- other building material.

1.4 Identification of a quarry

1.4.1 Identification

Quarry operations do not come under the *Mining Act 1992*. All commercially operating quarries require development consent, an environmental impact statement and approval under the *Environmental Planning and Assessment Act 1979* (EP&A Act). These quarries are regulated by the Department of Regional NSW. The responsibility for regulating quarries under the EP&A Act falls to either local or state government depending on size, capital investment value or severity of potential impacts.

A separate valuation is to be made for quarry land held under a lease.

Land used as a quarry and not leased will be valued with the adjoining land in accordance with the Valuer General's guidance note *Valuing separate parcels*.

1.5 Assumptions and considerations

1.5.1 Valuation assumptions

In line with section 6A of the Act, you must value the land at its highest and best use, while assuming:

- there is a sale of land
- the buyer and seller are hypothetical
- the title is unencumbered, and the valuation is of the full fee simple in possession
- the land is vacant and has no improvements other than land improvements.

1.5.2 Valuation considerations

You must also consider and reflect in the valuation these other requirements:

- the current use of the property if it differs from planning controls and would, if allowed, result in a higher land value (section 6A(2))
- all statutory restrictions on the land
- the valuation reflects a sale of the property at 1 July of the valuing year (section 14B)
- the property's physical condition, surroundings, zoning and allowable uses that applied on the date the valuation was made (section 14K).

1.6 Valuation rationale

1.6.1 Owner's interest

The Act requires a valuation of the fee simple of the land. Fee simple is the absolute title to land, free of any other claims against the title, which one can sell or pass to another by will or inheritance. This means, the material being extracted from the quarry is considered to be owned by the owner of the land.

Where the material is being extracted by an operator or lessee, a payment will be made to the owner of the land as rental or a royalty.

The assumption is made that the owner of the land is not the operator of the quarry and is separate from the quarry operation. The owner's interest consists of the royalty return or lease payment and the return of the quarry land at the expiration of the quarry's life.

Therefore, the owner's interest is calculated by determining the net present value of the royalty income or lease payment and the present value of the residual surface land deferred for the life of the quarry (LOQ) and remediation period.

1.6.2 General approach

The general approach to the valuation is:

- an allowance must be made for the time taken to bring a quarry into production, however there is no allowance for any costs which are borne by the hypothetical quarry operator who is not the owner of the land
- the income from the quarry is the hypothetical owners' right to receive the royalty from the sale of the material or a lease payment
- the royalty amount and or lease payments is to be determined from comparable market evidence
- if the return to the owner of the land is a royalty and the payment is variable, consider the average price of the quarry material over three years with the current year having double the weighting (i.e. used twice)
- the royalty or lease payment is then used in a discounted cash flow analysis (DCF) over the LOQ to determine the present value of the quarry
- the LOQ is established by dividing the total quarry reserve (proven and probable) by the annual production rate, also referred to as the run of quarry (ROQ) production
- the residual land value is to be calculated on the present value of the land, as it will be when returned to the owner following rehabilitation, deferred for the LOQ.

1.7 Royalties

The amount of royalty payable is not regulated. Royalties and lease payments are generally paid at a market rate. Evidence of royalties and lease payments must be established through research and investigation.

1.8 Life of a quarry

The life of quarry (LOQ) is determined by dividing the proven and probable reserves by the ROQ.

The term of any development consent is not to be considered. You must assume that the current use of the land as a quarry may continue (Section 6A(2)).

See below for further information under the headings:

- Extent of quarry material
- Run of quarry.

1.9 Saleable value of material

1.9.1 Value of recovered material

Where the land is not leased and the royalty income cannot be established from a history of royalty payments, income can be calculated by determining a percentage of the saleable value of the material.

The saleable value is to be calculated using the market value of the material and based on a fair and reasonable production level.

The calculation of the production level needs to be evidence based and/or supported by expert opinion. Any doubts on the level of production should be determined at the lower outcome.

The average market value of the quarry material at 1 July over three years is to be used with the current year having double the weighting.

1.9.2 Extent of quarry material

The extent of quarry material is limited to reserves defined as proven and probable.

Quarry material defined as inferred, indicated or measured resources are not to be included in the extent of quarry.

The extent of the quarry material will be determined from studies completed by the quarry company.

Where this is not available the extent of material available at the time of the development approval is available from the local council or the Department of Planning, Housing and Infrastructure for State Significant development.

Information describing the extent of quarry material, in order of hierarchy, includes:

- quarterly and annual company reports published by the quarry
- local government development applications
- Department of Planning, Housing and Infrastructure approval
- JORC reports

- Rehabilitation Management Plans (RMP) required for large operations (previously known as Quarry Operation Plans).

Only proven and probable reserves are to be included in the valuation calculations.

1.9.3 Run of quarry

The run of quarry (ROQ) is the raw production material extracted from the quarry before any processing. ROQ is the material as it comes from the quarry not treated at a preparation plant.

Once the extent of the proven and probable reserves has been determined the ROQ production is used to determine the life of the quarry.

If available, the current production rate will provide the best evidence.

1.9.4 Net disposals

Raw production must be discounted to provide the net disposal in tonnes. Raw production should be compared against the net disposal in tonnes to determine the overall recovery from the quarry.

The net disposal is the amount of raw production less waste. This may vary significantly depending on the quality of the material being quarried.

1.10 Further considerations

1.10.1 Allowance for construction period

A period of construction must be allowed for at the start of the cash flow analysis. Hypothetically, the quarry will require a period of time to allow for buildings and approvals before production can commence and income is generated.

The appropriate period will depend on the type of quarry and construction required.

Note: the allowance is for the time to construct the required quarry infrastructure, not the cost. The land value is based on the land having no improvements other than land improvements.

Caution should be applied where a quarry has a limited life expectancy as a quarry operator may not see any value in commencing operations.

1.10.2 Land improvements

There is no allowance to be provided for the time or costs of any excavation, tunnelling or levelling of land associated with the quarry operation as these activities are considered to be land improvements.

The Act requires that land improvements form part of the land value.

1.10.3 No depreciation

Although the improvements hypothetically do not exist and a period for the building of new improvements is provided in the discounted cash flow, there is no requirement to provide for depreciation in the calculation as the hypothetical owner of the fee simple is not the owner of the improvements.

1.10.4 Quarrying is yet to commence

Where a quarry has been granted development approval, but no extraction of material has commenced, the royalty income stream should be deferred to the likely start date, with production and sales volumes based on expert advice of likely output. Allowance should be made for any risk to the quarry commencing production.

1.10.5 Inactive quarry

The value of the hypothetical owner's interest in a quarry that is not producing saleable material is limited to the likelihood of production and therefore the royalty payments recommencing.

As there is no royalty income being paid, the value of the quarry will lie in the net present value of likely future returns. The risk of production recommencing must be considered and allowed for.

Alternatively, the basis of value may be the highest and best alternate use, after allowing for time and costs in the rehabilitation of the land.

The method that produces the highest land value is to be adopted.

1.11 Residual/surface land

1.11.1 Non quarry/buffer land

Where a quarry includes land not used for active extractive purposes, commonly referred to as buffer land, it is to be included in the value of the quarry unless separately occupied.

The value of the buffer land is limited to its highest and best alternate use such as agriculture.

Establishing the excess land area should have regard to the quarry's operational requirements.

Buffer land may attract a premium in the market due to a quarry operator's desire to secure surrounding land. However, the buffer land does not increase the royalty payments to the

hypothetical owner of the fee simple. Consequently, the value to that owner is limited to the return from either potential future extractive activity or the alternate highest and best use.

1.11.2 Valuation of voids

Open cut or extractive operations frequently leave voids (unfilled holes) at the end of the quarry operation. The value of the void will depend on the ability to find an alternate use. Areas close to main centres, particularly Sydney, may have substantial value for landfill sites.

The potential of land once the extractive operation has ceased must be taken into account. Where there is no demonstrated potential, the void has little value and is a detriment to the site. A nominal value should be applied in these cases.

1.11.3 Residual land value

As well as the owner's interest in the royalty income stream the value of the surface land is to be included in the valuation. The surface land value comprises the active quarry land and the non-quarry/buffer land.

The owner cannot access the active quarry land while the quarry is in operation. Once the quarry has reached its end of life the quarry operator is required to rehabilitate the site. The hypothetical owner will have the land returned, however there is a risk that the land will not be rehabilitated or will be returned in a degraded state. In the valuation the allowance for risk should consider a number of factors such as any security deposits held by the NSW Government for rehabilitation and the type of extractive activity.

Therefore, the land value of the residual land is the present value of that land based on its highest and best alternate use, deferred for the life of the quarry and the rehabilitation period, at an appropriate discount rate.

1.11.4 Rehabilitation

The responsibility to rehabilitate quarry land is a requirement of the development approval. For the purposes of determining a land value the assumption is made that the hypothetical quarry operator will be responsible for rehabilitation.

Security deposits are held by NSW Government to ensure rehabilitation is completed following the closure of a quarry. The security deposit is based on approved Rehabilitation Cost Estimate (RCE) tool maintained by Resources Regulator NSW and is required to cover the full cost of rehabilitation. The security deposit is reviewed at defined trigger points. For more information concerning security deposits visit: <https://www.resourcesregulator.nsw.gov.au/rehabilitation/rehabilitation-security-deposits>.

As rehabilitation is not the responsibility of the hypothetical owner of the land, the adjustment required to the residual value due to a requirement for rehabilitation will be based on the following;

- the amount of risk involved in the rehabilitation not being carried out
- the risk the land will still be in a degraded state after rehabilitation is completed
- the time taken to conduct the rehabilitation and hand back the land
- the area of land to be rehabilitated
- the amount of security held compared to the expected rehabilitation costs.

The cost of rehabilitation is complex and there may still be some risk that the security held will not cover the total costs.

1.12 Valuation Methods

The discounted cash flow method is to be adopted to determine the land value of the quarry land. The direct comparison method is to be adopted to establish the residual value of the quarry land and the land value of parcels not used for extractive purposes.

1.12.1 Discounted cash flow method

To determine the land value of the quarry you must:

1.	Establish the reserves of material classified as proven and probable.
2.	Determine the quarry's fair and reasonable annual production rate (ROQ).
3.	Calculate the life of quarry (LOQ).
4.	Estimate the quantity of sales as a percentage of the ROQ production.
5.	Determine the sale value after adjustment of the weighted average market price of the material.
6.	Determine the value of material sold.
7.	Establish the quarry's requirement for royalty payments to the owner (actual royalty returns shall be adopted where appropriate).
8.	Estimate the royalty return to the owner.
9.	Calculate the net present value of the income stream over the life of the quarry, deferred by the period required to commence sales.

10.

Calculate the value of the surface land (returned after rehabilitation) based on the net present value of the land deferred for the life of the quarry.

An appropriate discount rate to reflect the risk of the investment should be adopted. Regard may be had to yields of other forms of real estate investment in considering the appropriate risk rate.

1.12.2 Direct comparison method

Use the direct comparison method to determine the value of the surface or residual land and any land that is valued separately from the quarry due to different uses.

Direct comparison involves comparing market sales with the subject land.

When using direct comparison to value quarry land, buffer land or land used for other purposes, you must:

- consider a broad range of market evidence, including sales of vacant and improved land
- consider the value of existing lease arrangements in the sale price
- follow an evidence-based approach when using sales of improved land to deduce the land value
- analyse sales to provide a unit of measure such as rate per hectare
- consider all factors that influence the land's value such as the land's; size, aspect, location, zoning, planning controls and permitted use.

1.13 Administration

1.13.1 Quarry land divided by local government boundary

Where a quarry lies partly in one local government area and partly in another, the Act provides that it shall be valued as a whole, and the land value shall be apportioned based on the land area of each part.

References

Definitions

Term	Meaning
Discounted cash flow analysis	A valuation method used to value an investment by calculating the present value of an income stream discounted for the delay in receiving funds and the risk to the cash flow.
Fee simple in possession	Absolute title to land, free of any other claims against the title, which one can sell or pass to another by will or inheritance.
Extent of quarry	Quarry material that includes proven and probable reserves only.
Highest and best use	Valuation concept that refers to the possible use of a property that would give the highest market value. The use must be lawful, physically possible, and financially feasible.
Improvement	Something that improves the value of the land. This is not defined in the Act and is different from the term 'land improvement' (below).
Indicated	Used to provide a description of the level of confidence in the extent of a resource based on the amount of geological investigation. Indicted is a reasonable level of confidence (JORC 2012).
Inferred	Used to provide a description of the level of confidence in the extent of a resource based on the amount of geological investigation. Inferred is a low level of confidence (JORC 2012).

Term	Meaning
JORC reports	<p>The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code) is a professional code of practice that sets minimum standards for Public Reporting of minerals Exploration Results, Mineral Resources and Ore Reserves.</p> <p>The JORC Code provides a mandatory system for the classification of minerals Exploration Results, Mineral Resources and Ore Reserves according to the levels of confidence in geological knowledge and technical and economic considerations in Public Reports www.jorc.org.</p>
Land improvement	Land improvement, such as draining, excavating, filling, or clearing, as defined in section 4 of the Act and included in the land value.
Land value	Value of the land excluding any structures or improvements but including land improvements. See section 6A of the Act for a full explanation.
Life of quarry	For the purpose of this guidance note, the life of a quarry (LOQ) is determined by dividing the proven and probable reserves by the run of the quarry.
Market price	Current price at which materials sold from the quarry can achieve in the market.
Measured	Used to provide a description of the level of confidence in the extent of a resource based on the amount of geological investigation. Measured is a high level of confidence (JORC 2012).
Net present value	The value of a project or income stream where costs and payments occur over a period of time discounted back to the present using a discount rate that reflects the cost of capital, profit and risk.
Owner	For the purpose of this guidance note, owner means the hypothetical owner of the land who is entitled to receive the royalty payable on materials extracted from the land.
Probable	A probable ore reserve is the economically quarry able part of an indicated, and in some circumstances measured quarry resource. The confidence in the modifying factors applying to a probable ore reserve is lower than that applying to a proved ore reserve (JORC 2012).

Term	Meaning
Proven	A proved ore reserve is the economically mineable part of a measured mineral resource. A proved ore reserve implies a high degree of confidence in the modifying factors (JORC 2012).
Quarry	All land, on or below the surface or partly on or below the surface used or held for the extraction of sand, stone, aggregates, or other building material.
Rehabilitation cost estimates	The rehabilitation cost estimates (RCE) tool is used by Resources Regulator NSW to ensure adequate security deposits are held for rehabilitation activities across the life of a quarry.
Rehabilitation Management Plan	Rehabilitation Management Plan (RMP) required for large extractive operations with the commencement of Mining Amendment (Standard Conditions of Mining Leases-Rehabilitation) Regulation 2021. RMPs replaced Quarry Operation Plans.
Run of quarry	The run of quarry (ROQ) is the raw material extracted from the quarry before any processing. ROQ is the material as it comes from the quarry to the quarry head before any treatment.
Sale	<p>The transfer of property between parties. To use a sale as market evidence, it must have been:</p> <ul style="list-style-type: none"> • an arm's length transaction • between a willing buyer and willing seller who both acted knowledgeably, prudently and without compulsion • properly marketed.
Spot price	The current price at which a commodity can be bought and sold.
Statutory restrictions	Statutory restrictions on the land may include environmental planning instruments and development control plans, as well as restrictions relating to the clearing of land, water, and soil management.
Unencumbered	Unencumbered land is land without any encumbrances. An encumbrance is any right to or interest in land by someone other than the owner, and that prevents the transfer of that land or lowers its value. It might include an easement, restrictive covenant, mortgage, or other restriction.
Valuing year	The year starting 1 July. Valuation reflects the property market at the start of the valuing year.

Related documents and legislation

- [Valuation of Land Act 1916](#)
- Environmental Planning and Assessment Act 1979