Mineral-bearing land and waste management sites
1st edition, guidance note

This guidance note relates to the valuation of natural resources and waste management properties, more commonly known in the UK as ‘wasting assets’. The Resources and Environment Professional Group commissioned a working party to review, update and publish separately the guidance note that was originally included as GN 4 of the RICS Valuation Standards (the ‘Red Book’), 6th edition. This working group comprises members who are appropriately qualified and who specialise in this area of valuation.

This updated guidance note has been compiled and structured to provide advice on the broader issues to be considered by the chartered surveyor when valuing wasting assets. It avoids being prescriptive on various types of valuation methodology, as this decision will be left to the individual chartered surveyor when following market and industry best practice. In addition, this guidance note is intentionally concise to ensure that all the pertinent key elements of wasting asset valuations are covered.

This guidance note is essential reading for all RICS members who value these specialist types of property asset, as it is indicative of best practice for the chartered surveyor preparing independent valuation reports for wasting assets.
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RICS guidance note

1st edition (GN 84/2011)
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RICS Valuation Standards (the ‘Red Book’)

RICS (Royal Institution of Chartered Surveyors) is the leading organisation of its kind in the world for professionals in property, land, construction and related environmental issues. As part of our role we help to set, maintain and regulate standards – as well as providing impartial advice to governments and policymakers.

To ensure that our members are able to provide the quality of advice and level of integrity required by the market, RICS qualifications are only awarded to individuals who meet the most rigorous requirements for both education and experience and who are prepared to maintain high standards in the public interest.

Members who qualify as valuers are entitled to use the designation ‘Chartered Valuation Surveyor’ and, in addition to compliance with the general Rules of Conduct applicable to all members, must also comply with the RICS Valuation Standards, generally referred to as the ‘Red Book’.

This guidance note describes the standard of work that is expected of a reasonable, competent valuer experienced in the subject to which this note relates.

RICS has in place a regulatory framework. Where a valuer undertakes work that has to comply with the Red Book that valuer is also required to register with RICS and is entitled to use the designation ‘RICS Registered Valuer’ on their business stationery and marketing material. Registration enables RICS to monitor compliance with the valuation standards and take appropriate action where breaches of those standards have been identified.

Acknowledgments

This guidance note is a revision that updates guidance note (GN) 4 originally published in the Red Book, 6th edition. RICS would like to thank the working group members for their assistance in developing this guidance:

- Darren Herdman, SLR Consulting Australia Pty Ltd
- Keith Leighfield, Independent consultant
- David Sandbrook, SLR Consulting Ltd
- Andrew Fitzherbert, MTS Consultancy Ltd
- Rebecca Mooney, RICS.
This is a guidance note. It provides advice to RICS members on aspects of their work. Where procedures are recommended for specific professional tasks, these are intended to represent ‘best practice’, i.e. procedures which in the opinion of RICS meet a high standard of professional competence.

Members are not required to follow the advice and recommendations contained in the note. They should, however, note the following points.

When an allegation of professional negligence is made against a surveyor, a court or tribunal is likely to take account of the contents of any relevant guidance notes published by RICS in deciding whether or not the surveyor had acted with reasonable competence.

In the opinion of RICS, a member conforming to the practices recommended in this note should have at least a partial defence to an allegation of negligence if they have followed those practices. However, members have the responsibility of deciding when it is inappropriate to follow the guidance.

Alternatively, it does not follow that members will be found negligent if they have not followed the practices recommended in this note. It is for each surveyor to decide on the appropriate procedure to follow in any professional task. However, where members do not comply with the practice recommended in this note, they should do so only for a good reason. In the event of a legal dispute, a court or tribunal may require them to explain why they decided not to adopt the recommended practice. Also, if members have not followed this guidance, and their actions are questioned in an RICS disciplinary case, they will be asked to explain the actions they did take and this may be taken into account by the Panel.

In addition, guidance notes are relevant to professional competence in that each surveyor should be up to date and should have knowledge of guidance notes within a reasonable time of their coming into effect.
1 Introduction

1.1 This guidance note identifies additional matters that the valuer needs to take into account when applying the principles of VS 3, Basis of value, in the RICS Valuation Standards – Global and UK (the ‘Red Book’), 7th edition (2011), to the valuation of natural resource wasting assets, such as mineral deposits and waste disposal sites. Since mineral deposits exist globally, the valuer should have regard to the requirements of different states and possibly the international market price for the mineral being valued. In some instances the valuation could result in a negative value.

1.2 In certain states there may be legally enforceable codes for the technical assessment and valuation of natural resources. Therefore, the valuer should ensure that these are followed. In these cases the valuer may need to consider this guidance note in conjunction with any other relevant standards.

1.3 The valuer undertaking a valuation of a wasting asset must be suitably qualified to complete the task and demonstrate relevant professional experience in the type of resource being valued (see VS 1.6, Knowledge and skills, of the Red Book). These assets and associated businesses are of a specialised nature, and the valuer must be able to demonstrate to the commissioning party sufficient competence to complete the valuation exercise. In certain states, there may be a legal requirement to hold specific qualifications and licences to value assets of this nature.

1.4 The technical terminology related to in situ reserves/resources and landfill void space will differ from state to state. The valuer must be familiar with the local statutory definition of the natural resource wasting asset being valued, as this may determine the approach and methodology to be adopted for the valuation exercise.

1.5 There are several reasons why wasting assets are required to be valued. The purpose can include:

- financial reporting;
- sales and acquisitions;
- company mergers;
- public and/or private funding;
- rent or royalty review;
- taxation and litigation; and/or
- buildings and plant and equipment valuation for insurance purposes.

1.6 Having ascertained the purpose of the valuation, the valuer should adopt a suitable method(s) for valuing the resource or void space. The approach should replicate the actions of participants acquiring, selling, renting or regularly valuing such wasting assets in the marketplace.

1.7 It is essential that a distinction is made between valuing the resource/void space as an asset and valuing it as an operational going concern. In addition, the different methodologies that are applied to valuing each should be distinguished. Inevitably, the approach will be determined by the actions of those operating within the marketplace of the subject resource or void space.
2 Wasting assets

2.1 Wasting assets are defined as assets with a finite life which, when consumed, cannot be renewed in the existing physical location in which they occur. Examples of such assets are natural resources, along with waste disposal void space. These assets share the characteristic that their annual income varies according to the level of input/output, processing costs, selling price and liabilities. This, in turn, has an impact on the remaining economic life of the asset and, therefore, its Market Value (as defined in VS 3.2 of the Red Book).

2.2 All available information that will assist in establishing the remaining economic life of the asset should be obtained. This will entail a review of a geological/geotechnical appraisal of the natural resource, which will not only determine the quality and quantity of the in situ material available for extraction, but will also inform as to the likely tonnages of saleable materials to be achieved after an appropriate ‘added value’ processing of the natural resource has taken place.

2.3 Geological appraisals of in situ reserves/resources should be based on a recognised reporting code adopted in the state of the natural resource being valued.

2.4 The operational life of landfill void space is usually calculated by using topographical surveys and three-dimensional modelling techniques that determine the quantity of the void available for backfilling, net of all required engineering materials used to prepare the void for waste disposal. The total life of the void will be dependent on factors such as the type of waste being landfilled; operational compaction rates of the waste being achieved; the type and quantities of daily cover being used; and the final restoration/rehabilitation profile of the void. These factors will vary on a site-by-site basis. The operational life of the landfill may also be increased if a front-end materials recycling or treatment facility is incorporated into the waste management business, where waste streams that can be recycled are diverted away from landfilling.

2.5 Based on the data collected, the valuer will then need to agree with the client on any critical assumptions or special assumptions that may be appropriate when valuing wasting assets. Examples include:

- an assumption that accurate and reliable information has been provided by the client, or a third party, as to the extent or quality of an exploitable natural resource and/or available void space;
- an assumption as to future annual saleable production yields for materials extracted, or rates of backfilling waste;
- a special assumption that at the date of valuation, all planning permissions, environmental permits or development approvals for both waste and natural resources are in place;
- a special assumption that an anticipated future event that will have an impact on the supply or demand for the natural resource or landfill void space will have occurred, such as achieving or failing to achieve future planning permissions, environmental permits or development approvals.
3 Natural resources

3.1 Although natural resources will be physically part of the land area within which they are situated, they may be owned or leased with the surface, or held under a separate title with varying rights of working. They may be worked by underground mining, open pit/cut mining, quarrying, boreholes (as with oil and gas and brine pumping), or by way of treatment in situ (as with underground gasification of coal). Natural resources beneath oceans and lakes may also be worked by dredging.

3.2 Different states will have different laws relating to the ownership of natural resources. Ownership will be dependent on the state’s definition of its natural resources and may be severed from the surface, or be owned by the state. The question of ownership should be addressed together with any common law or statutory constraints that are relevant, for instance, matters relating to working rights and rights to withdraw support. Under such circumstances the valuer will need to outline clearly the nature of the interests being valued and define the different ownerships relating to the surface interest, the natural resources in all the land (there may be other minerals owned by third parties) and the operator’s interest. Where any of these interests encumber each other and affect their end value, an appropriate comment should be made.

3.3 The value of most natural resources will be intrinsically linked to market supply and demand, proximity to the marketplace, ease of extraction and processing. The valuer should not only be familiar with the technical aspects of the extraction process, but also have a clear understanding of the micro- and macro-economics that underpin the demand for the product. The financial breakdown of a natural resource operation is also required, such as the ex-pit selling price, operational costs (including plant and equipment depreciation), environmental liabilities (including withdrawal of support, restoration costs or provisions) and the margins (preferably on a product-by-product basis) that are being achieved at current production levels. The majority of this information will be essential if the valuer has been instructed to value the natural resource as an operational going concern.

3.4 Workings associated with natural resource mine development, such as mine shafts, open pit and quarry voids, tailings and dams, can often become liabilities, particularly once they are no longer in use. Such sites may be unmarketable, or may result in a negative value for the whole or part of the property being valued (see VS 6.8 of the Red Book). Much will be dependent on the ongoing or future restoration/rehabilitation programme associated with the operation. Modern planning permissions and development approvals require a comprehensive restoration plan to accompany extraction, providing a beneficial residual after use that may either supply an income for the landowner, or a capital sum if sold for alternative forms of development. Any residual value (including hope value for future alternative uses) attributed to the total value of a wasting asset should be identified separately.

3.5 Material considerations may include all or some of the following:

- interest being valued – surface, natural resource and/or operation;
- ownership of other minerals and right to disturb;
- rights to work and withdraw support;
- tenure – freehold and/or leasehold;
- type of natural resource being extracted;
- annual quantity and quality of materials being, or proposed to be, extracted;
- production yields achieved, or to be achieved, after processing;
- saleable outputs of the operation;
- geology and hydrogeology of the natural resource;
- planning, permitting and licensing relevant to the property;
- financials – ex-pit selling prices, operational costs and/or surplus trading profits (margins);
- market feasibility study for all saleable products;
- rehabilitation/restoration requirements;
- residual income or alternative end use value;
- subsidence or withdrawal of support liabilities; and/or
- discharge liabilities.

This list of material considerations is by no means exhaustive and will vary for each independent natural resource valuation exercise.
Waste management sites may be categorised under four broad headings, which relate to the way in which waste is accepted, processed/recycled and then disposed of. They are:

1. Waste collection – such as waste transfer stations and civic amenity sites;
2. Waste treatment – such as material recycling facilities, green waste composting facilities, liquid waste treatment plants and alternative waste treatment plants;
3. Energy from waste plants – such as thermal, mechanical or biological; and

Some waste management sites will accommodate a combination of these operations.

4.2 Usually only landfill, land raise, underground storage and landfill gas fields can be defined as wasting assets, since waste collection, waste treatment and certain energy from waste plants will, in most instances, operate indefinitely in the same way as any other commercial/industrial site. However, both waste collection and treatment and certain energy from waste plants will generate a residual waste product that can only be disposed of to landfill. It is therefore possible that for the life of a waste collection, treatment or energy from a waste plant site may be linked to that of an associated landfill site.

4.3 Similar to natural resources, the value of landfill void space will be intrinsically linked to market demand, proximity to waste arisings and/or other types of waste management facilities reliant on suitable void space for the disposal of residual wastes. The valuer should not only be familiar with the technical aspects of the landfill operation, but also have a clear understanding of the micro and macro economics that underpin the demand for landfill void space within a particular locality or region. The financial breakdown of the landfill operation is also required, such as gate charges for the different waste streams that the landfill facility is licensed to accept, operational costs inclusive of plant and equipment depreciation, and the margins achieved on a void space-consumed basis. The majority of this information will be essential if the valuer has been instructed to value the landfill as an operational going concern.

4.4 There is both established and emerging legislation governing the handling, treatment and disposal of waste materials. Such legislation defines different waste types and regulates the appropriate licensing for those waste streams. Governments have also introduced financial instruments to divert waste away from landfill and encourage the waste producer to generate less and recycle more waste. This is generally in the form of a landfill tax or levy, which is charged at the gate upon the acceptance of the waste. This levy may be retained by the landfill operator if the waste can be recycled and diverted away from landfill. The revenues generated from such activity can therefore be significant. In addition, the appropriate local statutory licensing requirements for such facilities may have a significant impact on value.

4.5 Depending on the waste type used in the landfilling process, completed and restored landfill sites may not be marketable because of actual or perceived hazards (stigma) arising from that current or historical use. Such liabilities or hazards may result in a negative value for the whole, or part, of the property. The valuer should make the necessary enquiries to ascertain the specification and quality of the restoration completed at the property being valued. In addition, the valuer should identify the level of aftercare management that has been put in place by either the landowner or the operator of the completed landfill/land raise. In certain circumstances, landfill aftercare management costs can be significant and therefore should be incorporated into the valuation of these types of wasting assets.

4.6 Electricity generation from landfill gas is a common practice and can be a valuable asset, subject to the suitability of the gas being produced. Landfill gas is a wasting asset, but its life may be longer than that of the landfill operation from which it is derived.

4.7 Material considerations may include the following:
- interest being valued – surface, void space and/or operations with associated facilities;
• tenure – freehold, and/or leasehold of land and void space;
• amount of approved landfill void;
• type(s) of waste licensed to be accepted at the facility;
• annual quantities of waste materials being, or proposed to be, landfilled;
• compaction ratios of the waste landfilled (if applicable);
• geology and hydrogeology of the void;
• engineering requirements to prepare the void space for waste disposal;
• planning, permitting and licensing;
• environmental consents;
• financials – waste gate charges, operational costs and/or surplus trading profits (margins);
• statutory taxes or levies on the wastes being accepted at the facility;
• market feasibility study for all waste arisings;
• rehabilitation/restoration requirements;
• discharge requirements;
• aftercare management scheme and associated ongoing costs; and/or
• residual income or alternative end use value.

This list of material considerations is by no means exhaustive and will vary for each independent landfill/land raise valuation exercise.
5 Associated buildings, plant and equipment

5.1 Valuations of natural resources and waste management assets often include ancillary buildings and site improvements, along with plant and equipment. The buildings will normally fall into the category of specialised properties with little or no comparable market transactional or rental evidence that can be relied upon for valuation purposes. It is not uncommon for these assets to be valued using the depreciated replacement cost method. GN 6, Depreciated replacement cost method of valuation for financial reporting, in the Red Book provides general guidance on the application of the DRC method.

5.2 Both mobile and fixed plant and equipment employed at a mine, quarry or landfill operation can be substantial and, in certain circumstances, will be highly specialised. It is not uncommon for certain items of plant and machinery located at base metal or industrial mineral operations to be designed and built specifically for that operation and therefore be unique. GN 5, Plant & equipment, in the Red Book provides general guidance on the valuation of plant and equipment. To comply with VS 1.6, the valuer should be able to demonstrate to the commissioning party sufficient competence to provide the valuation of the plant and equipment associated with such wasting assets.

5.3 Not all mobile and/or fixed plant and equipment will have useful remaining lives that will replicate those of the natural resource or void space being valued. It is usual for certain items of heavy plant to be replaced at regular intervals throughout the life of the wasting asset, even after repair and maintenance have been completed on a regular basis. Such replacement costs are usually predetermined throughout the operational life of the wasting asset and, depending on the basis of valuation, are factored into the reported value. This is particularly relevant when valuing the wasting asset as a going concern, where elements such as future plant replacement costs and depreciation are to be reflected.

5.4 In general terms the buildings, plant and other related infrastructure works relating to a mine, quarry or landfill development will have lives limited to that of the wasting assets which they serve. However, it is not unusual for extractive industry and waste management land and buildings to be put to other uses once their primary use has been exhausted. Where this is likely, it may be appropriate to place a value on the site of the buildings and plant in addition to the value of the natural resource or waste disposal void space. This approach would be appropriate if the valuer has been instructed to value only the assets of the operation, such as the land, resource/void space, buildings, plant and equipment. Where the valuation is of a going concern, the separate value of the buildings, plant and equipment would not be provided unless the client requests otherwise.

5.5 As wasting asset operations usually comprise various property types, the assets that have been valued and how their value is incorporated into the total value should be identified in the report to ensure that there has been no double counting.

5.6 The valuation may reflect costs that are also separately identified in the entity’s financial statements. The valuer should discuss with the directors and the auditors the accounting treatment of such costs, and the costs of any restoration liabilities, to ensure that these have been identified properly and to avoid double counting.
6 Valuation methods for valuing wasting assets

6.1 As with the majority of more conventional property valuations, the usual valuation technique to determine Market Value is based on the analysis of direct comparable evidence. Unfortunately, it is rare for wasting assets to be sold in their own right. When they are sold, they are normally associated with a company acquisition of multiple operations or larger land deals.

6.2 If comparable evidence is not available, other valuation methods can be used by the valuer, such as the capitalisation of actual or notional royalties over the life of the resource/void space being valued, which in principle reflects the value of the natural resource or void space as an asset. This method can also be used to value the potential profit from the sale of the resource or the void space being consumed. The valuer will need to decide the appropriate capitalisation rate that should be adopted when valuing the wasting asset.

6.3 The capitalisation rate is usually calculated from recent, comparable sales. Where such evidence is unsuitable or unavailable, the capitalisation rate should be based on an equated yield, replicating an appropriate return that an operator/landlord would expect from the initial investment. This return should reflect adjustments for non-recurring or abnormal items and any material changes in factors likely to affect the asset or business in the future. Examples include the cost of borrowing, the geological physical characteristics of the natural resource, working rights, the methods of operation and risks associated in achieving the margins or royalties to be capitalised.

6.4 If the valuer is instructed to value the wasting asset as an operational going concern, an appraisal of the potential profit margins being achieved from the sale of the natural resource or void space should be completed. This information is usually incorporated into a discounted cash flow model to arrive at the net present value of the projected future cash flows of the operation. GN 7, Discounted cash flow for commercial property investments, in the Red Book provides general guidance on DCF. The valuer will need to decide upon an appropriate discount rate and whether the rate should be pre- or post-tax, which is dependent upon the nature of the cash flows being discounted.
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