

A photograph of a modern multi-story building with glass balconies and brickwork, partially obscured by large green and blue geometric shapes. The text 'Your balcony proposal' is overlaid in white.

Your balcony proposal

ISSUE:

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Project:	Generic Detailing
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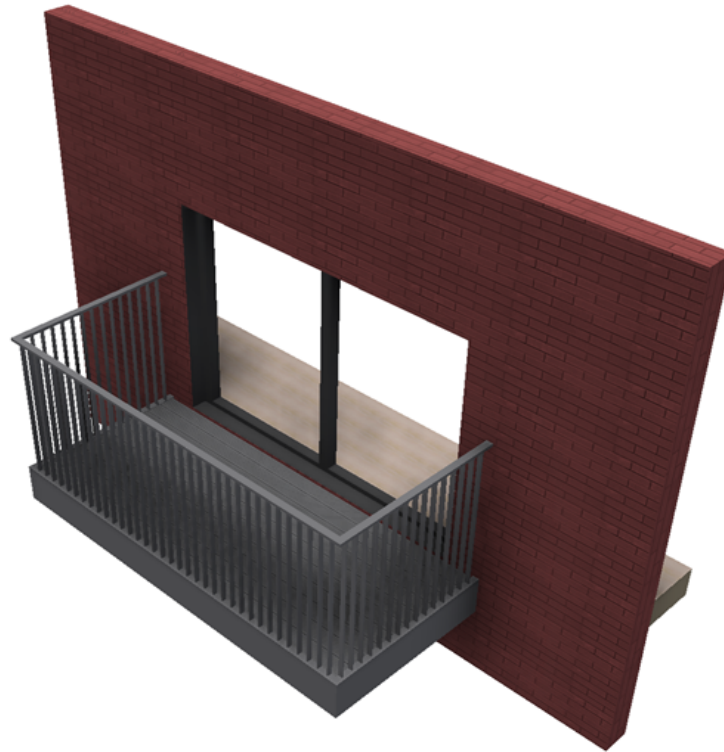
1.0

Your balcony proposal



Your balcony proposal

Project: Generic Detailing



Your design

This is the Sapphire balcony you have designed. Constructed from lightweight aluminium with discreet fixings and pre-fitted soffits, this balcony offers numerous benefits over 'traditional' balconies including, offsite construction, speedy installation, increased tolerance, and improved rigidity. We are so confident of the quality we deliver every balcony with our brand promise of Rigid. Ready. Right.

Balcony projection	1.5
Rear balcony length	3.5
Useable area	5.25 m2
Outside area	5.69 m2
Balustrade height	1400
Drainage	Positive

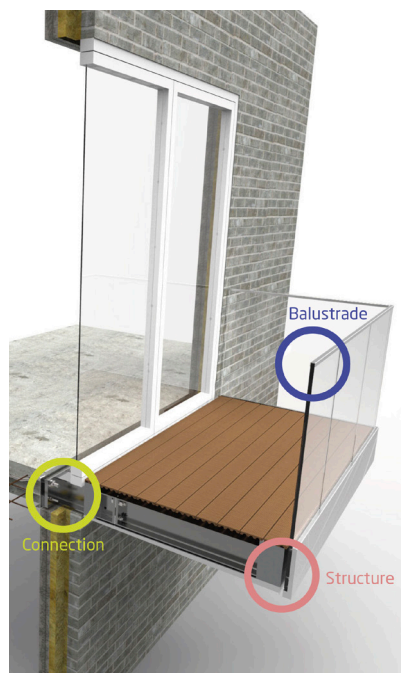
2.0

Material choice

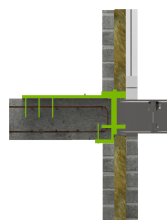


Material choice

Project: Generic Detailing

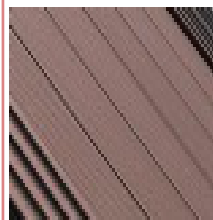


Connection

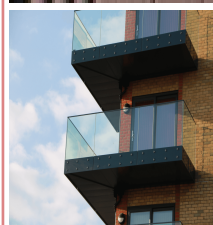


Connection
Cast in slab

Structure



Deck finish
S1 Old Mahogany
Brown

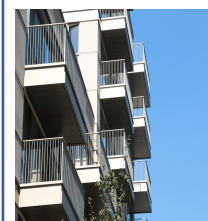


Soffits / drainage
Positive

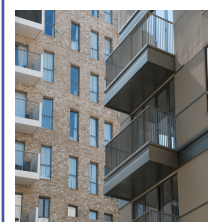
Balustrade



Front
Vertical Bar ()



Left
Vertical Bars



Right
Vertical Bars



Toprail
Rectangular
Handrail
(60x30mm)



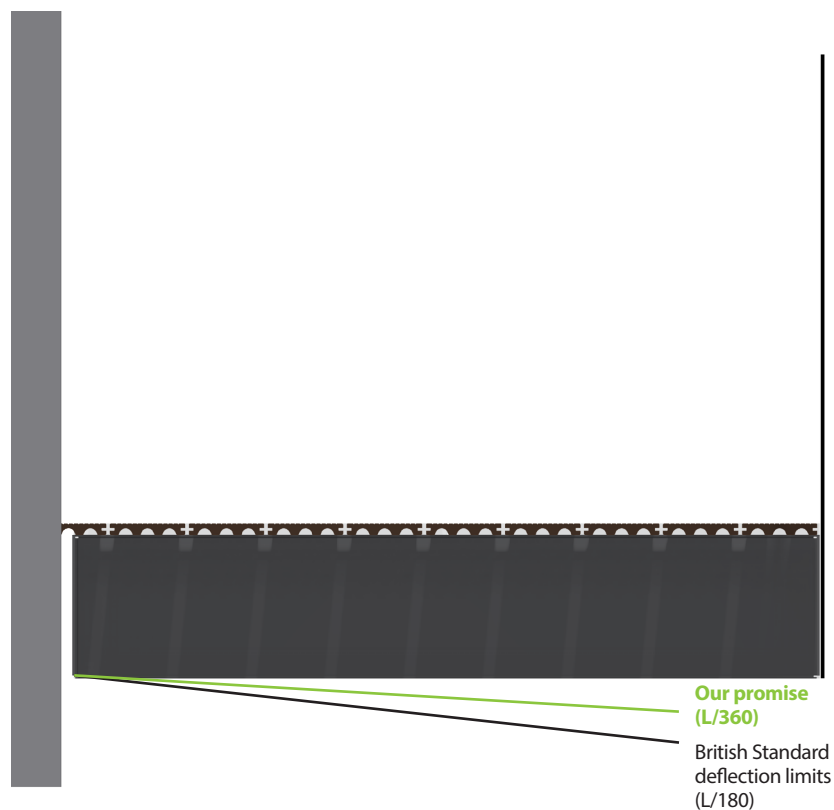
Fascia
Fascia in Front of
Bars

3.0

Rigidity considerations



Rigidity considerations



Summary

British Standards require cantilever structures to deflect no more than L/180.

Sapphire has created a way to scientifically test balcony rigidity and we guarantee that every balcony fixed using Sapphire Anchors, will achieve our Gold Standard (L/360), which means 50% less deflection than the limits in British Standard BS EN 1993-1-1:2005.

100% of rigidity tests we did in 2017 met our Gold standard (L/360).

Projection	BS EN allowed deflection	Sapphire promise
1.2m	6.67mm	3.34mm
1.3m	7.22mm	3.61mm
1.4m	7.78mm	3.89mm
1.5m	8.33mm	4.17mm
1.6m	8.89mm	4.44mm
1.7m	9.44mm	4.72mm
1.8m	10.00mm	5.00mm
1.9m	10.55mm	5.28mm

Your balcony design

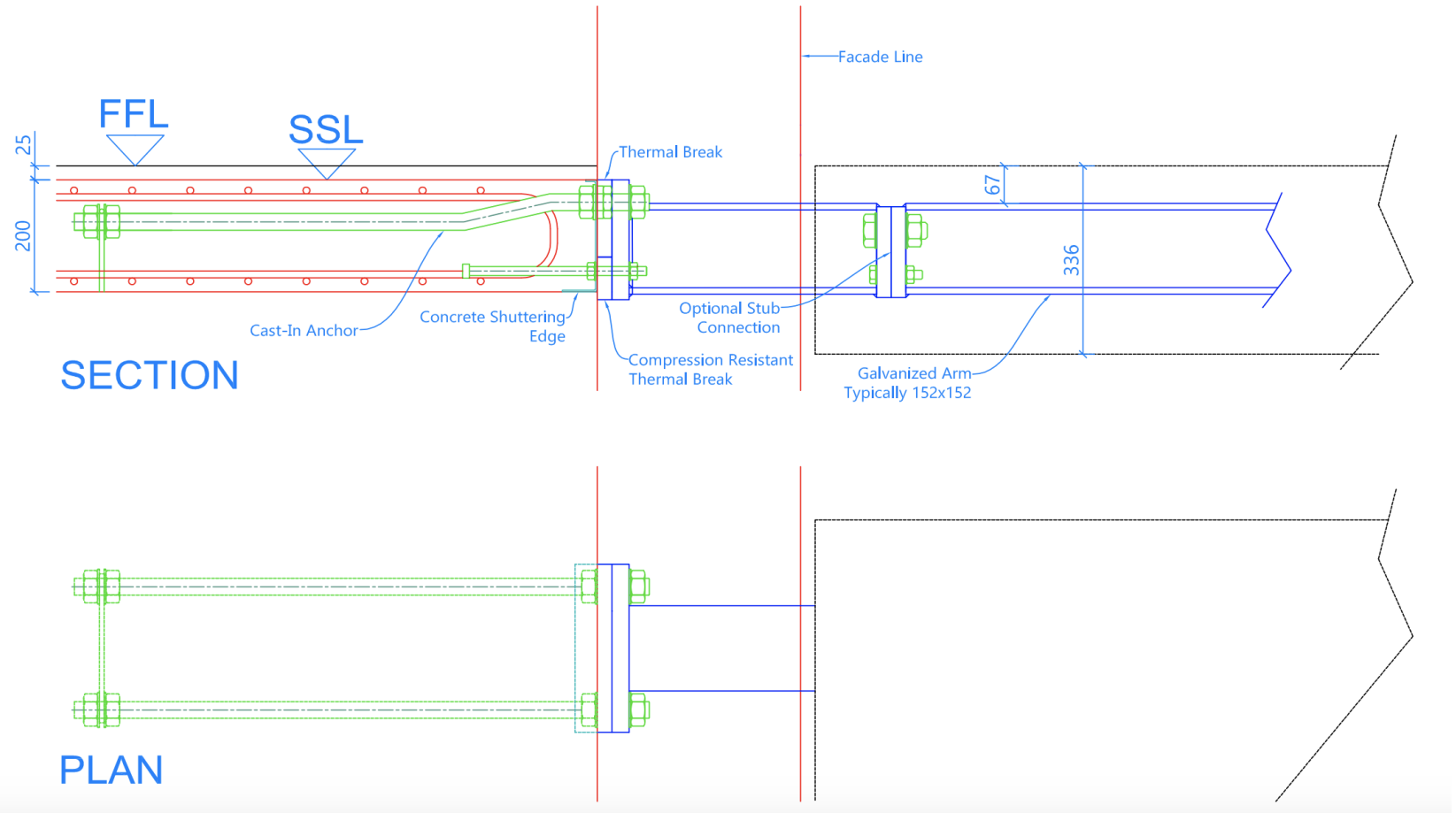
Width: 3.5m
Projection 1.5m

3.2

Connection summary

Notes

1. This detail is based on a concrete slab thickness of 200mm with floor finishes of 25mm
2. The anchor (shown green) and the balcony arm (shown blue) can be copied into your details. The red structural and facade lines are indicative
3. This design is indicative - exact anchor designs and arm sizes are subject to development and project specific structural calculations
4. Especially where floor finishes are thin (less than 75mm), we recommend doing thermal modelling to ensure sufficient insulation in the internal door cill area to comply with IP1/06 and Part L thermal requirements.
5. A soft joint should be specified around the balcony stub where it passes through the facade line, to allow for small differential movement and vibration without damaging the facade.



4.0

Structural load summary



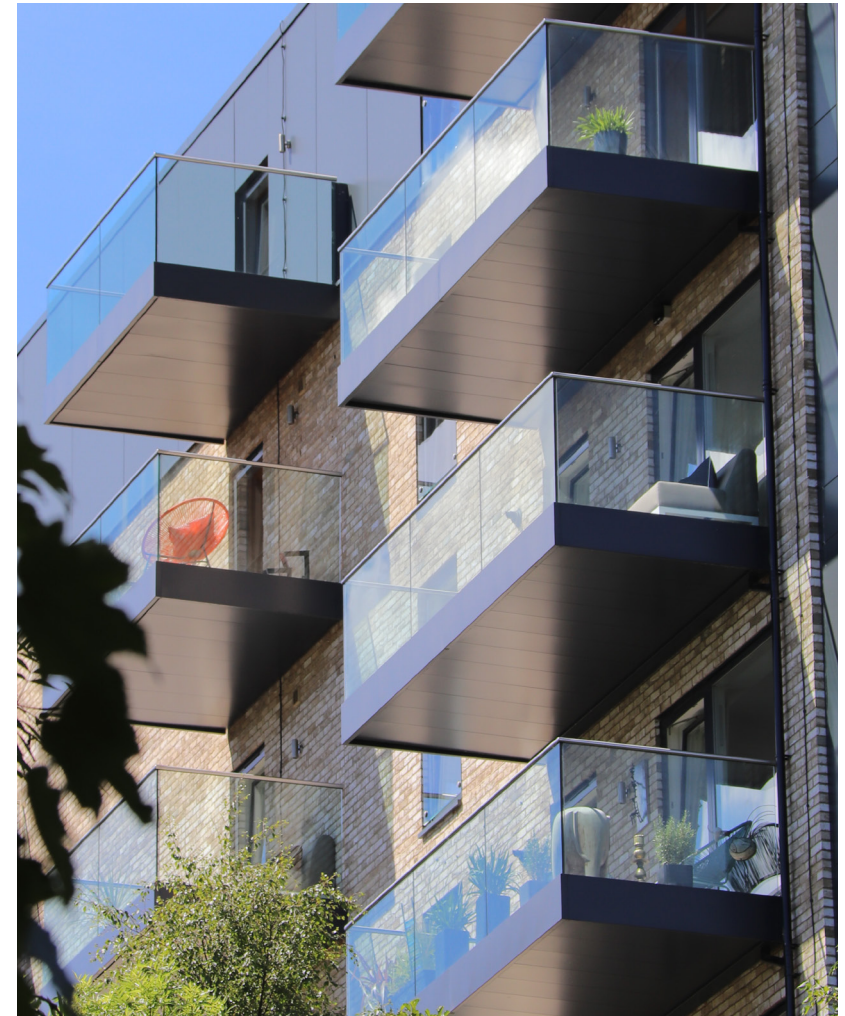
Structural load summary

Structural load summary

While, as with all structures, and in particular cantilevers, it is inevitable there will be some movement experienced under load, the structure should be analysed to ensure expected deflections are within acceptable limits to users. Consideration needs to be given to, not just for what achieves the requirements set out in British Standards, but also for what the average user would feel comfortable with. Normal use is deemed to be 400kg UDL ie 4 planters, 1 table, 4 chairs and 4 adults.

If you perceive and report that your Sapphire balcony isn't Rigid enough, we will ensure a visit is made to site within 7 working days to conduct our rigidity test (a point load of 2kN applied in outmost corner of the balcony). We will follow this up by sending you a technical report to scientifically prove its rigidity.

	Permissible	Sapphire	Pass
Tension of top stud Maximum tension in each top connection bolt is comfortably less than the capacity	162kN max	89.8kN	✓
Pull out force Tension in the top connection bolts is significantly less than pull out failure	151kN max	89.8kN	✓
Concrete cone failure Max tension in cast-in studs will not cause a core of concrete to pull out	310kN min	782kN	✓
Concrete splitting failure Concrete splitting failure will not occur	M20 studs min	M30 studs	✓
Moment capacity Max moment in normal use is less than moment capacity	310kN min	782kN	✓
Connection stiffness Stiffness compares very favourably with other leading alternatives and permissible stiffness	2,800 kNm rad min	Up to 13,000 kNm rad	✓



5.0

NBS specification



NBS specification

Manufacturer:	Sapphire Balconies Ltd 11 Arkwright Road Reading RG2 0LU 0344 88 00 553 sales@sapphire.eu.com www.sapphire.eu.com
Reference:	Glide-On™ aluminium Cassette® balconies, With polyester powder coated aluminium vertical bars on the front with polyester powder coated aluminium vertical bars on the left and with polyester powder coated aluminium vertical bars on the right.
Balcony anchor:	Sapphire Cast in anchor, preassembled with thermal breaks and concrete edge casting shutter. Cast in anchor for 200mm slab thickness with 25mm floor finishes.
Arms:	One-piece galvanised steel arms.
Casette® structure:	Standard 400mm modular Glide-On™ Aluminium Casette® balconies with levelling and clamping devices preassembled.
Soffits:	Polyester powder coated aluminium soffits Light Grey to RAL (TBC), with 400mm wide drip trays positively draining to gutter/RWP at rear of balcony.
Deck finish:	WPC composite decking fixed with hidden clips, boards in S1 Old Mahogany Brown with grooved finish.
Toprail:	60x30mm Rectangular polyester powder coated aluminium handrail light grey to RAL (TBC).
Guarding:	<p>Front: Polyester powder coated aluminium vertical bars Light Grey to RAL (TBC).</p> <p>Left: Polyester powder coated aluminium vertical bars Light Grey to RAL (TBC).</p> <p>Right: Polyester powder coated aluminium vertical bars Light Grey to RAL (TBC).</p>
Base fixing:	Mechanically fixed to Casette®
Fascias:	<p>Front: Polyester powder coated aluminium fascias, Light Grey to RAL (TBC). Fascia to be fixed in front of the bars.</p> <p>Left: Polyester powder coated aluminium fascias, Light Grey to RAL (TBC). Fascia to be fixed in front of the bars.</p> <p>Right: Polyester powder coated aluminium fascias, Light Grey to RAL (TBC). Fascia to be fixed in front of the bars.</p>

6.0

Child safety



Child safety

Child safety summary

It is important to ensure a balcony is a safe environment for children. The height of the balustrading is obviously key and every single Sapphire complies with the minimum height requirement of 1100mm, however we would recommend considering increasing this height or including a guarding panel to extend the height to 1400mm.

BS6180:1999 5.3 states that in dwellings and buildings that cater for children under 5, there should not be gaps large enough to allow a 100mm sphere to pass through.

Soffits

The addition of a soffit to a balcony will, aside from the fire safety and aesthetic benefits, ensure that any accidental spills from drinks, sand pits, paddling pools etc will be contained and won't fall through to the balcony below.



Laminated glass offers the ultimate in panel security for glass balustrades. In the unlikely event as in the event of 1 layer failing, the second maintains integrity.



Where vertical bar balustrades are selected we would recommend the addition of a kick-plate to avoid toys etc falling / rolling off the balcony

7.0

Fire considerations summary



Fire considerations

Except for the rare cases where balconies form part of an escape route, there is no specific requirement in the UK building regulations for fire resistant balcony construction. However as a leading UK manufacturer of balconies and balustrades, Sapphire is taking a lead in improving the fire safety of balconies.



Deck finish

Decking is classified by combustibility with Class D being more flammable than Class A. Although fire spread across floors is an uncommon scenario, Sapphire recommends the use of Class A (aluminium) decking to minimise the spread of fire.

- Class D or below – various types of timber decking
- Class C – standard WPC composites
- Class B – newly developed Enjura, a few premium options.
- Class A – new aluminium profile

Soffits

Sapphire's aluminium soffits are proven to reduce the propagation of fire by:

- Limiting the supply of oxygen feeding the fire
- Preventing burning debris from falling
- Preventing burning embers from hitting into the ones above
- Reflecting the heat
- Aluminium good at dispersing heat

Your balcony design

Stub/Arm	Class A
Balcony structure	Class A
Deck finish	Class A
Soffit	Class A
Fascia	Class A
Balustrade	Class A
Toprail	Class A

8.0

Drainage considerations



Drainage considerations

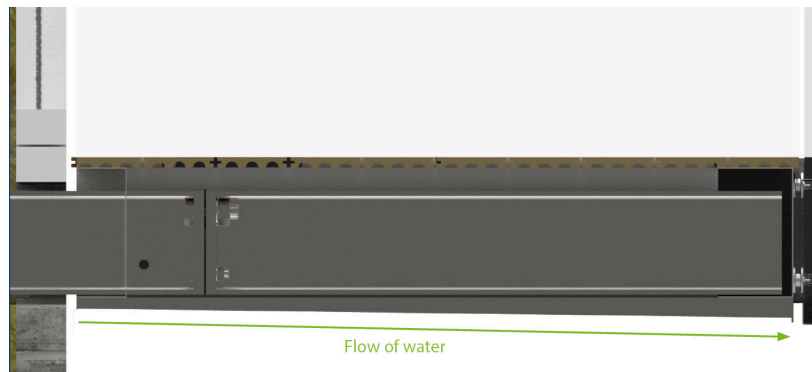
Controlled drainage

The sloped soffits, of Sapphire's controlled drainage Cassettes® usually slope forwards so that rainwater flows to the front of the balcony where it can freely drain. As the soffit allows rainwater contained within it to drain across the front edge it can be dispersed quicker and is less likely to puddle.

Typically controlled drainage is a more is a cost effective than positive drainage.

The addition of a drip tray typically adds around 10% to the cost of an undrained balcony. This is well worth considering as this has significant benefits over open balconies with no soffits at all. Incorporating positive drainage to a Rain Water

Pipe (RWP) typically adds a further 25% to the cost, and also makes the construction significantly more complex.



Your balcony design

Square meterage of
your balcony 5m²



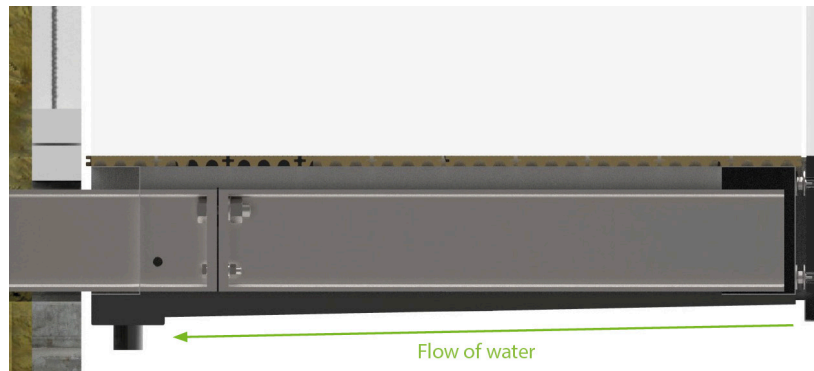
Typically in stacked balcony configurations, the top balconies shield the lower balconies from majority of the rainfall, potentially making pipe drainage unnecessary.

Drainage considerations

Positive (piped) drainage

Positive, or pipe, drainage captures water that has fallen onto a balcony and drains it away via a RWP. Sapphire's piped drainage Cassettes® usually slope backwards allowing rainwater to flow to the back of the balcony to the RWP.

The addition of a drip tray typically adds around 10% to the cost of an undrained balcony. This is well worth considering as this has significant benefits over open balconies with no soffits at all. Incorporating positive drainage to a Rain Water



Your balcony design

Square meterage of
your balcony 5m²



Typically in stacked balcony configurations, the top balconies shield the lower balconies from majority of the rainfall, potentially making pipe drainage unnecessary.

9.0

End user considerations



End user considerations

Apartment user guide

Like every element of construction legislation affects balcony design in many ways:

Lifetime Homes

Lifetime Homes are ordinary homes designed to incorporate 16 Design Criteria that can be universally applied to new homes at minimal cost. Each design feature adds to the comfort and convenience of the home and supports changing needs of individuals and families at different stages of life, yet rarely require greater space standards or impact the density of a development.

The London Housing Design Guide

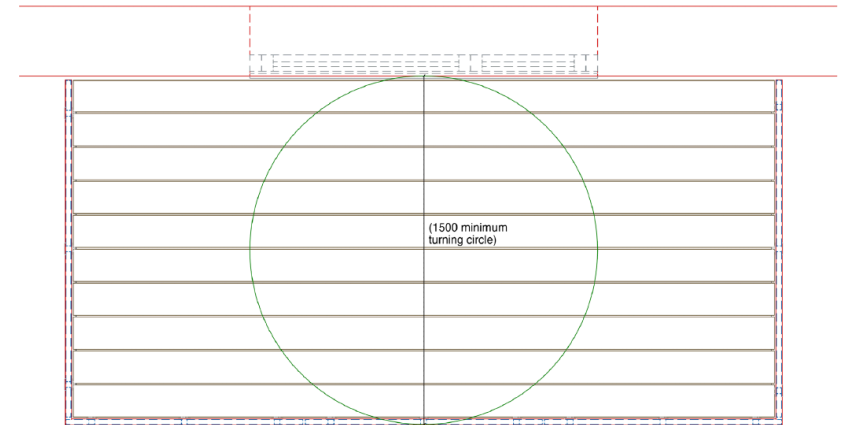
A minimum of 5m² of private outdoor space is required for all 2 person dwellings with an extra 1m² for each additional occupant. The minimum width and depth for all balconies and private external spaces is 1500mm. The dimensions aim to provide space sufficient for a meal around a small table, clothes drying, or for a family to sit outside with visitors.

NHBC

NHBC guidance states that “drainage should be provided where roofs are greater than 6m², however consideration should be given to providing drainage to smaller roofs, such as dormer, porch roofs or balconies.”

Your balcony design

Width:	3.5m
Projection	1.5m



10.0

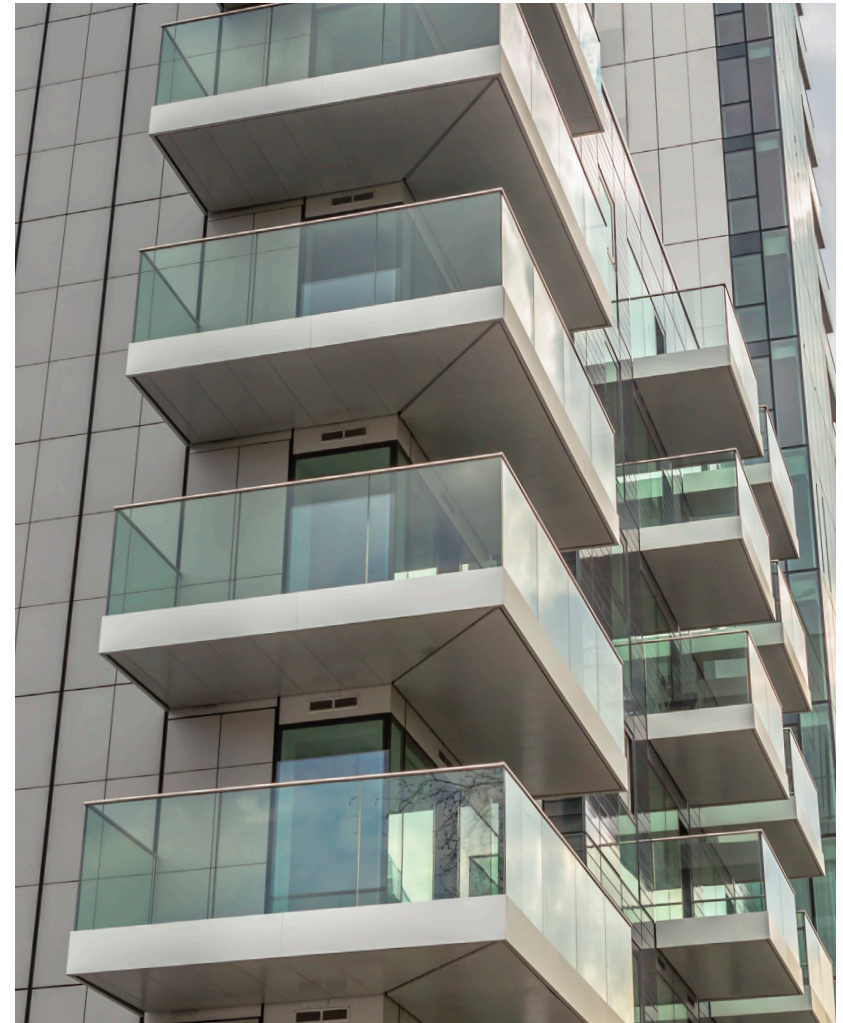
Precedent project images
& case studies



Precedent project images & case studies

Case studies

Wembley Alto »
London Dock »
Pomona Wharf »
Royal Arsenal »
First Central »
North Wharf Gardens »
Greenwich Peninsula (GP103) »
Kingston Gas Works »



 Rigid.Ready.Right.



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