



Scottish Land Commission  
Coimisean Fearainn na h-Alba



ECONOMICS

# Approaches to land valuation in the tax system

REPORT

October 2025



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## Summary

The Scottish Land Commission is working with the Scottish Government to explore how tax could reduce carbon emissions from land and support wider land reform outcomes. Building on the Commission's previous work on land taxation, this research looks at how other countries approach the valuation of land and property for tax purposes. The report offers practical lessons for Scotland as it looks to modernise its own system in line with national priorities.

A robust valuation system is an important foundation for a fair and effective taxation of land or property. Drawing on case studies from Denmark, the Netherlands, Australia and South Africa, the research compares how land valuation systems are structured, governed and updated. The findings show that strong valuation systems share the common features of being transparent, data driven and regularly updated to maintain fairness and public confidence.

### Key findings:



**Market-based valuation:** All case study countries use market data typically through comparable sales, as the basis for valuation. Approaches differ on whether land and buildings are valued together or separately.



**System design and technology:** The case study countries all use mass appraisal techniques to improve efficiency but differ in how centralised their systems are. Denmark leads with a fully automated national approach.



**Data integration:** All case study countries use official cadastral mapping, land registry data, property transaction records, and municipal planning/zoning information. Scotland and South Africa share a challenge of lacking nationally integrated databases.



**Regular revaluations:** Frequent revaluations are standard practice across all case study countries helping to improve accuracy and reduce the impact of market shocks. Scotland stands out for lacking a formal revaluation process for residential properties.



**Environmental considerations:** Environmental factors are increasingly important in valuations in these countries. There are no explicit or implicit considerations of environmental factors or natural resources in valuations in Scotland.



Image credit: Daniel Manastireanua/ Pixabay

From this evidence, the report identifies lessons for developing a modern, fair and effective valuation system that include independence, transparency, national oversight, use of technology and sustained public funding. Implementing a desired system is also recognised as a gradual, long-term process requiring consistent investment and clear principles. A stable valuation system is crucial to ensuring the system remains fair, trusted and resilient over time.

Considering these lessons, the research highlights that there is no single model of success. The best system will be one that grows from Scotland's own context, culture and ongoing public conversation about how land should contribute to national goals.

This research informs the development of the Scottish Land Commission's advice on exploring how tax could reduce carbon emissions from land and support wider land reform outcomes, due in spring 2026.



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## Glossary of terms

**Cadastre** – an official register of all land parcels in a jurisdiction, typically including property boundaries, ownership and values. Maintained by government officials, it is a comprehensive and permanent record, and can be represented as cadastral maps.

**Capital improved value** – the value of a plot of land plus the value of any improvements or buildings.

**Comparative principle or sales comparison** – The method used to value properties based on how much similar properties recently sold for.

**Deeds registry** – an official register of property transactions, recording property owners and transfers.

**Depreciated replacement cost** – the current cost to replace an asset, minus an amount for depreciation like physical wear and tear and any other factors reducing its value.

**Generalised additive model** – a statistical model that predicts an outcome by adding together smooth curves for each factor, allowing the relationship between different variables to be inferred.

**Geodata – or geospatial data** – is information linked to a specific location on the Earth's surface.

**Geographic Information System (GIS)** – the systems within which geodata is stored and managed.

**Highest and best use** – the most profitable use of a property or piece of land or property that is legal and achievable.

**Hypothecated rental equivalent** – an estimated value used for property valuation of the rent that could be earned on the property.

**Income capitalisation** – a valuation method that calculates the current value of the property based on its expected future income-generating potential.

**Land** – an area or plot of land in its natural state, including soil and natural features like trees, water and minerals.

**Mass valuation or appraisal** – the process of valuing a large number of properties simultaneously using either a manual method or automated computer system.

**Municipal** – belonging to or representing an authority for a town, city or local government area; such as a council or municipality.

**Open or fair market value** – the price a property would fetch in an open and competitive market.

**Point of sale** – The moment or location where a transaction is completed.

**Property** – a legal concept that typically includes land and any improvements, such as buildings over which someone has a right of ownership. For the purposes of valuation, in some cases property refers specifically to the buildings and capital improvements on a plot of land, and the land itself is considered separately.

**Prudence discount** – an amount subtracted from a market-based valuation to reflect risk and market volatility, intended to control for speculative price increases and ensure the values are stable over the long term.

**Provincial government** – an authority for a province or region.

**Rateable value** – the value of a property as assessed for the purpose of taxation.

**Revaluation** – the process of reassessing the value of a property, often done periodically at set intervals.

**Tone date** – The single date all non-domestic property is assessed in Scotland to ensure fairness.

**Unimproved value (UV)** – the value of a plot of land in its natural state, not taking into account the value of any improvements to the land (such as buildings).

**Valuation** – the process of assessing the value of a property or plot of land, using one of a number valuation of methods.

**Zoning** – the division of land within a local authority area into zones for specific purposes, such as residential, central business districts or agriculture, as part of the regulation of land use.







# 1. Executive Summary

WPI Economics was commissioned by the Scottish Land Commission to explore how land and property are valued for taxation purposes internationally. This follows the Scottish Government's 2025-26 Budget and Scotland's Tax Strategy committed to working with the Scottish Land Commission to consider the role of taxation and fiscal interventions in supporting land reform and reducing greenhouse gas emissions from land.

A robust valuation system is a prerequisite for fair and effective taxation of land or property. Taxation of land is central to supporting land reform, encourages more productive land use, and it supports both a just transition to net zero and a more equitable economy.

Four case study countries – Denmark, the Netherlands, Australia and South Africa – were selected for this analysis. The four case studies were selected as they:

- build on previous work commissioned by the Scottish Land Commission exploring land value taxation, capture and valuation processes;
- provide significant geographical spread, exploring how land valuation is approached in different parts of the world;
- showcase a variety of different and contrasting approaches to the valuation of land;
- highlight different elements of the valuation process that would be considered best practice;
- demonstrate challenges around policy implementation and operational considerations that provide valuable lessons for any potential approach taken by the Scottish Government.

In assessing the approach taken to land and property valuation in Scotland and the four case study countries, the report has examined different valuation principles, institutional responsibilities, data use, methodologies, revaluation cycles, and environmental considerations. A summary of the findings for each country across these six areas is provided in Table 1.

| Category                          | Scotland                                                                                                                                                                                                                             | Australia                                                                      | Denmark                                                                                  | Netherlands                                                                                                                                                                                                                                   | South Africa                                                                                                 |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 1. Basis of valuation             | Residential: Historic fixed-date (1991) property value bands includes buildings; ignores land-only valuation.<br><br>Non-residential: Estimated open market rental value; hypothecated rental equivalent for complex property types. | Land-based (unimproved/ site value), excludes building value; state variation. | “Best possible use” of land with prudence discount of 20%. Separate land & property tax. | Market value highest & best use. Depreciated replacement cost approach used for special properties.                                                                                                                                           | Capital improved value (land & buildings) for fairness and revenue.                                          |
| 2. Institutional responsibilities | Local Assessors, Scottish Assessors’ Association coordination; independent from national government.                                                                                                                                 | State Valuer-General & certified valuers; councils set rates.                  | Fully centralised and automated under the national Danish Property Assessment Agency.    | Municipalities under national supervision of Netherlands Council for Real Estates Assessment.                                                                                                                                                 | Municipal valuation power; provincial/national oversight; public participation.                              |
| 3. Data sources                   | Decentralised to Assessors.<br>Residential: Local planning and building records & historic sales registry<br><br>Non-residential: Rental agreements, accounting data, construction costs.                                            | State-based data systems; transactions, permits, inspections.                  | Centralised, integrated national registers with municipal updates.                       | National base registers, cadastral data, municipal updates.                                                                                                                                                                                   | Deeds registry, valuation roll, GIS, zoning, ownership history.                                              |
| 4. Methodology                    | Comparative principle.<br>Residential: based on 1991 sales, valuation bands not actual prices.<br><br>Non-residential: Based on rental evidence, or other data converted into rental values.                                         | Mass valuation with benchmarks, state-specific adjustments.                    | Sales comparison with 6-year data & geospatial modelling.                                | 3-step mass appraisal (market analysis → model → appraiser check). Sales comparison for residential, income capitalisation for commercial, sales comparison for residential, income for commercial, depreciated replacement cost for special. | Mixed methods: sales comparison, income capitalisation, depreciated replacement cost; current market values. |
| 5. Frequency of valuation         | Residential: No regular revaluation; only at point of sale or major changes.<br><br>Non-residential: Every three years.                                                                                                              | Most states are annual. Northern Territory is triennial.                       | Biennial since 2023 under new automated system.                                          | Annual since 2007.                                                                                                                                                                                                                            | 4-5 years for urban areas, 5-7 years for rural areas with supplementary updates.                             |
| 6. Environmental consideration    | No consideration.                                                                                                                                                                                                                    | Physical constraints, vegetation orders, water access.                         | Geodata for proximity to coast, nature, infrastructure; climate data.                    | Not directly. Shapes validation through zoning, environmental restrictions, water management.                                                                                                                                                 | Mostly indirect; environmental zones excluded from valuation.                                                |





Image credit: Katherine Pollard

Comparatively, our analysis finds that:

- 1. The basis on which land or property is valued:** All case study countries use market-based concepts as a key basis of valuation. This is mostly done indirectly through comparable sales (Australia, Denmark, South Africa). Highest or best use is a guiding principle of valuation in the Netherlands, Australia, and Denmark. However, there are different approaches to whether land is valued separately from improvements and property.
- 2. Key actors in the valuation process:** In Australia, the Netherlands and South Africa, a central valuation authority provides oversight of municipal execution of the valuation process. Private assessors can be contracted to carry out valuations for municipalities, but this is often due to capacity or resource issues within small local areas. Denmark operates

a much more centralised system, with the valuation process carried at the national level through an automated process. Scotland shares similarities with the decentralised approach of the Netherlands but lacks a comparable national-level body with a statutory remit to monitor and supervise local valuation processes.

- 3. The data used for land or property valuation:** All case study countries use official cadastral mapping, land registry data, property transaction records, and municipal planning/zoning information. In Australia and the Netherlands, this data is collected locally and integrated into centralised databases. Scotland and South Africa share a challenge of lacking nationally integrated databases.
- 4. The methodology used:** In general, sales comparison is used primarily for residential valuation, with income or cost approaches for commercial properties or property types classified as ‘special’. Mass appraisal systems are widely used for efficiency, and Denmark is the only country to have moved to a fully-automated valuation process. Compared to international practice, there is minimal statistical modelling within the Scottish valuation system.
- 5. The frequency of valuation or revaluation:** Although each case study country has a different frequency of revaluation, all conduct them regularly to improve accuracy and reduce the impact of market shocks. The most significant difference between Scotland and the case study countries is that there is no formal revaluation process for residential properties.
- 6. The consideration of the natural environment and natural resources in valuation:** Environmental factors are increasingly being factored into valuation processes, especially in Denmark and Australia. Considerations in the Netherlands and South Africa is much more indirect, either by shaping aspects of the valuation approach or setting exemptions from valuation. Scotland is unique in that there are no explicit or implicit considerations of environmental factors or natural resources in valuations.

The evidence in this report will further the Scottish Land Commission’s understanding of how the Scottish Government could increase and improve the information available about land values; ensure land and property are more effectively considered within the tax system; and ultimately promote Scottish Government policy objectives. To support this, the report **outlines nine lessons** that should be considered when setting out an updated approach to land and property valuation for the purpose of taxation.





## 2. Introduction

In the Scottish 2025-26 Budget and Scotland's Tax Strategy, the Scottish Government committed to working with the Scottish Land Commission to consider the role of taxation and fiscal interventions in supporting land reform and reducing greenhouse gas emissions from land.<sup>1</sup>

The Scottish Land Commission (SLC) has a key role to play in working with the Scottish Government to explore options for how tax could be a lever for behaviour change in this context. The Commission has a strategic priority to explore how the value and benefits of land can create national economic prosperity. As outlined in 2022 advice to Scottish Ministers, the SLC believes that tax on land and property should play a more significant role in supporting a just transition to net zero and a more equitable economy.<sup>2</sup>

A key first step for informing future tax design or options is understanding how land is valued and how a 'rateable value' for property or land is arrived at for tax purposes. Research by both the University of Reading and the International Property Tax Institute has highlighted the following points:<sup>3</sup>

- As well as different valuation methods and revaluation approaches, considerations around land usage, the wider planning system and other property taxes also have a bearing on the 'rateable value' of property and land.
- International experience shows that frequent, transparent, and methodologically rigorous valuation approaches are foundational for getting property and land taxation right – both in terms of public support and maximising revenues.

- Valuation approaches based on mass appraisal, published valuation rolls with clear appeals systems and a regular revaluation process are expensive, but essential to maintaining system integrity.

Given that revaluation is not a process regularly undertaken in Scotland – or indeed the wider United Kingdom – understanding and learning from international experience is important to getting the technical aspects of land valuation and tax design right.

With this in mind, the Scottish Land Commission commissioned WPI Economics to undertake an internationally-focused qualitative evidence review that explores the policies, institutions, and approaches to land and property valuations for use in the tax system in a selection of different countries. The evidence review focuses on how land is valued and on what basis, as well as how data is collected and used in valuations. It considers the roles of different actors across case study countries, including local government, agencies, landowners and surveyors. Through comparative analysis of a selection of international case studies – Australia, Denmark, the Netherlands and South Africa – it identifies the fundamental elements that must be accounted for in the land valuation process, building on international best practice.

The rest of the report is structured as follows:

- A summary of the research approach, including the criteria for the selection of case studies and a methodological outline of how we approached reviewing the literature and conducting the supporting expert interviews.
- An overview of current approaches to land and property valuation in Scotland, considering the current system and how Scotland differentiates from the rest of the UK in its approach.
- An in-depth exploration of the case study countries, with a focus on the policy context, institutional structure, and the adopted approach to land and property valuation.
- A comparative analysis of the case study countries and Scotland, addressing differences in approach across key policy and implementation details. This section also includes a visual mapping of these differences.
- A conclusion, summarising the report findings and the key elements of best practice that the Scottish Government should consider when valuing land and property for tax purposes.

The evidence from this analysis will further the Scottish Land Commission's understanding of how the Scottish Government could increase and improve the information available about land values, ensure land and property are more effectively considered within the tax system, and ultimately promote Scottish Government policy objectives.





## 3. Research approach

### 3.1 Case study selection

Four case study countries – Denmark, the Netherlands, Australia and South Africa – were selected for this analysis. The four case studies provide a blend of in-depth exploration and comparative analysis, and were selected as they:

- provide significant geographical spread, exploring how land valuation is approached in different parts of the world;
- showcase a variety of different and contrasting approaches to the valuation of land;
- highlight different elements of the valuation process that would be considered best practice;
- have demonstrated challenges around policy implementation and operational considerations that provide valuable lessons for any potential approach taken by the Scottish Government.

The case studies were selected based on previous comparative research, including earlier Scottish Land Commission research and studies from international bodies such as the International Property Tax Institute and International Association of Assessing Officers.

### 3.2 Approach to evidence review

We conducted a desk-based review of the existing literature on the valuation approaches in the four case study countries and Scotland. In our assessment of Scotland and the four case study countries, we identified six key areas – policy and operational considerations in the design and operation of mass land and property valuations – that support a rounded and complete picture of a country's valuation processes. These six areas are:

1. **The basis on which land or property is valued.** This can vary from estimating the value of a hypothetical unimproved plot of land, separate from the value of buildings or improvements, to estimating the combined value of the plot and any buildings or permanent improvements, with differing definitions of unimproved land.
2. **Key actors in the valuation process:**
  - I. The responsible agencies or government organisations. Responsible parties – and the precise nature of their role and level of government that they work for – can vary across different countries.
  - II. The roles of different actors and stakeholders. Actors will have different roles across the process for different countries, reflecting differences in their organisational setup and valuation methodology.
3. **The data used for land or property valuation.** This can range from dedicated databases with information on housing stock, geospatial data, the natural environment and environment degradation, planning permissions and zoning rules, and market transactions. These data sources can sometimes be supplemented with surveying plots for additional information. In some cases, valuations rely entirely on data from existing databases.
4. **The methodology used.** Techniques can vary, including the use of large statistical models, desk-based research of representative areas, and surveying representative plots. The relative emphasis placed on different techniques is evaluated within the case studies.
5. **The frequency of valuation or revaluation.** Countries differ in their approach to the trade-off between frequent revaluations preventing large and surprising increases in rateable values, and the cost of greater administrative effort.
6. **The consideration of the natural environment and natural resources in valuation.** Proximity to natural assets is sometimes considered but the use of accounting techniques to estimate the inherent value of natural assets is rare, in part because of the data requirements this involves.

For each case study, we have primarily relied on research, presentations and publications produced or commissioned by public bodies responsible



for valuation in those countries as well as relevant legislation, regulation and guidance from these bodies. In addition to these national-level sources, the case studies have been supplemented by the existing comparative literature from international research bodies. We have been able to access good quality English-language sources – or official translations – for all case studies.<sup>4</sup> This is aided by English being an official language in Australia and South Africa, and the widespread availability of sources in English in the Netherlands and Denmark.

### 3.3 Interviews

Alongside a detailed deep dive into the existing evidence and evaluations of the case study scenarios, we have also carried out a small sample of interviews with key stakeholders who are directly involved in the development and implementation of valuation policy within each case study country.<sup>5</sup> For this research we spoke to experts within the following organisations:

- **Australia:** Valuer-General of Western Australia.
- **Denmark:** Danish Property Assessment Agency.
- **Netherlands:** Netherlands Council for Real Estate Assessment.
- **South Africa:** Department for Cooperative Governance, South African Council for Property Valuers Profession (SACPVP) and Rates Watch.
- International Property Tax Institute.

The purpose of these interviews was to understand: a) further context and insight into the decision-making behind implementation of the policy; b) the nuances of approach taken to the process and methods of conducting evaluations; c) lessons that Scotland could take forward for its plans to introduce mechanisms for land valuation.

## 4. An overview of Scotland's current approach to land and property valuation

### Summary

- Scotland has a separate valuation process for residential and commercial property. Residential property in Scotland is not valued in real time, but is based on its value on a fixed historical date: 1 April 1991. Commercial property is valued to reflect the annual rental value of the property on the open market.
- Responsibility for valuations is locally delegated and carried out by Assessors. Within the UK, this local valuation process is unique to Scotland. Although the Scottish Assessors' Association works to ensure consistency of approaches, each local Assessor is ultimately an independent official.
- While commercial property is revalued every three years, residential property in Scotland is not regularly revalued and can only be done so in a limited way.

Land valuation for the purposes of taxation in Scotland primarily occurs in two fully devolved contexts: **council tax** and **Non-Domestic Rates**. Although property is also valued at other points in the Scottish tax system,<sup>6</sup> in this section and the rest of the report we focus on the valuation process for council tax and Non-Domestic Rates as these are the closest direct comparison to the government-directed mass property and land valuations that take place in other countries.

### 4.1 The basis on which land or property is valued

**Council tax is levied on the value of property, not the value of the site or the underlying land.** For example, property improvements and extensions can trigger revaluations (but only at the point of sale).

Unusually, properties are not valued in real time, but rather they are based on their value at a fixed point in the past: 1 April 1991. New properties, and properties that have been significantly improved and that are revalued at point of sale, are valued based on what their value would have been on 1 April 1991, had they existed at this point.

Further assumptions are made when valuing properties:<sup>7</sup>

- that the sale was with vacant possession;





- that the dwelling was sold free from any heritable security ( meaning that any mortgage is assumed to have been paid off);
- that the size and layout of the dwelling, and the physical state of its locality, were the same as at the time when the valuation of the dwelling is made (therefore, a new house built today will be valued to take account of any improvements to the area, for example better transport links, new schools or other amenities as well as anything which has been removed and enhances the area, such as the redevelopment of an old industrial district);
- that the dwelling was in a state of reasonable repair (regardless of its actual condition, to include properties which have been allowed to fall derelict. The age and character of the dwelling are also taken into account);
- in the case of a dwelling whose owner or occupier is entitled to use common parts, that those parts were in a like state of repair (regardless of their actual condition) and the purchaser would be liable to contribute towards the cost of keeping them in such a state;
- that the use of the dwelling would be permanently restricted to use as a private dwelling; and
- that the dwelling had no development value other than value attributable to permitted development (such as extensions or alterations to the property).

There is also a specific adjustment for special fixtures designed to make homes suitable for people with physical disabilities. Any such fixtures that

would improve the value of a property are disregarded. Any such fixtures that reduce the value of a property are, though, accounted for.

Non-residential properties are valued on the basis of the rateable value which, for **most non-residential property types, is designed to reflect the annual rental value of the property on the open market.**<sup>8</sup> While determining this is relatively straightforward for the most common non-residential property types (such as shops, offices and factories), other property types (such as civic buildings, schools, pubs and hotels) require different approaches to be applied to generate a hypothetical rental value. We discuss these different approaches in Section 4.4.

## 4.2 The roles and responsibilities of key actors in the valuation process

For both council tax and Non-Domestic Rates, responsibility for completing valuations is delegated to local authorities which are required to employ Assessors who are independent of local and central government.<sup>9</sup>

**Delegation to local Assessors is specific to Scotland. In England and Wales, the Valuation Office Agency (VOA) handles all valuations centrally.**

Notably, some local authorities have created joint valuation boards which are responsible for several local authorities.<sup>10</sup> For example, the Lothian Valuation Joint Board completes valuations for: The City of Edinburgh Council; East Lothian Council; Midlothian Council; West Lothian Council. The Scottish Assessors' Association (SAA) represents all Assessors and their senior staff. The SAA facilitates consistency of approach and, while Assessors consider the policies and decisions of the SAA, they are ultimately independent officials.<sup>11</sup> The SAA liaises with the Valuation Office Agency (VOA), but it is independent of the VOA.

Homeowners and ratepayers are able to appeal their valuations to their local Assessors, and are required to provide information where necessary. For example, new homeowners are often required to provide information on building extensions or improvements to inform point of sale revaluations. In the case of ratepayers, the right of appeal can typically be exercised within four months of a revaluation or within four months of a new occupation.<sup>12</sup>

## 4.3 The data used for land or property valuation

**For both residential and non-residential properties there is no systematic, national-level data collection in Scotland.** Individual Assessors are required to maintain a Valuation List, but the use of data to complete valuations is determined by individual Assessors.

As an example in the context of residential properties, the Lothian Valuation Joint Board (LVJB) uses the in-house Domestic Valuation System. The

physical details for properties are gathered from the plans provided by a planning or building warrant application, from a survey of the property and/or from details provided by the builder or owner of the property. Details of historic sales are provided by Registers of Scotland and provide the basis for the analysis of historic sales of similar properties that underpin the valuation methodology. The LVJB also utilises information on planning and building warrant applications and approvals to identify properties that have potentially seen significant redevelopment since their last sale. This information, matched onto the register of sales automatically, identifies properties that require investigation regarding potential point of sale revaluation.<sup>13</sup>

For non-residential properties, Assessors will generally seek the following data: <sup>14</sup>

- The physical characteristics of the property (size, layout, use, condition, and location) as well as the market conditions on a specific 'tone date';
- Actual rents agreed for similar properties in the locality, which is the primary data source used for most property types;
- Accounts information on turnover or expenditure, which is primarily used for properties that operate as hotels, pubs or leisure facilities;
- Construction costs for specialist properties where no rental evidence exists, such as schools, refineries and utilities.

#### 4.4 The methodology used

**Domestic properties are valued according to the Comparative Principle of Valuation.** Transactions of similar properties are identified and used as the basis for valuation. As noted in Section 4.1, because of the historic basis of valuation for council tax, properties are not valued in real time but rather are based on their value on 1 April 1991. This is done by identifying similar local properties that were sold close to the valuation date. Even properties that did not exist on the valuation date are valued as if they had done so; this is achieved by identifying appropriate analogues that did exist at the valuation date. The value is defined to be the amount that the dwelling may reasonably have sold for had it been sold on 1 April 1991, following the seven statutory assumptions outlined in more detail in Section 4.1. **Crucially, Assessors do not actually determine a value for a domestic property, rather they assess the value of the property as being likely to fall within a given band.**<sup>15</sup> The core approach to valuation does not vary between Scotland and England & Wales.

**By contrast, Assessors do determine an actual value for non-domestic properties.** Determining these values uses different methodologies for different property types, and these are guided by practice notes put together by the SAA.<sup>16</sup> The most common methodologies used are: <sup>17</sup>



- **Comparative principle:** For the majority of “bulk class” properties such as shops, stores, offices, workshops and factories, the valuation methodology is fairly straightforward: levels of rent paid are used to reflect a rate per square metre applied to the property area. This is a process that is easily repeated for these types of properties as they are generally rent-paying.
- **Contractor principle:** For property types such as civic buildings, utility sites, airports and schools, determining a rental valuation is more complex and, as such, Assessors refer to hypothetical construction costs, adjusting for any depreciation and obsolescence, to create a conversion to a rental equivalent.
- **Expenditure methods:** Where rental data is limited, an assessment is based on accounting data and makes use of factors such as turnover (pubs, hotels), input or output (filling stations, mineral extraction). This is, again, hypothecated into a rental value.



## 4.5 The frequency of valuation or revaluation

**Residential properties in Scotland are not regularly revalued.** This core approach does not vary between Scotland, England and Wales.

New dwellings – either new builds or existing buildings that have been subdivided – are valued as new entities. There are limited circumstances under which Assessors can review the valuation band applied to a

residential property.<sup>18</sup> Broadly, these are specific circumstances where there is either:

- **A material increase in value:** This commonly occurs at the point of sale where a property can be revalued if there has been a material increase in the value of the dwelling and it, or any part of it, has subsequently been sold. This means that if a property has been altered or extended by the current owner, the valuation of the property can only be reviewed to include any alterations at the time of the property being sold. For example, the Lothian Valuation Joint Board (LVJB) states that, on a monthly basis, sales that have taken place in the Lothian region are automatically mapped to technical records of planning permissions to identify properties which have had a building warrant or planning application since the last sale.<sup>19</sup> Properties where this is the case are then reviewed to determine if the planned work has taken place. This review is typically completed using details of the sale, or, if necessary, by contacting the property owners for clarification. If all else fails, a survey appointment will be required to establish the details of any (re)development. If a property requires revaluing, it will be revalued in line with all other valuations: based on comparison of the extended or redeveloped property to similar local properties that sold on or around the valuation date of 1 April 1991.
- **A material reduction in value:** If a property value decreases because part of it is demolished, the physical state of the local area changes, or because alterations are made to improve suitability for a disabled person, it can be revalued immediately.

However, in the case of non-residential properties a more regular revaluation process is carried out. Following the recommendations of the 2017 Barclay Review of Non-Domestic Rates, **non-residential property in Scotland is reassessed every three years, with valuations based on market conditions on 1 April one year prior (the 'tone date')**.<sup>20</sup> Prior to this Review, non-residential property was typically revalued every five years. In Scotland, the last revaluation was on 1 April 2023, with the next revaluation scheduled for 2026 with new rates to take effect from 1 April 2026. These will be based on an estimate of a property's open market rental value on 1 April 2025.<sup>21</sup>

#### 4.6 The consideration of the natural environment and natural resources in valuation

There is no explicit consideration of the natural environment within Scotland's valuation process. As we discuss in later sections, this is a major distinction between Scotland and the international case studies.





## 5. International approaches to land and property valuation

This section sets out the approaches taken in the selected four international case study countries — Australia, Denmark, the Netherlands, and South Africa — to the valuation of land and property for taxation purposes. For each case study, a systematic outline of each of the six key areas to approaching land and property valuation is provided. Table 2 provides a summary of the key elements of the approach taken to land and property valuation in each of the countries in line with the six key areas.





Table 2: Summary of approaches to valuation in case study countries

| Key area                          | Australia                                                                      | Denmark                                                                                  | Netherlands                                                                                                                                                                                                                                   | South Africa                                                                                                 |
|-----------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 1. Basis of Valuation             | Land-based (unimproved/ site value), excludes building value; state variation. | “Best possible use” of land with prudence discount of 20%. Separate land & property tax. | Market value highest & best use. Depreciated replacement cost approach used for special properties.                                                                                                                                           | Capital improved value (land & buildings) for fairness and revenue.                                          |
| 2. Institutional Responsibilities | State Valuer-General & certified valuers; councils set rates.                  | Fully centralised and automated under the national Danish Property Assessment Agency.    | Municipalities under national supervision of Netherlands Council for Real Estates Assessment.                                                                                                                                                 | Municipal valuation power; provincial/national oversight; public participation.                              |
| 3. Data Sources                   | State-based data systems; transactions, permits, inspections.                  | Centralised, integrated national registers with municipal updates.                       | National base registers, cadastral data, municipal updates.                                                                                                                                                                                   | Deeds registry, valuation roll, GIS, zoning, ownership history.                                              |
| 4. Methodology                    | Mass valuation with benchmarks, state-specific adjustments.                    | Sales comparison with 6-year data & geospatial modelling.                                | 3-step mass appraisal (market analysis → model → appraiser check). Sales comparison for residential, income capitalisation for commercial, sales comparison for residential, income for commercial, depreciated replacement cost for special. | Mixed methods: sales comparison, income capitalisation, depreciated replacement cost; current market values. |
| 5. Frequency of Valuation         | Most states are annual. Northern Territory is triennial.                       | Biennial since 2023 under new automated system.                                          | Annual since 2007.                                                                                                                                                                                                                            | 4-5 years for urban areas, 5-7 years for rural areas with supplementary updates.                             |
| 6. Environmental consideration    | Physical constraints, vegetation orders, water access.                         | Geodata for proximity to coast, nature, infrastructure; climate data.                    | Not directly. Shapes validation through zoning, environmental restrictions, water management.                                                                                                                                                 | Mostly indirect; environmental zones excluded from valuation.                                                |

By presenting these elements systematically, this section provides a structured account of how valuation systems are designed and operated internationally, highlighting the diversity of approaches and drawing attention to common themes and innovations that may be relevant for Scotland. These are drawn out further in the next section.

## 5.1 Australia



### Summary

- Land in Australia is usually valued on the basis of unimproved value – reflecting the most valuable use of land – and excludes capital improvements (for properties zoned as rural). Valuations of properties that are zoned as rural-residential and all other categories consider the unimproved value of the land along with site improvements.
- Most land is valued using the mass valuation approach where properties are valued in groups called “components”.
- Most states value land on an annual basis, with the exception of the Northern Territory that does so every three years.

#### 5.1.1 The basis on which land or property is valued

Land in Australia is usually valued on the basis of ‘unimproved value’ (UV) of the land. Unimproved value refers to the value of the land only and excludes capital improvements.<sup>22</sup> Examples of capital improvements include buildings, landscaping, pathways and fencing. However, it does consider site improvement works such as draining, excavating, filling, clearing and constructing retaining walls.<sup>23</sup> The unimproved value reflects the most valuable use of the property.

The land valuation process differs somewhat between various states and territories. Additionally, the valuation of rural or agricultural land often involves other considerations related to farming, such as soil quality and access to water. The overarching factors that affect land value in Australia include:<sup>24</sup>

- **Land location:** Location is one of the most critical factors in determining land value and it is affected by factors such as access to amenities, transport, schools, and commercial centres.
- **Zoning and regulations:** Local zoning laws and planning regulations can impact the value of the land by influencing its potential uses and development potential.
- **Environmental and legal factors:** The land’s value may be lower or higher due to environmental issues or legal restrictions.
- **Property size and shape:** Size plays a part in value; however, it is not the only consideration, as irregularly shaped properties or land that is challenging to develop may have a reduced value.

- **Property market:** Valuers consider how the current real estate market and trends and the demand and supply of land in the region impact land values.
- **Comparable sales:** Also known as the market approach, this refers to a comparison of the land to other land with similar characteristics that has recently been sold in the same area to estimate the value.
- **Potential use:** The potential of the property to generate income plays a critical role in land valuation. This factor is typically more important if the property will be used for commercial or investment purposes.
- **Site inspection:** During a site inspection, a valuer considers the land's unique features, topography, accessibility, and location.

**There are two primary methods of valuation used when determining the value of land: the unimproved value method and the site value method.**

The choice between these methods depends on the land's zoning under the state's or territory's planning provisions or the equivalent local government planning scheme.<sup>25</sup>

- **Unimproved Value Method:** This method is applied to land zoned as rural under the relevant planning scheme.
- **Site Value Method:** The site value method is used for land in any other category, including rural-residential zoning. If a property falls under multiple zones, the predominant zoning on the property determines the valuation methodology. This method considers the unimproved value of the land along with site improvements.

In addition to these, certain states, such as Western Australia, incorporate '**gross rental value (GRV)**' in their valuation methodology for urban areas. It is the total annual rent a property might reasonably be expected to earn each year if it was rented out. GRV is still determined for undeveloped land at a statutory valuation of 3% of the unimproved value (UV) for land designated as residential and 5% for land designated as non-residential. These figures are used by rating authorities – such as local councils, water and sewerage providers and emergency services – to determine any applicable service charges and levies.<sup>26</sup>

### 5.1.2 The roles and responsibilities of key actors in the valuation process

**The roles and responsibilities of key actors vary slightly for different states and territories.** At an overarching level, the Valuer-General of each state oversees the valuation system. This includes valuations for council rates and land tax assessments. Each state's Valuer-General is the state government's authority on statutory valuations.<sup>27</sup>

Land value is typically determined by licensed property valuers who are registered with the Australian Property Institute (API) and other relevant



authorities.<sup>28</sup> Valuers from Land and Property Information (LPI) or Land and Property Management Authority (LPMA) check the quality of land values before they are accepted and issued.<sup>29</sup>

### 5.1.3 The data used for land or property valuation

The specific data collected and analysed for land and property valuation also differs by each state and territory. A consolidated list of data includes:<sup>30</sup>

1. Property transactions, such as sales and rental transactions
2. External or internal inspection data
3. Historic government property data records
4. Planning permit or building permit records
5. Planning (zones and overlay) information
6. Property transaction statistics, including comparable areas of land that have recently been sold
7. Property title and occupancy details
8. Real estate market conditions<sup>31</sup>
9. Physical attributes and constraints on the use of the land.

### 5.1.4 The methodology used

In Australia, most land is valued using the mass valuation approach where properties are valued in groups called “components”. This is to ensure consistency and efficiency across a large number of properties. The properties in each component are similar or are expected to reflect changes in value in a similar way. During the valuation process, valuers analyse sales of both vacant land and improved properties, making adjustments for the added value of improvements.<sup>32</sup> The steps involved in this process differ slightly for different states and territories, but the overall process entails:<sup>33</sup>

1. **Grouping similar properties:** Valuers categorise properties into groups based on similar attributes into components, as noted above.
2. **Benchmarking properties:** Within each component, valuers select two types of benchmark properties, which serve as reference points for valuation. The two types are:
  - a. Primary benchmark: Represents most properties in the component.
  - b. Reference benchmarks: Represent higher- and lower-valued properties and other subgroups.

**3. Conducting sales evidence analysis:** Valuers analyse property sales data, including both vacant land and improved properties. Adjustments are made to sales prices to:

- a. remove the added value of improvements (such as buildings)
- b. reflect the property market conditions, as of the qualifying date in the valuing year.

The benchmark component report provides details on sales used for valuing benchmark properties.

**4. Calculating component factors:** Valuers individually value all benchmark properties, using sales evidence. The rate of change recorded for the primary benchmark is called the component factor. Factors considered include:

- a. Most valuable use of the land
- b. Zoning, heritage restrictions, and other use constraints
- c. Size, shape, features, location, and views
- d. Nearby development and infrastructure.

**5. Applying component factors:** Valuers review the reference benchmarks to ensure quality. The component factor is then applied to all properties within the component. This determines each property's new land value.

**6. Quality assurance:** Rigorous quality checks ensure accuracy and consistency of new values. Quality assurance reviews in each local government area are conducted before the Valuer-General accepts the land values and are entered in the Register of Land Values.

### 5.1.5 The frequency of valuation or revaluation

Land valuation usually<sup>34</sup> takes place annually in Australia, but at different times for different states and territories. For example:<sup>35</sup>

- **Victoria and New South Wales** determine land values as at 1 January each year. Both an unimproved Site Valuation (SV), and a Capital Improved Valuation (CIV) are assessed for each property.
- Land in **New South Wales and Tasmania** is valued for rating and tax purposes as at 1 July each year.

All jurisdictions provide an avenue for objecting to an assessed valuation, but the time period for lodging an objection is limited – usually 60 days – and often strictly enforced.<sup>36</sup>

### 5.1.6 The consideration of the natural environment and natural resources in valuation

Where applicable, environmental factors are considered in the land valuation process. They include the physical attributes of the plot such as:<sup>37</sup>

- Shape, size, topography, views, aspect and elevation
- Light, air, noise and vibration
- Erosion, flooding and permanent damage from adverse natural events
- Limitations due to waterways or environmental corridors
- Weeds, pests, carrying capacity and country classification
- Accessibility to the land
- Access to water and to essential or desirable services
- Mining operations

Beyond this, constraints – such as erosion, flooding and permanent damage from adverse natural events, limitations due to waterways or environmental corridors, and vegetation protection orders – are considered as applicable.





## 5.2 Denmark



### Summary

- In Denmark, both land and properties are valued for the purposes of taxation. Properties are valued on sales prices within the last years, whereas land is valued on the basis of the usage that would give the highest value. A 20% discount is applied to this 'best possible use' valuation.
- Municipalities are responsible for registering and updating most of the key data held in national databases, but the valuation process itself is conducted nationally by the Danish Property Assessment Agency.
- Denmark has operated a fully digitised and automated valuation process since 2023, bringing together a wide range of national databases. The transition to this process has also increased the frequency of revaluations to a biennial basis, but initial assessments saw some unexpected rises in land value estimates.

### 5.2.1 The basis on which land or property is valued

In Denmark, both property and land are valued and assessed for the purposes of taxation:<sup>38</sup>

- **Land tax** is paid on the value of undeveloped land (land with no buildings on it), although this can include a plot that has buildings. Land value takes into account both commercial and residential use.
- **Property tax** is paid on the value of the property, including the land and buildings. It is only paid by homeowners who live in the property.

In the case of rental properties, property tax is levied on the net profit of the rental business, whereas any undeveloped land on the plot is taxed via the land tax.

The Danish Property Assessment Agency makes a land assessment and property assessment. **The land valuation is based on the 'best possible use' of the land without taking current use into consideration.**

This best possible use accounts for:

- Whether the use is legally permissible in according to local zoning regulations;
- Physical possible for the assigned use to be made of the land;

- Economically feasible in terms of assigning a use that maximising the value, rent or profit of a property.

However, a principle of prudence is applied to best possible use, so that property owners are taxed based on a value 20% lower than the assessment.<sup>39</sup> It was explained in our expert interview with the Danish Property Assessment Agency that while this deduction was designed to account for market uncertainty, the level was not explicitly evidence-based but rather a policy tool to aid public acceptance of the valuation process and wider tax system.

**When calculating the value of a property, the starting point is the value that properties in the area are selling for to cover the previous six years.**

This process makes use of digital property sales information from the public registration of property rights.<sup>40</sup>

Denmark introduced a new digitised and automatic valuation system in 2023, when 1.7m preliminary assessments for 2022 were published. This process, and in particular the use of planning permissions data to establish highest and best use, has been criticised as leading to unexpected and subjectively unfair land value estimates. Some assessments varied significantly from the previous valuation system. On average, land value was considerably higher than the property value, which caused political and public debate.<sup>41</sup> An investigation and quality assurance process was initiated by the Ombudsman of the Danish Parliament in the preliminary valuation, and it found that the preliminary assessments may have been too high for new properties in expensive residential areas.<sup>42</sup> In our expert interview it was acknowledged that erroneous valuations and incomplete data in 2023 was a result of the infrastructure for the new valuation system not being sufficiently ready, the lack of sufficient manual oversight as well the use of a nationwide adjustment model (see Section 5.2.4 for more detail).

### 5.2.2 The roles and responsibilities of key actors in the valuation process

Valuation is provided by the Danish Property Assessment Agency, a national-level agency. It aims to ensure fair, uniform and transparent property assessments, which are used to calculate property tax. It also supervises municipalities' Building and Housing Register registrations in accordance with the regulatory frameworks set out in law. **However, most of the Danish process of land valuation is now fully automated and overseen by central government employees.** This is to provide a clear and widely accepted process for calculating property tax, with public information available on land and property valuation. The process of automation has increased the centralisation of the valuation process, removing the role of regional valuation boards.

**Municipalities are responsible for registering and updating most of the key data** and land-use planning (which affects land value).<sup>43</sup> These datasets

are derived from the records held by various national public agencies that operate and manage the registers from which data is drawn.

The Danish Tax Appeals Agency handles appeals about land and property valuation. It is an independent authority that handles appeals against decisions made by the Danish Property Assessment Agency (as well as other tax agencies).

During our expert interview, it was explained that **one important lesson from the initial automated valuations was the need for public engagement in the valuation process.** Initial valuations in 2023 lacked clear explanations for taxpayers of the changes, however the revised valuations in 2025 now provides clearer reasoning for assessed values. This has led to a significantly lower complaint rate of just 0.4% in 2025.

### 5.2.3 The data used for land or property valuation

Data for land and property valuations are drawn from a range of relevant datasets, public bodies and authorities:<sup>44</sup>

1. **Public Land Registry:** includes a public register of rights over real estate.
2. **Building and Housing Register:** a unit of the Danish Property Assessment Agency holding information about all buildings (over 10 square metres) in Denmark. The country's municipalities are the responsible updating authorities.
3. **Plandata.dk:** a Danish Planning and Rural Development Agency database created in 2018 as the 'planning basis', which determines what and how much can be built on a plot of land. This is based on data reported by municipalities. To develop Plandata.dk, existing local and municipal plans and rural zone permits were re-registered, and the map material was digitised.<sup>45</sup> The planning basis shows what and how much can be built in an area of land, allowing municipalities to determine what applies to an individual property and impacts on the value of both land and property.<sup>46</sup>
4. **The Common Municipal Property Master Register:** a nationwide register that contains information about ownership, land parcels, assessments and property taxes. This register is used by state, county and municipal authorities as well as private companies as part of administrative, legislative and planning tasks.
5. **Geodata from the Danish Climate Data Agency.**
6. **Danish Geodata Agency:** hosts the Danish Cadastre of the location of real estate, land parcels and building. The data includes the cadastral register, maps and archives, measurements and other cadastral information.



- 7. Danish Agency for Data Supply and Efficiency (SDFE):** including aerial photography,<sup>47</sup> maps and the Danish Elevation Model (explained in more detail in section 5.2.4). Taken together, the information from this agency is used to gain insights into distances, the basic shape of land parcels and properties and views.

#### 5.2.4 The methodology used

In Denmark, the valuation methodology for residential property goes through four steps:

- 1. Indexation of sales prices:** This is the primary data component of the valuation. Based on transactions in the area within the past six years, this is used to calculate the area's price per square metre based on projected sales prices.<sup>48</sup> In our expert interview it was explained that six years of sales data provides a balance between having enough transactions for robust modelling and maintaining data relevance. Shorter periods, such as four years, had been tested but were found to be less effective.
- 2. Nearest neighbours modelling:** Based on this sales data, the initial valuation uses a nearest neighbour approach, typically considering 10 to 15 neighbouring properties, with the closest neighbour given the highest weight in determining the area price.
- 3. Adjustment modelling:** Following this, a generalised additive model is used to adjust for differences in building and geographic characteristics between the subject property and its neighbours, with particular attention to construction age and location. Here, Geodata is used to determine distances between properties and their surroundings, including major roads, high-voltage lines, wind turbines, seas, and lakes. It also includes information about views from the plot, ground shape, or slope. Data comes from the Danish Elevation Model, collected using aerial laser scanning, which maps elevation differences in terrain and landscape throughout Denmark in relation to mean sea level.<sup>49</sup> Assessments are based on different conditions for all-season homes, summer homes, and apartments. Proximity to certain natural and man-made resources can positively or negatively affect the valuation based on its relationship to the property's type and purpose. However, considerable nuance is involved: for example, proximity to a railway has a negative effect on the valuation, but the effect levels out after around 300 metres, where living any closer to a railway does not then have a significant bearing on the valuation.<sup>50</sup> As part of the initial move to an automated system, the adjustment model was set at the national level which led to significant discrepancies. However, the model has since been updated to increase geographical specificity to better reflect local market conditions, as well as greater manual oversight and quality assurance of the automated processes.

**4. Land valuation:** In valuing the wider land on a plot, the method involves pairing sales data from unbuilt land with value of building a hypothetical standardised property on the plot to create an estimated land value to be derived from observed data.

Commercial properties are valued similarly to residential property, however these valuation use a baseline derived from the value of building a family home at the same location, with adjustments based on the type of commercial use and available commercial data.

#### 5.2.5 The frequency of valuation or revaluation

**Property and land assessment takes place every two years.** This biennial revaluation has been retained since the movement to a digitised and automated system, with the first preliminary assessments introduced in 2023. These were finalised in 2025.<sup>51</sup> In our expert interview, it was explained that the biennial revaluation was favoured as it:

- ensured a consistent smoothing across the six year of sales data that is the basis of valuations;
- retained some consistency and practicalities with the old system for the public;
- annual revaluation cycles were deemed significant more resource intensive, and require more manual labour input.

Property owners and landowners can check the information about their properties before it is assessed and submit an objection if the information is incorrect or incomplete. This must be done within four weeks from the date of receiving an assessment declaration.<sup>52</sup>

#### 5.2.6 The consideration of the natural environment and natural resources in valuation

In part to better account for the natural environment in valuation assessments, **the Property Assessment Agency has worked with the Danish Climate Data Agency to develop an improved geodataset** as part of the move to a digitised and automated system.<sup>53</sup> Factors considered include the conditions of the plot, as well as its proximity to resources – both man-made (such as motorways, public transport) and natural (for example, the coast or forestry) – that may affect property value.<sup>54</sup>

## 5.3 The Netherlands



### Summary

- Both residential and non-residential property is valued in the Netherlands for the purpose of taxation. The valuation system is an annual market-based assessment of the property, based on a principle of “highest and best use”.
- In the Netherlands, the valuation system is highly decentralised, with valuations carried out at the municipal level (either by municipalities themselves or outsourced to private assessors). The Netherlands Council for Real Estate Assessment provides guidance, oversight and quality assures this process at a national level.
- Transparency is key to the Dutch system, with residential valuations publicly available since 2016 and the quality of municipal valuations assessed on a five-star rating system.

### 5.3.1 The basis on which land or property is valued

In 1995, The Act for Real Estate Assessment came into force in the Netherlands, stipulating that residential and non-residential properties undergo valuation for tax assessment purposes.<sup>55</sup> The Act specifies that municipalities are responsible for the valuation process, and it was put in place to bring about greater efficiency, clarity, quality and uniformity to the valuation process, as prior to 1995 the valuation system had been fragmented and undertaken by various levels of government that often applied different methods and definitions.<sup>56</sup> The Netherlands Council for Real Estate Assessment, a national-level body, was also established by the 1995 Act to supervise and monitor the valuation process.

In the Netherlands, **the valuation of property is based primarily on the market value of a property on a given date, in accordance with international valuation standards.**<sup>57</sup> **The market value is based on the “highest and best use” appropriate in the context of the formal possibility, as described in the property’s zoning plan.** This considers what is legally permissible, physically possible, financially feasible, and maximally productive.<sup>58</sup> The actual state of the property on the value reference date is also a significant determining factor in the assessment process.<sup>59</sup> The valuation is made on the assumption that there is full and unencumbered ownership of the property to a single party, and it does not consider leaseholds or tenancy rights.



For properties where market data is lacking (especially non-residential or specialised properties such as schools or churches), the Dutch system utilises a depreciated replacement cost approach.<sup>60</sup> The depreciated replacement costs reflect the value for the current owner in a situation where there is no potential buyer who is willing to purchase the property. This ensures that such properties are valued in a consistent and fair way even in the absence of market comparability.

To appraise a property, it is important that there is clarity on what is being included in a property's assessment through a process of "demarcation".<sup>61</sup> Over time, the Dutch system of appraising a property has increasingly favoured a useable floor area approach. This approach is often being listed in base registers and measuring procedures developed by valuation agencies. However, municipalities have the choice between the measuring of useable area or gross volume of the buildings. The municipality must use a single system for each property category.<sup>62</sup>

In our expert interview with the Netherlands Council for Real Estate Assessment, it was explained that the Netherlands does not separate land and property in valuations due to the limited number of bare land transactions and the predominance of government involvement in land markets, making it difficult to establish transparent and market-based land values. Moreover, given the importance of transparency in the Dutch system (discussed in more detail in Section 5.3.2), a decision was made to not make a clear division between how much of a property's value is attributable to land versus buildings given that transaction data will typically reflect the combined value.



### 5.3.2 The roles and responsibilities of key actors in the valuation process

In the Netherlands, **municipalities are responsible for conducting and overseeing the technical property assessment work.** Our expert interview with the Netherlands Council for Real Estate Assessment revealed that some smaller municipalities often collaborate through public shared service centres to pool resources for valuation and taxation processes, enabling them to handle both routine and complex valuations more efficiently.

In addition to collaboration, **municipalities are also free to outsource and contract the valuation process to private sector assessors.** The Netherlands has a system for certification of private assessors, in which certified appraisers are listed in a registry. There is no legal requirement for property valuation to be carried out by a certified appraiser, but this is often best practice and required by municipalities.<sup>63</sup> Outsourcing mostly takes place for highly specialised or complex property valuations, so municipalities (including larger ones) will often hire private sector experts for such work. However, this process of outsourcing for specialised valuations is often expensive due to the need for detailed market analysis and ongoing negotiations with property owners.

If municipalities fail to meet the minimum quality standards set by the Council for Real Estate Assessment and in line with the 1995 Act, the municipal council is held accountable. In extreme cases where necessary improvements are then not implemented, the Minister of Finance may decide to assign the assessment process to another party instead, such as private sector assessor.<sup>64</sup>

The Cadastre, Land Registry and Mapping Agency in the Netherlands supports the municipality assessment process through the provision of geographical mapping, ownership data and price indices for different categories of property.<sup>65</sup>

The **Council for Real Estate Assessment is a national body that is responsible for supervising the quality and legality of municipal valuations. It provides guidelines, conducts audits, and arbitrates disputes.** The Council publishes a “Valuation Instruction” covering what it expects from municipalities and valuation suppliers working for municipalities when implementing the legislation.<sup>66</sup> The main purpose of the Council’s quality control standards is to assess whether the valuations are of sufficient quality during audits at municipalities or remotely. The Council also conducts other investigations, for example, whether the data used in the valuations are correct and whether the municipality handles objections correctly and within the required time limit.<sup>67</sup> To transparently demonstrate the overall quality of assessed property values within a municipality, The Netherlands Council for Real Estate Assessment uses a five-star rating system with the ratings for each municipality, which is displayed publicly.<sup>68</sup>



**The Dutch property valuation system encourages public participation to improve transparency, compliance and trust.** Public access to assessed values and valuation criteria of residential property has been possible since 2016, and this has enhanced taxpayer understanding of the system and reduced disputes.<sup>69</sup> There are ongoing efforts to further transparency of residential valuations, with calls to publish sales prices alongside valuations as a way of bolstering trust in the system. In addition, public support for the valuation process is aided by valuations informing not just property taxation but a wide range of other functions, including the Dutch water management system through the Polderboards.<sup>70</sup> At present, this transparency does not extend to commercial or specialised properties due to concerns about commercial sensitivity and the individualised nature of some valuations. However, there are ongoing discussions around making some commercial property valuations publicly available, but there are concerns over the consistency and quality of data.

### 5.3.3 The data used for land or property valuation

In completing a valuation, municipalities in the Netherlands use a range of data sources, including:<sup>71</sup>

- **Property characteristics:** Includes data on the type of house, size (useable floor areas and plot area), usage, year of construction, location, maintenance condition and building materials.



- **Market transaction data:** Recent sales prices, rental income, capitalisation rates, and vacancy rates are used.
- **Geographic data:** Sourced from national cadastral and mapping agencies.
- **Base registers:** These are centralised, legally mandated databases that include authentic data on buildings, addresses, persons, and ownership.
- **Administrative data:** Municipal records of building permits, zoning changes, and environmental regulations.

In assessing the characteristics of a property, the assessment uses registration documentation as the basis of this assessment. However, each municipality monitors these property characteristics and updates them if necessary. This process may involve:<sup>72</sup>

- Comparing aerial photos to discover significant structural changes or alterations.
- Walking around the neighbourhood to see the maintenance condition of a property.
- Looking at online house sales.
- Enquiring if a new property owner has changed anything in a home after the purchase, such as an extension or a new kitchen.
- Checking whether the data from the municipality still corresponds with the data from the Cadastre.

Triangulating property characteristics and market transaction data with more visual and statistical data and tools is designed to ensure what has been termed both horizontal (similar properties assessed equally) and vertical (higher-value properties assessed higher) equity.<sup>73</sup>

### 5.3.4 The methodology used

Broadly speaking, the municipality appraises property value in three steps:<sup>74</sup>

1. **Market analysis of sold properties:** Municipalities collect the sales prices of all properties in the municipality. The sales prices that the municipality receives from the Cadastre are carefully examined. It is analysed, among other things, whether a valuation can be used to appraise the value of other properties. If there were special circumstances for a sale, this sale will not be used in the appraisal of other properties. It is also checked whether the characteristics of the property sold correspond with the data a municipality has in its system.
2. **Setting up a valuation model:** Once the market analysis is completed, the sales prices are used to set up a valuation model. All information about the properties sold is used to ensure that the valuation model approximates the valuations as closely as possible. The model can also

estimate the market value for all unsold properties. The Netherlands employs a system of mass appraisal, with valuers making extensive use of Computer-Assisted Mass Appraisal (CAMA) systems and tools to process data and calculate property values efficiently. Only in very few circumstances does an assessor's office in the Netherlands not have some type of CAMA system to help with the property assessment process.

- 3. Final check by appraiser:** An appraiser checks the model values calculated by the valuation model before this appraisal is used as an assessed value.

Within the mass appraisal step, a variety of approaches are taken depending on the specific circumstances of the property.<sup>75</sup> For residential properties, it is mandatory that sales comparisons are used for the assessment of residential properties in line with market value. For a non-residential property, the value needs to be assessed based on the market value or on the depreciated replacement costs. Of these, the highest value needs to be applied. The market value for a non-residential property can be assessed in three different ways, namely:

- A sales comparison approach in line with the approach taken to residential property.
- Income capitalisation approach of the rental value – this is most common for rental and commercial properties.
- Discounted cashflow method, which is used where long-term income projections are available.

Recently, the Netherlands has been exploring the integration of Artificial Intelligence (AI) and Machine Learning (ML) into its valuation methodologies, and in particular CAMA systems to improve their quality. While an assessment by the Netherlands Council for Real Estate Assessment concluded that the biggest advantages of approaches that use AI and ML is their ability to process enormous amounts of data, one of the biggest drawbacks of these approaches is the “black box problem” of explaining the operation of AI and ML to the taxpayer.<sup>76</sup>

The difficulty of explaining AI and ML processes is a potentially significant challenge to the importance placed on public transparency within the Dutch system. Despite this, in our expert interview it was explained that municipalities have been encouraged to adopt AI-based valuation models and to use these in conjunction with more traditional CAMA systems to cross-validate and act as a source of quality assurance. This adoption of AI-based quality assurance has been built on partnerships between the private sector and municipalities.

### 5.3.5 The frequency of valuation or revaluation

**The Netherlands shifted from a four-year revaluation cycle to an annual valuation system in 2007.** Each year, properties are assessed based on their condition and market value as of 1 January of the preceding year. According to the Netherlands Council for Real Estate Assessment, the major advantages of shifting to this system include: more accurate and current assessments, increased public trust in the valuation process, lower long-term administrative costs due to continuous processing, and reducing large shifts in liability over time by reflecting actual real-time changes in the property market.<sup>77</sup> However, the Netherlands Council for Real Estate Assessment explained that in 2023 there were calls for a biennial valuation system to be introduced after valuations in that year saw rapid increases in market prices and a subsequent rise in objections. These calls were rejected, with a report by the Erasmus University Rotterdam concluding that annual valuations were too embedded in practice to reverse without significant damage to the system, as well as the wider advantages of annual valuations outweighing the short-term difficulties seen in 2023.<sup>78</sup>

The Netherlands has a formalised objection process. Dutch residents can object to their valuation within six weeks, and this must be logged with the municipality. Municipalities are still obliged to assess objections that were logged beyond this window. If it turns out that the assessed value is more than 20% higher than the true valuation, the municipality must reduce the valuation. Significant overvalues of this nature can be backdated by five years.<sup>79</sup>

### 5.3.6 The consideration of the natural environment and natural resources in valuation

The core property valuation process is driven by market dynamics and property characteristics. As a result, **the valuation process does not explicitly quantify a property's relationship to the natural environment.** However, environmental considerations shape the valuation process through determining permissible uses of land (which does directly affect market value), the allocation of environmental permits, and water management processes.<sup>80</sup> In our expert interview, it was explained that in densely populated areas, where market data is more abundant, the impact of natural resources on valuations will be captured in transaction prices. It was also explained that explicit adjustments would mostly be necessary in less densely populated areas with limited data.



## 5.4 South Africa



### Summary

- Property (including land) is valued on the basis of current 'fair market value' using capital improved values, and the exact method varies by property type.
- There are a large number of actors within the valuation system, and public engagement is expected. Municipalities have the main responsibility for the valuation process in accordance with the requirements set out in national legislation, but most contract private professional valuers to conduct valuations.
- The valuation process is conducted every 4–7 years, with supplementary revaluations for individual properties conducted as and when needed in the interval period.

### 5.4.1 The basis on which land or property is valued

South Africa has a long history of land value taxation. Its current system was introduced in 2004. Prior to this there were three different systems in place, which were replaced by a single uniform system of property taxation based on the market value of land and buildings.<sup>81</sup>

**Valuations serve solely to levy property tax under the Local Government: Municipal Property Rates Act 2004.** For this purpose, 'property' refers to a plot of land which may or may not include buildings. Although all properties are valued, not all properties are rateable, meaning they do not have tax applied to them. As part of the implementation of the 2004 Act, an unimproved value system was rejected by the South African Institute of Valuers (the valuation profession's trade body) due to a lack of vacant sales data in urban areas and concerns over public understanding.<sup>82</sup>

Property valuation in South Africa is based on 'fair market value', defined as the price a willing seller would receive from a willing buyer on the valuation date. Arriving at this value requires the use of different methods, depending on the type of property being assessed:<sup>83</sup>

- **Comparable sales method** is used for residential property. This is based on recent sales prices of similar properties.
- **Income capitalisation method** is used for commercial or residential rental properties. This is based on the properties' capability to earn income (using anticipated future discounted cashflows).
- **Cost method** is used for institutional properties (for example, schools,

hospitals). This is based on the cost to replace or rebuild using an estimate of the costs of improvements, less depreciation, and plus the value of the land.

The decision to use capital improved values was informed by the broad international acceptance and established uses of this approach, as well as the use case of valuation for property taxation in South Africa. Capital improved values were considered to be more consistent than land value alone, therefore offering a better revenue base, as well better reflecting the owner's ability to pay the tax charged on the valuation.<sup>84</sup> However, while highest and best use is not explicitly considered, some view it as implicit in the calculations due to the impact of developers' demand on sales prices, including for vacant land.

#### 5.4.2 The roles and responsibilities of key actors in the valuation process

Valuation in South Africa is relatively decentralised, with some central oversight. Municipal governments have the primary responsibility for land valuation. The right to value and rate property in their jurisdiction is given to municipalities in South Africa's Constitution, and they are responsible for ensuring the valuation database for their area is fully maintained and continuously updated.<sup>85</sup> However, there are a number of other key private and governmental actors within the system. This includes:

- **National government** (the Department of Cooperative Government) which sets guidelines for valuations and the specifications for the procurement of private valuers.
- **Provincial governments** monitor compliance with these guidelines and establish **Valuation Appeal Boards (VAB)** to handle appeals. There may be several VABs per province depending on the number necessary to cover the area, with at least one per metropolitan municipality.
- **Private professional valuers** are contracted by most municipalities to compile and maintain valuations. They must be registered in line with the Valuers Profession Act 2000.
- **The South African Council for the Property Valuers Profession (SACPVP)** regulates professional valuers.
- There are also **representative bodies for professional valuers** which promote the common interests of persons in the valuers' profession.<sup>86</sup>

While municipalities can conduct valuations in-house, this is currently only done in the City of Cape Town. **The majority of municipalities procure private valuers due to a lack of internal resource capacity and expertise.** The experts interviewed highlighted that the reliance on external suppliers in the South African system is, to some extent, also shaped by the historical context and the initial lack of internal capacity in municipalities at a time where there was a need for the rapid implementation of a new system.

They also highlighted that there remains a shortage of skilled valuers and technical staff, which limits the thoroughness and accuracy of valuations. While municipalities are meant to quality assure valuation rolls provided by contractors, the experts we interviewed reported that there is generally a lack of rigorous testing and a general reliance on the objection and appeal process to raise and address issues.

In addition, within the South African system **community participation is encouraged**. Municipalities typically require valuers to ‘involve and educate’ the local community in the valuation process.<sup>87</sup> Stakeholders within scope include councillors and municipal officials, rate payers, rate payer associations, agricultural unions and farming associations, business associations, and civic associations, and would typically take the form of public meetings. In practice, engagement is limited ahead of valuations taking place. However, a high level of transparency leads to engagement post-valuation through the objections and appeals processes.<sup>88</sup>

#### 5.4.3 The data used for land or property valuation

A large amount of data is required to be collected by valuers to prepare the valuation role. The data collected is informed by the Municipal’s Rates policy and national guidance which stipulates the minimum categories of data valuers must collect for different property types.<sup>89</sup> For this, valuers use a range of data sources including:

- **A property register** based on a land audit verifying all property in the municipality and existing land and building attribute data.
- **Deeds data from the Register of Deeds** through a web-based Deeds Registration System database which includes a central registry of property transactions.
- **Geographic information** such as aerial imagery, building footprints, neighbourhood delineation, zoning, and contours. Digitised site plans are required where aerial photography or satellite imagery is not being used.
- **Pricing data to calculate valuation** such as recent sales data, market trends, future development potential.
- **Any other data that may have a bearing on market value**, such as records relating to rentals, vacancies, expense ratios, capitalisation rates, and construction costs.

Largely, data collection is a manual exercise. However, most municipalities use Geographic Information Systems (GIS) to link cadastral information to the valuation roll to help maintain accurate property records. Our expert interviews highlighted that there are practical challenges faced in South Africa in collecting some of the data required. In particular, this is the case in rural areas, where clear ownership records are not kept or where ownership of plots is not formally subdivided. As such, data quality can be



limited, especially where municipalities do not have in-house data managers to maintain records. Data quality is also an issue when the valuer has been contracted with insufficient time to complete new valuations ahead of the fixed deadline linked to the start of the financial year .

#### 5.4.4 The methodology used

Municipalities typically contract private professional valuers to compile a valuation roll for their municipality. This is an extensive database of information about each property in their municipality area and its valuation. Valuers must ensure they have correct and accurate data for each property – either through electronic methods (for example, high-quality aerial photos) or via inspections. It takes around one year to complete a valuation roll, followed by a period of time for the municipality and the public to inspect the roll and raise objections (usually 60–90 days).

The process valuers follow can be summarised as follows:<sup>90</sup>

1. **Procurement of valuation service** by municipality through a competitive tender (if there is no in-house team)
2. Development and delivery of **public participation**
3. **Compilation of the valuation roll** based on a review of the existing valuation roll in comparison to electronic deeds data, aerial imagery, and GIS information. Properties for inspection will be identified and site visits conducted to obtain data such as property use, rentals and financial records of businesses.<sup>91</sup> As part of this process, data collectors and sub-contractors may be recruited and trained.
4. **Valuer prepares a market and cost report** showing all explanatory calculations, formulae, rates per square metre, and notes, based on sales review and benchmark value calculations or on manual valuations for special properties.
5. **Valuation roll certified** and submitted to municipality
6. **Management of objections and appeals**
7. **Supplementary valuations** (ongoing)

The method for the valuation calculations is either set by the municipality's valuation system or the valuer's own system (as long as it complies with the Act).<sup>92</sup> The **primary factor used in the calculations is comparable sales data of similar properties and mass valuations are commonly used for residential property**. This can be done by a computer-assisted mass appraisal (CAMA) system. However, this is not always cost-effective, for example in the case of small towns, and their use is rare.<sup>93</sup> Most valuers employ manual methods such as Excel models.

Certain property characteristics (for example, the value of annual crops or mining usage) are excluded from valuation or have special stipulations applied and there are specific stipulations for mixed use and common properties.<sup>94</sup>

#### 5.4.5 The frequency of valuation or revaluation

Municipalities can complete valuations annually, but **typically a new valuation roll is completed every 4–5 years** due to the considerable cost and resources required. The exact timeframe depends on the type of area covered by the municipality:

- In **rural areas, a valuation roll is required to be completed every five years**, with the possibility to extend to seven years.
- For **metropolitan municipalities, valuations should be completed every four years**, with the possibility to extend to five years if necessary.

Municipalities must apply to the provincial government to grant an extension. Extensions account for the practical challenges municipalities can face due to lack of resources, inadequate planning or budget constraints.

To ensure valuations are a current reflection of market value, valuations must be from no more than 12 months prior to the start of the financial year within which the valuation roll is to be first implemented as the basis for property rates.<sup>95</sup> **Supplementary valuations for individual properties are conducted as needed** during the lifespan of a valuation roll.<sup>96</sup> The triggers for a supplementary valuation were clarified in an update to the initial legislation in 2015 and aim to address market changes and prevent large changes in value when the new valuation roll is prepared.<sup>97</sup>

#### 5.4.6 The consideration of the natural environment and natural resources in valuation

Consideration of the natural environment is **not an explicit factor** in the South African valuation system but valuations do take into account a property's proximity to some natural resources and environmental factors. For example, where properties are subject to onerous environmental impact assessment requirements, are affected by adverse soil conditions, close to busy roads, or with prohibition on development.<sup>98</sup>

There are also specific stipulations for mining areas. Where the freeholder of the property is not the mining title holder, they are considered to be encumbered by the mining title and therefore the appropriate valuation for the plot is a residential land value.<sup>99</sup> The Property Valuation Act also exempts some property types from taxation which includes particular types of natural environment, such as seashores and nature reserves.<sup>100</sup>



## 6. Comparative analysis of approaches to land and property valuation

Building on the previous section's exploration of the country case studies, this section provides a comparative analysis of the approaches to land and property valuation for the purpose of taxation across the four international examples and Scotland. The analysis is structured around the six key areas to approaching land and property valuation: the basis of valuation, institutional responsibilities, data sources, methodologies, frequency of revaluation, and the treatment of environmental factors.

By examining the differences and similarities across these areas, this comparative section not only looks to benchmark Scotland's current system against international practice but also it aims to draw out practical insights and differences on how approaches seek to achieve fairness, efficiency and transparency within their country contexts.

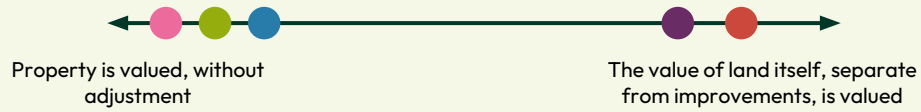
To help articulate these differences across the case studies and Scotland, Figure 1 provides a framework for where different countries are positioned with regards to key elements of each area. This framework illustrates where policy choices and operational implementation decisions have been made, highlighting where there is a spectrum of approaches and where there is more clarity on convergence of any best practice.

**Figure 1: (following page) Comparative framework of key valuation approaches**

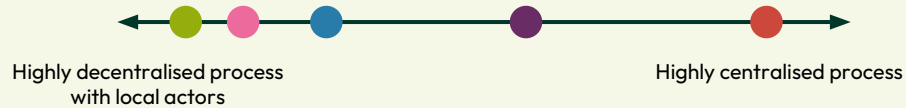
|     |                                                 |                                                   |                                              |
|-----|-------------------------------------------------|---------------------------------------------------|----------------------------------------------|
| KEY | <span style="color: red;">●</span> Denmark      | <span style="color: green;">●</span> South Africa | <span style="color: pink;">●</span> Scotland |
|     | <span style="color: blue;">●</span> Netherlands | <span style="color: purple;">●</span> Australia   |                                              |



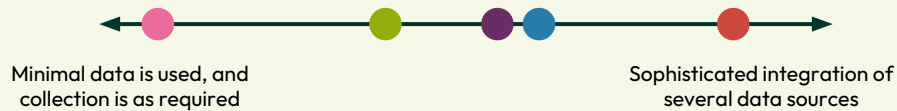
### 1 The basis on which land or property is valued



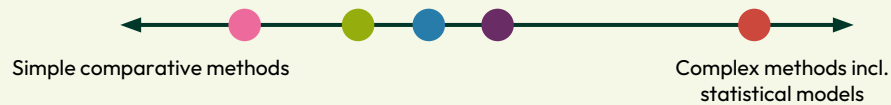
### 2 Responsible agencies and parties



### 3 The data used for valuation



### 4a Method: complexity



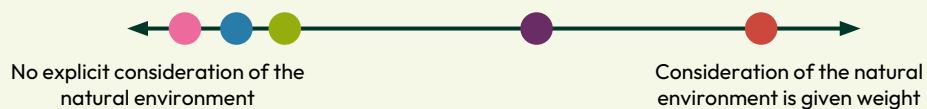
### 4b Method: systemisation and automation



### 5 Frequency of revaluation



### 6 Consideration of the natural environment



## 6.1 The basis on which land or property is valued

### 1 The basis on which land or property is valued



Within each country, there are different approaches to whether land is valued separately from improvements and property. The Scottish valuation system is entirely focused on property value including buildings, not land value. Here there are similarities to the Netherlands system, which only values residential and non-residential property, with clear demarcation of the properties boundaries (namely, accounting for gardens, outbuildings or external storage space). By contrast, Denmark and Australia focus heavily on land value (both site valued and unimproved land), often separating it from buildings for taxation purposes. In Australia, the focus is on unimproved land value or site value (varies by state). This excludes building value but includes certain land improvements (for example, clearing, retaining walls). In South Africa, valuations are on capital improved value (land and buildings), an approach designed to create fairness between urban and rural properties and generate better revenue yield.

Market-related approaches dominate, with all four countries using market value concepts as a key basis of valuation. This is mostly assessed indirectly through comparable sales (Australia, Denmark and South Africa). All case study countries adjust valuations regularly to reflect market changes and to prevent taxation drifting further from real-market realities over time. While market-based methods are used for non-residential property valuation in Scotland, for domestic property a historic, fixed valuation date (1 April 1991) is used regardless of when they were built or improved. As a result, Scotland has no regular revaluation cycle compared to the case studies.

Highest or best use is a guiding principle of valuation in the Netherlands, Australia, and Denmark. However, there is often some flexibility in the application of this for specific types or property or in recognition of existing usage. Scotland's valuation approach for residential property uses the Comparative Principle based on similar local property sales from around 1 April 1991, with newer properties back-calculated as if sold in 1991. This differs to the highest or best-case usage in most case study countries. Moreover, Scotland's domestic valuations are expressed as bands rather than exact, individualised best or highest figures. Compared to the case study countries, Scotland's banding method is currently less granular and less responsive to market changes.

## 6.2 The roles and responsibilities of key actors in the valuation process

### 2 Responsible agencies and parties



Each country's process involves central valuation authority oversight, municipal local execution of certain activities, and opportunities for public objection.

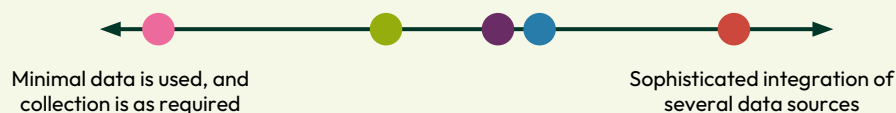
- **Denmark:** operates a fully-centralised valuation process under the Danish Property Assessment Agency, with municipalities responsible for updated registers and databases.
- **The Netherlands:** municipalities (or their contractors) conduct valuations, but under strict national supervision by the Netherlands Council for Real Estate Assessment which provided a five-starred rating of valuation processes.
- **Australia:** the system is state-based, with the Valuer-General in each state acting as a central authority, but work is often contracted to certified valuers.
- **South Africa:** the country's constitution gives municipalities valuation powers, but this is mostly outsourced. There is emphasis on community participation and public awareness programmes.

The use and role of the private sector within the valuation process varies. Often the use of private sector contractors is due to resourcing and capacity issues within municipalities (especially small ones) or where specialist knowledge and expertise is needed for complex valuations. In South Africa, all assessment (with the exception of one larger urban municipality) is outsourced to regulated contractors, while in the Netherlands municipalities are free to conduct valuations in-house or via private sector contracting. A similar mixed-market approach is possible in Australia, but in Denmark the system is completely 'nationalised'. In Scotland, local authorities appoint assessors (sometimes joint boards). While the Scottish Assessors' Association promotes consistency, it does not run valuations centrally. Appeals are handled locally by the assessor. The Scottish system of valuation is much more decentralised than in the case study countries, with minimal central oversight. In this respect, Scotland is closest to the Netherlands in local execution, but without the same national public body providing quality control or national-level data integration. This national or state-level oversight by a statutory body is an integral feature of the case studies valuation process.



## 6.3 The data used for land or property valuation

### 3 The data used for valuation



All case study countries use official cadastral mapping, land registry data, property transaction records, and municipal planning/zoning information. Geographic Information System and aerial imagery are also widely used within the case study countries, but with different degrees of focus.

Who is responsible for data collection, processing and analysis also varies:

- **Denmark:** highly-centralised, multiple national registers integrated (for example, Public Land Registry, Building and Housing Register, Plandata.dk, Climate Data Agency) but municipalities are responsible for updating this data.
- **The Netherlands:** relies on national-base registers and municipal data validation, with active monitoring for physical changes (either in-house or by private contractors).
- **Australia:** state-specific system of data inclusion. For example, Victoria includes planning permit/building permit data, whereas Queensland uses land use category trends.
- **South Africa:** relies heavily on deeds data and valuation rolls, which is managed by private assessors.

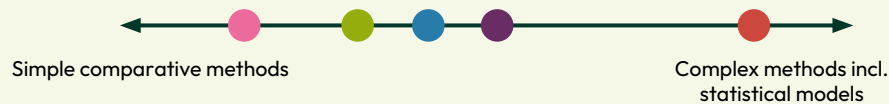
The primary data sources for domestic valuations in Scotland are local planning or building warrant applications, property surveys, and historic sales from Registers of Scotland. For non-residential valuations, rental value is the primary data source that is used for valuations, although for more complex properties additional accounting, construction and expenditure data will be sought to hypothecate a rental value. This is broadly aligned to some of the data sources in the case study countries. However, in Scotland, there is no national single database, with each local assessor instead completing their own valuation list. In this respect, Scotland shares a similar challenge to that faced by South Africa. However, the Scottish Assessors' Association does provide a portal to access the Valuation Rolls (Rateable Values) and Valuation Lists (council tax bands) through a combined database.<sup>101</sup>



Image credit: Katherine Pollard

## 6.4 The methodology used

### 4a Method: complexity



### 4b Method: systemisation and automation



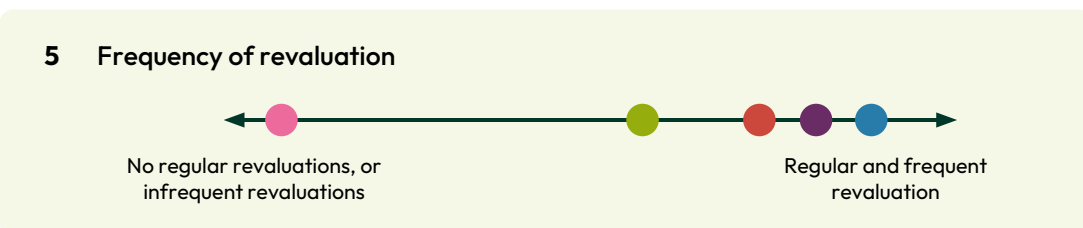
All countries use mass appraisal systems for efficiency. In the Netherlands, this often uses Computer-Assisted Mass Appraisal (CAMA), whereas in South Africa mass appraisal is still a more manual process, with few municipalities currently using CAMA methods. Denmark is the only country to have moved to a fully-automated valuation process in 2023. This was not without challenges and an investigation and quality assurance process initiated by the Ombudsman of the Danish Parliament. The Netherlands has explored the usage of AI and ML technologies within its valuation process, but in the interest of public transparency these have mostly been used as part of internal quality assurance processes. In general, sales comparison is used primarily for residential, with income or cost approaches for commercial properties or property types classified as 'special'. For example, South Africa adjusts mining-land value separately from other types of property value to account for its unique underground circumstances.

However, the exact methodological approach in each country is distinct:

- **Denmark:** uses six years of transaction data with geospatial modelling for proximity effect.
- **The Netherlands:** municipalities broadly operate a three-step process (market analysis → modelling → appraiser review) with advanced AI and ML trials.
- **Australia:** approaches are state-specific. For example, New South Wales uses benchmark properties within “components” to extrapolate values, whereas Victoria uses a four-stage process (preparation → analysis → application → quality assurance).
- **South Africa:** uses a mixed method, with mass appraisal for residential, and in-person assessments for commercial or specialised properties.

There is minimal statistical modelling within the Scottish valuation system compared to international practice. When compared to the case study countries (especially Denmark and the Netherlands), Scotland’s method – especially for residential property – is static, based on historic comparisons and lacking modern mass appraisal tools.

## 6.5 The frequency of valuation or revaluation



There are differences in revaluation timeframes. In the Netherlands and most Australian states, revaluations happen annually (The Northern Territory in Australia revalues on a triennial basis). In Denmark they are biennial, and South Africa undertakes revaluations every five years in urban areas, or seven years in rural areas. South Africa takes a balanced approach to these longest revaluation cycles, with supplementary updates permissible to help mitigate the risk of sudden increases. Perhaps the most significant difference between Scotland’s approach to land and property valuation is that there is no formal revaluation process for residential properties, although non-domestic properties are revalued at regular intervals (every three years).

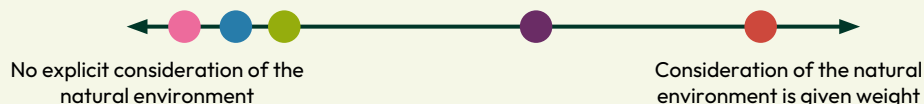


The Netherlands and Denmark have transitioned to more regular revaluation cycles to improve accuracy and reduce liability shocks. In the case of Denmark, this also maximises the potential of their transition to a fully-automated system. Scotland's valuation of non-domestic properties has similarly increased in frequency - from five to three years - to better reflect changes in the property market.

Appeals processes are formalised in all four case study systems, as well as in Scotland (in particular for non-residential property). Appeals processes are usually aided by a commitment to public transparency around valuations. In the Netherlands, significant over-valuations (those greater than 20%) can be backdated five years.

## 6.6 The consideration of the natural environment and natural resources in valuation

### 6 Consideration of the natural environment



Denmark and Australia explicitly integrate environmental constraints and natural resources into valuations. South Africa considers the environment indirectly, mainly through exclusions (for example, coastlines or nature reserves), and the implicit impact on market value. Data about environmental features is collected as part of a broader assessment of positive and adverse factors.

In the Netherlands, environmental considerations shape how land and property is used and valued, but these are not directly accounted for in the property valuation process. These considerations are nevertheless important because property valuation in the Netherlands also feeds into non-property tax factors, most notably water management processes and the levying of environmental taxes.

Scotland is unique amongst the countries explored in that there are no explicit or implicit considerations of environmental factors or nature resources in valuations.

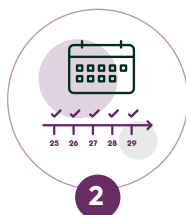
## 7. Conclusions and lessons to consider

This report has outlined the different approaches to land and property valuation taken by four different case study countries: Australia, Denmark, the Netherlands and South Africa. In addition, the report provides a comparative assessment of how key aspects of land and property valuations compare and contrast across these case studies and Scotland. Ultimately, our analysis shows that other countries have continually developed their approaches to build valuation systems that operate with clear institutional responsibilities, undertake regular revaluations, and carry out valuations with robust data and mass appraisal techniques. While Scotland relies on a historic fixed valuation date for residential property and has only recently moved to more frequent reassessments for non-residential property, the countries we have reviewed seek to accurately capture and reflect real-time market realities that create valuations that mostly reflect highest or best use. These features improve consistency, accuracy, and public trust of the valuation system.

From this analysis, this report outlines nine lessons that should be considered when setting out an updated approach to land and property valuation for the purpose of taxation in Scotland:



**Determining key principles:** Successful valuation systems are clear on their purpose, and it is this purpose, along with political considerations, that shapes the choices made over the key ways valuations can be approached. Most systems carry out valuations on the basis of highest or best use principle, are aligned to market values and are supported by a wide range of data, with regular and frequent revaluations. This reflects the need to ensure accuracy and fairness in the system for the purpose of taxation. However, there are other areas where significant political choices need to be made, in respect to both how the taxation system will operate and practical considerations and cost. These include, for example, whether property and land are both valued (and if they are to be valued separately), how complex and specialised properties are to be treated by the valuation process and the design of the approach to valuations in terms of levels of centralisation.



**Implementation is a long-term process:** However, getting all of these key principles in place is a process. Implementing a system and reaching the desired state in all countries studied has been a gradual process of continual improvement rather than one single-step overhaul. South Africa is an exception, and as a result its approach to valuation is largely shaped by practical considerations and the available resources at the

time. It is important to recognise that no system is ever perfect, but creating stability within the valuation system is crucial. It is this stability that provides a foundation for innovation (such as moving to more regular valuations or the adoption of an AI quality assurance process) and long-term success.



**The valuation processes should be independent:** It is important that the valuation process is separated from the ultimate use case of these valuations. This is to maintain the objectivity of the system and prevent any potential manipulation of the valuation process for favourability in the tax system or other policy goals. In the countries studied, while the primary purpose of the valuation system is for taxation, the taxation system also separately considers questions of payment rates, fairness, ability to pay, and environmental and economic policy incentives. Such an approach maintains the independence and objectivity of the valuation process, and recognising that the setting of taxation on the basis of these valuations is often a distinct political process.



**National oversight ensures robustness:** National oversight bodies are vital to ensure consistency and to implement effective checks and balances to ensure technical assessment is robust and independent. This is especially important where local actors are responsible for conducting the valuation process, such as in South Africa and the Netherlands. National formalised objection processes are common in all the case studies we reviewed, and the openness and transparency of these systems is an important function of national oversight.



**Transparency builds trust in the system:** There is an interest across the case studies in ensuring that, as far as is possible, publicly accessible information is available about both the valuation processes and the outcomes of process, as well as how these valuations are used for tax and other policy purposes. This holistic approach to transparency is important to build public trust in – and support for – the whole system. Although there are potential challenges with making the outcomes of the valuation process public, the Netherlands shows that transparency strengthens the legitimacy of the system. An important consideration is to what extent public attitudes towards data collection and the use of personal data could act as a barrier to transparency, as well as whether new approaches to data collection are necessary to facilitate this.



**Automation and the use of new technologies:** New technology has the possibility to scale up valuation processes as well as improve quality and efficiency. However, there is still a degree of caution around the use of advanced technologies and automation, with value still placed on the important role of professional judgements and oversight. For example, Denmark is the only country we assessed that has moved to a fully-automated process – and this has not been without technical challenges. Where automation perhaps works best is in a supporting or supplementary capacity, as in the Netherlands where AI-based models are being trialled as quality assurance tools alongside traditional comparative approaches. This type of innovation can also be limited by decentralisation, especially in rural or poorer areas, as is the case in South Africa.



**Role of the private sector in assessments:** Some countries make use of private assessors to carry out valuations, often on behalf of local government. This outsourcing is largely due to capacity and resourcing issues, which we found from our case studies (especially South Africa), but the use of private sector expertise can add significant value in assessing specialist or complex property and land types, as in the Netherlands. One of the major challenges around the use of private assessors is ensuring transparency and consistency in keeping with other parts of the valuation system and at the time of a revaluation.



**Considering the natural environment is viewed as important but challenging:** Internationally, attempts to incorporate the natural environment into land valuations are increasing. There has been a shift towards considering the natural environment, and there are advantages in doing so as an important dimension to more accurately reflect land values. However, given that most valuation systems remain market-based, translating these environmental considerations into market-based valuations brings practical difficulties. This is one area in particular where new technology can help, as is evident in Denmark.



**Maintaining public funding to ensure a functioning system:** Undertaking regular valuations can be a costly process, albeit one that can gain economies of scale over time due to greater familiarity and efficiency with the processes. In this context, it is important that systems are sufficiently funded for valuation activities, including data management and quality assurance. Our international case studies show that maintaining sufficient funding can be especially challenging when the system is functioning well, and priority needs to be placed on ensuring systems are well maintained and robust over time.



## 8. Endnotes

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- 4** A small number of sources have required translation through the AI-assisted translation software DeepL. While there are challenges in using translation software – such as the potential loss of nuance, precision and context as well as certain linguistic phrases being difficult to translate accurately into English – we have cross-referenced translated sources with accessible English-language sources to help us ensure we are detecting the relevant key concepts, ideas and issues within any translated sources.
- 5** Interviews were conducted virtually over MS Teams, and followed a structured discussion guide with key questions under each of the six key areas, as well as bespoke issues to explore each country's context. Transcripts and notes were collected during the interviews, with responses analysed by comparing and contrasting with written sources, where available.
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- 40 The Danish Property Assessment Agency, **Digital recording of property price data** (In Danish)
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