TECHNICAL INFORMATION
PAPER -
METHODS OF MEASUREMENT

Reference ARPTIP 3 – Methods of Measurement
Effective 1st January 2017
Owner National Manager – Professional Standards
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Technical Information Papers

The principal objective of a Technical Information Paper (TIP) is to reduce diversity of practice by identifying commonly accepted processes and procedures and discussing their use. A TIP is designed to be of assistance to property professionals and informed users alike.

A TIP will do one or more of the following:

- provide information on the characteristics of different types of asset that are relevant to the advice,
- provide information on appropriate practices and their application, provide information that is helpful to property professionals in exercising the judgements they are required to make in specific situations.

A TIP does not:

- provide training or instruction,
- direct that a particular approach or method should or should not be used in any specific situation.

The contents of a TIP are not intended to be mandatory. Responsibility for choosing the most appropriate approach is the responsibility of the property professional based on the facts of each task.

Whilst TIPs are not mandatory, it is likely they will serve as a comparative measure of the level of performance of a Member. They are an integral part of “Professional Practice”.

The reader should understand that legislation may change and whilst this TIP is accurate and relevant at the time it was completed, relevant referred reading and legislation should be investigated at the time of relying on this TIP.
Methods of Measurement

1.0 Introduction

1.1. Objective

The objective of this TIP is to provide a national guide to Members for the consistent application of the measurement of buildings in regard to Service Provider’s advice. While the TIP is intended to be used by all Members active in the Property Industry, the actual measurement of buildings should generally be carried out by professionals who specialise in the provision of measurement services and not necessarily by those Service Providers who rely on such measurements in the provision of other professional services to the industry.

This TIP does not cover the measurement of land.

Scope of this TIP

This TIP should be read in conjunction with other TIPs and/or practice standards which are either over-arching or directly applicable to the issues involved. An underlying principle of measurement is that physical measurement is a matter of fact not opinion.

The API is a Founding Member of the International Property Measurement Standards Coalition which, at the time of preparation of this TIP, had 70 Members of Not for Profit Organisations with a public interest mandate. The IPMS Coalition is committed to producing and supporting one shared standard of property measurement and the API supports this sentiment. The International Property Measurement Standards (“IPMS”) website can be viewed on the following hyperlink http://ipmsc.org/.

Where this TIP quotes from the IPMS it has been so referenced and the following statement should be read in conjunction with the quote “Copyright 2015. International Property Measurement Standards Coalition. All Rights Reserved.”

A critical issue in regard to measurement is to ensure the appropriate measuring convention is used for the appropriate circumstances. There are many measurement conventions which can be applied to four broad categories of circumstances.

Transactional – For both sale and leasing and relates to any related purpose such as Valuation. Measurement for Transactional Purposes is the primary focus of this TIP.

Facility Management - Total Floor Area including occupied areas and common areas used for calculation of various operating costs. This TIP notes IPMS 2 and the Component Areas detailed in the IPMS is appropriate for Facility Management but does not otherwise provide further commentary.
Construction – The area used to calculate the various construction costs for various elements of the built environment. The appropriate Measurement Convention for insurance and depreciated replacement cost purposes must be on a similar Measurement Convention to the method adopted in the reference material used to identify the variable factors applied in the calculation. This TIP notes IPMS 1 is designed for use in construction cost analysis.

Town Planning – Councils consider various measurements for identifying development potential and for assessing development / infrastructure charges and for controlling the height and size of buildings. For the reasons stated in Section 4.8 this TIP does not detail the methods of measurement for Town Planning Purposes.

Measurement Conventions

In addition to IPMS many markets in Australia adopt the PCA Methods of Measurement for Transactional Purposes. Where the market adopts a PCA Method of Measurement or some other method, for a particular class of property for Transactional Purposes, that method, should be adopted for Valuation Purposes.

The various State jurisdictions around Australia have documented the method of measurement for Strata Titled properties. This method varies significantly from State to State. It is critical to ensure that where Titled Area is available it should be stated in any report but for comparison purposes it is critical to ensure like is compared with like.

In all instances however where other than IPMS is the primary method of adoption in the market that IPMS is also quoted and an interface be provided.

The API recognises the importance of an international standard of measurement and Members should work towards that outcome. In all developed markets, where existing measurement conventions are established, significant adjustment will be required. IPMS will work initially in parallel with local standards and for a dual reporting basis and interface to be adopted where appropriate. In time the API expects, with Member support, IPMS will become the primary basis of measurement across markets.

Whilst this TIP attempts to deal comprehensively with the measurement of the built environment it does not purport to contemplate every eventuality. The TIP must be applied with common sense.
## 2.0 Definitions

The following defined words and terms have particular relevance to the methods of measurement of real property and appear in this TIP. Other technical words and terms are consistent with the hierarchy IPMS definitions, IVSC International Valuations Glossary and PCA Method of Measurement.

The definitions detailed below are not exhaustive. The definitions include but are not limited to some of the definitions in IPMS and PCA Method of Measurement. In general, the ordinary meaning of particular words given the context in which the word or term is phrased should be adopted. Common sense should prevail.

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balcony</td>
<td>An external platform at an upper level with a balustrade to the open sides projecting from or recessed from an External Wall and including in this definition generally accessible rooftop terraces, external galleries and loggia.</td>
</tr>
<tr>
<td>Building</td>
<td>An independent Structure forming part of a Property.</td>
</tr>
<tr>
<td>Catwalk</td>
<td>An internal or external walkway above the surrounding area that is used to provide higher level access.</td>
</tr>
<tr>
<td>Clearance Height</td>
<td>The maximum height within a Building or section of a Building measured to the lowest point of the roof structural element, roof access door or building equipment such as ducting, gantries, pipework, sprinklers.</td>
</tr>
<tr>
<td>Coalition</td>
<td>The Trustee of IPMS, comprising not-for-profit organisations, each with a public interest mandate.</td>
</tr>
<tr>
<td>Common Facilities</td>
<td>Those parts of a Building providing shared facilities that typically do not change over time, including, for example circulation areas, stairs, escalators, lifts/elevators and motor rooms, toilets, cleaners’ cupboards, plant rooms, fire refuge areas, maintenance rooms and unallocated parking spaces.</td>
</tr>
<tr>
<td>Component</td>
<td>One of the main elements into which the Floor Area of a Building can be divided.</td>
</tr>
<tr>
<td>Component Area</td>
<td>The total Floor Area attributed to one of the Components.</td>
</tr>
<tr>
<td>Covered Area</td>
<td>The extent at ground level of the area of a Building covered by one or more roofs, the perimeter of which (sometimes referred to as the drip line) is the outermost structural extension, exclusive of ornamental overhangs.</td>
</tr>
<tr>
<td>External Wall</td>
<td>The external enclosure of a Building, which comprises the area between the Internal Dominant Face and the outside of a Building.</td>
</tr>
<tr>
<td>Finished Surface</td>
<td>The wall surface directly above the horizontal wall-floor junction, ignoring skirting boards, cable trunking, heating and cooling units, and pipework.</td>
</tr>
<tr>
<td>Floor Area</td>
<td>The area of a normally horizontal, permanent, load-bearing structure, for each level of a Building.</td>
</tr>
<tr>
<td>GLA</td>
<td>Gross Lettable Area as per PCA Method of Measurement</td>
</tr>
</tbody>
</table>
GLAR
Gross Lettable Area – Retail as per PCA Method of Measurement

IDF (Internal Dominant Face) Wall Section
Each internal finish of a section of an External Wall, ignoring the existence of any columns that is either recessed from or protrudes from its adjacent section.

Internal Dominant Face (IDF)
The inside Finished Surface comprising more than 50% of the floor to ceiling height for each IDF Wall Section. If such does not occur, then the Finished Surface is deemed to be the IDF.

Industrial Building
A Building predominantly used for industrial purposes, whether or not part of the Building is used for ancillary purposes.

IPMS
International Property Measurement Standards.

IPMSC
The International Property Measurement Standards Coalition.

IPMS 1
The sum of the areas of each floor level of a Building measured to the outer perimeter of external construction features, which may be reported on a Component-by-Component basis for each floor of a building. The definition for IPMS 1 is the same for all classes of building.

IPMS 2
The sum of the areas of each floor level of a Building measured to the Internal Dominant Face.

IPMS 3
The Floor Area available on an exclusive basis to an occupier.

Loading Bay
The area designed for vehicles next to or adjacent to a Loading Dock.

Loading Dock
An elevated platform at an opening of a Building designed for receiving or dispatching goods or equipment.

Measurement Convention
A documented code for the Measurement for a Building.

Method of Measurement
The appropriate method to measure a Building, given combined consideration of the nature of the occupation or primary use to which the Building is designed and the use for which the measurement is to be utilised.

Mezzanine
An intermediate and partial storey, other than a Catwalk, between the floor levels or roof of a Building and usually fully or partially open on one or more sides.

NLA
Net Lettable Area as per PCA Method of Measurement.

Office Building
A Building predominately used for office purposes, whether or not part of the Building is used for other purposes.

Patio
A paved or floored terrace, adjacent to a Building, that may or may not be covered by an independent framework.

Permanent Mezzanine
A Mezzanine which is an integral part of the structure of a Building.

PCA
Property Council of Australia.
Property
Any real estate asset in the built environment. (This definition is only intended to apply to this TIP).

Property Industry
Comprises Users, Service Providers and Third Parties with interests in real estate assets.

Residential Building
A Building predominately used for residential purposes, whether or not part of the Building is used for other purposes.

Retail Building
A Building predominately used for retail purposes, whether or not part of the Building is used for other purposes.

Service Provider
Any entity providing real estate advice to a User or Third Party including, but not limited to, Valuers, surveyors, facility, property and asset managers, agents and brokers, Space Measurement Professionals, cost consultants, interior designers and architects.

Sheltered Area
Any part of a Covered Area that is not fully enclosed.

Space Measurement Professional
A Service Provider qualified by experience or training to measure Buildings in accordance with IPMS.

Specialised Uses
Uses other than Office, Retail, Industrial and Residential.

SSC
The Standard Setting Committee appointed by the IPMSC to develop global standards for property measurement.

Structure
A construction that provides shelter or serves as an ancillary function, but is not necessarily fully enclosed.

Temporary Mezzanine
A Mezzanine which is not an integral part of the structure of a Building.

Third Party
Any entity other than a User or Service Provider with an interest in property measurement including, but not limited to, governments, banks, other property financing bodies, data analysts and researchers.

Transactional Purposes
The use of measurement of a Building for the sale or lease or other dealing (includes valuation purposes) where the Building forms part of or the whole of a Property.

User
An owner-occupier, developer, investor, purchaser, vendor, landlord or tenant.

Valuer
A Service Provider with an appropriate professional qualification in valuation or appraisal.

Veranda
An open or partly enclosed area on the outside of a Building at ground level (Level 0), and covered by a roof that is an integral part of the Building.
3.0 Best Management Practice

3.1 General

In accordance with IPMS, API recommends where possible measurement is supported by computer generated drawings, but where other drawings are used as a basis for measurement annotated dimensions on drawings should be used in preference to reliance on scaling alone.

Buildings are to be measured individually and reported on a floor by floor basis.

3.2 Unit of Measurement

Where measurements are taken from plans that are not in the metric system the measurements are to be converted to metric and the conversion factor stated.

Where cubic measurement is adopted the floor plate must also be stated.

3.3 Accuracy of Measurement

The Service Provider should measure as accurately as is reasonably possible, having regard to the use to which the advice is to be put, the equipment used and the conditions at the time of measurement.

As is the case with all consultancy, where a critical reported result is contingent on a particular input being accurate and a specialist in that field should be engaged prior to relying on the critical reported result, then the report should be appropriately qualified. For example, if the tolerance is so high the critical result should not be relied on without a professional survey, the report should be appropriately qualified.

3.4 Reporting

The Service Provider must report how the floor area has been established for example computer generated drawings, other drawings and whether taken from annotations or measured by scaling.

It may be appropriate to report stated areas on plans prepared by a Registered Surveyor where that plan states the Method of Measurement used and is dated.

Wherever possible, check measurements must be taken from physical measurement on site and the tool used for measurement reported (laser, tape or wheel). Similarly, where no plans are available and the only measurements taken are physical measurements on site, this must be stated.

3.5 Interface Adjustment

Wherever a Service Provider uses a Method of Measurement other than IPMS as the primary method of reporting, the interface to the appropriate IPMS Method of Measurement should also be stated and the variations specifically identified and reconciled. Details of the interface for property classes is explained under commentary for each property class.
4.0 IPMS Method of Measurement Including Interim Guidelines

4.1 Primary Type Considerations

Whilst there is a broad range of property types most fall into 4 broad categories being retail, commercial, industrial and residential although there are also a broad range of Specialised Property Types. The nature of the occupation (primary type) provides the overriding primary criteria for the selection of the Method of Measurement.

Where there is more than one property type in a mixed use development and the property types are discrete, the Method of Measurement for each property type should be applied with the exception of circumstances where a property type is no more than an ancillary to the primary type then the Method of Measurement for the primary property type should be adopted for the whole property.

4.2 IPMS

4.2.1 Where should IPMS 1 be Used

IPMS 1 is used for measuring the area of a Building including External Walls. In some markets it can be used by parties for planning purposes or the summary costing of development proposals.

IPMS 1 can be reported on a Component-by-Component basis for each floor of the Building. The aggregate of the Component Areas must equal IPMS 1.

In previous Guidance Notes API has referred to the area defined as IPMS 1 as Gross Building Area ("GBA").

4.2.2 Method of Measurement

IPMS 1: The sum of the areas of each floor level of a Building measured to the outer perimeter of external construction features.

The definition for IPMS 1 is the same for all classes of building.

Inclusions:

IPMS 1 includes all areas and walls, columns and enclosed walkways or passages between separate Buildings, available for direct or indirect use. Covered void areas such as atria are only included at their lowest level.

The external area of basement levels is calculated by extending the exterior plane of the perimeter walls at ground floor level downwards, or by estimation of the wall thickness if the extent of the basement differs from the footprint of the Building.

Measurements included but stated separately:

Balconies and Verandas are included. They are to be measured to their outer face and their
areas are to be stated separately.

Exclusions:

Measurement for IPMS 1 is not to include the area of the following however the areas may be measured and stated separately:

- Temporary Mezzanines;
- Open light wells or the upper level voids of an atrium;
- Open external stairways that are not an integral part of the Building, for example, an open framework fire escape;

  External areas such as external vehicle parking, unenclosed Buildings, external Catwalks, vehicle circulation and other areas or structures (such as equipment yards, cooling equipment, refuse areas), and Patios and decks at ground level.

Examples of IPMS 1 for Offices and Residential (multi-level apartments) are depicted below.

**Drawing 1 - Office Building (Plan & Elevation)**

a) Covered gallery  
b) Balcony  
c) Upper level void of atrium  
d) Open External Stairway (not an integral part of building)
e) Atrium Ground Level
f) Roof Terrace
g) Lift Elevator Motor Room

Drawing 2 - Residential Building

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4.3 Component Areas

The concept of Component Areas is similar across Building types but the components may change to reflect the specific characteristics of the particular Building type. Detailed below are the Component Areas for a Residential Building and more specifically a multi-unit Residential Building. The IPMS Standard for the particular Building type should be referred to directly when other Building types are being considered.

Buildings comprise various components. Where it is appropriate to measure the various Components IPMS has determined the Components to be adopted. The sum of the following applicable Component Areas must equal IPMS 1.

<table>
<thead>
<tr>
<th>Component Area</th>
<th>Vertical Penetrations</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Examples of vertical penetrations include stairs, lift/elevator shafts and ducts but any penetration of less than 0.25 sq. m is to be disregarded.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component Area</th>
<th>Exterior Wall</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The external enclosure of a Building, which comprises the area between the Internal Dominant Face and the outside face of the Building.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component Area</th>
<th>Internal Structural Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>B2</td>
<td>This comprises all internal structural walls and columns.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component Area</th>
<th>Internal Non-Structural Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>B3</td>
<td>This comprises all internal full height permanent walls other than those included in Component Areas B1 and B2.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component Area</th>
<th>Technical Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Examples of technical and building services include mechanical/electrical plant rooms, lift/elevator motor rooms and maintenance rooms (and the like).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component Area</th>
<th>Hygiene Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Examples of hygiene areas include toilet facilities, cleaners’ cupboards, bath/shower rooms and changing rooms.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component Area</th>
<th>Circulation Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>This comprises all circulation areas, measured horizontally.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component Area</th>
<th>Amenities</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Examples of amenities include internal facilities such as cafeterias, day-care facilities, sport, leisure and fitness areas and prayer rooms. They are normally, but not necessarily Common Facilities.</td>
</tr>
</tbody>
</table>
**Component Area G**  
**Living space**  
The area available for exclusive use by residential occupiers.

**Component Area H**  
**Other Areas**  
Examples of other areas include balconies, covered galleries, internal car parking and storage rooms.

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**Drawing 3 - Components for a Residential Floor**

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The above diagram does not include Component F Amenities as these would typically not be part of an upper level residential apartment.

If a Component Area is in multifunctional use, it is to be stated according to its principal use. Portions of the Component Areas may be classified as private, being reserved exclusively for one occupier, or shared, being available for the use of several occupiers.

Areas within Component Area H not available for direct use of the primary purpose such as office or residential purpose may be described as ancillary. They are to be measured separately and additionally may be stated in an alternative way. For example, basement car parking may also be reported by the number of spaces.

IPMS include a sample spreadsheet setting out how Component Areas should be detailed.

There may be areas in Buildings that are incapable of legal or effective occupation. Such areas and their limitations are to be identified, measured and stated separately within IPMS reported areas. For example, if areas are subject to a height restriction, the height should be stated in the reporting document and in any Component Area spreadsheet.

The inclusion of measured areas in IPMS Components does not necessarily mean that the areas are available for legal occupation or use.
4.4 Offices

4.4.1 IPMS 2 Office – Concept and where it should be used

IPMS 2 - Office is for measuring the interior area. It can be used by parties such as asset managers, brokers, cost consultants, facility managers, occupiers, owners, property managers, researchers and valuers to provide data on the efficient use of space and for benchmarking.

4.4.2 IPMS 2 Office Method of Measurement

IPMS 2 - Office: The sum of the areas of each floor level of an office Building measured to the Internal Dominant Face.

Inclusions

IPMS 2 - Office includes all internal walls, columns and enclosed walkways or passages between separate buildings, available for direct or indirect use. Covered void areas such as atria are only included at their lowest floor level.

Inclusions but Stated Separately

Balconies and generally accessible roof top terraces are included in the measurements but are separately stated. They are to be measured to their inner face and their areas are to be stated separately.

Exclusions

Measurement for IPMS 2 - Office is not to include the area of: Open light wells or the upper level voids of an atrium; Patios and decks at ground level not forming part of the building structure, external car parking, equipment yards, cooling equipment areas and refuse areas and other ground level areas that are not fully enclosed are not to be included within IPMS 2, but may be measured and stated separately.

4.4.3 IPMS 3 – Office – Concept and Where it should be used

It is the measurement of the occupation of floor areas in exclusive use. IPMS 3 – Office is not related to IPMS 1 or IPMS 2 - Office, neither is it a Component Area within an office Building. There could be a single IPMS 3 – Office floor area for the entire building or there could be numerous separate IPMS 3 – Office areas.

IPMS 3 - Office is for Transactional Purposes and hence Valuation purposes.
4.4.4 IPMS 3 – Office – Method of Measurement

IPMS 3 – Office is the floor area available on an exclusive basis to an occupier but excluding Common Facilities and shared circulation areas. It is calculated on an occupier-by-occupier basis or on a floor-by-floor basis for each Building.

Inclusions

All internal walls and columns within an occupant’s exclusive area are included within IPMS 3 - Office. The Floor Area is taken to the Internal Dominant Face and, where there is a common wall with an adjacent occupancy area, to the centre-line of the common wall. Where a wall is to a Common Facility the measurement is to be taken to the Finished Surface.

Inclusions but stated Separately

Measurements Included but stated separately include Balconies in exclusive use which are to be measured to their inner face and their areas stated separately.

Exclusions

Excluded from IPMS 3 - Office are Common Facilities. Common Facilities may vary from floor to floor and will also vary according to how the Building is occupied. In the case of a Building in single occupation it has to be assumed, hypothetically, that the Building is in multiple occupation, floor by floor, in order to determine the extent of the Standard Facilities. If a floor has two or more occupiers each is to be measured separately and any shared circulation areas are also excluded.

Measurement for IPMS 3 - Office is not to include the area of: Open light wells or the upper level voids of an atrium; Patios and decks at ground level not forming part of the building structure, external car parking, equipment yards, cooling equipment areas and refuse areas and other ground level areas that are not fully enclosed are not to be included within IPMS 3-Office, but may be measured and stated separately.
Hatched Areas are to be stated separately.
Bracketed Area See Drawing 6 for example of Internal Dominant face.

Note that this is the same building in Drawing 1

Copyright 2014. International Property Measurement Standards Coalition. All Rights Reserved
Hatched Areas are to be stated separately.

Note that this is the same building in Drawing 1

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4.4.5  Internal Dominant Face

The Internal Dominant Face is the inside Finished Surface comprising more than 50% of the floor to ceiling height for each IDF Wall Section. If such does not occur, then the Finished Surface is deemed to be the IDF.

IDF (Internal Dominant Face) Wall Section is each internal finish of a portion of an External Wall, ignoring the existence of any columns that is either recessed from or protrudes from its adjacent section.
4.4.6 **IPMS 3 – Office - Interface to PCA**

PCA historically adopt NLA as the Measurement Convention for offices for transactional purposes. The Service Provider should reconcile NLA to IPMS 3 – Offices. The PCA Measurement Convention for the circumstances may have many minor variations which the Service Provider Member should consider in making any reconciliation/interface. The Measurement Conventions are similar to the extent that:

PCA measure permanent internal walls to the internal Finished Surface; and

PCA measure to the centre line of inter-tenancy walls or partitions.

Whilst individual circumstances may show that other differences exist between IPMS 3 – Office and NLA there is one fundamental difference between Dominant Portion and Internal Dominant Face.

For the internal measurement of an external wall PCA adopt the Dominant Portion which is defined as that portion of the internal or external (as relevant) finished surface of a vertical wall, which comprises in excess of 50% of the wall’s surface area. The concept whilst similar to the Internal Dominant Face has regard to the whole of the wall to determine to where a measurement if to be taken not just the aggregate of the Internal Dominant Face of the Vertical Sections. For example, in Drawing 6 the PCA approach is to compare the aggregate of the area of the windows for the full wall and compare to the aggregate area of the walls without windows, the higher of which, if greater than 50%, is the Dominant Portion.

In addition there are two other significant differences:

1. IPMS 3A – NLA excludes areas with clearance less than 1.5 metres whereas IPMS 3A - Office includes these areas which may be described as a Limited Use Area in accordance with IPMS Standards.
2. IPMS 3A - Office includes areas between lifts facing lifts and other similar areas for single occupancy floors as these areas are considered to be in exclusive use. NLA excludes those areas. These areas may be described as a Limited Use Area in accordance with IPMS Standards.

### 4.5 Residential

#### 4.5.1 IPMS 1

IPMS 1 is the same for all classes of building and commentary under 4.2 above applies.

#### 4.5.2 IPMS 2 Residential - Concept and where it should be used

Measurements for IPMS 2 – Residential are to be taken to the Internal Dominant Face for external construction features and otherwise to the Finished Surface.

IPMS 2 Residential may be used to provide data on the efficient use of space and for benchmarking although Component Area analysis may be a more useful tool for this purpose.
4.5.3 IPMS 3 – Residential – Concept and where it should be used

IPMS 3 is used for Transactional Purposes and hence valuation purposes.

IPMS 3 – Residential is for measuring the occupation of floor areas in exclusive use.

Measurement for IPMS 3 - Residential is not to include the area of: Open light wells or the upper level voids of an atrium; Vertical Penetrations greater than 0.25 sq m and Patios and decks at ground level not forming part of the building structure. External car parking, equipment yards, cooling equipment areas and refuse areas and other ground level areas that are not fully enclosed are not to be included within IPMS 3 – Residential, but may be measured and stated separately.

Depending on the variation used, the measurements for IPMS 3 – Residential may be taken to the external face or the Internal Dominant Face for the Exterior Wall, while interior walls may be measured to the Finished Surface or the centerline. Internal walls or columns are to be ignored in IPMS 3A Residential and IPMS 3B Residential.

IPMS 3 – Residential is not directly related to IPMS 1 or IPMS 2 – Residential, neither is it a Component Area. There could be a single IPMS 3 – Residential area or there would be numerous separate IPMS 3 – Residential areas within a multi-occupied Building.

The IPMS provide for 3 variations of measurement. Best measurement practice in Australia is to adopt IPMS 3A – Residential. Where a Member who is a Service Provider adopts other than IPMS 3A – Residential the method adopted should be clearly stated and the reasons for not adopting IPMS 3A – Residential clearly explained as well as providing an Interface.

4.5.4 IPMS 3A – Residential Method of Measurement

IPMS 3 A: The area in exclusive occupation measured to:-

- the external face of the exterior wall,
- the centre line of shared walls between occupants, and
- the Finished Surface of walls shared with Common Facilities.

Inclusions but Stated Separately

The following areas are included in IPMS 3A – Residential but are to be measured and stated separately:

Attics, cellars, Balconies and Verandas in exclusive use enclosed garages and Limited Use Areas.
Level 1

Balcony included but stated separately and measured to the outer perimeter of external construction features.

Level 2

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4.5.5 **IPMS 3B – Residential Method of Measurement**

IPMS 3 B: The area in exclusive occupation measured to:
- the Internal Dominant Face,
- the centre line of shared walls between occupants, and
- the Finished Surface of walls shared with Common Facilities.

4.5.6 **IPMS 3C residential Method of Measurement**

IPMS 3 C: Residential - The area in exclusive occupation, excluding the floor area occupied by full height internal walls and columns, measured to:
- the Internal Dominant Face and
- the Finished Surface of all full height internal walls.

4.5.7 **Interface to PCA / Strata Title Area**

In the case of strata title development in Australia the various State jurisdictions use different measurement conventions. In addition, PCA adopt Net Residential Area as the Measurement Convention for residential for transactional purposes.

If the Service Provider Member uses other than IPMS 3A as the primary method of measurement, an interface reconciling IPMS 3A to the primary method of measurement should be detailed. This TIP does not attempt to detail how each reconciliation should be undertaken due to the numerous measurement conventions that will be relevant in various jurisdictions. See commentary below on Strata Title.

4.6 **Retail**

4.6.1 **IPMS Retail**

IPMS Retail at the date of production of this TIP has not been prepared. Members will be advised when IPMS Retail has been adopted and this TIP will be appropriately amended.

4.6.2 **Gross Lettable Area Retail (“GLAR”) and Gross Lettable Area (“GLA”)**

GLAR is the method adopted by PCA and as at June 2015 is broadly accepted in Australia as the appropriate method of measurement for transactional purposes of retail tenancies in shopping centres, commercial buildings and strip shops, freestanding shops, semi-detached or terrace style shops in suburban streets.

Gross Lettable Area (GLA) is broadly accepted in Australia as the appropriate method of measurement for transactional purposes used for measuring tenancy area in, freestanding supermarkets and showrooms. See S.4.7 for more detail of GLA.

The GLAR is the aggregate of floor space contained within a tenancy at each floor level.
In general terms however for shopfronts outside the mall line the measurement is taken from the external finished surface of the dominant portion of those walls. Where the shopfront is on or inside the mall line the measurement is to be taken from the mall line.

In the case of inter-tenancy walls the measurement is to be taken from the centre of the wall. In all other circumstances the measurement is to be taken from the internal finished surface of the wall.

4.7 Industrial

4.7.1 IPMS Industrial

IPMS Industrial at the date of production of this TIP has not been prepared. Members will be advised when IPMS Industrial has been adopted and this TIP will be appropriately amended.

4.7.2 Gross Lettable Area ("GLA")

GLA is the method adopted by PCA and is broadly accepted in Australia as the appropriate method of measurement for measuring tenancy area in warehouses and industrial buildings.

GLA is the floor space contained within a tenancy at each floor level.

In general terms however in the case of external walls the measurement is taken from the dominant portion of the outside faces of wall of the building alignment and, in the case of inter-tenancy walls or partitions or common areas measuring to the centre line of the walls albeit ignoring recessed windows or doors.

Included in GLA are window mullions, window frames, structural columns, engaged perimeter columns or piers where inside the outside face of the main perimeter wall.

Excluded from GLA in multi tenanted buildings are lift lobbies where lifts face other lifts, blank walls, areas set aside for the provision of services, or areas that are dedicated as public spaces. Specifically, GLA also excludes standard facilities in multi tenanted buildings such as stairs / escalators, access ways, fire stairs, toilets, cupboards, lift shafts, tea rooms, and plant rooms.

In the case of Single Tenant Buildings GLA includes everything within the external building walls.

4.8 Town Planning

In order to achieve specific outcomes Town Planners use a broad range of measurement units. These may include Gross Floor Area, number of storeys, number of bedrooms, number of units, floor space ratio and site coverage.

These measurements together with other measurements dealing with infrastructure services are used to calculate infrastructure charges and infrastructure credits.

In each instance Councils set their own definitions to suit the particular circumstances. For these reasons it is deemed not practical to address the Methods of Measurement for Town Planning in this TIP.
When assessing development potential of site the Property Industry should have regard to the specific principles and Methods of Measurement detailed in the Town Plan for the Council area in which the particular building is located.

5.0 Strata Title Measurements

Strata Title differs in each jurisdiction in Australia. The Member must define the area actually owned as defined by the relevant Strata Title legislation.

The over-riding principle in any state or location is that any measurement used as part of a valuation calculation should be consistent with the method that is used to analyse comparable sales or rental evidence. That is, the valuation should be calculated giving consideration to the evidence on a “like with like” basis.

The following commentary summarises the owned area of Strata Title Property in each jurisdiction.

5.1 Victoria

In Victoria Strata Plans may be measured to the interior face, median (centre line) or exterior face or in some other location. The boundary adopted where not the default must be identified on the plan.

| Walls       | Median (centre) - Default |
| Floor      | Median (centre) - Default |
| Ceilings   | Median (centre) - Default |
| Balconies  | There does not appear to be an explicit method for balconies. There are provisions for the median of balustrades and for boundaries to be defined by a projection of a building boundary, which may adequately define a balcony. |
| Stairs     | For enclosed concrete stairs or similar, common methods of defining boundaries include underside of stairs, upper face of stairs or simply to include the structure “which defines the boundaries” into Common Property. |
| Excluded from Lot | A notation must be made on the plan of all structures defining building boundaries and service installations or appurtenances not shown on the plan that are within Common Property. This may include all internal columns, service ducts, pipe shafts and cable ducts, or any other service installations. |
5.2 New South Wales

Walls  Surface
Floor  Upper Surface
Ceilings  Under Surface
Balconies  If uncovered, boundaries are defined by a Stratum Statement.
Stairs  Defined by Stratum Statement.

May be included as part of the Lot (not exhaustive)

Courtyards, garden areas, yard space, balcony, patio, veranda, terrace, deck, car spaces and carports may be included as part of a Lot and would normally require a Stratum Statement.

Car spaces are defined by reference to structural features or right angle offsets from them. It must be noted on the plan whether it is measured from the face or centre of a column. Internal car spaces do not require a Stratum Statement.

Excluded from Lot  Structural Cubic Space is Common Property and is to be excluded from the Lot. Structural Cubic Space is cubic space occupied by a vertical structural member, not being a wall, of a building (e.g., columns, posts, poles, etc.), any pipes, wires, cables or ducts within a building or parcel that are not for the exclusive enjoyment of one lot, and any structure enclosing any such pipes, wires, cables or ducts.

5.3 Queensland

There are two kinds of title plans that subdivide buildings: Building Format Survey Plans (post 1997) and Building Unit Plans (pre 1997). There are only minor differences in the method of measurement.

Walls  Centre
Floor  Centre
Ceilings  Centre, excluding false ceilings
Balconies  Building Format Survey Plans measure from the external face of the balustrades, whereas Building Unit Plans measure from the centre of the balustrades. The upper boundary of balconies in both is no higher than the centre line of the adjoining ceiling.

Stairs  An internal staircase within a multi floor lot could be considered to be part of the floor on a particular level (Building Format Survey Plans).

May be included as part of the Lot (not exhaustive)

Building Format Survey Plans may include a balcony, carport, courtyard, garage, patio, porch, private yard, roof garden, storage, deck, void or verandah as part of a Lot.

Building Unit Plans may include a balcony, courtyard, roof garden or other area (being part of a building) as part of a Lot.
Excluded from Lot

Building Format Survey Plans generally exclude Utility Infrastructure. Utility Infrastructure is cables, wires, pipes, sewers, drains, ducts, plant and equipment that provide utilities to lots and common property. Utility Infrastructure is Common Property, except for when it belongs to a service provided (e.g., a water meter or wires for cable TV), or if it is solely providing utility services to a Lot, is within the boundaries of that Lot and not in the boundaries of another lot.

Building Unit Plans exclude any pipes, poles, wires, cables or ducts for the passage and provision of services existing within a lot are part of Common Property.

5.4 South Australia

Walls
- Inner Surface
Floor
- Upper Surface
Ceilings
- Under Surface
Balconies
- Does not appear to explicitly define the measurement of balconies.
Stairs
- “Floors” includes stairways and ramps.

May be included as part of the Lot (not exhaustive)
- Yard, garage, garden, carport, verandah, balcony, rain water tank, garden shed, swimming pool, barbecue, air conditioner, pergola, fish pond, car parks or boat marinas.

If these have no solid base or no structure to define the part of the Lot (e.g., a yard), explicit notation must be made on the plan defining the part of the Lot (e.g., X metres above/below ground level or reference to Australian Height Datum).

Carparks can be fixed by lineal measurements from the inner surface of walls and/or columns within the structure.

Excluded from Lot

Any pipe, wire, cable, duct or drain that is not for the exclusive use of a unit, any structure that is not for exclusive use of a unit (installed before plan is deposited), or any other designated structure is Common Property and not part of a Lot.

5.5 Western Australia

In Western Australia there are two forms of strata subdivisions: Single Tier for buildings that are only a single storey (no lot above another lot) and Multi-Tier for buildings with more than one storey. There are minor variations.

Walls
- Single Tier plans measure walls from the external surface of the building including anything that is attached to and projects from the building or anything that is prescribed by regulation to be part of the Lot (see below). The exception being a common/party wall, in which case it is measured from the centre.
Multi-Tier plans measure walls from the inner surface.

Floor  
Single Tier plans do not subdivide horizontally. Multi-Tier plans measure from the upper surface.

Ceilings  
Single Tier plans do not subdivide horizontally. Multi-Tier Plans measure from the under surface.

Balconies  
Single Tier plans include balconies where attached to and projects from the building. Does not appear to be an explicit method on how Multi-Tier plans measure balconies.

Stairs  
Single Tier plans include stairs where attached to and projects from the building. “Floors” includes stairways and ramps.

May be included as part of the Lot (not exhaustive)  
Single Tier plans include the following: hot water systems, including solar hot water panels, refrigeration, air conditioning, cooling or heating plant or equipment, antennae or aerials for telecommunication, skylights, chimneys, roof ornaments, pipes, wires and cables, awnings, blinds, shutters and window grills, light fittings, meter boxes, signs and anything similar to the above.

Excluded from Lot  
Single Tier plans exclude the following, unless included on the floor plans: patios, carports and pergolas, enclosed rooms, storage rooms, and any similar structure to the above. Structural Cubic Space being cubic space occupied by a vertical structural member, not being a wall, of a building, any pipes, wires, cables or ducts NOT for exclusive use or enjoyment of that lot, and any cubic space enclosed by a structure enclosing any such pipes, wires, cables or ducts is also excluded from Single Tier plans.

Multi-Tier plans exclude Structural Cubic Space being cubic space occupied by a vertical structural member, not being a wall, of a building, any pipes, wires, cables or ducts and any cubic space enclosed by a structure enclosing any such pipes, wires, cables or ducts.

5.6 Tasmania  
All horizontal and vertical lot boundaries are required to be described on the strata plan.

Walls  
Centre

Floor  
Centre

Ceilings  
Centre

Balconies  
Balconies and other open lot boundaries are the prolongation of building structures or perpendicular to building structures, unless defined by measurement. If open lot boundaries are complex, they may be supported by sketch notes.

Stairs  
Does not appear to be an explicit method for measuring stairs.

Excluded from Lot  
Service infrastructure being cables, wires, pipes, sewers, drains, ducts, plant and equipment for the provision of services is Common Property,
thus excluded from the Lot. However, service infrastructure is not Common Property if it is contained entirely within a Lot and is solely related to supplying services to that Lot. Carparking, the roof of a building, and attached guttering, is also Common Property, and excluded from the Lot.

5.7 Northern Territory

Walls | Inner Surface
---|---
Floor | Upper Surface
Ceilings | Under Surface
Balconies | Does not appear to have an explicit method for measuring balconies.
Stairs | “Floor” includes a stairway and ramp.

Excluded from Lot

Structural Cubic Space being cubic space occupied by a vertical structural member, not being a wall, of a building; pipes, wires, cables or ducts in a building not for the exclusive use enjoyment of one unit; and cubic space enclosed by a structure enclosing such pipes, wires, cables or ducts, is excluded from a Lot, unless described in a strata plan as being part of the Lot.

5.8 Australian Capital Territory

There are two types of strata subdivision: Class A units, which are bounded by reference to floors, walls and ceilings (generally high rise apartments) and Class B units, which are subdivisions at the ground level, boundaries are unlimited in height to the extent of any encroachment above or below ground level (generally townhouses). The method of measurement for Class A units is described below.

Walls | Centre
---|---
Floor | Centre
Ceilings | Centre
Balconies | Class A plans must show whether an uncovered balcony is part of a Lot or Common Property. It is optional for a Class B plan.
Stairs | Class A plans must show whether an uncovered stairway is part of a Lot or Common Property. It is option for a Class B plan.

May be included as part of the Lot (not exhaustive)

Part of a parcel being a balcony, corridor, garage or carport, gazebo, laundry, pergola, porch, stairway, shed, storeroom, utility room, verandah, any other approved part and part of a parcel for the purpose of garden, lawn or yard, car space or parking area, recreation area and any other approved purpose by planning and land authority.

Pipes, wires, cables and ducts for utility services appear to be included in each unit owners Lot. The provision of these services is provided by easements under s34(b)&(c) of the Unit Titles Act 2001.
Strata Title Plans

Measure from Centre Line of walls, floors and ceilings
Measure from Inside Surface of walls, floors and ceilings

Allow deviations from standard if noted on plan.
6.0 Comparison Methods of Measurement for Specialised Property

6.1 Selection of Method, Reporting and Alternate Approaches

In general terms the measurement of floor area should fall into one of the categories detailed above. The Method of Measurement should always be stated in the report. In circumstances where more than one method may be appropriate reasoning why a particular Method of Measurement chosen should be stated. Other units of comparison may be appropriate as a Method of Measurement to ensure a like with like comparison.

The SSC has not yet considered Specialised Property and the IPMS will apply to Specialised Property when considered by the SSC subject to there being no conflict with normal market practice. The following reflects current normal market practice albeit where appropriate combined with relevant IPMS principles.

6.2 Backpacker Hostels, Boarding Guest Houses

Depending on the purpose to which the information is to be utilised IPMS 1 or IPMS 3A Residential may be appropriate as the Method of Measurement and Component Area Analysis may be appropriate.

For transactional purposes it is also desirable to show both the number of rooms and beds in the description, and indicate whether there is a manager’s residence or room, number of bathrooms (showers, toilets per bed), kitchens, living room and laundry area.

6.3 Carparks (Commercial)

IPMS 1 may be appropriate as the Method of Measurement.
For transactional purposes commercial carparks are normally compared on the number of bays. The reporting may be further expanded into tandem bays and differing sized bays such as disabled or bays that are only suitable for small vehicles.

Analysis of efficiency may be appropriate to analyse IPMS 1 on a per bay basis.

6.4 Cinemas

Depending on the purpose to which the information is to be utilised IPMS 1 may be appropriate as the Method of Measurement and Component Area Analysis may be appropriate.

Measurement should include the foyer, box office, concessions sales areas, public toilets, back of house, ‘bio box’ or projection area, circulation area and cinema auditorium area. These areas are regarded as fitout in the tenancy. Principles applying to Retail Property should apply.

Units of comparison include the seating capacity and the number and type of auditoriums. Efficiency of cinemas may compare the seating capacity, area of auditoriums or number of auditoriums to the measured area.

6.5 Clubs and Hotels (Recreation)

Clubs and Hotels (Recreation) should generally be measured using the IPMS 1.

IPMS 1 can be apportioned between various uses such as reception, office administration and boardroom areas, individual bars, auditorium, restaurants, gaming areas.

Recreation facilities such as bowling greens, carparks and other outdoor facilities should be separately identified and measured.

6.6 Accommodation Hotels and Motels

Depending on the use to which the information is to be utilised Component Area Analysis, IPMS 1 or IPMS 3A Residential for rooms may be appropriate as the Method of Measurement.

Accommodation Hotels and Motels often include a combination of various uses and therefore should be measured in accordance with the principles for mixed use property.

For transactional purposes it is also desirable to show both the number of rooms and beds in the description, and indicate whether there is a manager’s residence or room, number of bathrooms (showers, toilets per bed), kitchens, living room and laundry area.

6.7 Hospitals, Nursing Homes & Hostels

IPMS 1 should be adopted as the primary Method of Measurement.

Nursing Homes and Hostels often include a combination of various uses and therefore should be measured in accordance with the principles for mixed use property.

Clear differentiation should be made between front and back of house areas.

The appropriate unit for comparison may not be area based but on the number of beds balanced against the level of care.

6.8 Retirement Villages

Retirement Villages should be measured in a similar method to IPMS Residential.

6.9 Rural Buildings

Rural buildings should generally be measured using IPMS 1.
Homesteads should be measured adopting IPMS Residential.

Other specialised improvements that may be associated with rural purposes have discrete Methods of Measurement that can be appropriate.

<table>
<thead>
<tr>
<th>Type</th>
<th>Additional Unit of Description/Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicken Sheds</td>
<td>IPMS 1 and Bird Capacity (number of mature birds accommodated comfortably)</td>
</tr>
<tr>
<td>Dairies</td>
<td>IPMS 1 and Capacity Per Head at any one point in time</td>
</tr>
<tr>
<td>Grain Storage Sheds</td>
<td>IPMS 1 and Capacity (Tonnes)</td>
</tr>
<tr>
<td>Grain Silos</td>
<td>Capacity (Tonnes)</td>
</tr>
<tr>
<td>Haysheds</td>
<td>IPMS 1 and expressed as either square or round bale capacity</td>
</tr>
<tr>
<td>Piggeries</td>
<td>IPMS 1 and Capacity Per (Lactating) Sow at any one point in time</td>
</tr>
<tr>
<td>Shearers Quarters</td>
<td>IPMS 1 and Number of Shearers plus Cook accommodation</td>
</tr>
<tr>
<td>Shearing Sheds</td>
<td>IPMS 1 and Number of Stands or Per Head Basis</td>
</tr>
<tr>
<td>Stables</td>
<td>IPMS 1 and Number of Stalls i.e. individually subdivided stalls</td>
</tr>
</tbody>
</table>

6.10 Service Stations

Service stations should be measured in a similar manner to Retail Property.

Further measurement may include the volume of tanks and the number of hoses.

7.0 Effective Date

This TIP is effective from 1 January 2017. Earlier adoption is permitted.

The above TIP, ARPTIP 3, replaces the superseded Guidance Note “ANZRPGN 4 Methods of Measurement” which operated from January 2012 to 31 December 2016.

Note: This TIP was re-named ARPTIP 3 from ANZRPTIP 3 on 1 July 2019 as it is adopted in Australia only.