Circular No : URA/PB/2022/09-DCG
Our Ref : DC/ADMIN/CIRCULAR/PB_22
Date : 01 September 2022

CIRCULAR TO PROFESSIONAL INSTITUTES

Who should know

Building Owners, Developers, Architects, Engineers, Registered Surveyors and Real Estate Agents

Effective date

With effect from 01 June 2023

HARMONISATION OF FLOOR AREA DEFINITIONS BY URA, SLA, BCA AND SCDF

1. This circular is to inform the industry of the new harmonised floor area definitions that will be adopted by URA, SLA, BCA and SCDF.

Current issues faced by the industry and homeowners

2. Today, agencies adopt different floor area measurements for various purposes. For example, URA uses gross floor area (GFA) to measure building intensity, SLA uses strata area to demarcate ownership, BCA uses statistical gross floor area (SGFA) to measure the total floor areas of a building, while SCDF uses accessible floor area (AFA) to determine fire safety requirements.

3. In addition, agencies also define their various floor areas differently. For instance, URA's GFA is measured to include the full thickness of external walls but excludes voids, whereas SLA's strata area is only measured up to the middle of the wall and may include voids (see details in Appendix 1). This results in QPs expending a significant amount of time and effort calculating the various floor areas to fulfil the different agencies' regulatory requirements.

4. The different floor area definitions also create confusion for property owners who wish to carry out addition and alteration works within their strata units, but encounter increase in GFA of the development even though there is no increase in strata floor area e.g. slabbing over of internal void space.

Revised floor area definitions

5. In consultation with industry representatives from the professional institutes, URA, SLA, BCA and SCDF have jointly reviewed the different floor area definitions to harmonise requirements across agencies, which aims to pave the way for coordinated submissions and improved productivity for the built environment profession. The key changes are summarised as follows:

    a) All agencies' floor areas will be measured to the middle of the wall.

    b) All strata areas will be included as GFA.

    c) All voids will be excluded from strata area.

    d) BCA and SCDF will adopt an aligned definition for SGFA computation.

6. The details of agencies' revised floor area definitions are found in Appendices 2 to 4. Additional clarification on URA's revised GFA definition can be found in the FAQ.

Implementation

7. The revised floor area definitions in Para 5 will apply to all development applications[1] submitted to URA on or after 01 June 2023. The revised definitions will also apply to all Government Land Sale (GLS) and industrial Government Land Sale (iGLS) sites[2] launched for sale on or after 01 September 2022.

8. The old floor area definitions will continue to apply under the following scenarios:

    a) Development applications (excluding Outline applications) submitted to URA before 01 June 2023 that have already obtained URA's Provisional Permission (PP), or which will result in a PP.

    b) All amendment applications[3] for projects that had earlier obtained URA's Written Permission (WP) based on old floor area definitions.

9. We would appreciate it if you could convey the contents of this circular to the relevant members of your organisation. We will update the guidelines accordingly on our

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[1] For Additions & Alterations (A&A) applications to existing buildings, there will be no change to the strata computation of existing voids. If new voids are proposed in A&A applications submitted to URA on or after 01 June 2023 without a valid PP, these new voids shall not be computed towards the total strata area. For minor A&A works, URA is prepared to consider applying the revised GFA definition only to the affected parts of the development. This will be assessed on a case-by-case basis taking into consideration the scale and nature of the A&A works.

[2] These include GLS and iGLS sites on the Reserve List that are successfully triggered and launched for sale on or after 01 September 2022.

[3] Proposals that involve major changes (i.e. re-design and re-configuration) to the original approved development will not be accepted as an amendment application. A fresh development application would be required for such proposals.

websites before the guidelines take effect. If you or your members have any queries concerning this circular, please contact the relevant agencies:

a) URA: https://www.ura.gov.sg/feedbackWeb/contactus_feedback.jsp
b) SLA: https://www.sla.gov.sg/enquiry-feedback
c) BCA: https://www.bca.gov.sg/feedbackform/
d) SCDF: SCDF_QP_Consultant@scdf.gov.sg

Thank you.

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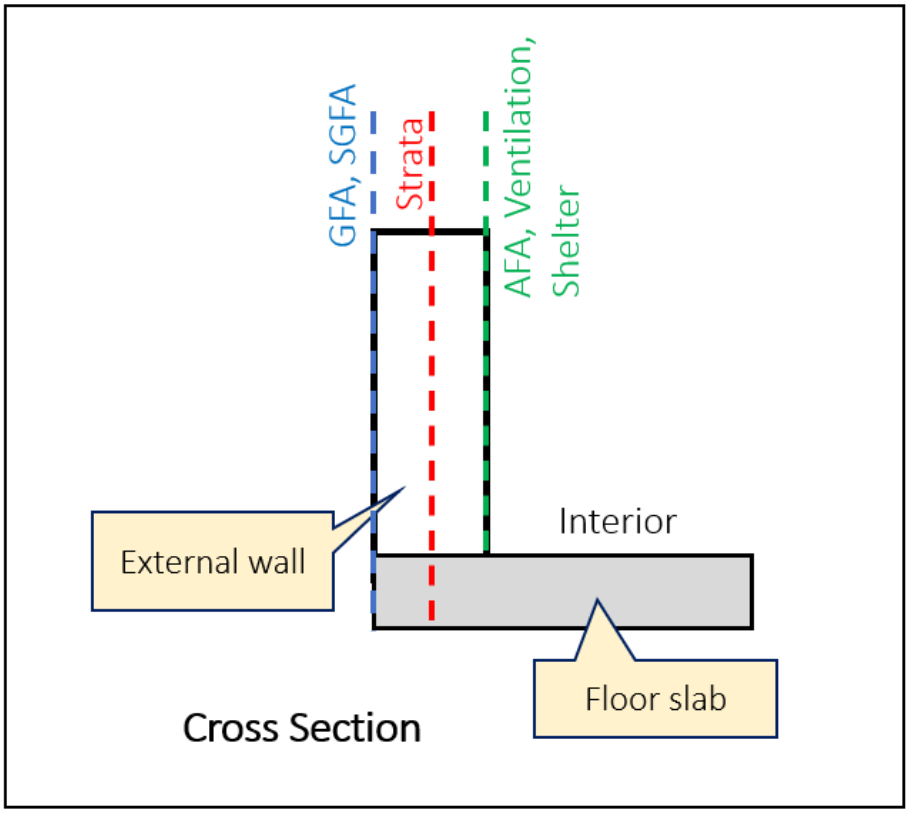
SINGAPORE CIVIL DEFENCE FORCE

Appendix 1: <u>Existing</u> floor area definitions by various agencies and their measurements vis-à-vis the external wall of a development

Floor Area Type	Definition
• URA's gross floor area (GFA) • BCA's & SCDF's statistical gross floor area (SGFA)	Measured to include thickness of the wall
• SLA's strata area	Measured to the middle of the wall
• SCDF's accessible floor area (AFA) • SCDF's & BCA's household / storey shelter requirements • BCA's ventilation requirements	Measured to exclude thickness of the wall

See illustration below for the current computation of the various floor area definitions.



Appendix 2: URA's revised GFA definition

GFA Definition

1. All covered floor areas of a development and all uncovered areas used for commercial purposes (e.g. outdoor refreshment area) will continue to be computed as GFA, but with the following changes:

    a) GFA will now be measured up to the middle of external walls, party walls and other similar external building features (e.g. curtain walls, railings, parapet walls) (see Diagrams 1 to 4 in Appendix 2-1).

    b) Where there are connecting external walls with varying thickness, a 50mm offset will be allowed to accommodate the change in wall thickness. This is to align with the current industry practice for demarcating strata area (see Diagram 5 in Appendix 2-1).

2. All strata areas will be computed as GFA. Today, private roof terraces and private enclosed spaces (even if uncovered) are already computed as GFA. Under the revised GFA definition, all uncovered areas that form part of the strata area of the development will be computed as GFA (e.g. car parks included as part of a strata unit or an accessory strata lot). Ledges for equipment that are exclusive to a strata unit such as air-conditioner (AC) ledges[4] that are included as strata area will be computed as GFA. However, developers who propose to retain AC ledges as common property can continue to exclude such AC ledges from GFA[5].

GFA Exemption Areas

3. AC ledges that are proposed to be retained as common property are similar to reinforced concrete (RC) ledges. Hence, such common property AC ledges will now be exempted from GFA up to 2m in width, to align with the current GFA treatment for RC ledges.

4. There will be no change in the basis for GFA exemption policies. Covered communal floor areas that fulfil URA's GFA exemption criteria can continue to be exempted from GFA[6].

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[4] QPs must still ensure that AC ledge designs continue to meet BCA's design for maintainability guidelines to ensure ease of maintenance (refer to Clause 3.1.2 (a) and 3.1.2 (b) under the Maintainability Section for Residential Building here).

[5] Developers should consider design solutions at the building design stage to safeguard direct access to the common property AC ledges by the MCST for downstream access and maintenance.

[6] Some communal spaces may fall within private strata lots due to the need for the demarcation of ownership (e.g. sky terraces within a mixed use development). Such communal spaces will continue to be considered for GFA exemption if they fulfil the GFA exemption criteria.

5. There are some areas that are subject to a minimum or maximum width criteria before GFA exemption can be considered (e.g. minimum 5m width for sky terraces, maximum 2m width roof eaves). For such cases, the measurement of this minimum / maximum width will continue to be based on the net width of the spaces (i.e. exclude the width of the adjoining walls) (see Diagrams 6 & 7 in Appendix 2-1).

Submission Requirements

Inclusion of strata boundaries in submission drawings to URA

6. For development applications involving proposed strata-titled developments, QPs are required to include the proposed strata boundaries as a separate layer within the CAD or BIM submission drawings for agencies' reference. QPs should finalise these strata boundaries early and avoid unnecessary downstream adjustments, as changes to strata area may have an impact on the development's GFA figures.

Appendix 2-1: URA's revised GFA definition – Supplementary Diagrams

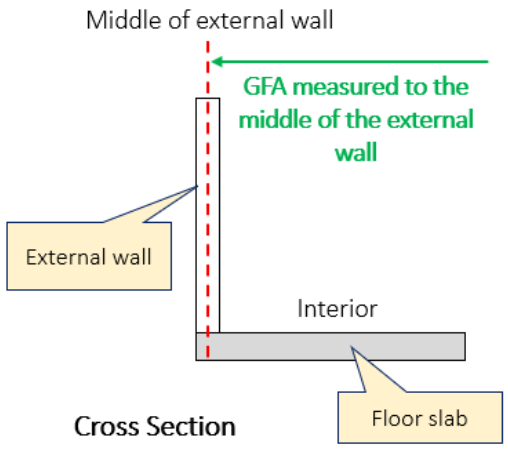
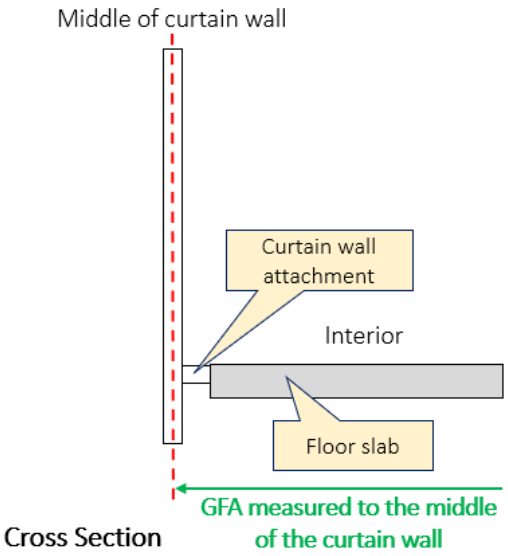
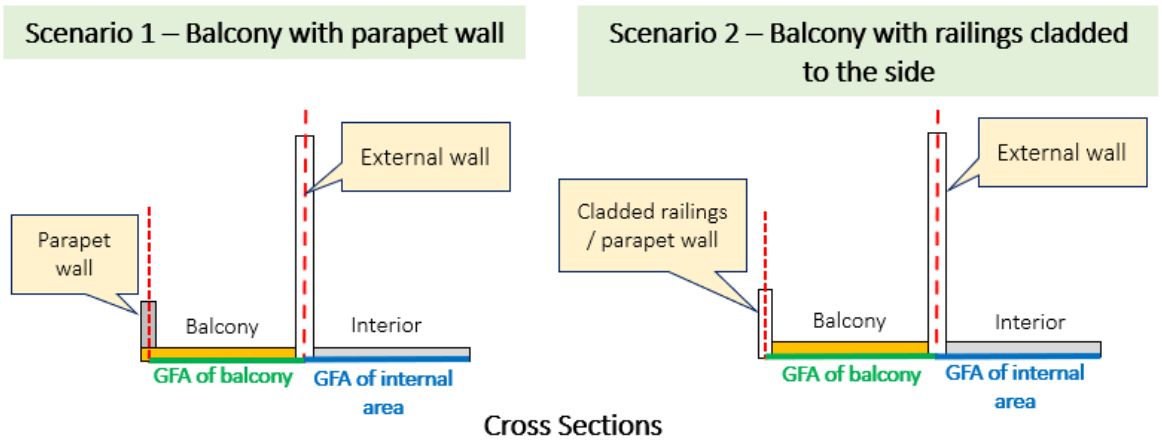
S/N	Diagrams
Diagram 1 GFA treatment of external wall	
Diagram 2 GFA treatment of curtain wall	
Diagram 3 GFA treatment of balcony	

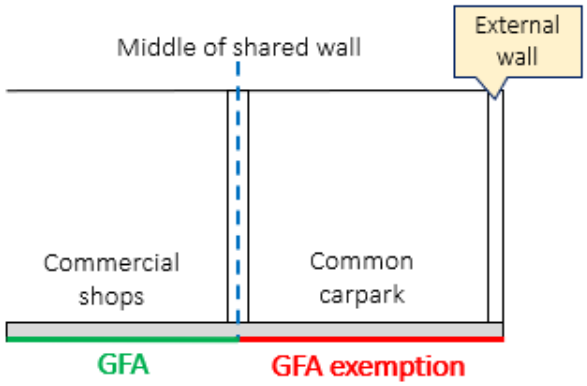
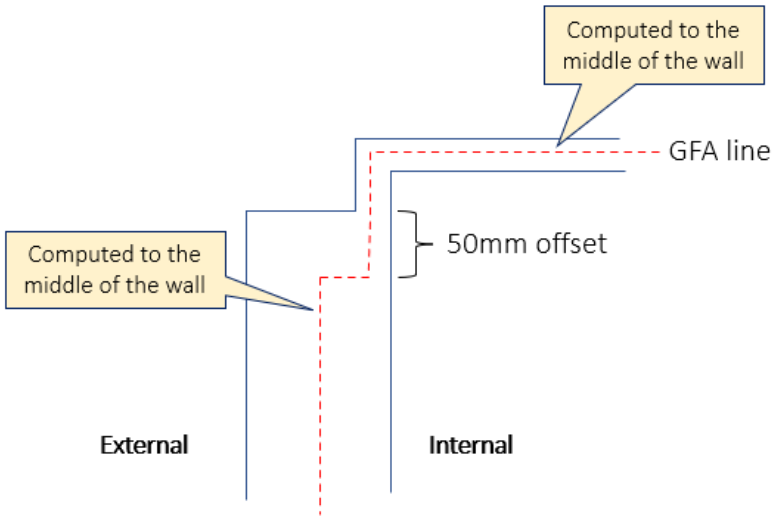
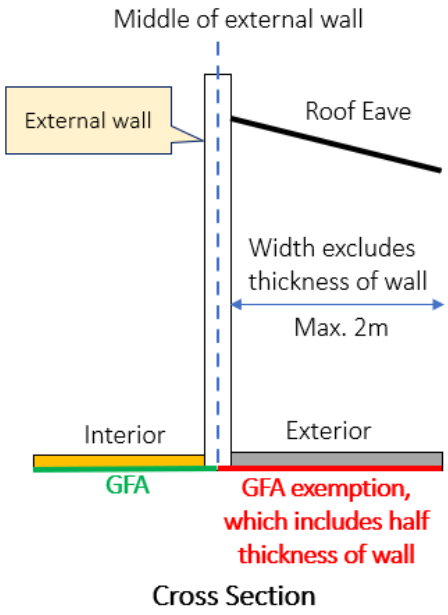
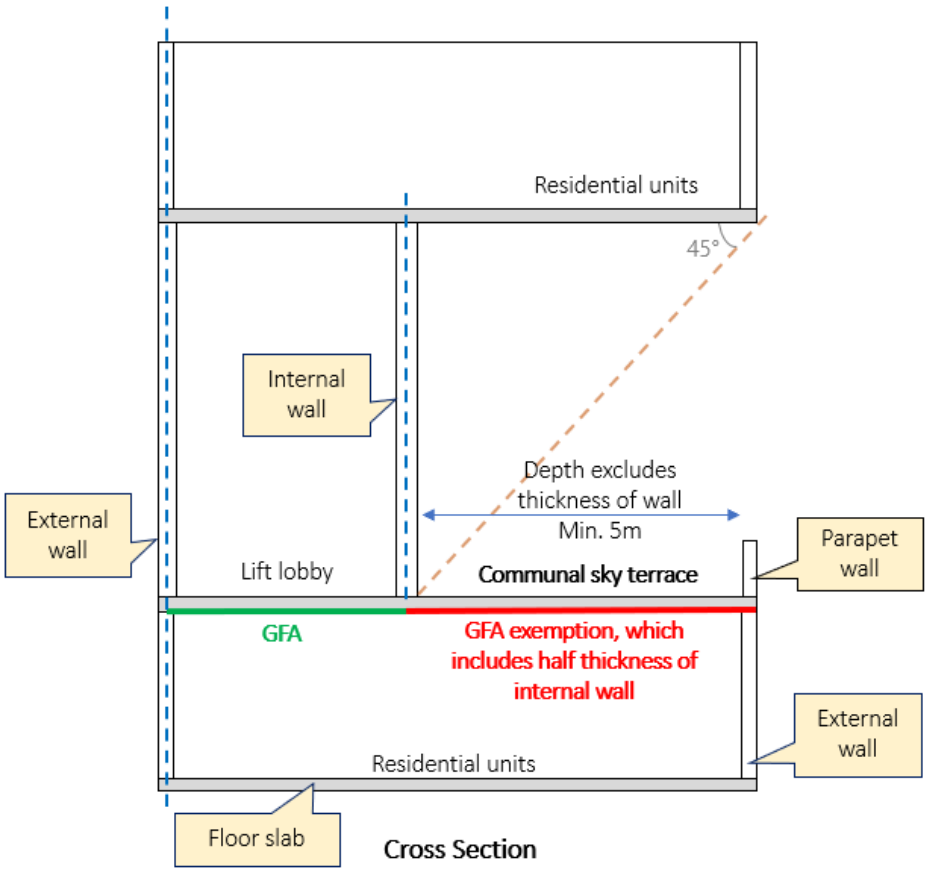
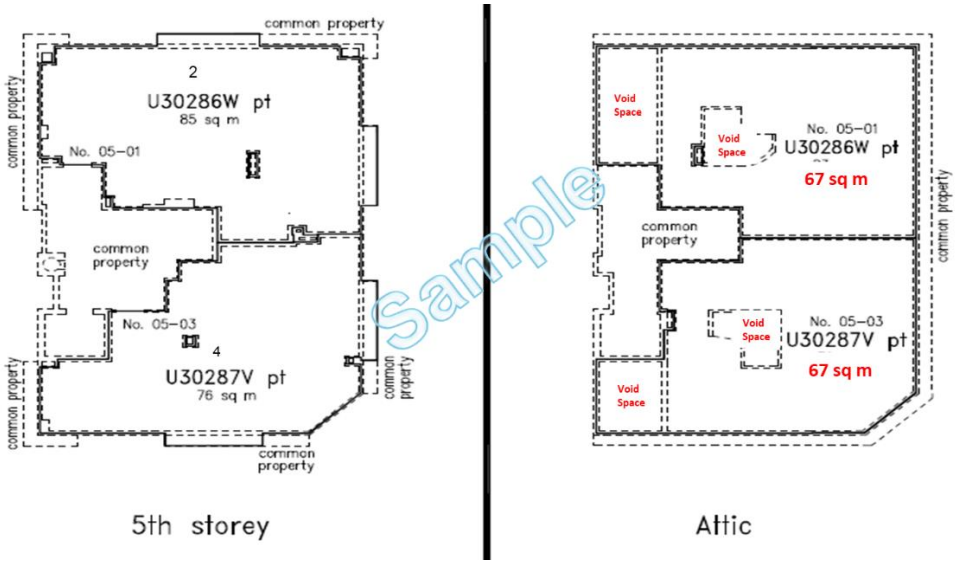
Diagram 4 Measure to middle of shared wall	 Cross Section
Diagram 5 GFA demarcation for building with walls of different thickness	 Top Down View

Diagram 6 GFA and width measurement of roof eave exemption	 Cross Section
Diagram 7 GFA and width measurement of sky terrace exemption	 Cross Section

Appendix 3: SLA's revised strata definition

Principles	Application
Removal of voids	Voids (internal and external) will be excluded from strata area computation. In the Strata Certified Plan (CPST), voids will be indicated for reference only (see Diagrams 1 and 2 for examples of the CPST and area tabulation).

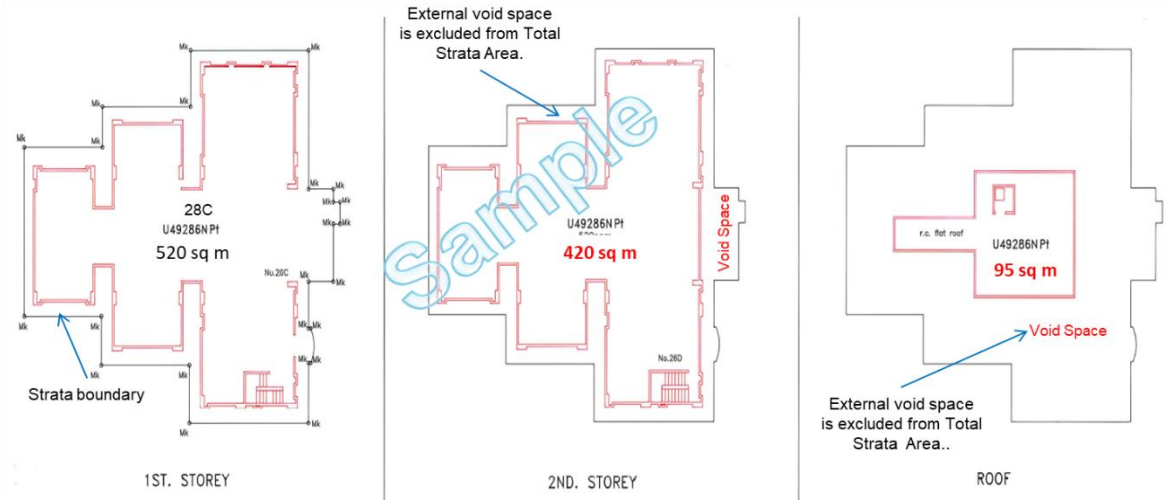
Diagram 1: Example of CPST for a penthouse unit with internal voids



House No.	Strata lot	Storey	Strata Area (sq. m)	Total Strata Area (sq. m) (Excludes Void Area)	Void Area (Not Counted in Total Strata Area. For reference only) (sq. m)
2	U30286W	5th	85	152	0
		Attic	67		16
4	U30287V	5th	76	143	0
		Attic	67		12

Diagram 2: Example of CPST for a strata bungalow with external voids

NB: Building / wall details shown in red and description 'External void space is excluded from Total Strata Area' is only for illustration purposes



House No	Strata Lot	Storey	Strata Area (sq. m)	Total Strata Area (sq. m) (Excludes Void Area)	Void Area (Not Counted in Total Strata Area. For reference only) (sq. m)
28C	U49286N	1st	520	1035	0
		2nd	420		100
		Roof	95		425

Computation to the middle of the external walls	Strata area will continue to be computed to the middle of the external walls and other similar external building features (including curtain walls, railings and parapet walls). Where there are connecting walls of varying thickness, a 50mm offset should continue to be drawn in to demarcate ownership boundaries.

Appendix 4: BCA's and SCDF's revised floor area definition

<table>
<tr><th>Floor area definition (Agency)</th><th>Changes</th><th>Explanation</th></tr>
<tr><td>Statistical gross floor area

(BCA and SCDF)</td><td>Align and simplify the computation</td><td>SGFA refers to the total floor area of a building, regardless of the usage of the space. BCA and SCDF have worked together to harmonise and simplify SGFA computation. This minimises potential confusion and unnecessary iterations and the industry no longer needs to compute two sets of floor areas for both agencies.

SGFA will aggregate GFA/Strata Area and be measured to the middle of the external wall (including curtain walls, railings and parapet walls), where there are such walls and other external floor areas. Details of SGFA computation can be found in the SGFA form. The updated SGFA form can be downloaded at https://go.gov.sg/sgfa.

The prevailing fee rates for BCA and SCDF submissions will continue to be applicable.</td></tr>
<tr><td>Household / storey shelter

(BCA and SCDF)</td><td>Adopt the revised GFA definition for size of the dwelling unit</td><td>The size (GFA) of the house in the Shelter Codes will adopt the revised GFA definition (i.e. measured to the middle of the wall) to determine the size of the storey / household shelter required.

The measurement of the shelter area and volume will continue to be based on net area and volume (i.e. exclude thickness of walls) (see Tables 1a and 1b). The requirements on the size of the household shelter / storey shelter will remain status quo. Do refer to the latest technical requirements for household shelter / storey shelter on BCA's and SCDF's websites.

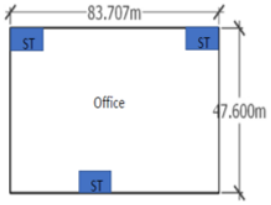
Table 1a: Minimum internal household shelter (HS) floor area and volume
<table><tr><th>GFA* of a House (m^2)</th><th>HS Floor Area (m^2)</th><th>HS Volume (m^3)</th></tr><tr><td>GFA $\leq$ 40</td><td>1.44</td><td>3.6</td></tr><tr><td>40 < GFA $\leq$ 45</td><td>1.6</td><td>3.6</td></tr><tr><td>45 < GFA $\leq$ 75</td><td>2.2</td><td>5.4</td></tr><tr><td>75 < GFA $\leq$ 140</td><td>2.8</td><td>7.2</td></tr><tr><td>GFA > 140</td><td>3.4</td><td>9.0</td></tr></table>Based on revised GFA definition (ie computation to the middle of the wall)
Continue to be based on net shelter area and volume (exclude thickness of the wall)</td></tr>
</table>

<table>
<tr>
<td></td>
<td></td>
<td>
<u>Table 1b: Minimum internal storey shelter (SS) floor area and volume</u>
<table>
<tr><th>Gross Floor Area (GFA)* of Dwelling Unit</th><th>Nominal Occupancy of Dwelling Unit
(No. of persons catered for in SS)</th></tr>
<tr><td>GFA $\leq 45m^2$</td><td>2</td></tr>
<tr><td>$45m^2 < GFA \leq 75m^2$</td><td>3</td></tr>
<tr><td>$75m^2 < GFA \leq 140m^2$</td><td>4</td></tr>
<tr><td>GFA $> 140m^2$</td><td>5</td></tr>
</table>
Area of Storey Shelter = TNO x $0.6m^2$
Volume of Storey Shelter = TNO x $1.8m^3$
TNO = Total Nominal Occupancy of units served by Storey Shelter
Based on revised GFA definition (ie computation to the middle of the wall)
Continue to be based on net shelter area and volume (exclude thickness of the wall)
</td>
</tr>
<tr>
<td>Ventilation requirement

(BCA)</td>
<td>Computation to the middle of the walls</td>
<td>If natural ventilation is adopted in a building, the opening for ventilation is required to be at least 5% of the floor area that it is ventilating, which is measured to the middle of the wall.</td>
</tr>
<tr>
<td>Accessible floor area

(SCDF)</td>
<td>Computation to the middle of the walls</td>
<td>SCDF will allow the measurement of AFA and other fire safety requirements to the middle of the wall, if the QP has assessed that fire safety design is not impacted (see Examples 1 and 2). Nevertheless, the QP may also choose to compute AFA based on the net floor area to comply with the fire safety requirements.

<u>Example 1: Fire safety requirements derived from AFA</u>
Some fire safety requirements are based on tiers of AFA ranges (e.g. fire engine accessway). For most cases, measurement to the middle of the wall will not lead to additional fire safety provisions. However, additional fire safety provisions may be required when AFA is close to the next tier.</td>
</tr>
</table>



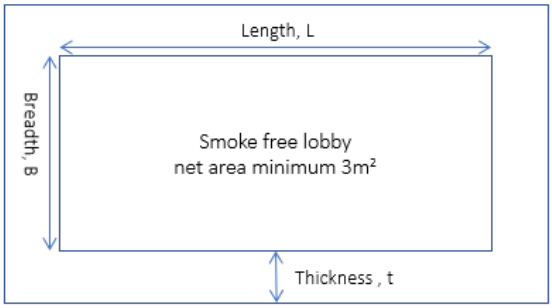
Measurement	AFA	Length of fire engine accessway
To inner wall	3984m²	• 1/4 perimeter (non-sprinkler protected) • 1/6 perimeter (sprinkler protected)
To middle of the wall	4007.5m²	• 1/2 perimeter (non-sprinkler protected) • 1/4 perimeter (sprinkler protected)

Length of fire engine accessway for PG III, IV, V & VII Buildings		
AFA (m^2)	Required length of perimeter	
	Non-sprinkler protected	Sprinkler-protected
≤ 2000	1/6 (at least 15m)	1/6 (at least 15m)
> 2000 & ≤ 4000	1/4	
> 4000 & ≤ 8000	1/2	1/4
> 8000 & ≤ 16000	3/4	1/2
> 16000 & ≤ 32000	Island site	3/4
> 32000		Island site

Example 2: Fire safety requirements with minimum net area / dimension

Some fire safety requirements have minimum net area/dimension (e.g. smoke free/fire lift lobby, fire command center, refuge area). If QP chooses to calculate to the middle of the wall, the minimum net area should still be adhered to.

For example, to achieve a net area of at least $3m^2$ for the smoke free lobby, the calculation to middle of the wall of the lobby is as follows:



Assuming a typical 1hr (non-load-bearing wall) has 75mm thickness (t) and the smoke free lobby measures 2m (L) by 1.5m (B):

Area measured to the middle of the wall (to achieve net area of $3m^2$)
= (2m + 0.075m) x (1.5m + 0.075m)
= $3.27m^2$

This supplementary document is to be read in conjunction with agencies' joint circular "Harmonisation of Floor Area Definitions by URA, SLA, BCA AND SCDF" dated 1 Sep 2022 (see circular here).

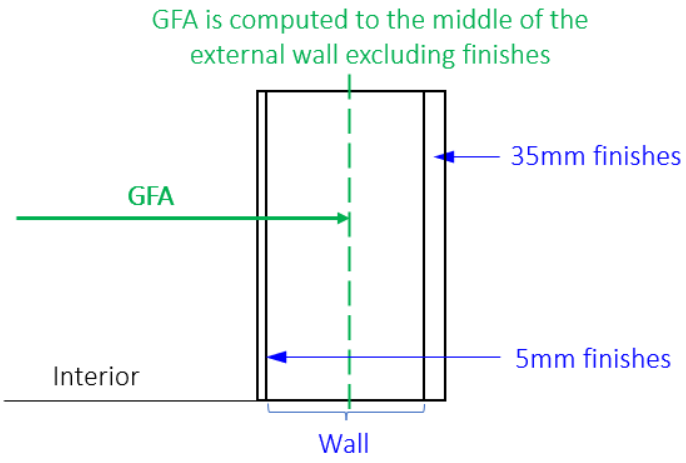
CLARIFICATIONS ON URA'S GROSS FLOOR AREA (GFA) DEFINITION

Following the release of agencies' joint circular on 1 Sep 2022, URA had engaged the industry at various platforms to seek further feedback and provide clarifications on the revised GFA definition. We have collated these clarifications into this supplementary document, to facilitate industry preparations when the new GFA definition takes effect on 1 Jun 2023.

Q1. Does GFA computation consider the thickness of wall finishes?

GFA will be measured up to the middle of the external wall, excluding wall finishes.
[Note: Wall finishes, if shown in drawings, are to have their thickness reflected in order to facilitate GFA demarcation]

Example of GFA demarcation for an external wall with finishes

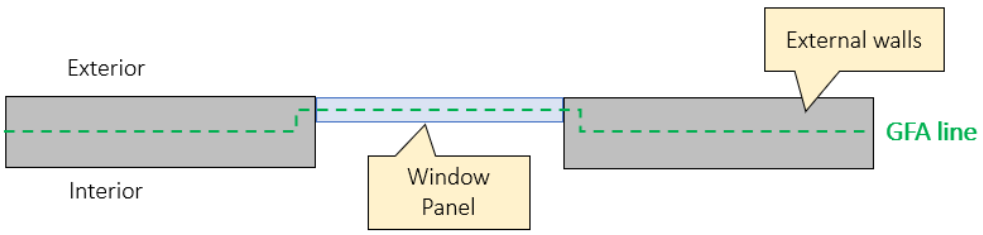


Cross Section

Q2. How is GFA measured where there are windows/doors of varying thickness along the external wall?

GFA will be measured up to the middle of such window and door components.

Example of GFA demarcation for windows along an external wall



Plan View

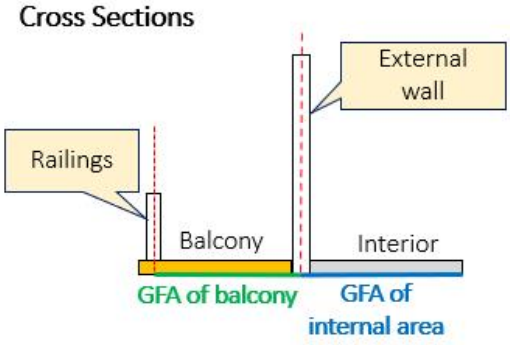
Q3. How is GFA measured where there are other types of vertical structures at the edge of the floor slab (e.g. railings) in-lieu of external walls?

GFA will be measured up to the middle of the outermost vertical structures.

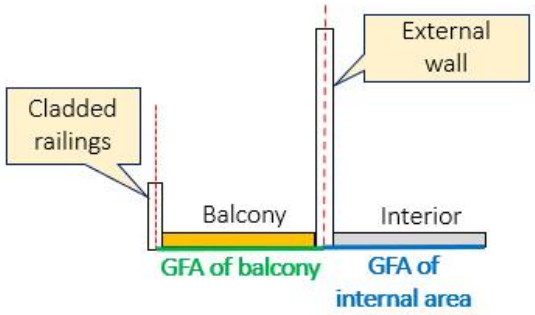
However, if there are spaces beyond the vertical structure that is proposed to be included as strata area, this strata area will also be included as GFA.

Examples of GFA demarcation for railings

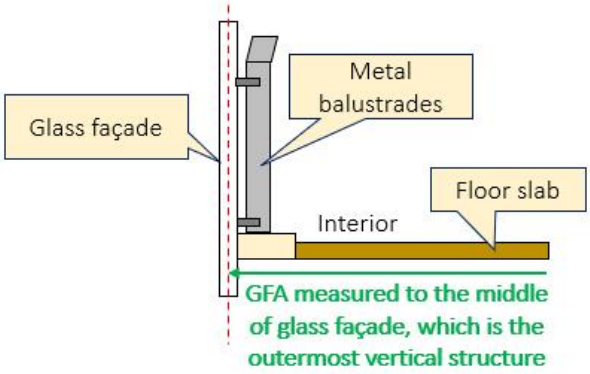
Scenario 1 – Balcony with railings on slab



Scenario 2 – Balcony with railings cladded on the side of slab



Scenario 3 – Glass façade with metal balustrades at shopping mall

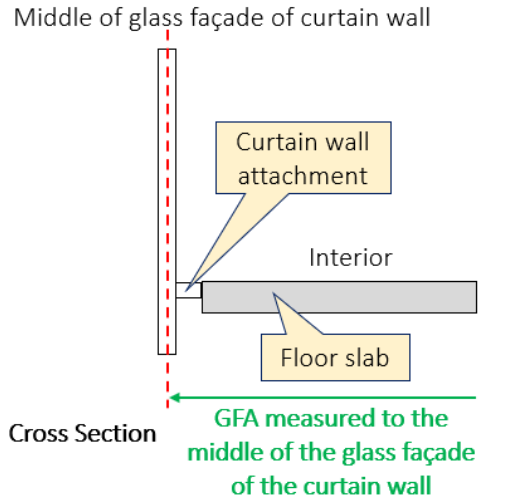


Q4. GFA will in future be measured to the middle of curtain walls. What are the implications if there are subsequent changes to the curtain wall design?

Curtain walls will be treated no different from any external walls, with GFA measured up to the middle of the curtain wall. Hence, the developer and project team will need to ensure that any changes to such wall systems will still allow the development to keep within the permissible GFA for the site.

For this reason, we encourage the developer to work closely and involve the relevant parties at the early design stage so as to firm up the curtain wall design to minimise downstream abortive work.

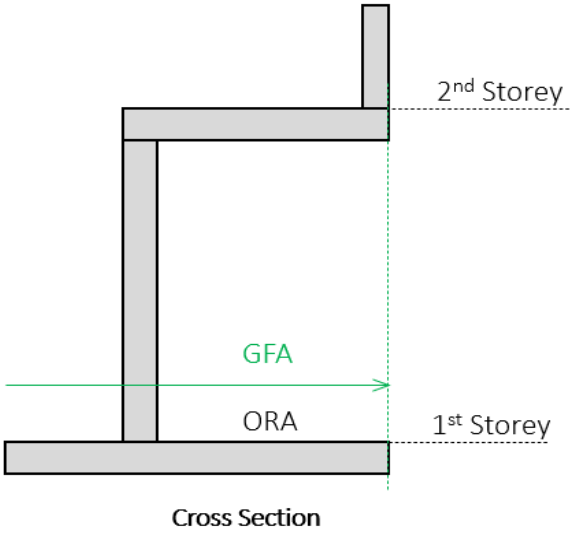
Example of GFA demarcation in curtain wall



Q5. How is GFA measured where there are no external walls or similar vertical structures?

GFA will be measured to up the edge of the covered area.

Example of GFA demarcation for ORA

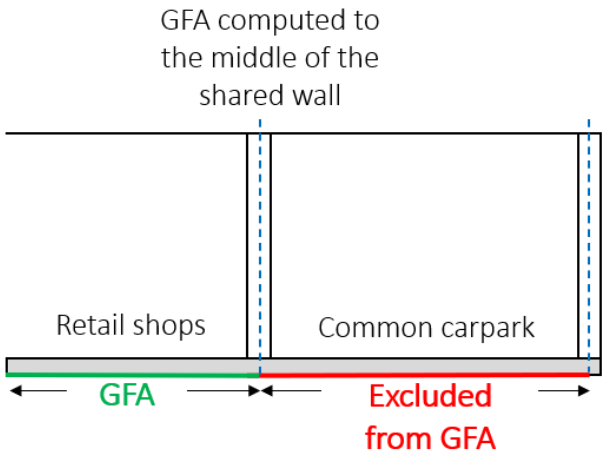


Q6. What is the GFA treatment for a wall that is next to a space excluded from GFA?

If the wall is between a GFA and space excluded from GFA computation (e.g. shop space and common carpark), the GFA of the shop space will be measured up to the middle of the wall.

If the wall is between 2 spaces that are excluded from GFA (e.g. common carpark and outdoor open-to-sky area), the wall can be excluded from GFA.

Example of GFA demarcation for walls next to non-GFA spaces

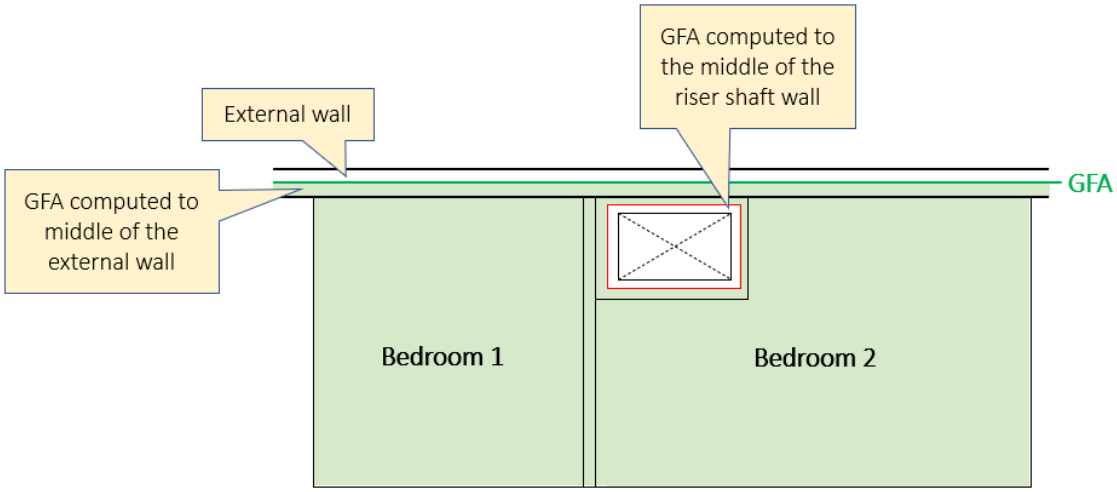


Cross Section

Q7. I have a riser shaft (void space) built directly next to the external wall. Can the entirety of the 2 walls (shaft wall and external wall) be excluded from GFA?

In cases where there are 2 walls abutting each other, these will be assessed on the basis of them being distinct walls. In this particular scenario, the inner half of the riser wall can be excluded from GFA. The remaining covered floor areas will need to be computed as GFA.

Example of GFA demarcation of a unit with void space

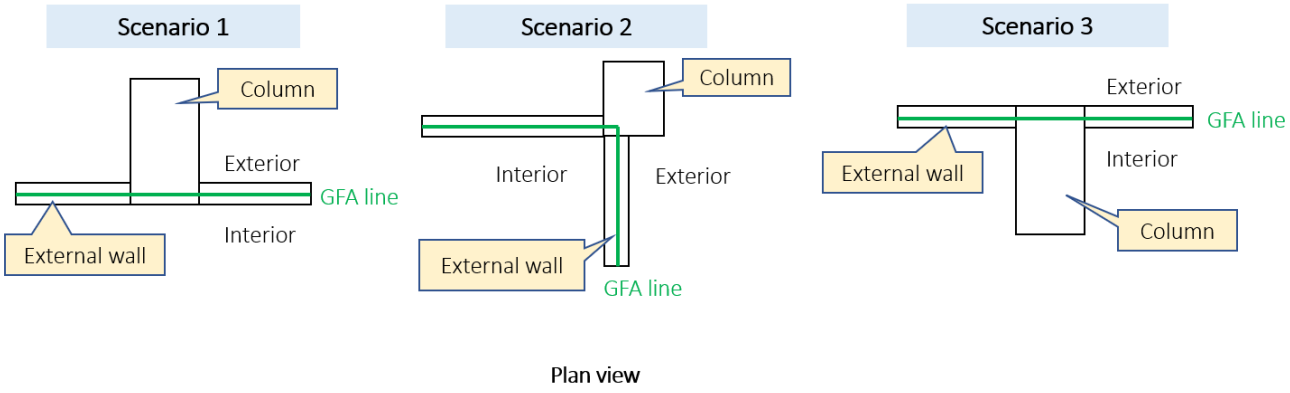


Plan view

Q8. How is GFA measured where there are columns of varying thickness along the external wall?

There is no need to account for these columns and GFA will continue to be measured to the middle of the external wall.

Examples of GFA demarcation for walls with columns



Plan view

Q9. Does the new GFA definition apply to landed and strata landed housing developments?

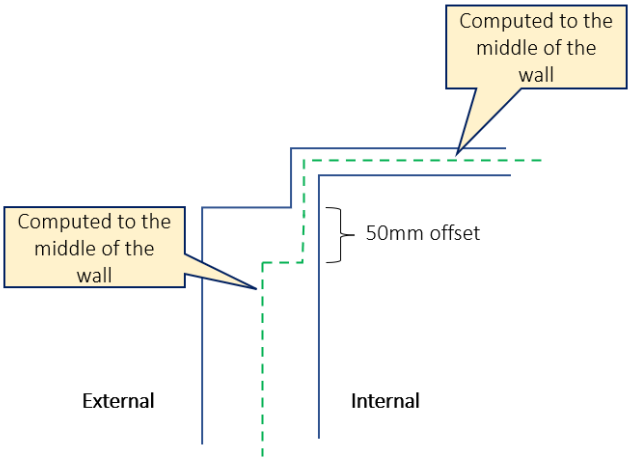
Yes, the revised definitions will also apply to all developments, including landed and strata landed housing.

In the case of strata landed housing, this means that other than covered floor areas, all proposed strata areas (whether covered or otherwise) will be computed as GFA. Examples include private enclosed spaces (PES), private roof terraces (PRT) or private carpark lots. This is consistent with the approach for non-landed strata developments (flats/condominiums).

Q10. Why is the 50mm offset required when demarcating GFA for connecting walls with varying thickness?

This is to align with how the industry currently delineates strata area along external walls.

Example of 50mm offset for walls of different thicknesses



Top Down View

Q11. There are certain spaces within mixed-use developments that are included as strata area purely for the purpose of demarcating ownership / maintenance responsibilities between the different building users.

However, these spaces are meant to serve a communal function (e.g. public carpark lots, communal roof gardens & sky terraces, public walkways & linkages). Will including these spaces as strata area result in them being counted as GFA under the revised definition?

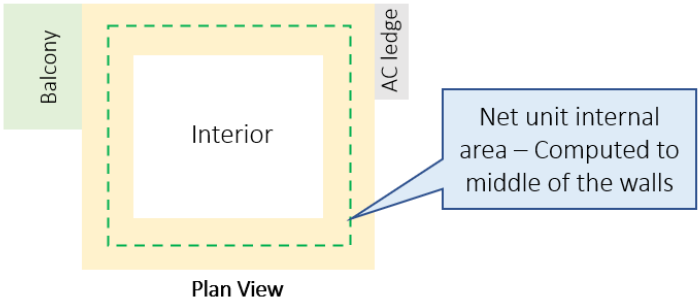
There are currently various communal spaces that can qualify for GFA exemption, subject to compliance with URA's detailed guidelines (e.g. sky terraces, privately-owned public spaces (POPS), covered walkways, common carpark lots). These communal spaces will continue to be considered for GFA exemption under the revised definition, even if they are owned en-bloc and form part of a larger strata lot for the purpose of demarcating ownership in mixed-use developments.

For example, in a hotel / office mixed-use development, the proposed communal sky terrace within the hotel (and is within the hotel strata lot owned be-bloc) can continue to be considered for GFA exemption, if it complies with URA's GFA exemption guidelines.

Q12. URA has guidelines limiting the size of certain spaces in residential developments (e.g. size of balcony capped at 15% of the unit's internal area, minimum 35sqm nett unit internal). Will this change with the revised GFA definition?

These requirements remain to ensure the spatial quality of such spaces. However, we will harmonise the measurements with the way GFA is computed, allowing the area of these various spaces to be determined by measuring to the middle of the walls or other similar external building features such as railings.

Example of net unit internal area computation – Computed to the middle of the unit's walls but continue to exclude AC ledges, voids and semi-outdoor spaces (e.g. balconies)



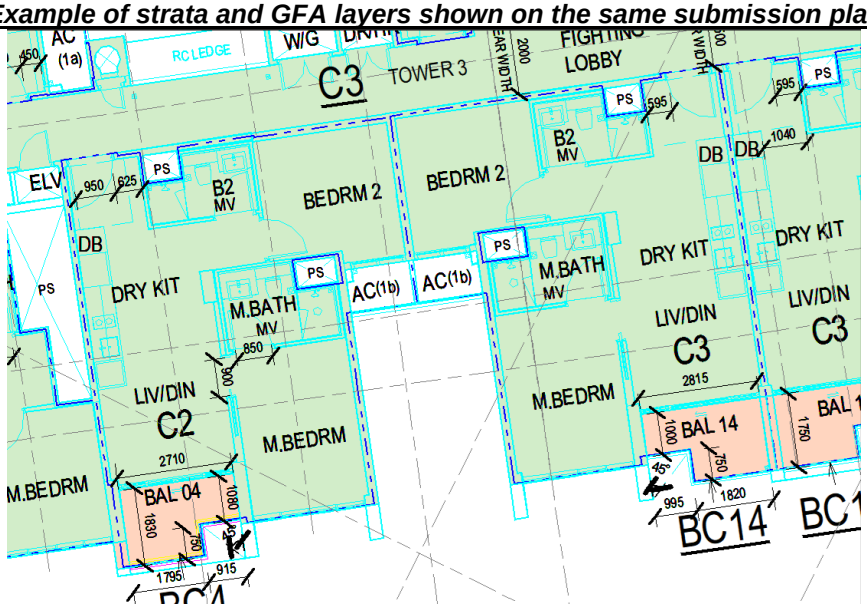
Q13. Does this mean that QPs now have to reflect the strata area demarcation in their submission plans for proposed strata-titled developments? What happens if there are proposed changes in the strata boundaries after the development has obtain planning permission?

Today, URA already requires QPs to reflect the proposed strata boundaries on the submission plans when assessing proposed strata-titled developments prior to grant of Written Permission. To facilitate URA's assessment for grant of Written Permission, QPs should clearly reflect both the GFA and strata boundaries on the same submission plan (see example below) and ensure all proposed strata areas have been duly computed as GFA.

Downstream changes to strata boundaries may affect the resultant GFA of the development. Applicants need to ensure that any increase in GFA for the development will still need to be regularised in accordance with the Master Plan permissible parameters, before strata subdivision approval can be granted.

Thus, we highly encourage developers and architects to involve surveyors upstream in the development process to firm up the strata boundaries, and avoid potential abortive work downstream.

Example of strata and GFA layers shown on the same submission plan



Q14. How will the revised GFA definition apply to existing developments carrying out A&A works?

As a general principle, the new GFA definitions will only apply to the areas affected by the A&A works and there is no need to recompute the GFA of the existing development (i.e. existing untouched areas can still retain the old GFA definition).

Given that the nature and scope of A&A works will vary across developments, applicants may wish to pre-consult URA prior to making a submission.

Q15. Will the changes affect the approved GFA for existing developments?

For existing developments approved before 1 Sep 1989, these were approved based on either the density or net floor area (NFA) methods. Owners of such developments who wish to determine their approved GFA are currently required to update the development's GFA to the prevailing GFA definition. The updated GFA will then form the approved GFA for the development.

For existing developments approved after 1 Sep 1989, these were already approved based on the GFA. Owners can continue to take reference from the last approved GFA for these developments when planning for any A&A works. There is no need to further "update" the GFA for such post-1989 developments.

There is no change to the above current practices.

Q16. As (strata) AC ledges will in future be computed as GFA, it is likely that such spaces in new developments will be right-sized. Will this compromise maintainability of AC equipment downstream?

All AC ledges should continue to comply with BCA's design for maintainability guidelines to ensure that they are adequately sized for ease of downstream maintenance. QPs and building owners can refer to Clauses 3.1.2 (a) and 3.1.2 (b) under the Maintainability Section for Residential Building here.

Q17. AC ledges may have railings or screens installed along the edges. Will there be a difference in GFA computation if these AC ledges are retained as common property or included as strata area?

AC ledges, if proposed as common property, will be excluded from GFA up to a depth of 2m. However, if these AC ledges are included as strata area for a particular unit, the extent of GFA demarcation for the AC ledge will align with the proposed strata area boundary, regardless of the position of the vertical railings or screens.