International Property Measurement Standards: Industrial Buildings

International Property Measurement Standards Coalition

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Welcome to IPMS: Industrial Buildings

On behalf of the IPMS Coalition we present *IPMS: Industrial Buildings*. The Coalition comprises organisations from all over the world, who have come together to create one shared international standard for property measurement. We have recognised that there has been a lack of consistent measurement standards within many markets. Our profession and consumers deserve better.

This document follows feedback from previous consultations and discussions with many stakeholders over inconsistencies in industrial measurement within and across markets. It is a continuation of the work already carried out in relation to measurement of office and residential buildings and is part of a programme of work that includes preparing IPMS standards for other building classes: retail and mixed use.

The Coalition accepts that standard setting is a never-ending process of continuous improvement and will be listening closely to the market to make future developments to the standard as and when needed.

As a Coalition we are also continuing the important work of implementation through engaging with governments, occupiers, owners and other important stakeholders.

In preparing this document, the Coalition wishes to acknowledge the work on the floorplans undertaken by Professor Marc Grief of Mainz University of Applied Sciences.

On behalf of the Coalition, the Standards Setting Committee and the numerous participants in the consultation, we are proud to present *IPMS: Industrial Buildings*.

For further information on IPMS and to view the list of well over 200 companies and governments that have committed to using IPMS please visit the website [www.ipmsc.org](http://www.ipmsc.org).

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Kenneth M. Creighton, Trustee for RICS, Chairman of the Board of Trustees IPMS Coalition

Lisa M. Prats, Trustee for BOMA International, Vice Chair of the Board of Trustees IPMS Coalition

Jean-Yves Pirlot, Trustee for CLGE, Secretary General of the Board of Trustees IPMS Coalition
Introduction

The International Property Measurement Standards Coalition (IPMSC) was formed on 30 May 2013 after meeting at the World Bank in Washington DC. The Coalition, comprising (at the date of publication) the 87 organisations listed below, aims to bring about the harmonisation of national property measurement standards through the creation and adoption of agreed international standards for the measurement of Buildings.

This document for the measurement of Industrial Buildings is the third building class standard prepared by the Coalition’s Standards Setting Committee (SSC). The Coalition members at the date of publication include:

American Society of Farm Managers and Rural Appraisers (ASFMRA)
Appraisal Institute (AI)
Asia Pacific Real Estate Association (APREA)
Asian Association for Investors in Non-listed Real Estate Vehicles (ANREV)
Asociación de Consultoras Inmobiliarias (ACI)
Asociación de Promotores Constructores de España (APCE)
Asociación Española de Análisis de Valor (AEV)
Asociación Española Geómetras Expertos (AEGEX)
Asociación Professional de Sociedades de Valoración (ATASA)
ASTM International
Australian Property Institute (API)
British Property Federation (BPF)
Building Owners and Managers Association of Canada (BOMA Canada)
Building Owners and Managers Association of China (BOMA China)
Building Owners and Managers Association Indonesia (BOMA Indonesia)
Building Owners and Managers Association International (BOMA International)
Bulgarian Chamber of Professional Valuers (KPO)
Bundesverband der Immobilien-Investment-Sachverständigen e.V. (BIIS)
China Institute of Real Estate Appraisers and Agents (CIREA)
Chongqing Real Estate Association (CREA)
Commonwealth Association of Surveying and Land Economy (CASLE)
Consiglio Nazionale Geometri e Geometri Laureati (CNGeGL)
CoreNet Global
Council of European Geodetic Surveyors (CLGE)
Council on Tall Buildings and Urban Habitat (CTBUH)
Counselors of Real Estate (CRE)
Cyprus Architects Association (CAA)
Cyprus Association of Civil Engineers (CYACE)
Cyprus Association of Quantity Surveyors and Construction Economists (SEEOKK)
Czech Banking Association (CBA)
European Association for Investors in Non-Listed Real Estate Vehicles (INREV)
European Association of Real Estate Professions (CEPI-CEI)
European Mortgage Federation (EMF)
Facility Management Institute Czech Republic
Facility Management Institute Slovakia (FMI)
Federation of Associations of Building Contractors Cyprus (OSEOK)
Gesellschaft für Immobilienwirtschaftliche Forschung e. V. (GIF)
Ghana Institution of Surveyors (GhIS)
GRESB
Hungarian Real Estate Developers Association (IFK)
HypZert GmbH
Ingenieur-Geometer Schweiz (IGS)
Institute of Estate Agents, Singapore (IEA)
Institute of Philippine Real Estate Appraisers (IPREA)
Institute of Real Estate Management (IREM)
Institution of Surveyors of Kenya (ISK)
International Association of Assessing Officers (IAAO)
International Consortium of Real Estate Associations (ICREA)
International Facility Management Association (IFMA)
International Facility Management Association Poland (IFMA Poland)
International Federation of Surveyors (FIG)
International Monetary Fund (IMF)
International Real Estate Federation (FIABCI)
International Right of Way Association (IRWA)
Introduction continued

International Union of Property Owners (UIPI)
International Union of Tenants (IUT)
Italian Real Estate Industry Association (ASSOIMMOBILIARE)
Japan Association of Real Estate Appraisers (JAREA)
Japan Association of Real Estate Counselors (JAREC)
Japan Building Owners and Managers Association (BOMA Japan)
Middle East Council of Shopping Centres (MECSC)
National Society of Professional Surveyors (NSPS)
Nigerian Institution of Estate Surveyors and Valuers (NIESV)
NP "Cadastral Engineers"
Open Standards Consortium for Real Estate (OSCRE)
Ordre des Géomètres-Experts (OGE)
Polish Green Building Council (PLGBC)
Property Council of Australia (PCA)
Property Council New Zealand (PCNZ)
Property Institute of New Zealand (PINZ)
Pro Progressio
Queensland Spatial & Surveying Association (QSSA)
Real Estate Institute of Botswana (REIB)
Real Estate Institute of Zimbabwe (REIZ)
Real Estate Syndicate of Lebanon (REAL)
Real Property Association of Canada (REALpac)
Royal Institute of British Architects (RIBA)
Royal Institution of Chartered Surveyors (RICS)
Royal Society of Ulster Architects (RSUA)
Secovi-SP (Secovi)
Society of Chartered Surveyors Ireland (SCSI)
Society of Industrial and Office Realtors (SIOR)
South African Property Owners Association (SAPOA)
Technical Chamber of Cyprus (ETEK)
The Appraisal Foundation (TAF)
Union Nationale des Economistes de la Construction (UNTEC)
Zentraler Immobilien Ausschuss e.V. (ZIA)

Research by the SSC has found that measurement practices vary substantially across local and global industrial markets. The SSC has focused only on issues directly related to

Building measurements and calculated areas within a Building. It is acknowledged that globally there are different Floor Area measurements adopted in construction, transactions and valuation. IPMS: Industrial Buildings will not only provide clarity for those purchasing or leasing industrial property, but will also enable comparison of differing measurement standards by interfacing to IPMS.

IPMS, as an international property measurement standard, has been created through a transparent, detailed and inclusive standard setting process by the SSC. It supports associated financial reporting and valuation standards such as the International Financial Reporting Standards (IFRS) and, in the USA, the Uniform Standards of Professional Appraisal Practice (USPAP). The International Valuation Standards Council (IVSC) supports IPMS, which should be read in conjunction with International Valuation Standards (IVS).

The SSC has spent considerable time researching established standards to ensure that existing intelligence has not been wasted. The SSC did not identify any existing industrial measurement standard that was suitable for adoption internationally. IPMS is not a hybrid of those standards but does introduce some concepts that may be new to some markets. These concepts have been further refined for the purpose of IPMS.

IPMS is a high-level and over-arching standard. Markets that do not have an existing established measurement standard are encouraged to adopt IPMS. The SSC expects IPMS to work initially in parallel with local standards and for a dual reporting basis and interface to be adopted where appropriate. In time the SSC expects IPMS to become the primary basis of measurement across all markets.

The SSC considered it unrealistic to create a single standard that would immediately apply to all classes of Buildings because each has distinctive characteristics that require individual analysis. However the principles, methodology and measurement practices developed for IPMS will be similar for all Buildings. IPMS needs to be consistent as another class of Building, mixed use, incorporates several Building classes.

In order to resolve confusion with terms that have established definitions the SSC avoided using existing Floor Area descriptions such as Gross External Area (GEA), Gross Internal Area (GIA) and Net Internal Area (NIA). These terms are commonly, but inconsistently, used in markets across the world.

The SSC consulted widely to understand the measurement conventions used in different international markets against the background of the impact on consumers of non-transparent and varying local market practices. Our research found there was a need to measure the external area of a
Introduction continued

Building, for planning purposes or the summary costing of development proposals. The SSC decided to refer to this as IPMS 1 and apply it to all classes of Buildings.

IPMS 2 – Industrial was developed to measure the internal area of a Building and, with the use of Component Areas, will assist the Property Industry in making efficient use of space and in benchmarking data.

It was also important to measure areas in exclusive occupation for transactions and other purposes. The SSC identified two different measurement bases, IPMS 3A – Industrial and IPMS 3B – Industrial, that were required to meet global market needs for measuring areas in exclusive occupation.
IPMS Standards Setting Committee

In July 2013 the IPMSC selected real estate experts from around the world to form the Standards Setting Committee (SSC) and develop global standards for property measurement.

The SSC brings together experts including academics, real estate fund and asset managers, Valuers, and specialists in development and construction. The SSC acts independently from the Coalition and its respective members.

The SSC members and co-authors of this standard for Industrial Buildings are:

Max Crofts FRICS (UK)  Chairman
Allen Crawford FRICS, FAPI (Australia)  Vice Chairman
Alexander Aronsohn FRICS (UK)  Executive Secretary to the Committee
Claudio Bernardes (Brazil)
Anthony Gebhardt MRICS, RQS (South Africa)
Kent Gibson BOMA Fellow (USA)
Prof. Dipl. Ing. Marc Grief (Germany)
Prof. Sr Dr. Ting Kien Hwa FRICS, FRISM, MPEPS, MMIPPM (Malaysia)
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Howard Morley ANZIV, SNZPI, FREINZ, AAMINZ (New Zealand)
Frederic Mortier MSc (Belgium)
Sara Stephens MAI, CRE (USA)
Peter L. Stevenson CEO, BOMA, MRICS (USA)
Nicholas Stolatis CPM, RPA, LEED AP (USA)
V. Suresh FRICS (India)
Koji Tanaka FRICS, ACIArb, RIBA, JIA (Japan)
Dr. Piyush Tiwari MRICS (India)
Definitions

Ancillary Area
An area in exclusive use, which is either detached from the main area being measured or is being used for supplementary purposes.

Balcony
An external platform at an upper floor 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.

Balustrade
A protective barrier formed by a solid wall, railings or other feature.

Building
An independent attached or detached Structure forming all or part of a Property.

Catwalk
An internal or external walkway above the surrounding area that provides higher level access.

Clear Height
The height within a Building or section of a Building measured from the floor to the lowest point of the structural element above, ignoring the existence of any brackets, struts or fixtures and fittings.

Coalition
The Trustees of IPMS, comprising not-for-profit organisations, each with a public interest mandate.

Common Facilities
Those parts of a Building that would, in multiple occupation, provide shared facilities that typically do not change over time and may include, 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.

Component
One of the main elements into which the Floor Area of a Building can be divided.

Component Area
The total Floor Area attributed to one of the Components.

Covered Area
The extent of the area of a Building covered by one or more roof(s) and the perimeter of which is sometimes referred to as the drip line, being the outermost permanent structural extension, exclusive of ornamental overhangs.

External Wall
The enclosing element of a Building, including windows and walls, that separates the exterior area from the interior area.

Finished Surface
The wall surface directly above the horizontal wall-floor junction, ignoring skirting boards, cable trunking, heating and cooling units, and pipework.
Floor Area
The area of a normally horizontal, permanent, load-bearing structure for each level of a Building.

IDF (Internal Dominant Face) Wall Section
The extent of each section of an External Wall where the inside finished surface area of each part of a window, wall or other external construction features varies from the inside finished surface area of the adjoining window, wall or external construction feature, ignoring the existence of any columns.

Industrial Building
A Building mainly used for industrial purposes such as manufacturing and warehousing, whether or not part of the Building is used for other purposes.

Internal Dominant Face (IDF)
The inside surface area comprising more than 50% of the first 2.75 metres measured vertically from the floor, or to the ceiling if lower, for each IDF Wall Section. If such does not occur, then the Finished Surface is deemed to be the IDF.

Internal Height
The height within a Building or section of a Building measured from the floor to the lowest point of a ceiling, ignoring the existence of any brackets, struts or fixtures and fittings.

IPMS
International Property Measurement Standards.

IPMSC
The International Property Measurement Standards Coalition.

IPMS 1
The total of the areas of each floor level of a Building measured to the outer perimeter of External Walls, Sheltered Areas and Balconies.

IPMS 2
The total of the areas of each floor level of a Building measured to the Internal Dominant Face of all External Walls and Balconies on each level.

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

Loading Bay(s)
Area(s) designed for vehicle access next to or adjacent to a Loading Dock.

Loading Dock(s)
Elevated platform(s) at an opening of a Building designed for receiving or dispatching goods or equipment.

Mezzanine
An intermediate or partial floor, other than a Catwalk, that is usually fully or partially open on one or more sides.

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

Property
Any real estate asset in the built environment.
Property Industry
Comprises Users, Service Providers and Third Parties.

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

Sheltered Area
Any part of the Covered Area that is not fully enclosed, but excluding insignificant areas under the eaves.

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

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

Standard Facilities
See Common Facilities.

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

Temporary Structure
A physical element within a Building installed on an interim or permanent basis, the removal of which would not damage the physical integrity of the 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.

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.
Part 1  Aim and Scope of the Standards

1.1  Aim of the Standards
The aim of IPMS is to provide transparency in the measurement of Buildings. IPMS supports the requirements of Service Providers, Third Parties and Users of Property for consistency in measurement reporting. Until now the stated area of floor space in identical Buildings has varied considerably between countries, and sometimes within the same country, owing to differing measurement conventions.

The measurements can be used for asset management, benchmarking, construction, facility management, marketing, property financing, research, transaction, valuation and other purposes.

1.2  Use of the Standards
IPMS defines what is to be measured in a Building and the measurement parameters. IPMS does not dictate how measurements are to be obtained or used.

The appropriate IPMS standard (such as office, residential, industrial, retail) to be used should be chosen according to the current or proposed designed function of the Building or part of a Building being measured.

IPMS can be used for any purpose agreed between Users, Service Providers and Third Parties.

IPMS provides a common language that can interface with existing local measurement standards.

1.3  Accuracy
Service Providers must adopt appropriate measuring and computing processes so as to satisfy the requirements of Users. These requirements can range from a broad approximation for some purposes to a precise calculation for contractual or other reasons.

1.4  Floor Level Designation
The SSC found there is no market consistency in the reference to a particular level.

For all property classes IPMS has adopted Level 0 as the primary ground level. Upper and lower levels are referred to sequentially as the number of levels above or below Level 0. For example, Levels 1, 2 or 3, etc. are above Level 0 and Levels -1, -2 or -3, etc. are below Level 0.
Part 2  Principles of Measurement

2.1  General Principles of Measurement and Calculation

IPMS is a factual measurement and must not include inflated or exaggerated Floor Areas. The SSC has adopted the following fundamental principles of measurement and calculation, which apply to all Buildings:

1. The item must be capable of being measured.
2. The measurement must be objectively verifiable.
3. All measurements with the exception of height are to be taken horizontally.
4. The measurements and calculations must be clearly documented and the following stated:
   • The IPMS standard used, for example, IPMS 1, IPMS 2 – Industrial, IPMS 3A – Industrial or IPMS 3B – Industrial
   • The method of measurement and the tools used (see Section 2.2.1)
   • The unit of measurement
   • The date of the measurement
   • Whether the measurement is verified on site.
5. Buildings are to be measured individually and reported on a floor-by-floor basis as existing or proposed at the time of measurement.
6. The principles of IPMS should be extrapolated using a common-sense approach.

2.2  Best Measurement Practice

2.2.1  General

The SSC recommends that all IPMS measurement is supported by computer-generated drawings, if available, but where other drawings are used as a basis for measurement annotated dimensions on drawings should be used in preference to a reliance on scaling alone.

The Service Provider must report how the Floor Area has been established, for example, by computer-generated drawings, other drawings or by laser or tape measurement.

2.2.2  Unit of Measurement

Measurements and calculations should be in the unit commonly adopted in the relevant country.

Users and Third Parties may require measurements to be converted, in which case the conversion factor must be stated.
2.2.3 Measurement Reporting

Any Component Area under IPMS 1 or IPMS 2 reported to a User or Third Party should, where practical and where appropriate, be cross-referenced to an appropriately coloured drawing and Component Area spreadsheet.

When reporting measurements and Floor Areas for proposed developments, Service Providers must take special care to ensure that measurements are cross-referenced as accurately as is reasonably possible to plans at the date of reporting.

2.3 Limited Use Areas

Service Providers need to be aware that in certain markets there may be areas in Buildings that are incapable of legal or effective occupation due to local or national legislation. Such areas and their limitations are to be identified, measured and stated separately within IPMS reported areas. If areas are subject to a restriction, this should be stated in the reporting document and in any Component Area spreadsheet.

Users and Third Parties need to be aware that the inclusion of measured areas in IPMS does not necessarily mean that the areas are available for legal occupation or use.

The reason why a particular area is regarded as a Limited Use Area must be stated.

The following examples are not exhaustive:

Example 1 – Area difference from Internal Dominant Face

There may be a need to show the difference, if any, in Floor Area between measurements taken to the Internal Dominant Face and measurements taken to the wall-floor junction.

Example 2 – Areas with height restriction

In various markets, areas defined as having limited or restricted height are identified separately. This height can vary between jurisdictions and in some instances the restricted height may be due to construction features.

Example 3 – Areas with limited natural light

In some jurisdictions, areas with limited natural light in a Building are required to be identified separately.

Example 4 – Above and below ground

A Building is generally composed of floors above ground and floors below ground. For measuring purposes, this distinction may be important in determining the conditions under which the premises may be used in compliance with local or national legislation, rules on fitness for habitation, or taxation.
2.4 Adjustment between IPMS and other standards

Where dual reporting is adopted, reconciliation between IPMS and the standard referred to must be appropriately explained. The SSC recommends that Coalition members provide interface guidance in their local implementation procedures for their respective membership.
Part 3  IPMS Standards

The IPMS standards (and their principal uses) are:

- IPMS 1 (External)
- IPMS 2 – Industrial (Internal)
- IPMS 3A – Industrial (External: Exclusive Occupation)
- IPMS 3B – Industrial (Internal: Exclusive Occupation).

3.1  IPMS 1

3.1.1  Use

IPMS 1 is used for measuring the area of a Building including External Walls.

The primary intent of IPMS 1 is that it is used for planning purposes or the summary costing of development proposals.

IPMS 1 is a whole of Building measurement.

3.1.2  Definition

IPMS 1: The total of the areas of each floor level of a Building measured to the outer perimeter of External Walls, Sheltered Areas and Balconies.

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

In many markets, but not universally, this is known as Gross External Area.

Measurement practice:

Areas for IPMS 1 are to be taken from drawings or on site.

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

If there are no available plans for a basement, the area must include an estimation of the exterior wall thickness.

In respect of Sheltered Areas, IPMS 1 is to be measured to the Covered Area. In respect of roller shutters and other openings the principal external perimeter line of the Building across such openings should be followed to measure IPMS 1.

Balconies and Mezzanines are to be measured to the outside edge of the floor construction.

Inclusions:

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

Measurements included but to be stated separately:

Balconies, Sheltered Areas, Verandas and Mezzanines are included but the measurement of each must be stated separately.
Measurements excluded but to be stated separately:

Measurement for IPMS 1 does not include:

- **Temporary Structures**
- 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
- Any **Structure** beyond the **Covered Area**.

Diagram 1: IPMS 1 – Total Floor Area of Level 0 and Level 1

Diagram 2: IPMS 1 – Ground Floor (Level 0)

Diagram 3: IPMS 1 – Upper Floor (Level 1)

For larger versions of the above diagrams see Part 5 (pages 30–31).
3.2 IPMS 2 – Industrial

3.2.1 Use
IPMS 2 – Industrial is a whole Building measurement that is used for measuring the interior boundary area of a Building. The primary intended use is for providing data on the use of space and for benchmarking.

IPMS 2 – Industrial enables Users, Third Parties and Service Providers to make direct floor space comparisons between data derived from different market practices.

3.2.2 Definition
IPMS 2 – Industrial: The total of the areas of each floor level of a Building measured to the Internal Dominant Face of all External Walls and Balconies on each level.

In many markets, but not universally, this is similar to Gross Internal Area.

Measurement practice:
All areas in an Industrial Building, including for example offices, are to be measured in accordance with IPMS 2 – Industrial.

Balconies and Mezzanines are to be measured to the inner face of the balustrade, but not beyond the outside edge of the floor construction.

If required IPMS 2 – Industrial may be reported on a Component-by-Component basis for each floor of a Building.

Inclusions:
IPMS 2 – Industrial includes all internal areas, including internal walls and columns. Enclosed void areas such as atria are only included at their lowest floor level.

Measurements included but to be stated separately:
Balconies, internal Loading Bays, Mezzanines and enclosed walkways or passages between separate Buildings, available for direct or indirect use, are included but the measurement of each must be stated separately.

Measurements excluded but to be stated separately:
Areas outside the External Wall such as Sheltered Areas and external Loading Bays do not have to be measured, but if they are measured then these areas should be measured and stated individually and separately.

Sheltered Areas are to be measured to the Finished Surface of any walls and otherwise to the outer perimeter of the Covered Area.

Diagram 4: IPMS 2 – Industrial – Total Floor Area of Level 0 and Level 1
Diagram 5: IPMS 2 – Industrial – Ground Floor (Level 0)

Diagram 6: IPMS 2 – Industrial – Upper Floor (Level 1)

For larger versions of the above diagrams see Part 5 (pages 33–34).
3.3 IPMS 3 – Industrial

3.3.1 Use

IPMS 3A – Industrial and IPMS 3B – Industrial are used for measuring the occupation of Floor Areas in exclusive use. They are not directly related to IPMS 1 or IPMS 2 – Industrial.

The SSC has researched international property markets and identified different measurement bases that need to be accommodated. Some markets require only one of these measurement bases for transactional purposes, that being the primary intended use for IPMS 3. Other markets may either use IPMS 3A – Industrial or IPMS 3B – Industrial for sale purposes and the other for leasing purposes.

Service Providers must not simply state that a measurement is in accordance with IPMS 3 – Industrial. The reference must state whether the measurement is IPMS 3A – Industrial or IPMS 3B – Industrial.

Each unit in a multi-occupied Building must be measured separately, but if consistent the Building may be reported as an aggregate of IPMS 3A – Industrial or IPMS 3B – Industrial.

3.3.2 IPMS 3A – Industrial

Definition:

IPMS 3A – Industrial: The Floor Area available on an exclusive basis to an occupier measured from the outside face of the External Walls and any Balconies and also including any Sheltered Areas.

Measurement practice:

IPMS 3A – Industrial is measured to the outside face of External Wall(s) of the area in exclusive occupation.

In the case of attached or partially attached Buildings measurement is taken to the centre-line of shared walls between occupants.

In the absence of one or more External Wall(s), IPMS 3A – Industrial (only at ground levels) is measured to the Covered Area excluding ornamental overhangs and eaves beyond External Walls.

Walls shared with Common Facilities are to be measured to the Finished Surface.

In respect of roller shutters and other openings, the principal external perimeter line of the Building across such openings should be followed to measure IPMS 3A – Industrial.

Balconies and Mezzanines are to be measured to the outside edge of the floor construction.

If required, office, storage, production and other such areas may be measured and stated separately.

Measurements included but to be stated separately:

Ancillary Areas, Mezzanines and Catwalks are included in IPMS 3A – Industrial, but are to be measured and stated separately.

The Floor Area occupied by stairs is only to be included at the lowest level. A vertical penetration, whose floor opening and surrounding walls, if any, is less than 0.1m² (1 ft²) is not separately identified and is included in the Floor Area measurement of IPMS 3A – Industrial.
Measurements excluded but to be stated separately:
Measurement for IPMS 3A – Industrial does not include:

- Temporary Structures
- 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
- Any Structure beyond the Covered Area.

![Diagram 7: IPMS 3A – Industrial – Ground Floor (Level 0)](image)

![Diagram 8: IPMS 3A – Industrial – Upper Floor (Level 1)](image)

For larger versions of the above diagrams see Part 5 (pages 36–37).

3.3.3 IPMS 3B – Industrial

Definition:
IPMS 3B – Industrial: The Floor Area available on an exclusive basis to an occupier measured to the Internal Dominant Face of External Walls and Balconies, and otherwise to the Covered Area.

Measurement practice:
All areas in an Industrial Building, including for example offices, are to be measured in accordance with IPMS 3B – Industrial.

Balconies and Mezzanines are to be measured to the inner face of the balustrade, but not beyond the outside edge of the floor construction.

Walls shared with Common Facilities or adjoining occupiers are to be measured to the Finished Surface.

The Floor Area occupied by stairs is only to be included at the lowest level. A vertical penetration, whose floor opening and surrounding walls, if any, is less than 0.1m² (1 ft²) is not separately identified and is included in the Floor Area measurement of IPMS 3B – Industrial.

If required, office, storage, production and other such areas may be identified, and measured and stated separately.
Inclusions:

IPMS 3B – Industrial includes all exclusive use areas within the External Walls, including internal walls, columns and enclosed walkways or passages between separate Buildings, available for direct or indirect use. Enclosed void areas such as atria are only included at their lowest floor level.

Measurements included but stated separately:

Balconies, internal Loading Bays and Mezzanines.

Measurements excluded but stated separately:

Measurement for IPMS 3B – Industrial does not include:

- Temporary Structures
- Any areas outside the External Wall.

Areas outside the External Wall, such as some Ancillary Areas, Sheltered Areas and external Loading Bays, may be measured and stated separately.

Sheltered Areas are to be measured to the outside perimeter of the Covered Area and such measurements are to be stated individually and separately.

For larger versions of the above diagrams see Part 5 (pages 39–40).
Part 4  Technical

4.1  Internal Dominant Face

The Internal Dominant Face (IDF) is the inside surface area comprising more than 50% of the first 2.75 metres measured vertically from the floor, or to the ceiling if lower for each IDF Wall Section. If such does not occur, then the Finished Surface is deemed to be the IDF.

An IDF Wall Section is the extent of each section of an External Wall, where the inside finished surface area of each part of a window, wall or external construction feature varies from the inside finished surface area of the adjoining window, wall or external construction feature, ignoring the existence of any columns.

If the Internal Dominant Face is not vertical, the measurement is to the Finished Surface.
Diagram 11: Internal Dominant Face
4.2 Clear Height and Internal Height

Clear Height is the height within a Building or section of a Building measured from the floor to the lowest point of the structural element above, ignoring the existence of any brackets, struts or fixtures and fittings.

Internal Height is the height within a Building or section of a Building measured from the floor to the lowest point of a ceiling, ignoring the existence of any brackets, struts or fixtures and fittings.

Diagram 12: IPMS – Clear Height and Internal Height

4.3 Covered Area

The extent of the area of a Building covered by one or more roof(s) and the perimeter of which is sometimes referred to as the drip line, being the outermost permanent structural extension, exclusive of ornamental overhangs.

Diagram 13: Extent of Covered Area

4.4 Shared Walls (IPMS 1)

Where a Building extends over more than one individually owned Property each separated by a shared wall, as in adjoining industrial units, then IPMS 1 is to be measured to the centre-line of the shared wall unless the boundary of the titled area differs, in which case the titled area takes precedence.
4.5 IPMS Industrial Component Areas

Below are recommended industrial Component Areas that should be used when areas need to be separately allocated for cost or other purposes under IPMS 1 and IPMS 2 – Industrial. These may be further subdivided if required.

### Industrial Component Areas

<table>
<thead>
<tr>
<th>Component Area</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A1</strong></td>
<td>Vertical Circulation Penetrations. Examples of vertical circulation penetrations include stairs and lifts/elevators.</td>
</tr>
<tr>
<td><strong>A2</strong></td>
<td>Vertical Technical Penetrations. A technical penetration such as a pipe, duct or shaft, whose floor opening and surrounding walls, if any, is more than 0.1m$^2$ (1 ft$^2$); otherwise, the opening is not separately identified and remains in the Component Area where it is found.</td>
</tr>
<tr>
<td><strong>B1</strong></td>
<td>External Wall. The enclosing element of a Building, including windows and walls, that separates the exterior area from the interior area.</td>
</tr>
<tr>
<td><strong>B2</strong></td>
<td>Internal Structural Elements. This comprises all internal structural walls and columns.</td>
</tr>
<tr>
<td><strong>B3</strong></td>
<td>Internal Non-Structural Elements. This comprises all internal, full-height, permanent walls other than those included in Component Areas B1 and B2.</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>Technical Services. Examples of technical and building services include mechanical/electrical plant rooms, lift/elevator motor rooms and maintenance rooms.</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>Hygiene Areas. Examples of hygiene areas include toilet facilities, cleaners’ cupboards, bath/shower rooms and changing rooms.</td>
</tr>
<tr>
<td><strong>E</strong></td>
<td>Circulation Areas. This comprises all circulation areas within the building, measured horizontally.</td>
</tr>
<tr>
<td><strong>F</strong></td>
<td>Amenities. 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>
<tr>
<td><strong>G</strong></td>
<td>Workspace. Examples of workspace include warehouse, production, office, showroom, Mezzanine and enclosed Loading Docks.</td>
</tr>
<tr>
<td><strong>H</strong></td>
<td>Other Areas. Examples of other areas include auxiliary areas, unenclosed Loading Docks, internal parking and storage rooms.</td>
</tr>
</tbody>
</table>
If a particular space may be assigned to more than one Component Area, then it is to be assigned to the Component Area that best reflects its primary design function within the larger space.

Component Areas, as a whole or in part, 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 industrial-related use may be described as auxiliary. They are to be measured but may also be stated in an alternative way. For example, car parking may also be reported by the number of spaces.

**Limited use areas**

Limited use areas as defined in Section 2.3 are included within IPMS reported areas but must be identified, measured and stated separately.
Diagram 14: IPMS – Industrial – Ground Floor (Level 0) – Component Areas

- Component Area A1 – Vertical Circulation Penetrations
- Component Area A2 – Vertical Technical Penetrations
- Component Area B1 – External Wall
- Component Area B2 – Internal Structural Elements
- Component Area B3 – Internal Non-Structural Elements
- Component Area C – Technical Services
- Component Area D – Hygiene Areas
- Component Area E – Circulation Areas
- Component Area F – Amenities
- Component Area G – Workspace
- Component Area H – Other Areas
Diagram 15: IPMS – Industrial – Upper Floor (Level 1) – Component Areas

- Component Area A1 – Vertical Circulation Penetrations
- Component Area A2 – Vertical Technical Penetrations
- Component Area B1 – External Wall
- Component Area B2 – Internal Structural Elements
- Component Area B3 – Internal Non-Structural Elements
- Component Area C – Technical Services
- Component Area D – Hygiene Areas
- Component Area E – Circulation Areas
- Component Area F – Amenities
- Component Area G – Workspace
- Component Area H – Other Areas
### 4.6 Sample Spreadsheet for Component Areas

<table>
<thead>
<tr>
<th>Floor</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Component Area A1 – Vertical Circulation Penetrations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Example – stairs, lift/elevator shafts and ducts</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Component Area A2 – Vertical Technical Penetrations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Example – pipes, ducts or shafts</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Component Area B1 – External Wall</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Example – exterior wall of a building</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>* Limited use areas</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>IPMS total</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Component Area B2 – Internal Structural Elements</strong></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Example – internal structural walls and columns</td>
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</tr>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Component Area B3 – Internal Non-Structural Elements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Example – all internal, full-height, permanent walls other than those included in Component Areas B1 and B2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>IPMS total</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td><strong>Component Area C – Technical Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Example – mechanical/electrical plant rooms, lift/elevator motor rooms and maintenance rooms</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>* Limited use areas</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>IPMS total</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Component Area D – Hygiene Areas</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Example – toilet facilities, cleaners’ cupboards, bath/shower rooms, laundry and changing rooms</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>* Limited use areas</td>
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<td>0</td>
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</tr>
<tr>
<td>IPMS total</td>
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### 4.6 Sample Spreadsheet for Component Areas continued

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<th>2</th>
<th>3</th>
<th>4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Component Area E – Circulation Areas</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Example – all horizontal circulation areas</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>* Limited use areas</td>
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<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Component Area F – Amenities</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Example – cafeterias, day-care facilities, sports, leisure and fitness areas, and prayer rooms</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
</tr>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Component Area G – Workspace</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Example – factory, warehouse, office, laboratory, showroom and enclosed Loading Docks</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>IPMS total</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Component Area H – Other Areas</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Example – Balconies, covered galleries, Sheltered Areas, unenclosed Loading Docks, internal car parking and storage rooms **</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>* Limited use areas</td>
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<td>IPMS total</td>
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<td><strong>TOTAL IPMS 1</strong></td>
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<td></td>
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</tr>
<tr>
<td>Aggregate non-limited use Component Areas</td>
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<td>0</td>
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<td>0</td>
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</tr>
</tbody>
</table>

**Additional areas outside IPMS 1**

- External vehicle parking 0
- External Catwalks 0
- Hardstand storage areas/external storage pads 0
- External vehicle circulation 0
- Other areas or Structures (examples include equipment yards, cooling equipment, refuse areas) 0

All subcomponents are to be stated separately.

* Each limitation, if any, is to be stated separately.

** The extent of each use within Component Area H is to be stated separately.
Part 5  Floorplans and Sections

Measurement practice text and diagrams are replicated here for ease of use by practitioners.

5.1  IPMS 1 (External)

Measurement practice:
Areas for IPMS 1 are to be taken from drawings or on site.
If required, 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.
If there are no available plans for a basement, the area must include an estimation of the exterior wall thickness.
In respect of Sheltered Areas, IPMS 1 is to be measured to the Covered Area. In respect of roller shutters and other openings the principal external perimeter line of the Building across such openings should be followed to measure IPMS 1.
Balconies and Mezzanines are to be measured to the outside edge of the floor construction.

Diagram 1: IPMS 1 – Total Floor Area of Level 0 and Level 1
Diagram 2: IPMS 1 – Ground Floor (Level 0)
Diagram 3: IPMS 1 – Upper Floor (Level 1)
5.2 IPMS 2 – Industrial (Internal)

Measurement practice:
All areas in an Industrial Building, including for example offices, are to be measured in accordance with IPMS 2 – Industrial. Balconies and Mezzanines are to be measured to the inner face of the balustrade, but not beyond the outside edge of the floor construction. If required IPMS 2 – Industrial may be reported on a Component-by-Component basis for each floor of a Building.

Diagram 4: IPMS 2 – Industrial – Total Floor Area of Level 0 and Level 1
Diagram 5: IPMS 2 – Industrial – Ground Floor (Level 0)
Diagram 6: IPMS 2 – Industrial – Upper Floor (Level 1)
5.3 IPMS 3 – Industrial (Occupier)

5.3.1 IPMS 3A – Industrial

Measurement practice:

IPMS 3A – Industrial is measured to the outside face of External Wall(s) of the area in exclusive occupation.

In the case of attached or partially attached Buildings measurement is taken to the centre-line of shared walls between occupants.

In the absence of one or more External Wall(s), IPMS 3A – Industrial (only at ground levels) is measured to the Covered Area excluding ornamental overhangs and eaves beyond External Walls.

Walls shared with Common Facilities are to be measured to the Finished Surface.

In respect of roller shutters and other openings, the principal external perimeter line of the Building across such openings should be followed to measure IPMS 3A – Industrial.

Balconies and Mezzanines are to be measured to the outside edge of the floor construction.

If required, office, storage, production and other such areas may be measured and stated separately.
Diagram 7: IPMS 3A – Industrial – Ground Floor (Level 0)
Diagram 8: IPMS 3A – Industrial – Upper Floor (Level 1)
5.3.2 IPMS 3B – Industrial

**Measurement practice:**

All areas in an **Industrial Building**, including for example offices, are to be measured in accordance with **IPMS 3B – Industrial**.

**Balconies** and **Mezzanines** are to be measured to the inner face of the balustrade, but not beyond the outside edge of the floor construction.

Walls shared with **Common Facilities** or adjoining occupiers are to be measured to the **Finished Surface**.

The **Floor Area** occupied by stairs is only to be included at the lowest level. A vertical penetration, whose floor opening and surrounding walls, if any, is less than 0.1m² (1 ft²) is not separately identified and is included in the **Floor Area** measurement of **IPMS 3B – Industrial**.

If required, office, storage, production and other such areas may be identified, and measured and stated separately.
Diagram 9: IPMS 3B – Industrial – Ground Floor (Level 0)
Diagram 10: IPMS 3B – Industrial – Upper Floor (Level 1)
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