



Facing bricks & walling v1.0

 **Tobermore**
Hard landscaping. **Made easy.**



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Introduction

Good design starts with the right materials. Our facing bricks combine strong visual appeal with dependable performance, giving housebuilders and contractors the confidence to deliver developments that stand the test of time.

With a broad palette of colours, textures and finishes, our range supports both traditional and contemporary projects without compromising on quality, consistency or availability.





Kingston | Moorland



Lansdowne | Heather



Lansdowne | Charcoal



Country Stone | Slate

Application design

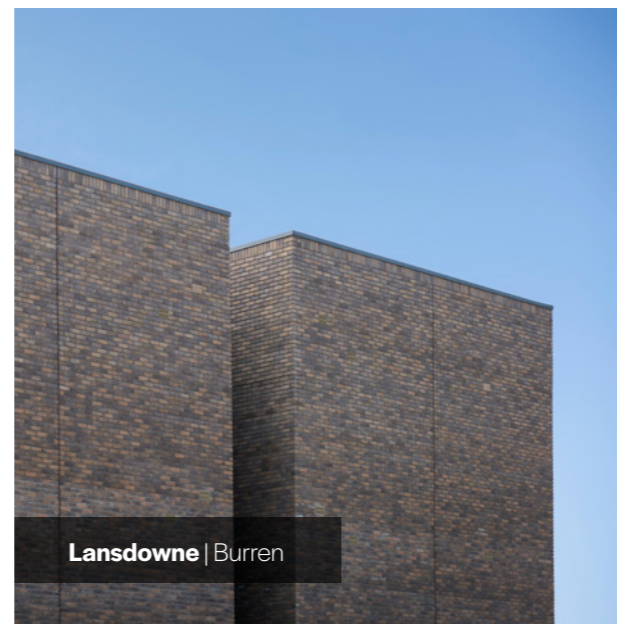
Housing

From individual homes to large-scale residential developments, our facing bricks are designed to deliver character while meeting the practical demands of modern housebuilding. Whether your plans require a classic look or a more contemporary aesthetic, Tobermore facing bricks provide the visual warmth and durability needed to create developments that perform commercially and visually.

Application design

Commercial

In commercial and mixed-use settings, material choice directly impacts long term performance and visual consistency. Our facing bricks offer a robust, low-maintenance solution suited to offices, education, healthcare and mixed-use development projects. Consistent colour, dependable performance and refined finishes ensure a professional result across various public environments.





Colours for every concept

Colour plays a key role in creating a sense of place. Tobermore offers a curated range of facing brick colours, from subtle neutrals to more expressive blends, enabling designers to meet planning requirements and site context with confidence. Whether matching to the existing environment or creating contrast, we offer a facing brick colour solution for every concept.

Classic rustic reds

Timeless and familiar, rustic reds remain a cornerstone of architecture across the UK and Ireland. Our red facing bricks deliver the warmth and variation associated with traditional brickwork, making them a reliable choice for developments that require heritage influence, regional consistency or long term appeal.



Kingston | Warm Red



Kingston | Autumn Gold & Cottage Red



Lansdowne | Heather



Lansdowne | Heather



Kingston | Cottage Red



Lansdowne | Multi Buff



Lansdowne | Multi Buff



Lansdowne | Meadow Gold



Lansdowne | Meadow Gold



Lansdowne | Multi Buff

Beautiful buffs

Buff bricks bring lightness and flexibility to a scheme. Available in both solid tones and balanced blends, they work across a wide range of applications, from traditional housing to contemporary developments. Their natural, understated finish is particularly suited to rural, suburban and regeneration projects where a softer, more neutral palette is required.

Cool concrete greys

Grey bricks offer a clean, modern finish that complements contemporary architecture. Available in both solid colours and blended variants, they give designers the flexibility to achieve anything from minimal, uniform façades to more textured urban schemes, while maintaining consistency across large scale builds.



Lansdowne | Slate



Lansdowne | Charcoal



Country Stone | Slate



Kingston | Charcoal



Kingston | Charcoal



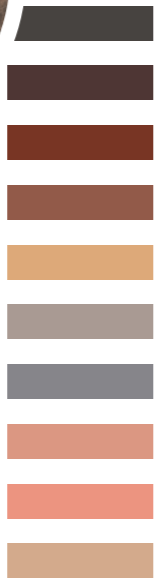
Kingston | Burren & Autumn Gold



Kingston | Burren



Lansdowne | Burren



Kingston | Moorland



Kingston | Moorland

Brilliant blends

Blended bricks introduce depth and tonal variation across a façade. By combining complementary colours, they help break up large wall areas, soften uniform elevations and create a more established finish. This makes them particularly effective on larger housing and mixed use developments where consistency and variation need to work together.



Kingston | Autumn Gold & Cottage Red

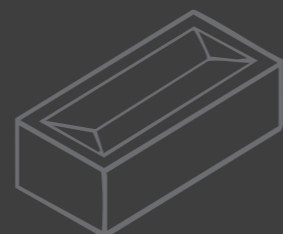


Finishes & textures

Texture plays a key role in the overall appearance of brickwork. Our facing bricks are available in smooth and tumbled finishes, giving designers flexibility to achieve the desired look.

Smooth bricks deliver clean lines and a precise, contemporary finish. Tumbled bricks offer softened edges and a more traditional feel.

Selecting the right finish allows you to balance modern design with character and authenticity.



Kingston

Smooth & modern



Lansdowne

Tumbled & traditional



Lansdowne

Tumbled facing bricks with a warm, aged finish.

Lansdowne facing bricks are designed to deliver a warm, aged finish with the durability required for modern construction. The tumbled profile softens edges and introduces natural variation, while robust manufacturing ensures long-term performance and colour consistency across the build.

product	size (mm)	colours available	no. per pack	no. per slice	weight kg per pack GB	weight kg per pack NI/ROI
Lansdowne	215 x 100 x 65	Autumn Gold, Burren, Charcoal, Cottage Red, Heather, Meadow Gold, Moorland, Multi Buff, Slate	480	96	1358	1348

- Tumbled finish creates a softer, more traditional look
- Adds variation across elevations, reducing uniformity on large schemes
- Long-lasting colour performance using high-quality pigments
- Suitable for both traditional and contemporary developments

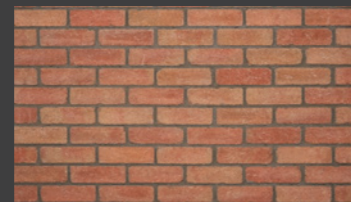
Moorland



Heather



Autumn Gold



Cottage Red



Burren



Charcoal



Slate



Meadow Gold



Multi Buff



Disclaimer: Colours and images shown in this brochure are for guidance only. Variations may occur due to print, screen display and natural material differences. Please refer to physical samples for an accurate representation.



Lansdowne | Burren

Kingston

Smooth facing bricks with a clean, contemporary finish.

Kingston facing bricks are manufactured with a smooth finish to deliver a clean, consistent result across a range of applications. With eight colour options, from warm reds and golds to cooler greys and stone tones, Kingston provides the flexibility to meet both planning requirements and modern design preferences.

- Smooth finish delivers a clean, contemporary look
- Long-lasting colour performance using high quality pigments
- Curated colour options that support faster, more confident selection

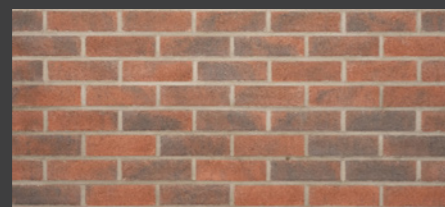
Disclaimer: Colours and images shown in this brochure are for guidance only. Variations may occur due to print, screen display and natural material differences. Please refer to physical samples for an accurate representation.

product	size (mm)	colours available	no. per pack	no. per slice	weight kg per pack GB	weight kg per pack NI/ROI
Kingston	215 x 100 x 65	Autumn Gold, Burren, Charcoal, Cottage Red, Moorland, Multi Buff, Slate, Warm Red	480	44	1277	1267

Moorland



Cottage Red



Autumn Gold



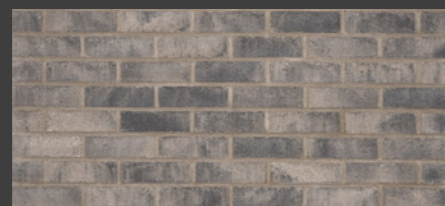
Warm Red



Charcoal



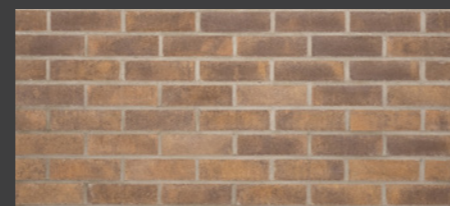
Slate



Multi Buff



Burren



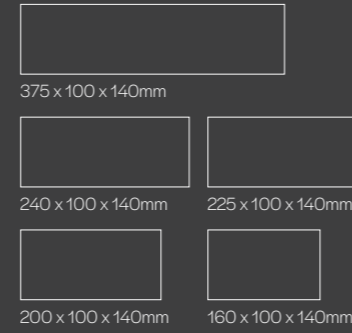
Kingston | Moorland

Country Stone Walling

Stone effect walling with a rugged, natural finish.

Country Stone walling is designed to replicate the look of natural stone, providing a more traditional finish without the complexity of sourcing and laying individual stone. The mixed size format adds variation across the elevation, helping to create a more authentic and established result.

- Replicates the look of natural stone with a rugged, textured finish
- Mixed size units create variation and a more natural, less uniform appearance
- Long-lasting colour performance using high-quality pigments

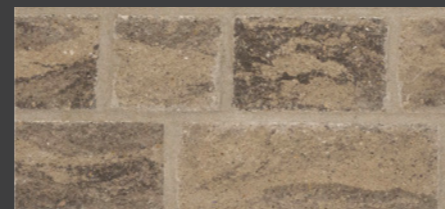


Sizes (all in one pack)

Bracken



Slate



Disclaimer: Colours and images shown in this brochure are for guidance only. Variations may occur due to print, screen display and natural material differences. Please refer to physical samples for an accurate representation.

product	size (mm)	colours available	m2 per pack	m2 per slice	no. per pack	weight kg per pack GB	weight kg per pack NI/ROI
Country Stone (single course mixed length) (all sizes in one pack)	375 x 100 x 140				40		
	225 x 100 x 140				40		
	160 x 100 x 140	Bracken, Slate	6.72	1.34	40	1560	1560
	240 x 100 x 140				40		
	200 x 100 x 140				40		
Country Stone Coping	208 x 300 x 80	Bracken, Slate	-	-	128	1417	1417



Country Stone | Slate

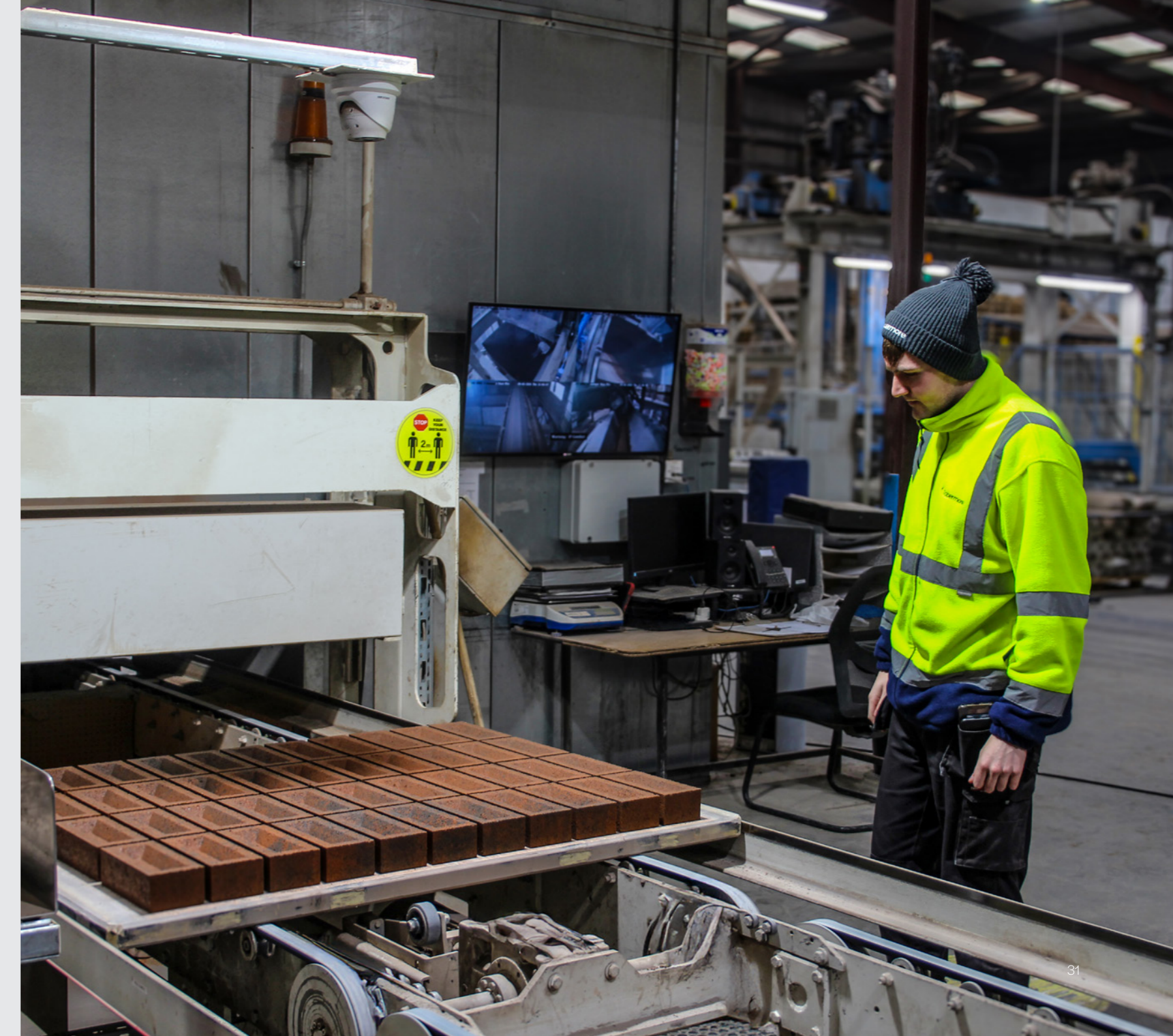
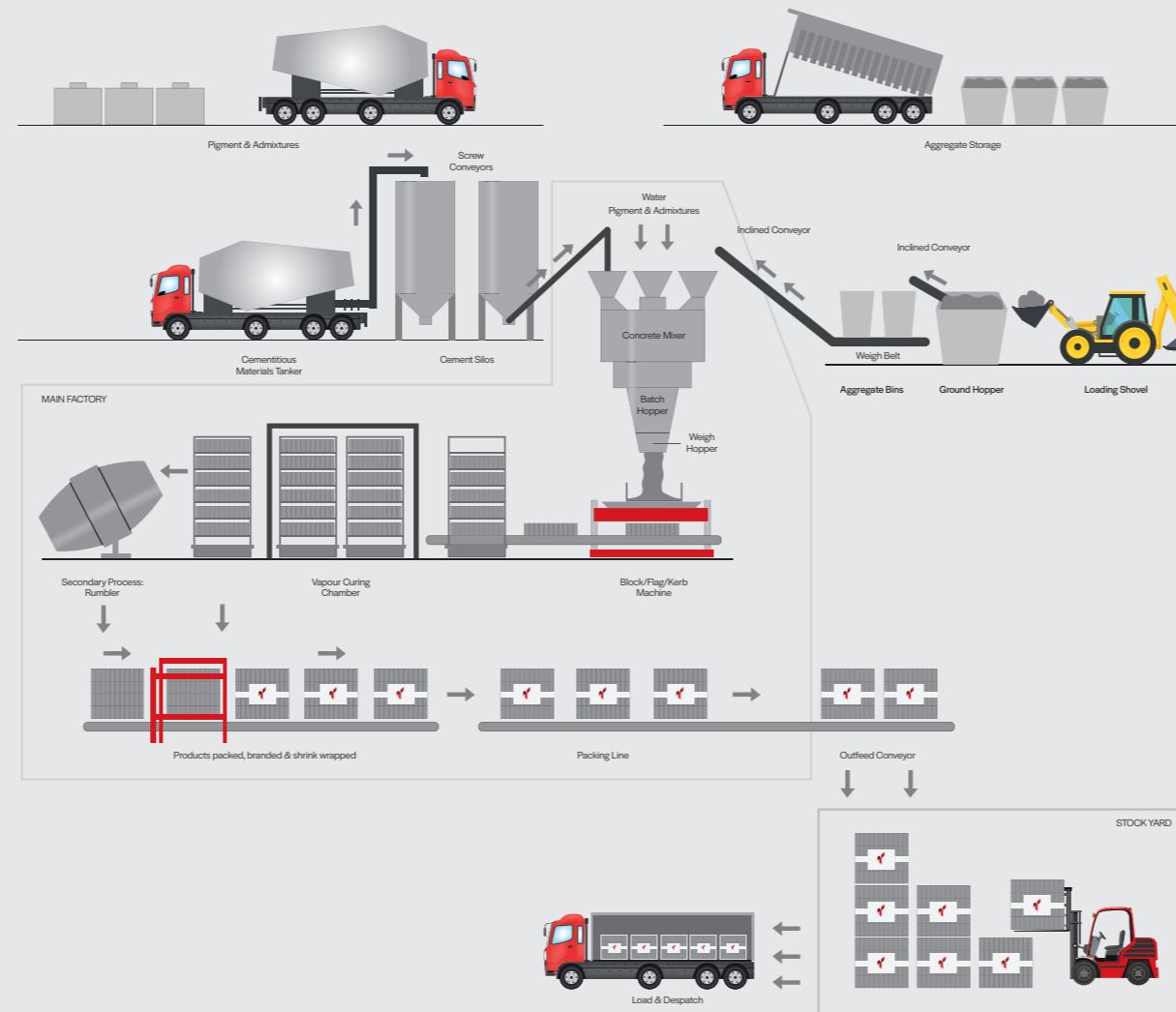
What are facing bricks & how are they manufactured

Concrete facing bricks are standard-sized masonry units, designed to be used in a similar way to traditional clay bricks on buildings of various sizes.

Tobermore concrete facing bricks are crafted from cement, premium naturally occurring aggregates, and iron-oxide pigments. These materials are blended into a semi-dry mix, which is then placed into moulds, vibrated, and compacted. Following this process, the bricks are transferred to tunnels where they undergo curing using state-of-the-art vapour curing technology.

Independent tests confirm their resilience in various climates. As these bricks age, water absorption decreases while strength increases, ensuring exceptional durability. With excellent sound reduction and minimal impact on “U” values, they meet stringent building regulations. Our unique vapour curing process minimises efflorescence, enhancing colour vibrancy. Utilising high-quality iron oxide pigments, our bricks maintain long-term colour performance.

Explore the process that delivers our quality facing bricks.



Why choose Tobermore facing bricks?

Tobermore facing bricks are designed to deliver consistent quality, reliable supply and long-term performance across large-scale developments. By combining controlled manufacturing, carefully selected raw materials and proven site performance, they provide a dependable solution for housebuilders, contractors and specifiers.

Reliable supply

Tobermore operates one of the largest manufacturing facilities in the UK and Ireland, supported by its own aggregate quarry. This level of control ensures a consistent supply of raw materials and finished product, reducing risk and supporting programme certainty across your projects.

Consistent quality

Full control over raw materials, combined with precision manufacturing processes, ensures consistent product quality and dimensional accuracy. This supports efficient installation on site and helps achieve a uniform finish across the development.

Designed for efficient installation

Facing bricks are manufactured to support comparable laying rates to clay alternatives, with consistent sizing and low suction helping to improve handling and stability during installation. This contributes to smoother workflows and reduced disruption on site.

- 98% on-time in full delivery
- Manufactured at scale (200m facing brick capacity with new HESS 5 plant)
- 430+ projects supplied across the UK & Ireland



Value across the build

Manufactured at scale and supplied reliably, Tobermore facing bricks offer strong value across large housing and commercial projects. The combination of durability, consistency and availability helps reduce risk, minimise rework and support efficient project delivery.

Laying speed

Tobermore facing bricks offer comparable laying rates to clay alternatives and excel in efficiency and ease of installation, ensuring a swift and seamless construction process. Lifts of 1.5 metres or 20 courses can be achieved per day which is the maximum height in accordance with BS 8000-3.

Proven colour performance

Tobermore facing bricks use **high-quality iron oxide pigments** to deliver long-term colour performance. Combined with a controlled manufacturing and curing process, this helps ensure colour stability and reduces the risk of efflorescence.

- High-quality iron oxide pigments in accordance with BS EN 12878
- Long-lasting colour performance and fade resistance
- Vapour curing process helps reduce efflorescence
- CE/UKCA compliant pigments, tested for durability and weathering



Sustainability

Tobermore is dedicated to responsible manufacturing practices aimed at minimising the environmental impact of all operations.



As part of this commitment, Tobermore has obtained the BES 6001 accreditation, certifying the responsible sourcing of all construction products. This certification enables us to demonstrate to specifiers and contractors our effective system for ensuring the sustainability of our products.

Tobermore is actively working towards becoming a net-zero company.



Environmental Product Declarations

Tobermore offers exact and **reliable environmental performance data** for all its products. Every Environmental Product Declaration (EPD) undergoes independent verification to guarantee the precision of each brick's environmental performance, eliminating the need for estimations or averages.

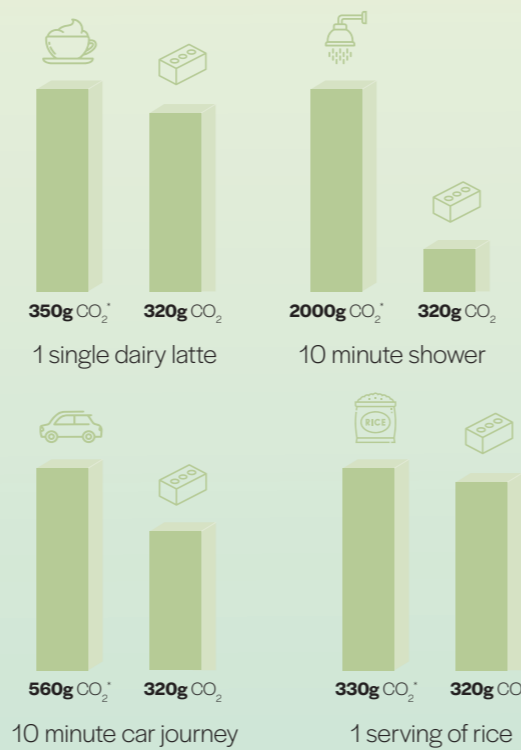


Tobermore is a **Gold member** of the Supply Chain Sustainability School.



'Sustainable Manufacturing Business of the Year' at the Business Eye Sustainability Awards 2023.

Everyday carbon comparisons to Tobermore facing bricks



*Data taken from Clever Carbon (2022) <https://clevercarbon.io/carbon-footprint-of-common-items/>



Tobermore Shipping Routes

If required, Tobermore can provide a Carbon Emissions estimate upon placement of order, and an exact Carbon Emissions report for the full journey to site once delivery has been made.

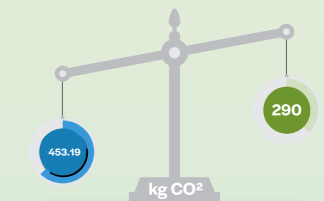
Larne	>	Cairnryan
Belfast	>	Cairnryan
Belfast	>	Heysham
Belfast	>	Liverpool
Warrenpoint	>	Heysham
Dublin	>	Holyhead
Rosslare	>	Pembroke



Tobermore have independently verified EPDs proving facing bricks have **lower kg/CO₂ per thousand bricks** compared to the estimated clay averages.



Tobermore also has a wind turbine on site. Our wind turbine generated **758,806kw of energy** in 2023.



Tobermore Kingston Bricks
290kg CO₂ per 1000 bricks*

Clay Bricks
453.19kg CO₂ per 1000 bricks**

*Data independently verified, March 2024
**Data taken from Clay Brick Average EPD

Technical features

Performance



Strength

Minimum compressive strength exceeding 22 N/mm², comfortably surpassing standard requirements. Strength continues to increase over time, supporting long-term durability.



Composition

Manufactured using cement, premium aggregates and iron oxide pigments. Full control of raw materials ensures consistent quality across every batch.

Installation



Frog design

Recessed frog improves mortar adhesion and overall bond strength.



Dimensional accuracy

Manufactured using high-precision moulds to ensure consistent tolerances, reducing wastage and supporting efficient laying.



Low suction/ no floating

Low water absorption combined with a recessed frog helps prevent floating and improves stability during laying.

Supply & value



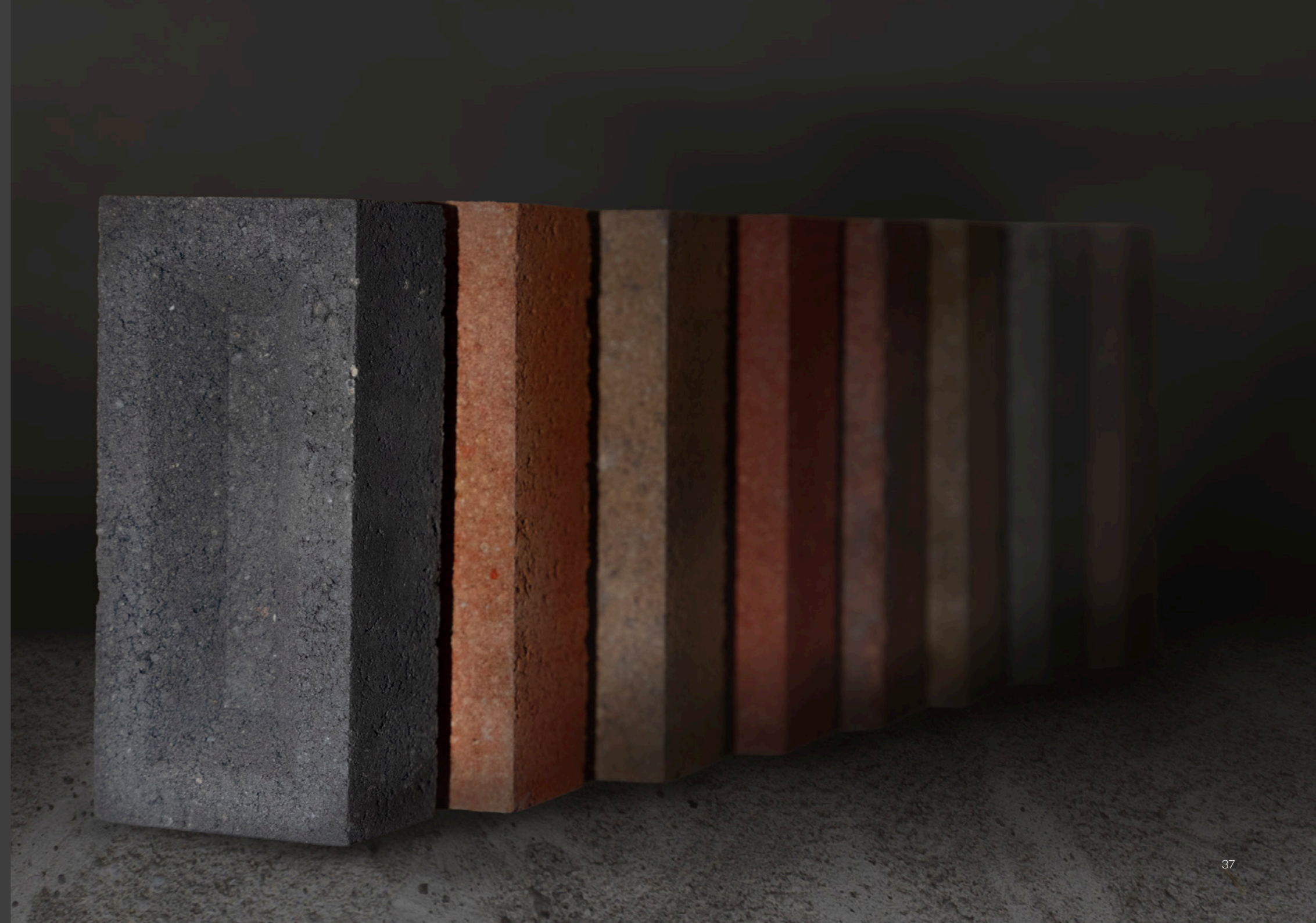
Colour range

A carefully curated range designed to complement a wide variety of house types while maintaining consistent stock availability.



Availability & pricing

Manufactured at scale to ensure reliable supply and competitive pricing, delivering strong value across large developments.





Technical summary

For full technical information on Tobermore facing bricks, please refer to the appendix on page 42.

Product type	Concrete facing brick
Manufactured to	BS EN 771-3:2011+A1 2015 Specification for Masonry Units:Aggregate Concrete Masonry Units
Brick type	Frogged
Efflorescence	Minimum 12 hour vapour curing to significantly reduce the possibility of efflorescence
Mean compressive strength	22N/mm ² Air Dry
Dimensional stability (Moisture movement/shrinkage)	<0.6mm/m
Weight	2.8kg per brick (average)
Durability	Frost Resistant (severe exposure)
Tolerances	Category D2
Reaction to fire	Class A1
Water vapour permeability	5 /15 μ (Tabulated from EN 1745:2012 Annex A)
Water absorption	4.5g / (m ² x s) BS EN 772-11:2011
Soluble salts	S2
Direct Airborne Sound Insulation- Gross density	1880 kg/m ³
Shear bond strength	0.15N/mm ² (Tabulated from EN 998-2: 2016, Annex C)
Flexural Bond Strength	NPD
Thermal Resistance (Conductivity)	1.11W/mK Dry
Mortars & Expansion Joints	Refer to BS 5628-3:2005
Bed Reinforcement	Refer to BS 5628-3:2005
Installed to	Refer to BS 5628-3:2005
nbs	Plus F10 215 Create 45-80-50/302
Applications	Please refer to Table 15 of PD 6697: 2010. For further details please refer to www.tobermore.co.uk
Energy used	100% renewable energy
Water used	100% from our rainwater harvesting system and groundwater bore hole
Recycled content	Not less than 10%
EPA Carbon footprint	0.31kg Co ₂ e/unit
Recyclable	100% of this product can be recycled
Manufacturing & Delivery	From one location within the UK
breeam rating www.bre.co.uk	A+ , according to the Green Guide to Specification, 4th Edition 2009.

Tobermore products are manufactured in accordance with an accredited ISO 9001:2015 quality management. Manufacturing facilities are accredited to ISO 14001:2015 environmental management. The company publish environmental labels and declarations in accordance with BES 6001.

Appendix

Technical information

Beyond aesthetics, Tobermore facing bricks are engineered to meet the practical demands of modern construction. This section provides technical guidance to support correct specification, installation and long-term performance on site.

It covers key considerations including standards compliance, durability, colour consistency, installation best practice and maintenance requirements - helping ensure brickwork performs as intended from first lift to long-term usage. Following this guidance will support build quality, reduce risk on site and protect the finished appearance of the development.



Technical information

Important information

Any technical information provided by Tobermore in relation to any product (whether before or after order) is provided by way of GUIDANCE ONLY and, to the fullest extent permitted by law, without liability on the part of Tobermore for any loss or damage suffered as a result of relying upon it.

Such technical information should not be relied upon in substitution for obtaining independent expert advice prior to using any product from both a suitably qualified engineer and building contractor, in particular, as to the suitability of the product for use at the intended site for the intended scheme.

PD 6697:2019

Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2. This publication includes the information that was incorporated in BS 5628, which is now withdrawn and which does not contradict that given in EN 1996.

Note

BS guidelines are subject to change and therefore you should refer to www.bsigroup.com for the latest version.

Walling and masonry are well established forms of construction in the UK. The products incorporated are comprehensively covered by British Standards. Guidance is available from BSI to ensure that the products are professionally installed. One issue which is repeatedly raised is the suitability of Tobermore concrete bricks and Country Stone Walling for use below the damp-proof course. Tobermore products have a long history of successful installation below the DPC and provided the guidance for design, installation and maintenance is followed their use in this location is recommended. Refer to the references below for the detail. Tobermore recommends a maximum spacing of 6m for movement joints when used with the correct mortar and design principles in accordance with PD6697.

Vibrant long lasting colours

Tobermore only uses high quality Iron Oxide pigments, (which are made to BS EN 12878), to produce our strong, vibrant and deep colours. Our state-of-the-art equipment makes our products extremely dense thus ensuring that our colours remain intact for very long periods. For example, when we examine products which are 20 years old we can see that the colour retention is excellent. Tobermore recommends that to maintain the colour and quality of product a regular maintenance programme is carried out on all projects.

Colour integrity

Additionally, all pigments are manufactured to the latest BS EN 12878: 2014 standard, allowing each of the products to carry the CE/UKCA mark. Within this standard there are various tests, including weathering trials, to which each pigment must be subjected. If the pigment is CE/UKCA marked, then the pigment has been determined as being resistant to weathering and is lightfast.

Density and positioning of wall ties

Wall ties in accordance with PD 6697: 2019 should be used. Please refer to the tables regarding exposure zone, cavity width and type of structure. As work progresses, wall ties should be built into both leaves simultaneously. They should be placed so that they fall towards the outer leaf and the drip is central, facing downwards. The number of wall ties per m2 should be in accordance with BS EN 1996-1-1:2012 +A1 2005.

The density (number of wall ties per square metre) should be in accordance with the NA to BS EN 1996-1-1:2005. Wall ties should be evenly distributed, except around openings, and should preferably be staggered. At the vertical edges of openings and at vertical unreturned or unbonded edges (for example, at movement joints and up the sloping

verge of gable walls), additional wall ties should be used at a rate of one tie per 300mm height or equivalent, placed not more than 225mm from the edge.

Detailing to reduce efflorescence

The following measures are best practice to minimise the occurrence of efflorescence in masonry walls.

Tops of walls and parapets

Walls and parapets should be protected at the top surface with elements such as flashings or capping. One of the most common causes of masonry staining is water ingress through these exposed horizontal surfaces, leading to moisture entering the walls and cavities.

Window sills

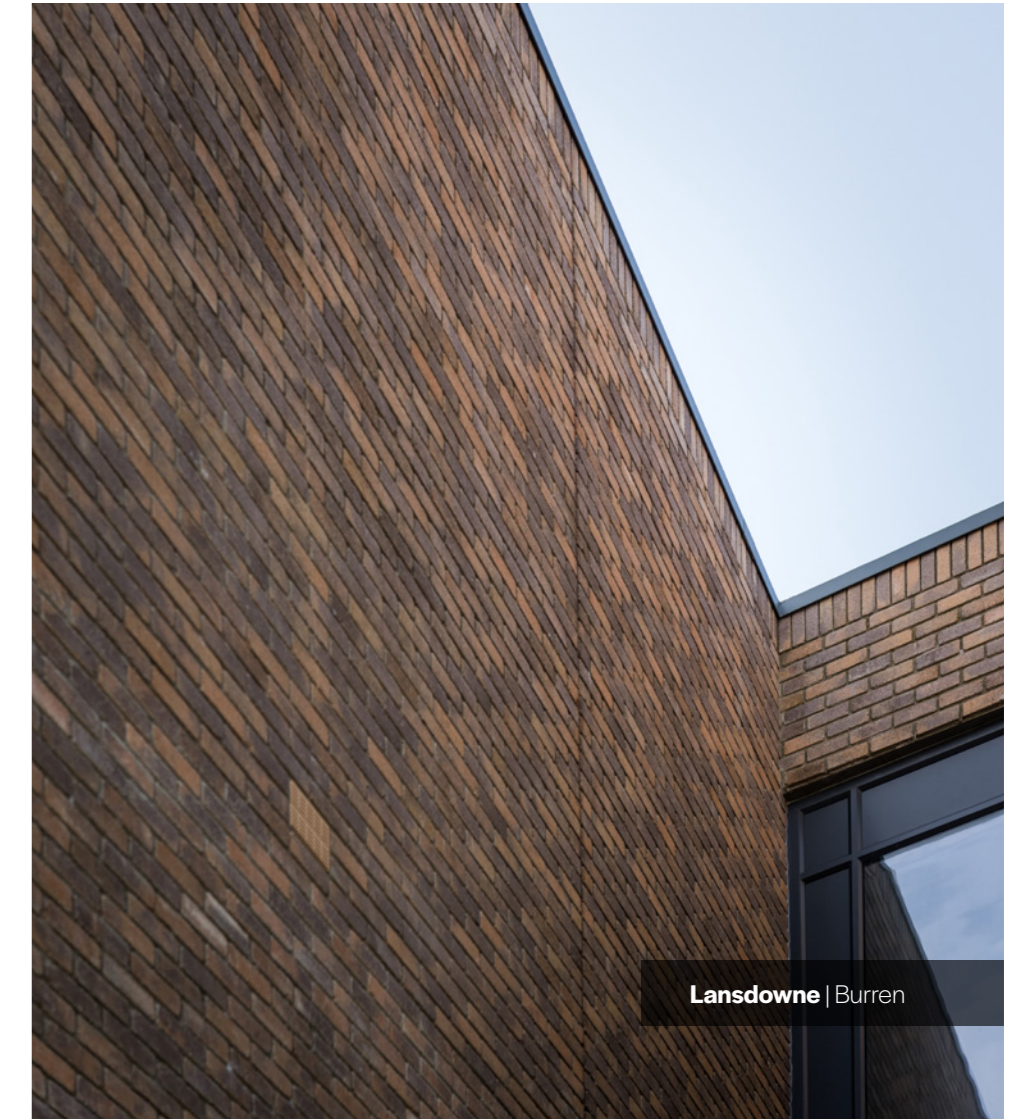
Window sills that do not project sufficiently from the wall can allow water to enter, leading to staining and moisture ingress. This issue is often worsened by improperly installed window flashings.

Flashings

Flashings should extend to the outer face of the brickwork. If they terminate short of the weep holes in the external leaf, any moisture entering the wall can be directed into the masonry units. This moisture may permeate the mortar and eventually migrate to the surface as efflorescence.

Weep holes

Cavity walls should incorporate multiple correctly placed weep holes to ensure effective drainage of any moisture within the cavity. It is essential to keep cavities clear of mortar droppings, as this helps prevent lime leaching onto the face of the masonry.



Installation

Concrete walling products are manufactured from a mixture of CEM II Cement and aggregate which is vibrated into moulds and subsequently cured in a warm vapour atmosphere for 12 hours which ensures efflorescence is dramatically reduced. Moreover, the vapour curing also enhances the colour, improves the strength and cures the products much faster.

British standard

Concrete walling products are manufactured in accordance with BS EN 771-3: 2011+A1: 2015 which is the Specification for Masonry Units Part 3 Aggregate Concrete Masonry Units (Dense and Lightweight Aggregates). The Specification applies to all aggregate concrete masonry units, i.e. bricks and blocks in UK terminology. Tobermore concrete bricks are nominally 215mm long, 100mm wide (thick) and 65mm high, and comply with the traditional UK definition.

Declaration of performance

Compliance with the Specification BS EN 771-3:2011 + A1: 2015 is demonstrated by Tobermore producing a Declaration of Performance (DoP) for each brick type. These documents which are available on the Tobermore website (www.tobermore.co.uk) lists the properties of the product as required by the Specification, e.g. compressive strength, dimensions and density are all given by Tobermore in a legal declaration. The CE mark, which gives the same information, accompanies the product and signifies that the declaration has been made and consequently the products meet the legal requirements for sale in all of the countries in the European Single Market.

Design guidance

The way in which the designer uses the declared information and the way the builder constructs the brickwork are covered by guidance in other relevant documents. Key to this is the European Code of Practice, Eurocode 6 - Design of Masonry Structures.

This comes in the following parts:

General Rules for Reinforced and Unreinforced Masonry (BS EN 1996-1-1)

General Rules - Structural Fire Design (BS EN 1996-1-2)

Design Considerations, Selection of Materials and Execution of Masonry (BS EN 1996-2)

A further part, Part 3: Simplified Calculation Methods for Unreinforced Masonry Structures exists, but gives very conservative designs and its use is not encouraged in the UK. The Eurocode covers all masonry construction throughout Europe but because of the widely varying traditions, it cannot do that in detail. Consequently, a lot of the detail which is relevant to the UK is given in Published Document; Recommendations for the Design of Masonry Structures to BS EN 1996-1-1 and BS EN 1996-2, PD 6697: 2019.

Whilst there is much that is helpful in the official guidance, manufacturers' recommendations should be followed in order to achieve successful results.

Tobermore walling products are used to provide the appearance of the building. This is generally not the case with concrete blocks and there are important differences between concrete and clay bricks. All masonry units expand or contract to some extent due to temperature and moisture effects. Clay masonry units respond to changes in temperature. They demonstrate a small reversible movement due to wetting and drying but importantly demonstrate a long term irreversible expansion as they adsorb water from the atmosphere. On the other hand, concrete walling products shrink as they dry out. The way to deal with this in concrete brickwork is to subdivide walls into smaller panels by introducing movement joints which should be provided at intervals between 6m and 9m. The length to height ratio of panels should not exceed 3:1. It is also important to not allow concrete bricks to become excessively wet before they are laid, or for new brickwork to do so before it is adequately protected by good architectural details.

There are other differences between concrete and clay units, e.g. Tobermore walling products are very consistent in size and hence the brickwork has a regular, precise appearance which, although possible with some clay bricks, is not with others due to natural variability in size due to the making, drying and firing processes. Tobermore Lansdowne facing bricks are consistent in size, however they are tumbled which gives softer edges and less precise arises.



Design for movement

The provisions of the Eurocode for masonry are written as a principle followed by a series of application rules to achieve the principle. In the case of movement, the principle is:

“The possibility of masonry movement shall be allowed for in the design such that the performance of the masonry in use is not adversely affected by such movement.”

The way of achieving this situation is by using movement joints as described earlier to subdivide large areas of brickwork into smaller panels so that shrinkage of the brickwork does not allow sufficient tension to build up in the wall that it cracks.

Consequently, long low panels are to be avoided. The maximum spacing of movement joints is a national matter and the National Annex to BS EN 1996-2 recommends a value of 9m for concrete brickwork, with the provision that it may be less if the length:height of the sub-panel created exceeds 3:1. In practice, movement joints are often spaced at 6m-9m as recommended in PD6697. Tobermore recommends a maximum spacing of 6m.

The illustrations on the following pages show some situations where cracking can occur and how it can be alleviated by the introduction of movement joints.

Types of movement in structures

Movement within a structure can occur due to several factors, including:

- Thermal effects causing expansion or contraction
- Shrinkage and moisture-related changes
- Properties of the external masonry materials
- Alterations in the building’s shape or orientation
- Construction site activities and practices
- The type and quality of mortar used

Concrete facing bricks shrink slightly as they dry, although they can almost return to their original size when exposed to moisture. Like all materials, concrete is also affected by thermal expansion and contraction. Therefore, movement joints are strategically placed to accommodate these movements, while also taking into account aesthetic, practical, and structural considerations.

Mortar choice

The recommended spacing for movement joints when using Tobermore facing bricks is 6 metres and is based on using an M4 strength mortar (Type iii 1:1:6 mix or its equivalent). It’s important to note that mortars classified by strength can be stronger than those mixed by volume due to the requirement to achieve the minimum strength.

Thermal movement

South facing walls, especially those constructed with dark coloured bricks, are more prone to thermal movement compared to other elevations and should have movement joints to allow for expansion and contraction. If installing movement joints is not feasible in these elevations, bed joint reinforcement should be used above and below large openings as an alternative.

Dissimilar materials

When building with dissimilar materials allowances should be made for differential movement. Design guidance from a structural engineer should be sought when combining dissimilar materials such as clay and concrete facing bricks.

Examples of using dissimilar materials would be where a clay brick is used to build up to the DPC level and Tobermore concrete facing bricks are used above the DPC. In some circumstances, the DPC acts as a slip plane to separate the two materials which helps to dissipate tensile stress.

However, expert guidance should always be sought as to ensure structural stability as further slip planes or bed reinforcement may need to be incorporated into the design.

The following illustrations show some situations where cracking can occur and how it can be alleviated by the introduction of movement joints.

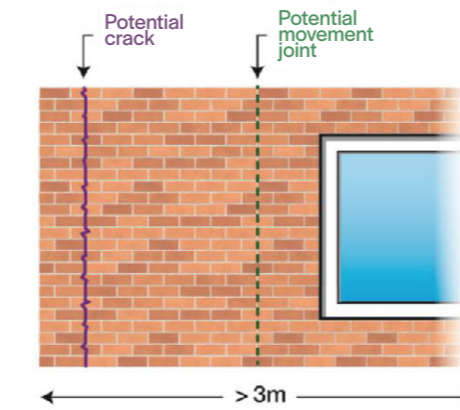


Fig.1: Corners are very stiff joints. A run of brickwork more than half the minimum allowance can lead to cracking near the corners.

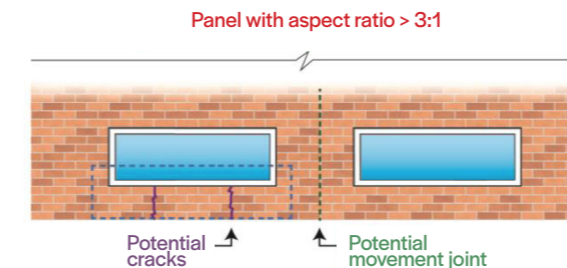


Fig.3: Long, low panels (> 3:1 ratio) should be avoided. These panels shrink between the more heavily loaded brickwork between the windows.

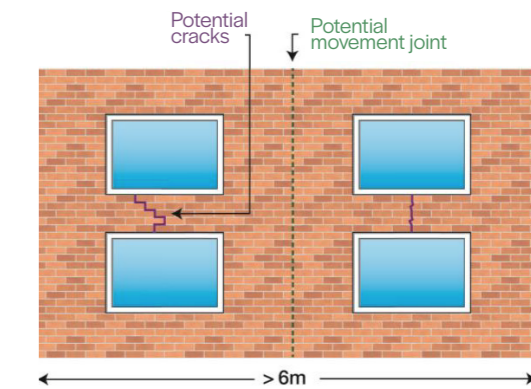


Fig.2: A long uninterrupted run of brickwork between upper and lower windows can lead to cracking at the smallest height, i.e. between the windows either as shown or from the corners of the windows. Cracks may be vertical or stepped – they follow the line of least resistance.

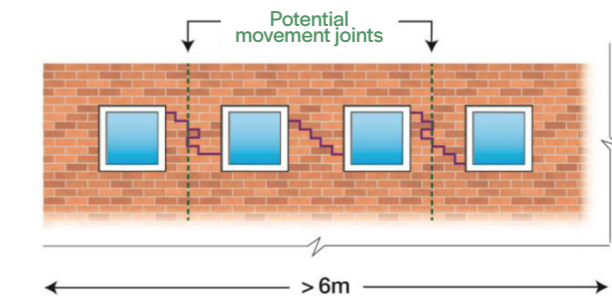


Fig.4: Long runs of uninterrupted brickwork, especially when vertical loading is low, can lead to diagonal cracking of narrow brickwork panels between window openings.

Current guidance focuses on ensuring movement joints are located where they are needed in relation to interaction with other structural elements, restraints, corners etc. and is based upon experience rather than calculation. Movement joints in concrete brickwork should not be less than 10mm thickness. They must be free from mortar.

In concrete masonry, the principal effect is shrinkage and relatively incompressible materials such as hemp, fibreboard and cork can be used. The joints must be sealed with a sealant that will resist rain penetration and a guide to the selection of sealants is given in BS 6213. Where practical, movement joints can be placed behind downpipes to minimise visual impact. Where window or door jambs align vertically, joints may be continued through these jambs. Where jambs are staggered, bed joint reinforcement should be incorporated.

Joints below DPC

NHBC Standards, Clause 6.1, D3, state:

“Any movement joints provided in the substructure must be carried up into the superstructure. Movement joints may be required in the superstructure even where none are present in the substructure; however, suitable allowance should be made for relative movement.”

Shrinkage is minimal below the DPC, nonetheless, in line with NHBC guidance, the following considerations should be applied:

- Where the DPC is less than 600mm above ground level, movement joints are generally not required to extend below the DPC.
- Where the DPC is more than 600mm above ground level, consideration should be given to extending the joint through the masonry below the DPC.
- Where movement joints are required to accommodate differential ground movement—for example:
 - at significant changes in foundation level,
 - between foundations of different designs, or
 - where variations occur in building height, the joints should be continued through the brickwork below the DPC.

Bed joint reinforcement

Stresses can build up around openings, if these stresses are not properly addressed, they can result in cracking of the brickwork. Bed joint reinforcement can be utilised to mitigate stresses and reduce the likelihood of cracking.

It is important to note that bed joint reinforcement should not replace movement joints entirely; rather, it may be used to increase the spacing between them where justified.

Data from bed joint reinforcement manufacturers suggests that, under certain conditions, joint spacing can be increased by up to 50% when bed joint reinforcement is incorporated.

Advice should be sought from the bed joint reinforcement manufacturer. Lattice or ladder-type bed joint reinforcement can be installed in the two courses immediately above and below openings.

They should extend 600mm beyond the opening. **See Figure 5.** The use of bed joint reinforcement should be especially considered if the openings are greater than 1.2 metres.

NOTE:

Bed joint reinforcement should never bridge a movement joint. Key installation considerations:

- The reinforcement must not extend beyond movement joints
- Installation must follow the manufacturer’s guidance
- Only reinforcement certified for structural use should be specified — expanded mesh is unsuitable.

Although there is a nominal cost associated with bed joint reinforcement, the performance benefits generally outweigh this expense. **See Figure 6.**

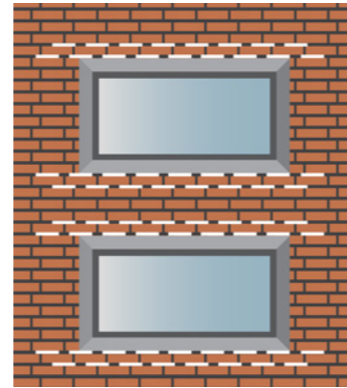


Figure 5

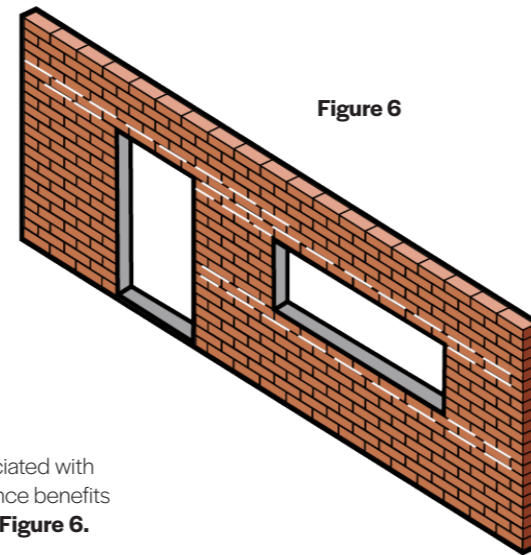


Figure 6

Retrospective installation of movement joints

Movement joints should be incorporated at specified locations during the design and construction phases; however, instances may occur where these joints have been omitted. Where movement joints have been omitted during design or construction, they can be introduced retrospectively by cutting vertical contraction joints into the masonry at predetermined positions.

Procedure: Cut vertical joints, 10 mm wide, to a minimum depth of 75 mm in the brickwork face. Install horizontal flat ties at 450 mm centres, with one end de-bonded, to maintain wall stability. Bed joints should be filled with suitable mortar.

Fill the vertical joint with a flexible strip or weak mortar, then finish with standard joint mastic. These contraction joints act as crack inducers, localising shrinkage movement.

Site protection

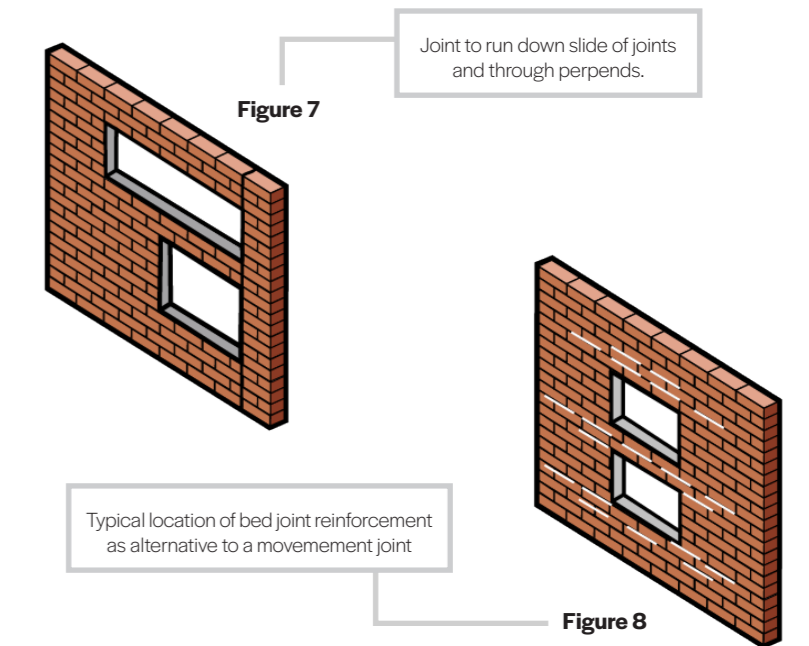
Since bricks shrink slightly as they dry out, it is important that they are kept as dry as possible before laying. Opened packs should be covered up, as should bricks after they have been stacked up around the site. Incomplete brickwork should be protected as this will minimise the risk of shrinkage and efflorescence leaching from around the mortar joints. As mentioned, if the bricks are allowed to become wet or saturated whilst stored or in build then there would be a tendency for the brick to expand and on subsequent drying the magnitude for shrinkage would be greater.

Length/height ratio and panel shape

In accordance with BS 5628-3:2005 and PD 6697:2019, the length-to-height ratio of masonry panels should not exceed 3:1. Panel shape is as critical as overall length.

The building should be considered as a series of discrete panels. Where elevations incorporate window openings significantly longer than their height, or where such openings are stacked vertically, this may result in the brick panels in between the windows being less than 6 metres but exceeding the 3:1 ratio.

In these situations, provide vertical movement joints aligned with window jambs where feasible **Figure 7**, or alternatively, incorporate bed joint reinforcement to dissipate stresses within the panel. **Figure 8.**



Where practicable, subdivide masonry elevations into discrete panels to reduce stress concentrations. In zones subject to high tensile stress, provide bed joint reinforcement as an alternative or supplement to vertical movement joints.

Where panel subdivision is not feasible (**Figure 9**), specify bed joint reinforcement, particularly where openings exceed 1.2 m in width. While reinforcement cannot replace movement joints, it may allow joint spacing to be increased—by up to 50%—subject to structural assessment and manufacturer guidance.

Stress concentration is likely where openings are significantly wider than their height or where large openings are vertically aligned. In such cases, introduce vertical movement joints adjacent to jambs or provide bed joint reinforcement to dissipate stresses (**Figure 10**).

Figure 9

Typical location of bed joint reinforcement as alternative to a movement joint

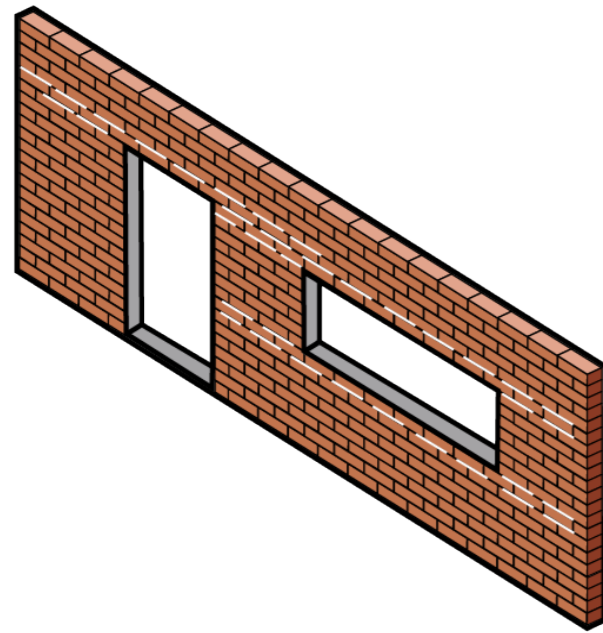


Figure 10

Typical location of bed joint reinforcement as alternative to a movement joint

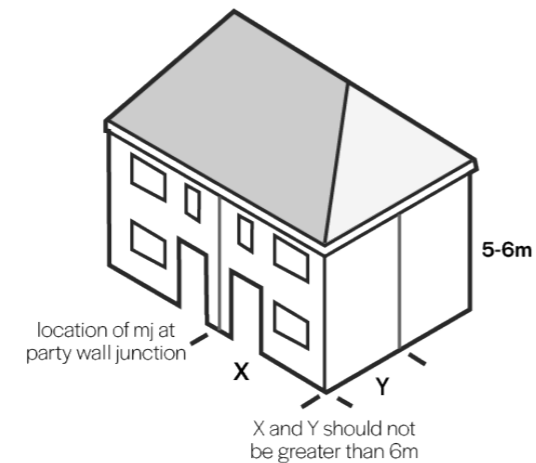
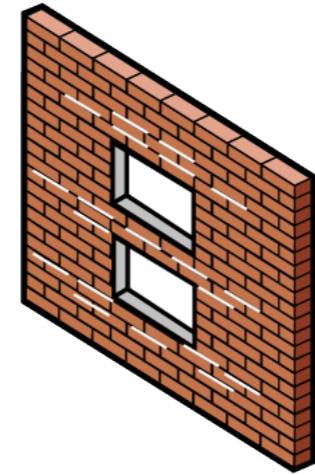


Figure 11 indicates typical locations for semi-detached properties.

The need for a joint in the gable or end wall depends on the overall elevation dimensions

Movement joints – internal junctions and returns

Joints can be installed at internal junctions if required. See **Figure 12 and 12a**. The length of a panel can include a return provided the overall panel length is within the allowed limits. The longer leg should butt up to the shorter return.

Figure 12

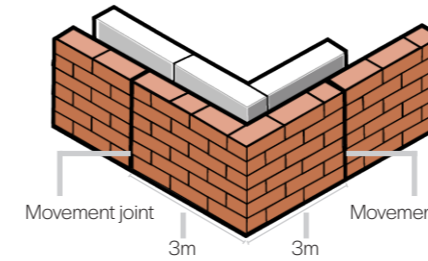
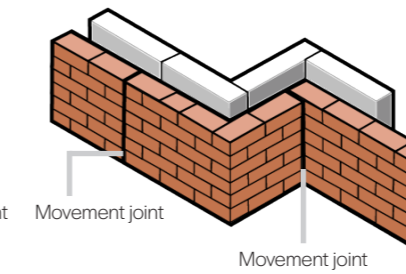


Figure 12a



Cracks in brickwork

Masonry movement must be accounted for in the design to prevent performance issues. If movement is not adequately accommodated, tension can build up within the structure, leading to hairline cracks.

When tension builds up because movement is restricted, bricks and mortar crack to release the stress. While these cracks are the visible symptom, they do not represent the underlying cause.

Cracks typically follow the path of least resistance, spreading along weak points in the buildings structure. As a result, they are commonly seen extending from the corners of windows and doors, as well as around lintels and window sills. Cracks in concrete brickwork may occur for a variety of reasons, including:

- Effects of thermal movement
- Shrinkage and moisture-related behaviour of external masonry
- Variations in building orientation or geometry
- On-site construction practices
- Mortar type and strength classification
- Settlement
- Improper storage or inadequate protection of materials

In most cases, cracks related to moisture, shrinkage or thermal movement are generally classified as hairline cracks. Cracks can occur within the bricks themselves, within the mortar joints or spread through both the bricks and mortar joints.

Hairline cracking can also arise when the mortar mix is excessively strong, as this limits the wall's ability to accommodate movement. While the appearance of hairline cracks can seem concerning, those less than one millimetre are generally considered cosmetic and not a structural issue.

Typical remedial approaches include:

- Very fine cracks which are barely noticeable, and limited to just a few bricks, it may be more practical to leave them as they are, since repairing them could be more obvious than the original cracks.
- For slightly wider cracks, repairs can often be carried out on-site. This typically involves raking out and repointing any damaged mortar and filling the cracks using an epoxy resin injection process.
- If necessary, individual bricks and mortar can be removed and replaced by a trained professional. Initially, the repairs may be noticeable, as it can be difficult to match the exact colour of the mortar, but this usually diminishes over time as the mortar weathers and matures.

Durability

Although durability is covered in the Specification for Concrete Bricks (BS EN 771-3: 2011 + A1: 2015), it is rather unsatisfactory from the user point of view. The manufacturer is required to declare the freeze thaw resistance by reference to the provisions valid in the place of use until an appropriate European Standard is available. There were no requirements in the previous Standard, BS 6073-1: 1981 and durability is dealt with by Code of Practice guidance. At the European level, this is limited. Where masonry is exposed to moisture, wetting, or extreme wetting and freeze thaw cycling, but excluding exposure to external sources of significant levels of sulfates or aggressive chemicals, the bricks are required to be freeze thaw resistant. In more aggressive situations, the guidance is to consult the manufacturer. PD 6697 is more helpful and contains a table describing the various locations in buildings. For each location, the minimum compressive strength of a concrete brick that is suitable for that location, together with a minimum mortar classification is required. The only exception to this is that concrete walling products are not considered to be suitable to act as masonry DPCs.

Table 15 in PD 6697 is useful; however, there are several different minimum brick compressive strengths for the various locations. Tobermore walling products are declared as frost resistant. In this context, this means that Tobermore facing bricks are suitable for all locations except cappings, copings, sills, earth retaining walls without waterproofing on the retaining face, or in foul drainage. Although not covered in BS EN 771-3, concrete bricks do not contain soluble sulfates and hence the reference in the Eurocode is to sulfates from external sources. In these circumstances, the manufacturer's advice should be sought.

Resistance to rain penetration

The principal guidance on the design and detailing of walls is given in PD 6697. This covers the thickness of single leaf walls and cavity walling, including reference to a minimum air space and the introduction of cavity insulation. The guidance is comprehensive and authoritative. There are no specific provisions that one would make for concrete brickwork. Concrete and clay brickwork are dealt with in the same way.

Fire resistance

Tobermore facing bricks are classified as non-combustible with zero flame spread and are rated as Category A1 in accordance with BS EN 13501-1:2018.

Selection of mortars

In general, the common guidance for the selection of mortars in most situations is to use a mortar that is no stronger than is required for structural or durability reasons. This is relevant to concrete brickwork as these are susceptible to drying shrinkage and if this were to cause cracking, it is far preferable that it is contained within the joints. It may then be viewed as negligible or relatively easy to repair by raking out and repointing.

The selection of mortars for durability is covered in table 15 of PD 6697 and, for most situations in facing masonry, a mortar with compressive strength class M4 is suitable. This is a mortar which would be expected to achieve a compressive strength of 4N/mm² after 28 days. A mortar prescribed by its mix of constituents by volume traditionally considered to be equivalent to an M4 mortar would be a 1:1:5-6 Ordinary Portland Cement: lime:sand:mortar, the range of proportions of the sand content reflecting its grading.

The designer should be aware that, if the cement used is a CEM II, the OPC content may be 65% only and the volume proportions may need to be reconsidered. Exceptions to the use of strength class M4 are work near to ground level or in earth retaining structures. Where concrete brickwork is being used in structural situations, the engineer will select a mortar such that the strength when used with the facing will achieve the compressive, flexural and shear strength in the brickwork that is required, according to the provisions of Eurocode 6, BS EN 1996 1-1.

Tobermore concrete walling products meet the minimum strength requirements for all dwellings constructed using Approved Document A of the Building Regulations and BS 8103-2: 2013 Structural Design of Low Rise Buildings, Part 2: Code of Practice for Masonry Walls for Housing. The mortars should be selected using table 15 of PD 6697 but will generally be an M4 strength class (lower classes are not permitted).

PRESCRIBED MORTARS (BY VOLUME)							
Increasing ability to accommodate movement	Mortar designation	Compressive strength class	Strength N/mm ² at 28 days	Cement: Lime:Sand with or without air entrainment	Cement: Sand with or without air entrainment	Masonry: Cement:Sand (4)	Masonry: Cement:Sand (3)
	i	M12	12	1:0:1/4-3	-	-	-
	ii	M6	6	1:1/2:4-4 1/2	1:3-4	1:2 1/2:3 1/2	1:3
	iii	M4	4	1:1:5-6	1:5-6	1:4-5	1:3 1/2-4
▼	iv	M2	2	1:2:8-9	1:7-8	1:5 1/2:6 1/2	1:4 1/2

Admixtures

Mortars may include waterproofing agents, air-entraining agents and pigments. However, their use must be carefully controlled as excessive dosing can negatively affect performance. Avoid using washing-up liquids or calcium chloride-based admixtures.

Lime mortars

Lime mortars provide notable advantages, including improved workability, water retention, elasticity, long-term strength and durability. However, as with all mortars, it is essential to protect uncured brickwork from weather exposure, particularly from water percolating down through completed masonry. Such exposure can cause calcium carbonate to leach from both lime and cement, leading to efflorescence around joints which once cured may be difficult to remove.

Number of courses per day

BS 8000-3: 2020 - Workmanship of Building Sites recommends:

The consistency of the mortar should be adjusted to suit the suction rate of the bricks. The height of lifts should be limited to 1.5m in one day, i.e. equivalent to 20 courses.

This can be readily achieved, provided the bricks are kept dry and the mortar's workability is adjusted to match the unit's suction rate and site conditions.

Note: Customers should be aware that mortar performance may vary, as its characteristics depend on local mix designs used to achieve the specified strength grade. These variations can affect the mortar's ability to accommodate movement.

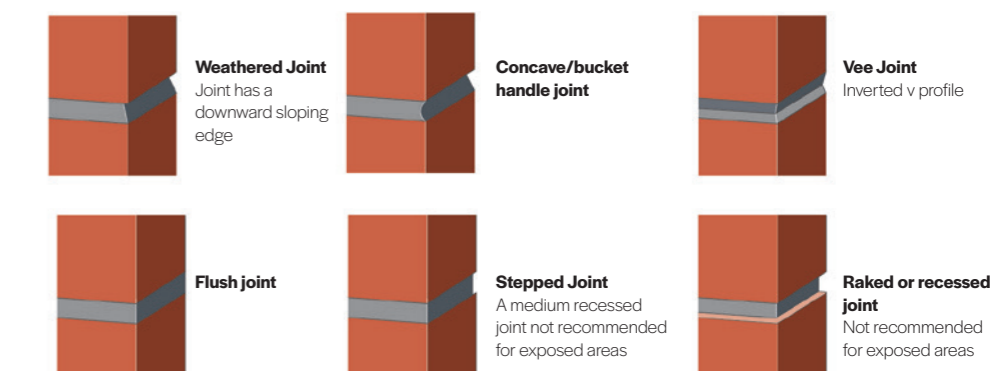
The primary impact of higher mortar strength reduces flexibility, making it less able to accommodate movement. This can lead to a greater risk of shrinkage or movement-related cracking.

Cracking may appear within the brick units themselves, rather than along the mortar-brick interface. These are typically classified as micro-cracks and do not affect the structural integrity of the brickwork. If required, they can be addressed by specialist cosmetic contractors with the expertise to carry out repairs and reduce their visual impact.

Mortar joint profiles

Joint profiles in brickwork account for nearly 17% of the total wall area, and different joint types can significantly influence both the appearance and weather resistance of the wall. High-quality workmanship is essential to ensure the wall meets its structural, aesthetic, and weathering performance requirements.

Tobermore recommends constructing sample panels which provide an ideal opportunity to evaluate and confirm the most suitable joint profile to meet both aesthetic and durability requirements.



Good practice on site

Workmanship

Good site practice for the use of Tobermore concrete walling products is no different to that for clay walling products. The only issue worthy of comment is that of adjusting the suction of concrete bricks which is better solved by using a water retentive additive in the mortar. However, the suction of Tobermore concrete walling products is low and this is unlikely to be an issue. The appearance of facing brickwork can be ruined by lack of care on site. Care is needed to avoid mortar adhering to the walling products face.

Prior to commencement of work (construction drawings and movement control)

When movement control measures have not been included in the design drawings, or when design drawings have been produced based on the use of clay facing bricks, we strongly recommend that the designers are made aware of the change to masonry units and drawings are updated to reflect this change in materials prior to any work commencing.

Storage and handling on site

Masonry units should be stored in dry conditions. Tobermore products are supplied in shrink wrapped packs which should remain sealed until they are required. The shrink wrapping provides protection from the weather. If this is removed, it should be replaced, or alternative protection provided. Bricks should be stored on sound, level ground and raised so that they are clear of any wet/muddy areas. This prevents the possibility of contamination and staining. Masonry units should be kept in storage areas which are close to where they will be required. This helps to reduce unnecessary handling which will minimise any damage or waste. Best practice is to ensure units are protected from the weather during storage on site and during construction.

Protection during construction

Newly constructed work should be protected from rain, snow, frost and excessive drying out using waterproof coverings which allow air to circulate. Best practice

precautions will help to reduce the likelihood of subsequent efflorescence, shrinkage, patchy mortar colour, staining, and movement. Any materials which are used in conjunction with masonry units should also be stored under protection.

Material stacked out on scaffolding should also be fully protected whenever rain causes an interruption to work and overnight.

Distribution of units on site

Distributing the units to the area of work is best carried out using mechanical methods to reduce the possibility of damage and wastage. Best practice is to lift and place the units. They should always be kept as dry as possible. Opened packs and units that have been stacked out ready for use should be protected from the weather.

Other important practices

- Tobermore concrete walling products should be laid on a full bed of mortar with all joints filled.
- No lift should exceed 1.5m in height in a single day. The joint profile should be finished to the specified profile. The specified joint profile should be formed after leaving the mortar to harden slightly. Tooling is recommended to compact the joints, improve weather resistance and to reduce shrinkage in the mortar. Joints should be finished depending on the overall effect required. It is vital that all horizontal and vertical joints must be compacted and free from voids. Shell bedding should not be used. Recessed or flush pointing is not recommended in high exposure areas.
- Tobermore concrete brickwork should not be built in temperatures below 3°C and frozen materials should not be used. Masonry units should be constructed in areas that are greater than 10m away from de-icing salts.

Selecting bricks on site for use

To achieve the best possible finish, we recommend the following advice is followed to evenly distribute any slight variations in shade, colour and texture over a large area. When the circumstances allow the completion of one house/building by using masonry units taken from the same batch. This is achieved by checking the batch code label displayed

on the packs. Always thoroughly mix products from a minimum of three packs. Where products are supplied in packs with vertical slices, always take them “vertically, slice by slice”. This ensures that colours are distributed evenly. When the circumstances do not allow the use of products from the same batch, it is extremely important to minimise possible colour banding/shading by always thoroughly mixing products from a minimum of three packs concurrently with some overlap between deliveries/batches. If a noticeable variance in colour/shade or texture is visible, do not proceed with the installation and contact your supplier for further guidance. Best practice is to make regular visual checks to ensure the blending of colours is consistent.

Mortar deposits

Excess mortar which extrudes from masonry joints during laying should be cut off with an upward stroke of the trowel to avoid smearing the face of the unit.

Upon completion of laying and tooling, any mortar smears on the face of the masonry should be removed promptly - initially with dry brushing, followed by wet brushing if needed. Mortar residues and droppings should not be allowed to harden on the masonry surface. (See General Cleaning Advice)

Completed work

The finished appearance should be agreed between all relevant parties which may include the specifier, client, housebuilder or end user. Best practice is to construct sample panels between 1 to 1.5 square metres in size. These panels should be viewed from a distance of at least 3 metres. The brickwork should be viewed as a whole rather than viewing individual bricks. Inevitably, some individual units may have small chips caused by transporting to site or movement and handling on site. However, the generally accepted industry standard is that no individual chip should be greater than 15mm. Tobermore masonry units are coloured all the way through which provides an added benefit meaning any small chips are less visible.

General cleaning advice

Facing bricks & Country Stone

- It is always important to keep bricks as clean as possible while laying and tooling.
- If mortar has been allowed to dry on the surface of the bricks, the options you have to clean it off are as follows. Each process should be tested first and should ensure the facing bricks are not damaged:
 - (a.) Dry brushing
 - (b.) Wet brushing
 - (c.) Using a 'like coloured' brick to rub the stained brick
 - (d.) Pressure washing – this should only be used as a last resort as it will damage the surface and the mortar joint if not completed correctly. This method cannot be attempted until the area has been allowed to set for a minimum of 7 days.
- Acid cleaning should be avoided.

Instructions & warnings

Stay informed: Scan for important guidance.

To ensure the best results when using Tobermore products, we've made our latest installation guidelines, care instructions and product warnings easily accessible online.

Always up to date

Get the latest product and installation information.

Expert advice

Best practices for achieving a high-quality finish.

Care & maintenance

Tips to keep your products in top condition.

Troubleshooting

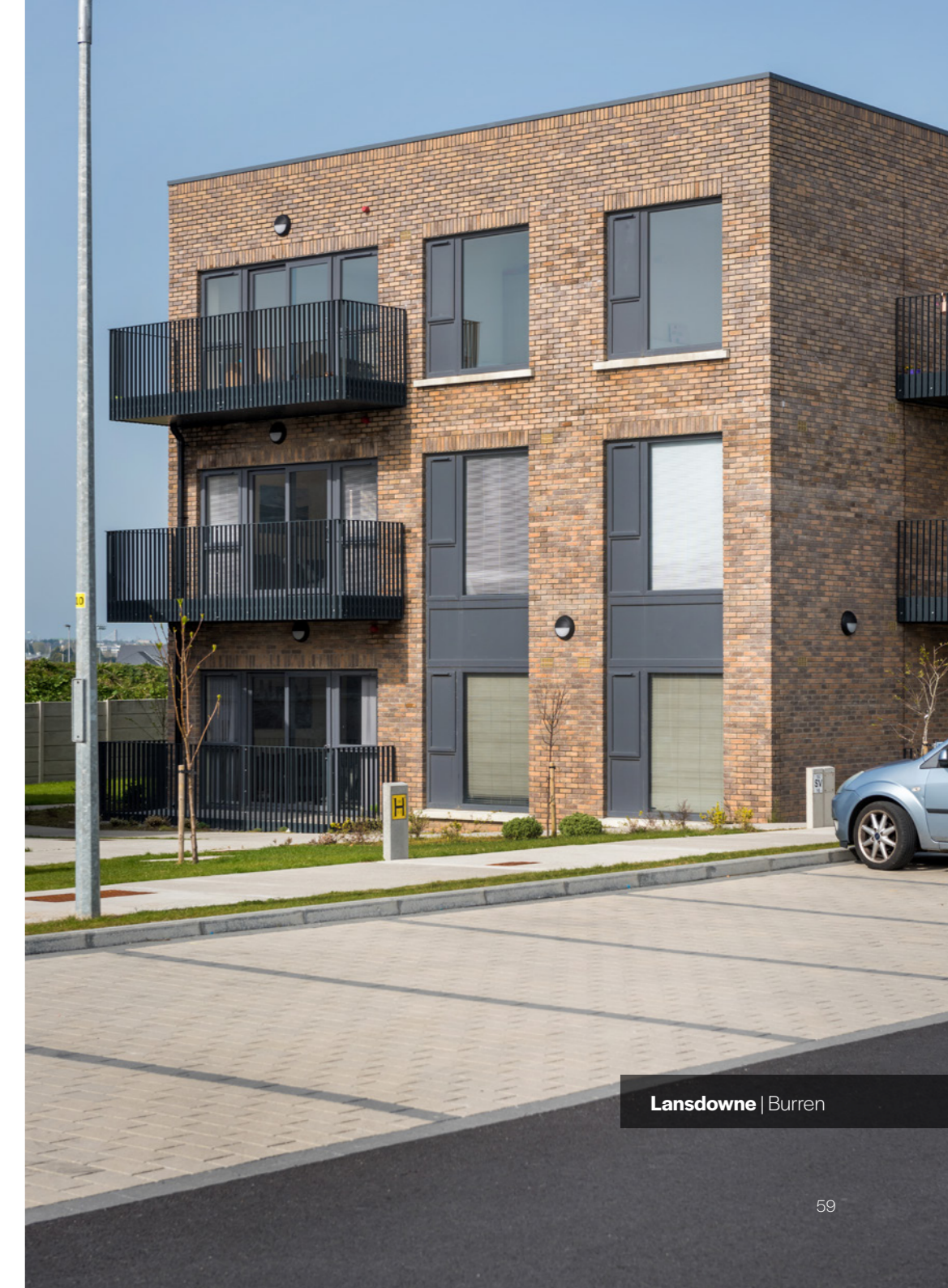
Guidance on common issues and how to resolve them.

Simply scan the QR code below to access everything you need for a smooth installation and long-lasting results.





Lansdowne | Cottage Red



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