



Materials

External building materials and their use in Aberdeen

Technical Advice Note
November 2019

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Introduction

Aberdeen, the ‘**Granite City**’, has a distinctive ‘sense of place’ at its core. The local granite industry has largely gone but by considering the historic use of materials and their properties it is possible to distil the essence of an Aberdeen look for our future buildings and places.

The **Aberdeen Local Development Plan 2017** reiterates, at a local level, the importance of quality placemaking through the use of design-focused policies which promote good design and guide decision making. All these policies emphasise that the careful selection of appropriate materials in new buildings is a key factor to achieving the qualities of successful places.

This advice provides a benchmark for the **promotion of high-quality external materials** which are appropriate to their context. The advice encourages and challenges designers, developers and homeowners to consider and select external materials for new buildings and extensions that are visually appropriate, sustainable, long lasting, have low-maintenance requirements and that respond to climate change. Materials should also be grounded in the historic design features and characteristics of Aberdeen’s development in order to guide, create and reinforce local distinctiveness through high quality development, rather than produce new places that look like anywhere else.

This advice illustrates a way of looking at our city with a design-led approach to material selection for the 21st century based on an aesthetic understanding of the historic use of material, colour, texture and detail to shape specifications today. It will be used in the assessment of planning and listed building consent applications with the aim of improving design quality and offering a consistent approach to the way in which materials are considered and used across Aberdeen.

Context is Crucial

This advice is not designed to be a prescriptive list or technical specification for materials but has been prepared to encourage greater consideration of materials and their detailing to reinforce Aberdeen’s distinctive sense of place. Each development proposal will be considered on its merits and the context of both the immediate and wider area are crucial when developing ideas about material choices, colours and detailing. We encourage all development to consider:

Do the proposed materials, their colour and detailing contribute to the immediate context and reinforce Aberdeen’s ‘sense of place’?

Union Street: The Granite Mile ▶
Aberdeen’s sense of place is principally derived from the many buildings constructed from locally quarried granite, none more so than those that line Union Street, the city’s main thoroughfare



Preserving Aberdeen's Sense of Place

Many of Scotland's towns and cities have their own distinctive 'sense of place' derived principally from their architecture, with strong variations in local characteristics across the country due in no small part to the type of local building materials historically available and how they were put together. In Scotland historically, local stone was the predominant material used for the external walls of buildings and whilst Glasgow and Edinburgh are built mainly from sandstone of varying shades of brown and red, the north-east of Scotland's geological base is granite.

Aberdeen's granite heritage is intrinsically linked to its cultural heritage known as 'The Granite City' or the 'Silver City' – granite gives our city its local identity and planning policies seek to protect our heritage.

Today Aberdeen's granite industry has gone, and whilst some local granite is still available it is generally used for prestige urban realm projects. Nonetheless whilst the look of new buildings, and especially new housing, is remarkably unvaried across the country as a result of tested development formulas, careful consideration of the materials, colour and detail specified should allow new places to be created that are easily identifiable as belonging to, or respecting Aberdeen's local context, and are suitably equipped to tackle predicted climate

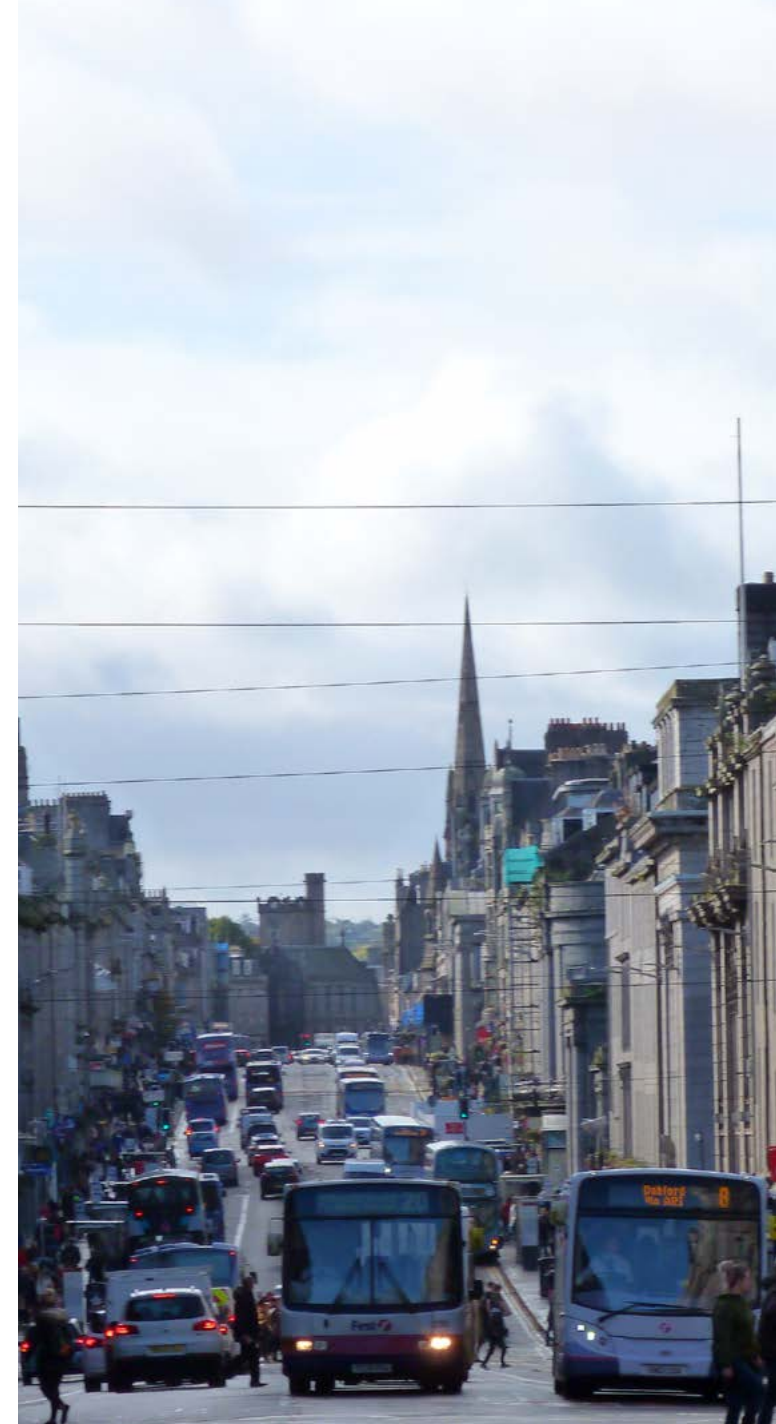
change, offering solutions that are sustainable, energy/resource efficient and aid carbon emission reduction.

The elements of substance that give developments their visual characteristics and distinctiveness and can root their inhabitants in the area they live, creating a greater sense of individuality and belonging, often in subtle ways. The historical origins of materials, their colour, texture, practical and aesthetic relationships in Aberdeen should inform how materials should be used today.

In order to respect, complement and enhance the surrounding townscape and Aberdeen's core local distinctiveness, new development must select materials which will provide a successful design solution in the 21st century as a context response. This guidance has focused on analysing a selection of more traditional materials and their contribution to Aberdeen's sense of place: granite, render, brick, timber, glass, metal and roofing (including green and renewable technologies).

It is understood however, that there are a wide range of materials available on the market today and this guidance does not preclude the use of any other material where this can be used to good effect. For example, the use of different and contrasting materials of metal cladding, glass and granite being used alongside historic buildings works well because context has been understood. However, there are implications for sourcing non-local granite as this incurs a

Union Street – Aberdeen's Granite Mile



high carbon footprint therefore affecting the sustainability credentials of the material. There are also innovative examples such as green roofs/walls, unusual colours and textures of cladding which offer creative responses to design.

However, regardless of the material chosen, there are several aspects involved in the selection and implementation of a material appropriate for its context which are important. These include more aesthetic qualities of **colour, texture, module size, detailing, jointing, finish**, as well as the evaluation of **contrasting or complimentary** approaches to design, and, more practical **environmental and technical considerations**. The construction and detailing of materials will need to respond to predicted warmer wetter winters and hotter drier summers and opportunities to enhance green infrastructure and energy efficiency must be taken into account. Materials should also be informed by the building orientation and siting, taking consideration of aspect, exposure and solar gain.

This advice advocates a *more informed approach to the use of appropriate materials* and seeks to ensure that the external finishes of new buildings in Aberdeen have been chosen carefully so they:

- are appropriate for both their city-wide and localised (streetscape) context,
- respect the city's heritage and contribute toward Aberdeen's distinctive 'sense of place', and

- take consideration of the whole life-cycle and sustainability of materials, including sourcing and energy efficiency
- consider how the chosen materials respond to future climate



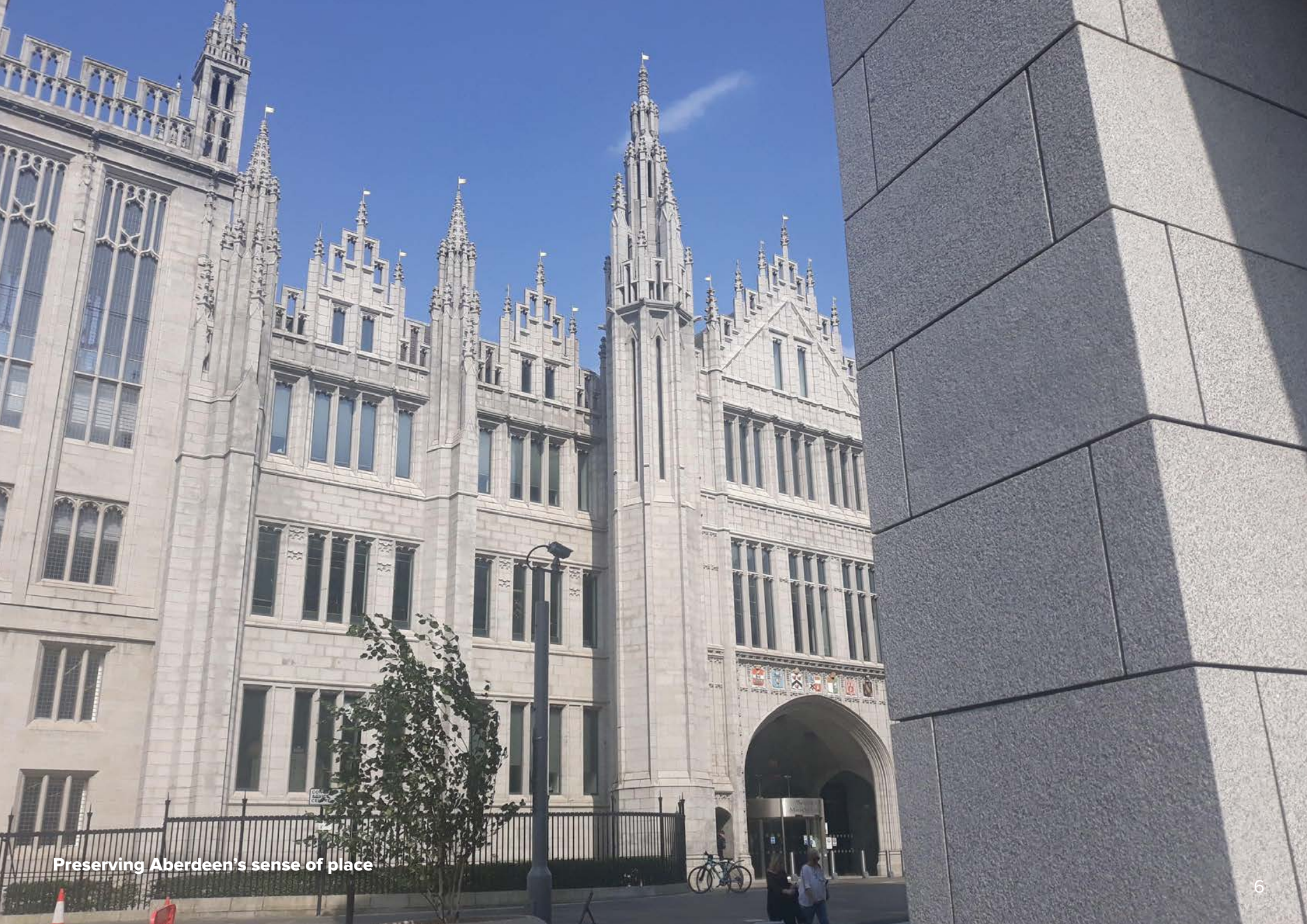
The Silver Fin The frontage faces onto Union Street, the use of light-grey granite cladding respects the street's granite heritage and colour, whilst the use of glazing in the taller element behind helps to reduce its massing



Marischal Square The use of new buff/brown granite cladding panels on the recent Marischal Square office development sympathetically reflects the colours seen in the walls of Provost Skene's House, one of Aberdeen's oldest buildings



Aberdeen Art Gallery The contemporary roof extension to the Category 'A' listed Aberdeen Art Gallery has been designed as an honest, clearly modern addition to the original building and its granite façade below. The use of pink/brown copper cladding serves as a good match for the pink Corrennie granite used in the façade embellishments



Preserving Aberdeen's sense of place

Granite

Historical context

Aberdeen, 'The Silver City', is derived from the light grey colour of the local granite which dominates the city's buildings, because the mica in the granite sparkles in the sunshine.

Aberdeen's predominantly light-grey granite forms the basis of the core of the city's distinctive streetscape colour and character; for example, Aberdeen's premier street Union Street is lined with solid grey granite buildings. In fact, north-east granite comes in many varieties of colour, ranging from light grey to earthy browns, blues, pinks and reds.

The walls of Aberdeen's granite buildings can vary significantly in appearance depending on their age. The city's oldest remaining buildings are generally built with rubble walls (of a more earthy colour palette), with relatively unworked and gathered granite of varying shapes and sizes laid in non-uniform courses.

As commercial quarrying and technological advances arrived in the 18th and 19th centuries, the size, shape and detailing of granite blockwork increased and improved.

It was during this time that Aberdeen had an abundant local source of high-quality, granite from Rubislaw and the nearby Kemnay, Dancing Cairns, Craigenlow and Corrennie quarries. This resulted in a high proportion of Aberdeen's inner city and city centre buildings being composed of local granite (although even then some was still imported into Aberdeen).

Granite Properties

- **Strength / durability**
- **Low maintenance**
- **Impermeable**
- **The granite 'sparkle'**
- **Restrained detailing**

Rubislaw quarry (now defunct) in the city's west end was at one time the largest man-made hole in Europe and its granite, of the highest visual and structural qualities, was used as far afield as London's prestigious Waterloo Bridge and the Houses of Parliament

terraces as well as the base of Australia's Sydney Harbour bridge.

By the mid-to-late 20th century, local granite quarries were exhausted and, combined with an increase in the availability of cheaper, imported stone and the use of other building materials in recent decades, it has become increasingly difficult and often cost-prohibitive to source new local granite.





Marischal College The early 20th century front elevation uses the finest Kemnay ashlar-cut blockwork and detailing



Provost Skene's House Built of granite-rubble in the 17th century it is one of Aberdeen's oldest remaining buildings



Art Gallery Incorporates pink Corrennie granite detailing

Contemporary use of granite

Granite is synonymous with Aberdeen's heritage and townscape character. It's existing granite stock and heritage should be retained wherever possible, in order to preserve and continue Aberdeen's distinct sense of place.

However, due to technological advances and changes in construction, stone is no longer a key load-bearing component of walls. Instead, its modern-day use in new buildings is predominantly restricted to its aesthetic and weather-resistant properties.

Whilst granite could be seen as an obvious material choice for new buildings in the city, it is important to note that the use of new granite, especially imported foreign stone, could actually dilute, rather than reinforce, the city's granite heritage. Instead, alternative materials can often be a more appropriate choice to help preserve and enhance the status and setting of the city's existing, locally quarried granite.

Depending on the context of the site, the use of new granite may be appropriate, provided the type of granite used is sympathetic to the surrounding streetscape and the city's granite heritage. Where modern granite cladding is considered appropriate on new buildings in historic settings, the panels should be coloured, sized and coursed to reflect the detailing of surrounding buildings.

Detailing and Colour

In instances where new granite is acceptable, care needs to be taken to ensure that it would be a good match to the existing stonework in every aspect including: colour, size, finish, coursing and detailing. Where extensions or new buildings are proposed, it will often be preferable to use a different material in order to provide a distinct contrast to the original granite and to create clear visual separation between old and new. Granite's strong, durable properties make it much harder to work than softer building stones such as sandstone. As a result, Aberdeen's granite buildings do not tend to incorporate much architectural embellishment such as intricate carvings. The main exception to this is Marischal College's façade which was fashioned by machine.

In the general absence of decorative carvings, Aberdeen's more prominent historic buildings tend to incorporate architectural interest and status in their façades through the use of granite blocks of varying finishes (i.e. smooth, tooled, rough-faced), different colours (as at the Art Gallery) or sizes (Aberdeen Bond), or where detail exists that it is refined, strong and unfussy. Typically the façade detailing will differ from that of the rear and side elevations which are of lesser importance, with those elevations often finished with rubbled granite with more expensive, uniform ashlar blockwork on the façades.



Modern granite cladding Depending on the context, the use of granite cladding panels in new buildings can work well, as at the Neptune Energy building on North Esplanade West



Imported granite cladding panels have been used on new buildings in Aberdeen such as **Marischal Square**



Technical considerations

Retention & re-use of existing granite

- Existing local granite contributes to Aberdeen's identity and distinctive sense of place. Wherever possible, all existing granite should be retained.
- Where new developments require granite to be taken down, as much of the dountakings as possible should be re-used in the new development.
- The retention and re-use of existing granite is also more sustainable than the introduction of new materials, particularly imported stone.
- Granite has poor heat retention properties; redevelopment opportunities of existing granite buildings can explore energy efficient solutions.

New granite blockwork

- Where new granite blockwork is proposed, care must be taken to ensure that the colour, module size and detailing are appropriate and sympathetic for their context, especially where it would sit alongside existing granite.
- Blockwork sizes should generally be approximately 300mm in height, with lengths between 400mm and 800mm, giving the blocks a horizontal, rectangular proportion.

Granite cladding

- Modern granite cladding panels can be used to good effect, particularly in new tall or large buildings, where traditional blockwork walls would not be feasible.
- As with blockwork however, care must be taken to ensure that the module sizes reflect those of traditional granite blockwork, and take cognisance of the surrounding context, which will give clues as to appropriate colours and details.

Alternatives to granite

- The use of new granite; particularly imported granite, can dilute the city's existing local granite heritage and the granite's embodied craftsmanship.
- As a result, the use of contrasting materials other than granite will often be more suitable in preserving the city's sense of place and will be promoted ahead of the use of imported granite.

Brick

Historical context

Although not as immediately obvious in the ‘granite city’, there is a rich tradition and use of brick in Aberdeen. The brick industry here was successful with high quality bricks being produced and exported across the world. Brickworks were established at Seaton (Old Aberdeen), Clayhills (north of River Dee) and Torry in the 18th Century. The deeply coloured red clay at Seaton Brick Works is derived from the old red sandstone beds that formed between the Dee and the Don.



In Aberdeen, historically bricks were used on non-principle or secondary elevations and along rear lanes. Most often bricks were used for outbuildings, chimney stacks, walls and edges, however there was equally no concern in entire rear elevations composed of brick. A characteristic feature within many historic areas of Aberdeen is the use of red coloured brick as the coping for a

Brick Properties

- Small module size
- Variety of colours available
- Textured and plain finishes
- Ease of altering bond, coursing and pattern for decorative effect
- Consistency and clean lines

random rubble granite wall.

Lighter cream/buff coloured bricks are frequently used as quoins to granite walls, perhaps due to practical construction reasons, module size and availability, combined with its decorative effect. In addition, traditional buildings along Union Street feature white glazed bricks to rear/ internal atriums and lightwells.

The surge in volume housebuilding activity in Aberdeen from the 1980s, at the time of the oil boom, created several new housing estates, for example Bridge of Don and Cove. These were dominantly brick and render, with the decorative use of brick often altering depending on the house type. Buff, brown and red coloured bricks, with accents of another contrasting colour in soldier courses above windows and for sill detailing, often mixed with dry dash render on principle elevations with a horizontal emphasis is the consistent design with this age of housing.

Over time the standardised approach to brick and its use has now dated particular housing stock and resulted in a certain ‘placelessness’.

Contemporary use of brick

Although contemporary uses of brick are not necessarily consistent with the historical precedents, the presence of brick in Aberdeen is strong and therefore its use today is relevant.

Within more recent developments brick has been used on a large scale, with confidence and consideration of detailing. This has helped to reinforce the identity and aesthetic of the granite city – allowing granite to stand out for its own qualities and offering a contemporary contrast. The brick and mortar colours chosen (development post 2014) have generally taken their visual base from the range of colours found in granite and lime mortars.



With such a wide range of bricks, sizes and colours available on the market today, the detailing of brickwork is extremely important, and the way bricks are laid is almost as important as the choice of brick itself. Bricks should be considered as part of the whole building design and expressed in a contemporary way. They can offer detail to break up larger elevations, e.g. porches, gables or be used to treat an entire building or façade.

Granite wall with brick coping and window surround detailing – characteristic ‘Seaton red’



Technical Considerations

The use of bricks could take cues from local vernacular.

For example:

- use on side and rear elevations
- stair towers
- window surrounds
- boundary wall coping

Brick construction does feature a high proportion of mortar joints and therefore may be vulnerable to increased risk of water penetration to exposed facades under predicted future climate conditions.

Specialist bricks can be used which provide a home for wildlife, such as for bees, bats and birds.

Detailing

Where brick is to be used its detailing must be carefully considered in order to add visual interest, variety and texture.

For example:

- Alternating walls of vertically laid bricks with walls of horizontally laid bricks
- Introduce interest and variety through the choice of bond
- Special shaped bricks as a feature
- Brick detailing to window and/or door surrounds, reveals, in goes and entrances
- 3D brick modelling to larger expanses of brick
- Using different sizes and shapes of the same brick
- Brick detailing for porches

Colour

The use of bricks must reflect and take consideration of the surrounding context, as this will help to inform colour choices. There is an historical basis for red coloured bricks (e.g. 'Seaton' red) and yellow/buff bricks for detailing. Brick colours in the blue-black and grey-buff ranges work well against granite.

Mortar joint accounts for approximately 15% of the overall wall covering, therefore the style used is also important as certain styles may suit modern or contemporary uses.



Buff coloured brick used in new housing development at **Countesswells**



Grey brick used at **2 Powis Place** student accommodation



Red brick rear façade of **111 Gallowgate**



Render / 'harling'

Historical context

In Scotland, a traditional rendered finish is more commonly referred to as 'harling' (roughcast/wet dash) – originating from the term to throw or 'hurl' mortar at a wall.

Harling is an exterior surface treatment to buildings with the primary purpose to provide a weatherproof shield for a stone building and if the harling is pigmented with a colour it avoids the need for repainting. Traditionally render (consisting of lime and aggregate) is thrown, or cast-on, resulting in a rough textured surface finish.

Harling is widely found in vernacular solid wall constructed buildings; the finish is particularly suited to the Scottish climate and can help to create a more uniform appearance, improving overall building aesthetics. Harling was also commonly used to cover rubble stone or brickwork (perceived to be) of poor quality and where irregular joints would allow water ingress, particularly for pre-1900s buildings in Scotland. Over time, fashions change and during the late 19th century it was common to re-expose the underlying stone or brickwork believing that exposing the various periods of construction added to the historic interest/romance of old buildings.

Aberdeen has historical evidence of buildings

being harled, for example Provost Ross House (Maritime Museum), Provost Skene's House and some older properties in Old Aberdeen. Harling with the use of lime remains the most suitable finish for traditional random rubble stone-built properties as it allows the movement of water (please see Appendix 5 for further information). In recent decades lime harl has been replaced with modern renders. Between this earlier period and the onset of modern construction and renders, there is a gap in the use of harling, most likely due to the rise in the granite industry and desire for buildings which reflected classical architecture.

Contemporary use of render

Render as a modern building material can have a much wider use and application. Modern renders include a higher proportion of cement, and, acrylic or silicone are also now used in modern 'enhanced' render specifications.

The use of render as a building material is commonly found across the City, ranging from residential extensions, houses, blocks of flats and office buildings. The existing housing stock which has render utilises a palette of cream, buff and grey renders, with a recent trend towards white renders.





Smooth finish white render at **Stoneywood**

Render Properties

- Weatherproof shield
- Unifying aesthetic
- Variety of colours available
- Variety of finishes to suit
- Affordability
- Reflective abilities



Traditional harling in **Old Aberdeen**



Consideration should be given to long term maintenance implications for use of smooth white render



Technical Considerations

- Render needs to be considered as part of the whole building design – i.e. ensure that the type chosen is suitable for backing material, takes consideration of movement/ stop joints, aspect and climate.
- Avoid small infill panels of render, a more comprehensive approach with clear junctions between materials is more contemporary.
- Rendered finishes down to ground level may not offer the robustness needed due to the higher level of activity and effects of weathering at this threshold.
- Render used when extending properties, must be designed to either complement the existing building or for contemporary design offer an assertive contrast.
- Render used when extending traditional buildings or in historic contexts benefit from a wet-dash finish, with a through-colour.

Detailing

- Render can be applied in a variety of different finishes (smooth, rough, sand-faced, pebble dash, scrapped etc), the suitability of which will be dependent upon the building / surrounding context.
- Sills, copings, overhangs and flashings should be designed to project from the face

of the wall ensuring that water is deflected away from the rendered façade to reduce moisture ingress.

- Gutters, down-pipes and soffits must be designed to keep water off the rendered façade – angles may be formed using stop beads or chamfered battens.

Colour

- Wide range of colours available for modern renders.
- Evidence that render colours such as white or off-white do not weather particularly well over time, particularly on exposed facades. This does not preclude the use of white render, and it can be used in modern design to strong effect where an assertive contrast is desired.
- Light and paler tones have reflective qualities to aid cooling of buildings in predicted warmer summers
- Where development is proposed within an existing built up area, cues should be taken from the surrounding area to inform new render colour choices. Matching render to the buff, pink and ochre tones in traditional granite random rubble walls is the preferred approach as it helps to integrate new development into its surroundings, helping to enhance setting and the 'sense of place'.

Metal

Historical context

Historically in the United Kingdom, the use of metal as a material in the external envelope of buildings has generally been restricted to roofing and functional elements such as guttering, rones (downpipes) and, to a lesser extent, architectural embellishments such as Juliet balconies, cast iron railings and ridge brattishing and sheds.

Aberdeen's history of metal use is much the same as in the remainder of the country. Whilst the majority of older buildings have slate roofs (historically a cheaper, more-readily available material), the roofs of several of the city's prominent public buildings utilise metal: predominantly lead and copper.

Whilst lead, with its grey colour, is predominantly used in pitched roofs and spires, copper (green) has more commonly been used as a roofing material for architectural eye-catchers such as decorative domes (see the Art Gallery, His Majesty's Theatre and the former Woolmanhill Hospital). The use of metal as an architectural embellishment in Aberdeen is otherwise very limited but there are opportunities with this material.

Aside from its use in industrial buildings, it was not until the late 20th century that the use of metal as a cladding material for external walls

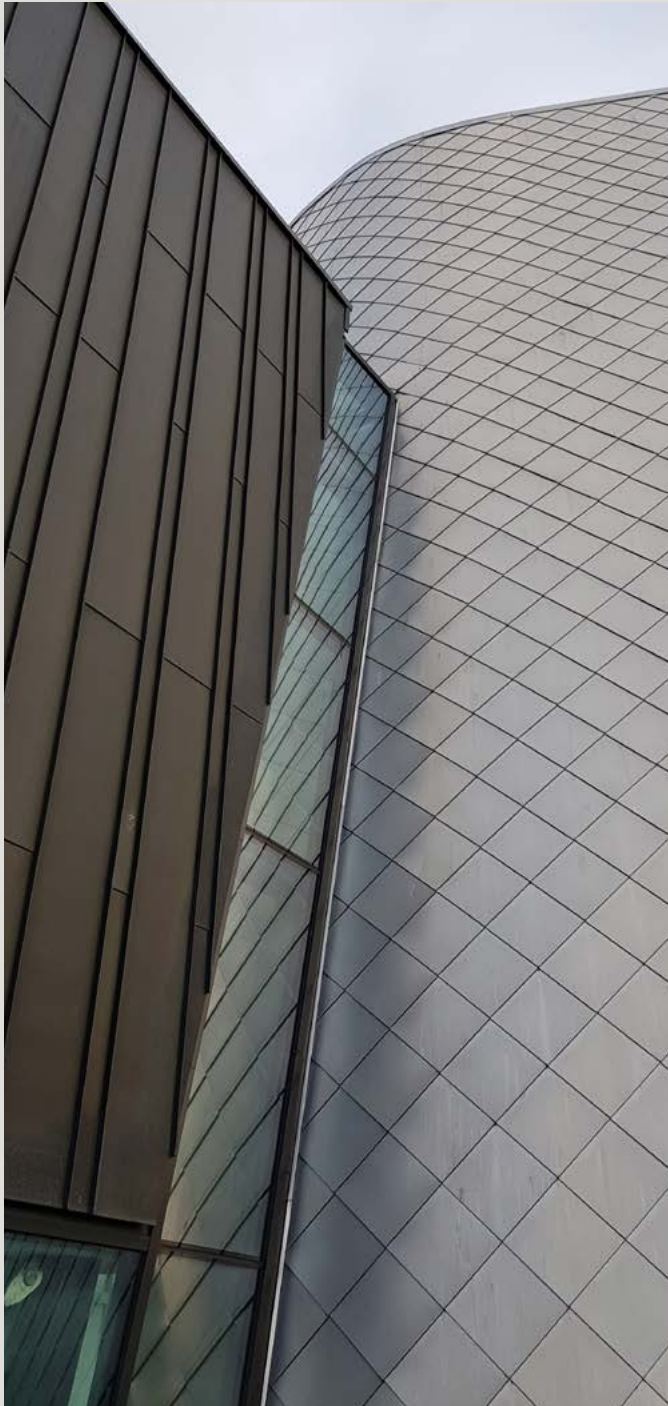
became more commonplace.

Although not traditionally used on civic and residential buildings, metal cladding continues to grow in popularity as an attractive, lightweight and relatively inexpensive, versatile material, particularly on new buildings and contemporary extensions. Metal can often be utilised to provide a clear, honest distinction and contrast between old and new.

The Category 'A' listed Aberdeen Art Gallery building has recently been refurbished and now includes a contemporary copper roof extension, the red/brown colour sympathetically reflects that of the pink Corrennie granite façade detailing below and echoes the use of copper in the nearby buildings. The detailing and jointing of metal wall cladding (use of standing seams, patterned perforation, variation in colour of cladding panels etc) can add visual interest and help to soften the appearance of large elevations on new buildings and give a new aesthetic.

The use of metal cladding at roof level and on the walls of upper storeys can help to add interest to, and reduce the massing of, new buildings by differentiating between the colour of the remainder of the façade and/or replicating the colour and appearance of a traditional roofscape, as at the Craiginches development.





Metal cladding creates a roofscape at **Craiginchies**



The red/brown colour of the **Art Gallery** roof extension reflects that of the pink Corrennie granite below.

Contemporary use of metal

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Detailing and Colour

Where metal cladding is proposed, it is important to ensure that not only the scale, colour and texture of the cladding is sympathetic to the context, but that it is carefully and finely detailed and jointed to ensure low maintenance and longevity.

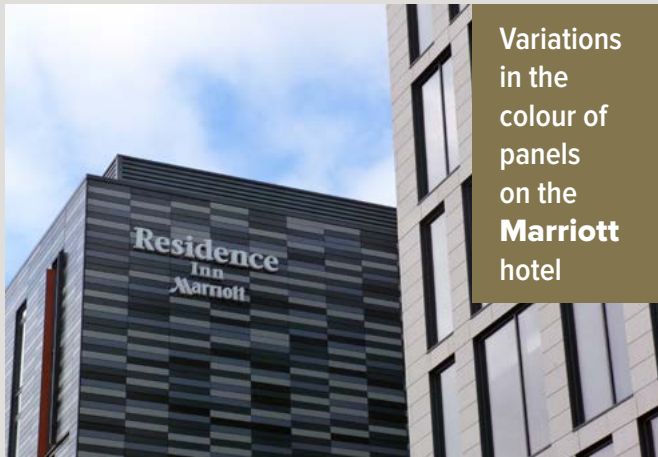
Traditionally metal roofing (particularly lead) involved the use of raised timber battens, around which each sheet of metal would be joined together. Whilst timber battens are no longer required, modern 'standing-seam' metal cladding replicates the aesthetic and the jointing adds visual interest to the cladding, helping to break up the appearance of large elevations.

There is a long-standing history of **light grey** lead and anodised **green** copper roofing in Aberdeen. Both those colours sit well within the Aberdeen context and contribute towards our 'sense of place'. More recently **black** and **dark grey** cladding have been used to replicate the colours of traditional slate roofs.

Metal Properties

- Relatively lightweight in sheets
- Durable
- Low maintenance
- Impermeable
- Relatively inexpensive
- Available in many colours

The jointing in the metal cladding at **Causeway-end** ties in with the coursing of the adjacent granite.



Variations in the colour of panels on the **Marriott** hotel

Dark grey metal cladding used to create a roofscape at the former **Remnant Kings** building on Loch Street



Technical Considerations

- If detailed correctly, metal cladding can be an attractive, contrasting material for external walls in new buildings and in contemporary extensions to existing (including historic) buildings.
- Careful consideration requires to be given to the colour, surface finish, module size and jointing, which should all be chosen based on a site-specific analysis of the context.
- The jointing used in 'standing-seam' metal cladding can add visual interest to otherwise featureless walls, replicating the raised-batten jointing seen in traditional lead roofs.
- Variations in colour between cladding panels can help to break up large blank elevations, such as that seen in the Residence Inn Marriott hotel at Marischal Square.
- Metal cladding can be used to good effect in reducing the massing of medium-height, flat-roofed buildings by imitating the appearance of a roofscape.

Timber

Historical context

Early timber construction influences across Scotland were more akin to Scandinavian countries such as Norway and Sweden. European Oak and Scots pine were the two most common timbers and Scottish builders tended to use cladding boards vertically.

The historic use of timber in Scotland is evidenced, albeit not as widely evidenced in Aberdeen, due to the dominance of the granite industry. Its use was primarily for construction timbers, doors, roofs, windows, interior joinery and outbuildings.

A prime example of historic timber outbuildings are the 'tarry' sheds in Fittie (Footdee). Here

timber charred or tarred with bitumen was used in the construction of small outbuildings to store fishing equipment, such structures were purposefully cheap, lightweight and easy to construct, however their presence now is an important and aesthetically valuable historic asset.

In the 1960-70s exterior timber cladding was used in the construction of Aberdeen's social housing expansions, with the Council importing Norwegian and Swedish kit houses to create neighbourhoods in parts of Aberdeen such as Sheddocksley.

During the 1980s housing expansions however, the use of timber changed, with timber frame construction being hidden behind other exterior cladding, in favour of materials such as render and brick which perhaps as they were perceived to more closely emulate masonry construction and visual solidity.



Vertical timber cladding to rear extension of **Queen's Cross Dental** in interesting curve design



Traditional timber sheds in **Footdee**

Contemporary use of timber

Approximately 75% of new homes in Scotland are timber-frame construction, however few buildings in Aberdeen use timber cladding of any great degree or scale. Exterior timber cladding is predominately contained to household extensions. However, in recent times new build construction and design has seen the use of timber, timber-composite or timber-effect products used as an elevational cladding treatment.

Timber cladding all over, or the majority of the building is increasing in popularity. Western red cedar is the most commonly used whole-house cladding, but European larch is becoming more widespread because of its availability and its property of weathering to a uniform silver-grey which needs no staining for protection. There has also been a more recent rise in well-designed timber clad garden offices/studios where the aesthetic of natural materials and small-scale module work well in the garden setting.

Technical Considerations

- There are a wide range of hardwoods and softwoods available for timber cladding, with Sitka Spruce, Scots Pine and Larch being the dominant species in northern Scotland.
- Timber sources should always be from sustainable FSC – Forest Stewardship

Council (or similar) certified sources.

- ‘Wood effect’ products which offers the same look as timber cladding but requires less maintenance – however uPVC cladding can suffer from discolouration over time and the products seem to provide a lesser aesthetic than real timber.
- Vertical cladding is more akin to the Scottish vernacular and allows for faster water shedding down the vertical plane of the timer, also beneficial to cope with predicted increased rainfall.
- Opaque coatings should be moisture permeable to allow timber to ‘breathe’. However, there will be requirement to repaint every 5-10 years and replace damaged boards should be understood as an accepted part of the maintenance regime – as opposed to natural materials and finishes.
- Aspect and detailed design must be considered prior to timber cladding and treatment choice, as different planes and more sheltered elements will weather at a different rate, affecting overall long-term aesthetics.
- Varnishes and coatings should be non-toxic and eco-friendly.



Timber Properties

- Sustainable
- Lightweight
- Ability to source locally
- Wide range of hard and softwoods available
- Untreated, stained, treated, painted finish options
- Retrofit opportunities (external insulation)

Detailing

Aberdeen has a maritime climate, therefore the control of wind-driven rain penetration into the wall is important, including as a result of climate change. The “4 D’s” is a useful consideration for the detailing of timber cladding.

Deflection – overhangs, eaves, top flashings, splashlines, sheltered openings

Drainage – drained and ventilated cavity behind cladding and use of high-performance breather membrane, heartwood on external face

Drying – ventilation gaps, supporting boards, provide for shrinkage/expansion, coating boards before application

Durability – naturally-durable or preservative-treated timber

Colour

Timber cladding can use traditional staining and painted colours in both bright and light, and more



darker tones. However, the success of a scheme will very much depend on the surrounding context which will help inform colour choice.

Small-scale cladding use, for example on extensions, has the potential to use uncoated timber (dependent upon the wood). Iroko or cedar are two types of timber which can be used for (relatively) maintenance free cladding, as a natural silver-grey protective patina forms on the

wood's surface which complements well with natural stone walls such as granite. Equally, small outbuilding, timber sheds and garden studios have potential for using more jewel-like accent colours, for added interest.

Traditionally tar, and now scorching (heat treated) techniques have been used to create a weather-resistant skin to timber and this has a characteristic dark black colouring.

Glass

Historical context

Prior to the 20th century, the use of glass only featured in windows, progressing from small hand-blown 'brown-plate' and 'crown' glass windows to larger, machine-manufactured 'plate' glass units by the end of the 19th century, predominantly for shopfronts.

The use of glass as a wholesale building cladding system didn't become commonplace until the early 20th century as advances in manufacturing methods allowed production of glazing in large sheet forms.

Despite its arrival as a building material, the use of glass remained prohibitively expensive to all but significant and noteworthy architectural projects until manufacturing processes in the mid-20th century brought it to the fore as a mainstream cladding/construction material.

In an Aberdeen context, glass wasn't used as an external wall material until very recently and its use was predominantly limited to contemporary extensions to existing public buildings (see His Majesty's Theatre and the Maritime Museum). More recently however, high-profile big buildings such as Aberdeen University's Sir Duncan Rice Library, The Capitol and Silver Fin office developments on Union Street and Talisman House on Holburn Street have all incorporated significant elements of glass as an external wall material.



The green-tinted glass extension to **His Majesty's Theatre** reflects the colour of the building's copper dome above



The use of glass in the upper gable of this roof extension maximises daylight receipt and minimises the extension's massing



The **Silver Fin** office development on Union Street

Contemporary use of glass

The transparent and reflective qualities of glass make its use preferable in tall buildings where slender, vertical proportions, and a visually light aesthetic are desired. The use of glass in such buildings can help to reduce their massing compared to more solid, less reflective materials.

The transparent nature of glass can also benefit the occupants of buildings by providing a significant amount of daylight and thus a natural source of heat (when appropriately orientated), via passive solar gain. The use of glass walling continues to grow in popularity in new large buildings and contemporary extensions as its various characteristics and qualities make it a good complementary aesthetic choice.

Glass often works well alongside other, more solid materials in new buildings. Where appropriate, buildings constructed predominantly or entirely with glass should incorporate high-quality detailing to add visual interest. Care needs to be taken to ensure that glare reduction and internal lighting do not adversely affect townscape.

Technical Considerations

- The use of glass walling in tall or large buildings can help to reduce their massing.

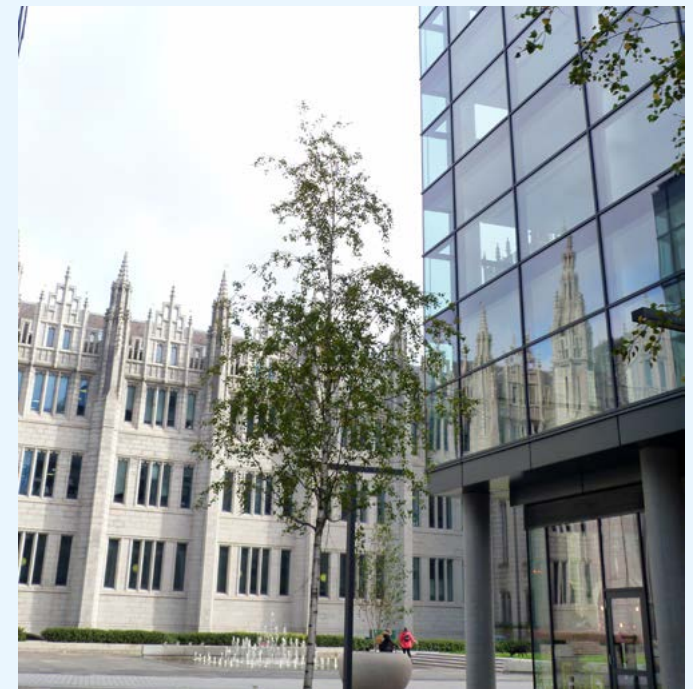
Glass Properties

- Transparent
- Reflective
- Impermeable
- Durable
- Can be curved

- Glass often sits well alongside a more solid material.
- Glass will often be appropriate in extensions to existing buildings due to its transparent and reflective qualities.
- Module size relative to the building, context and scale are all essential to understand in the creation of appropriately modelled elevations.
- Care needs to be taken to ensure that the jointing between panes of glass is minimised and coloured appropriately so that it does not detract from the appearance of the glass itself.
 - Opportunities to enhance the setting of important neighbouring buildings through sympathetic reflection should be explored, as at Marischal Square.
 - Any large expanse of glass must consider predicted warmer summer climate and how this affects internal thermal comfort levels, for the avoidance of extra cooling requirements etc.
- Use of large expanses of glass to building facades can pose risks to people with low or visual impairment, therefore the use of architectural controls should be considered – such as building orientation, shade, exterior controls (shutters/louvers/light shelves), and, interior fittings such as blinds/glazing manifestations.



The Maritime Museum glass-walled extension



The Marischal Square glazing reflects Marischal College



Patterns add visual interest to the **Duncan Rice Library**

Detailing and Colour

Although glass walling is predominantly clear and transparent, it can be manufactured with various shades, tints and levels of opacity. The His Majesty's Theatre extension utilises glass with a green tint, which sympathetically reflects the colour of the original building's green copper dome and the wider Union Terrace Gardens setting.

Patterns and designs can also be incorporated to add visual interest or to enhance privacy where desired, such as in The Sir Duncan Rice Library building at Aberdeen University where the elevations act as a light box at night.

Vinyl designs can also be added, giving glass great flexibility and adaptability in the long-term and offering a solution to signage and layers of visual interest.



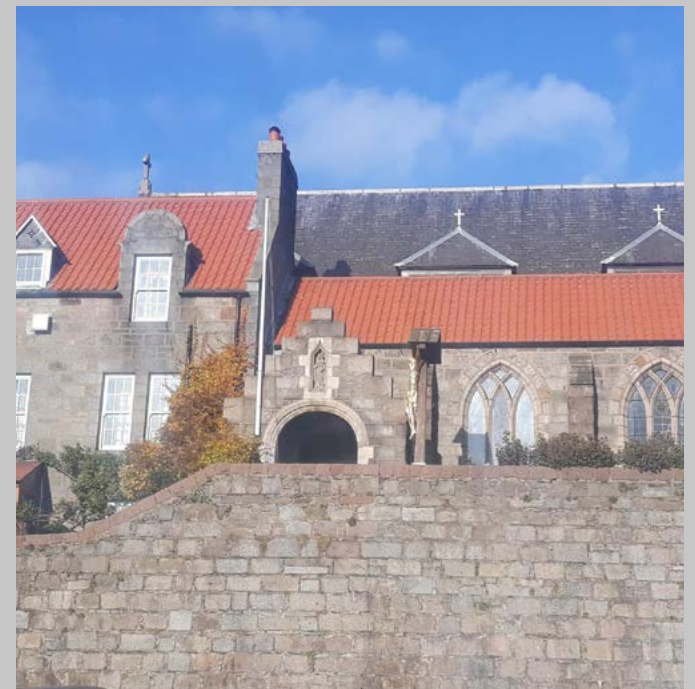
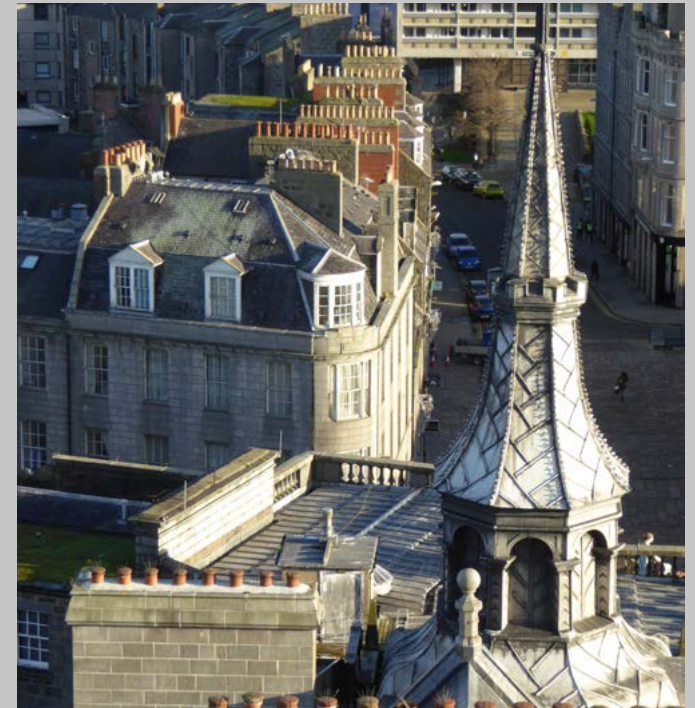
Roofing

Historical context

From the 19th century onwards Aberdeen's pitched roofs were mostly finished with **dark-grey** slates, with flat roofs and/or ornate roofs clad in lead. However, earlier in history pantiles were also used, particularly in areas of Old Aberdeen whose tiles were made locally by Seaton Brick and Tile Company.

Despite being a coastal city, Aberdeen does not have a significant number of buildings finished with red/brown clay pantiles, as can be seen elsewhere in a coastal context in the north-east of Scotland. However, Pantiles would have existed up until the 19th century though surviving evidence is extremely limited as they have been replaced over time and were used on smaller-scale domestic architecture. Slate being a more robust and higher quality material means it is well suited to Aberdeen's climate and as the city expanded from the 19th century, typified by the construction of Union Street, large grand buildings of granite and slate set the image of the city.

As well as slate, lead was also used as a roofing material, particularly on prominent public buildings and churches, such as the Town House and St Nicholas Kirk, and especially on roofs with shallow pitches, due to its better rain resistance properties than courses of slate at pitches below 23 degrees.



Contemporary and green roofscapes

With a significant increase in flat roofed buildings in recent years (particularly those exceeding 2-storeys in height), the colour or material used for the roof itself has become less important. However, where cladding is used on the top floor of the walls, to give the impression of a roof-level and reduce massing, that cladding requires to be appropriately coloured for the context of the building and the surrounding area.

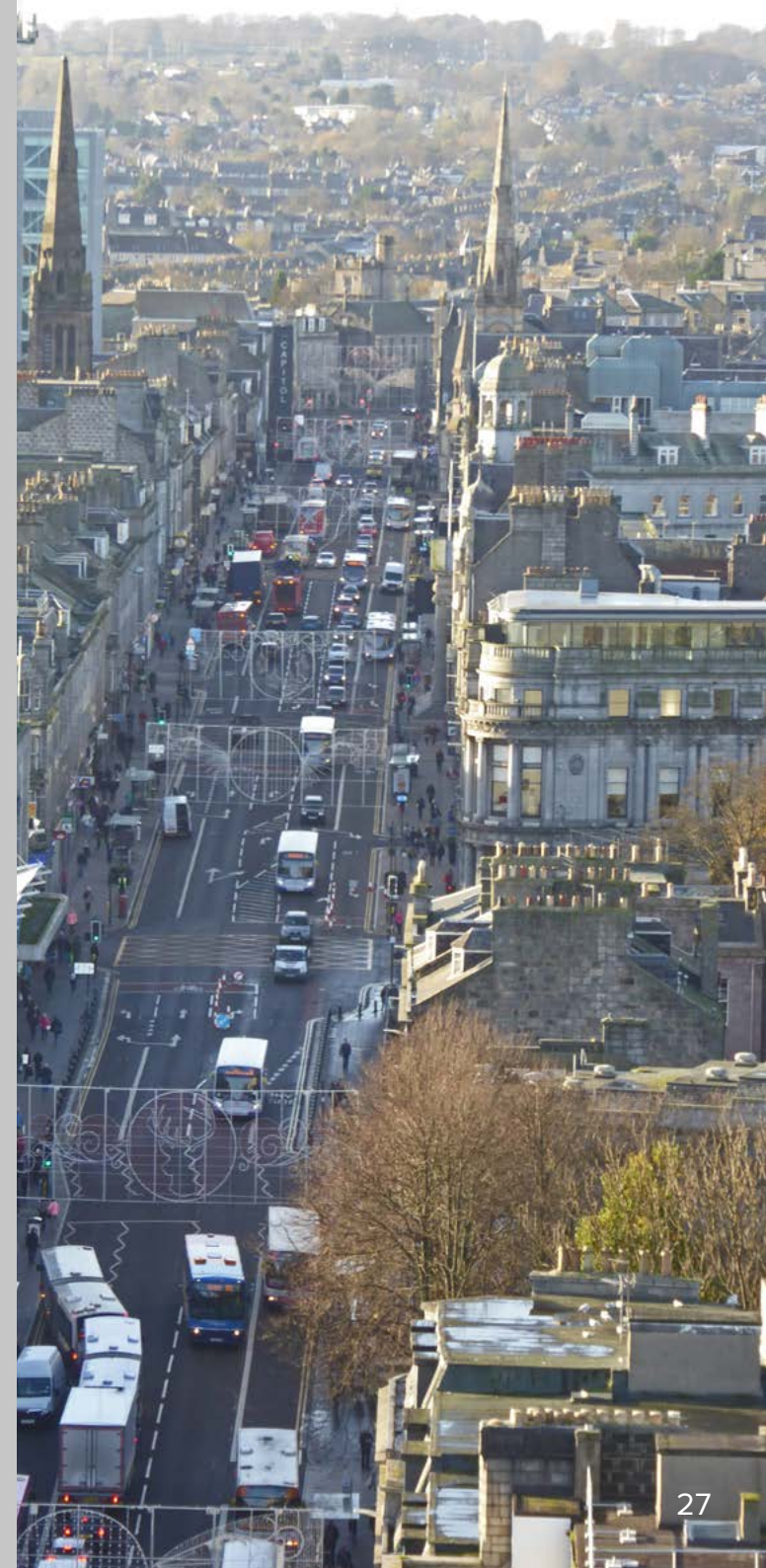
More recently **green roof** infrastructure is becoming a popular option and is well suited to flat roof designs – which is discussed further in the next section on green roof and wall infrastructure.

Incorporating appropriate low carbon technologies, such as **solar panels**, at the design stage for roofs aids reduction in emissions and energy efficiency.

Consideration should be taken of the scale of the building, site energy demand, roof design and orientation. For example, higher wall parapets may be required to hide solar panels on flatter roof designs, whereas modern technologies such as solar pv tiles can be integrated into the roofscape.

Technical Considerations

- In order to retain and reinforce the city's **light-grey roofscape context**, whilst a **variety of materials may be appropriate at roof and upper-storey levels**, **red and brown roof tiles in new developments (particularly those with pitched roofs) will only be supported where they have support of an design statement, as part of a tonal ranges of colours and based on a context appraisal of the surrounding area.**
- **New medium-height flat-roofed buildings can incorporate cladding on the upper storeys to imitate a roofscape. Such cladding should be coloured appropriately for its context.**
- **All roof material choices (including downpipes and guttering) must respond to predicted increase rainfall intensity in future climates, which could cause implications for flat roof design and coverings. Large eaves can protect walls below.**



Green roof and wall infrastructure

Options to incorporate green roofs can slow down rainfall runoff, improve building insulation and contribute to biodiversity.

There are 2 broad categories of green roof:

- 1) **Extensive green roofs** – not used by people but as design feature, often suited to flat or gently sloping roofs
- 2) **Living gardens** – recreational and accessible green roofs using flat roof with container and raised bed gardens

Green roof design must take account of:

- Structural load accounted for in design (including additional load from weather/ rainfall and access requirements onto the roof).
- Appropriate sealing, waterproofing membrane and drainage to cope with predicted future rainfall levels.
- Growing medium appropriate for roof type (extensive or living garden).
- Plant coverage (sedum/mosses/grasses) appropriate for climate, location, soil depth, root growth and design.
- Regular and safe access to any green infrastructure must be considered early in the design process.



Colour

Green roofs offer a striking contrast with other materials, especially against existing granite, however species choice also offers scope for colour by choosing red sedum for example.

Green walls

Incorporating green facades and living walls where feasible, can enhance a buildings aesthetics as well as support a reduction in run off from rainfall, improve building insulation and support biodiversity. There are also great opportunities to retrofit this option to existing buildings to enliven blank or unattractive facades. Any type of green wall infrastructure must take into consideration any extra weight, sub-framing and structural support which may be required, that species choice if suited to the aspect and climate of the façade and future maintenance requirements.

There are 2 main ways of creating green wall infrastructure

- 1) **Green façade** – using climbing or trailing plants grown across frames/cables to provide support; will take time to establish; moss walls can create different designs with colour and texture, grow well in shade and are low maintenance.
- 2) **Living wall** – require higher level of design and installation, including irrigation, however offer benefits to improve the building performance as a cladding material (cooling, absorb moisture etc.); fixed to building via framework in a modular system using non-combustible materials and minimal cavity as possible; types include (a) continuous living wall systems (b) modular soil free walls or (c) modular soil based systems.

Appendix 1: Notes on Granite Detailing



Granite rubble – Aberdeen’s oldest buildings are formed from granite rubble. These stones were hand-gathered before quarrying started. They often comprise a range of earthy colours.



Aberdeen Bond – The distinctive couring pattern, using a stack of three smaller granite offcuts (from the quarry sett-makers), was efficient and adds interest.



Ashlar blockwork – A standard light-grey ashlar-cut granite block. Ashlar blocks typically measure approximately 300mm in height and between 400mm and 800mm in length.



Aberdeen Art Gallery – the use of a rough-faced pink Corrennie base-course adds interest to the façade below the light grey Kemnay tooled blockwork.



Decorative detailing – The hard-to-work nature of granite meant that decorative carvings were difficult and costly to achieve. As a result, ornate detailing is rare in Aberdeen’s buildings.



New next to old – This photo shows the importance of blockwork size in respecting context. The new granite (right) blocks are not large enough to match the existing.

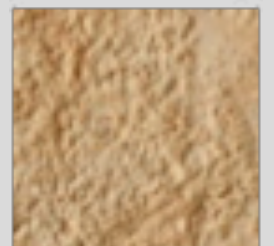
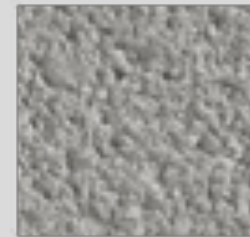
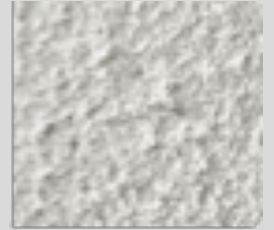
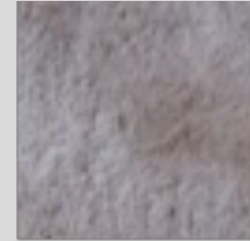
Appendix 2: Brick bond and coursing detailing

Images to follow

Appendix 3: Mortar jointing

Images to follow

Appendix 4: Render colour palette inspiration



Appendix 5: Harling traditional stone buildings

- New harling/render should be based on evidence of previous use of the material on the building
- Traditional lime-based render allows the wall to absorb and evaporate moisture effectively
- Where a building is in a conservation area, or is listed, planning permission and/or listed building consent may be required to render the building and consultation with the Council's Conservation Officer is required
- Historic cement renders should only be removed if found to be causing damage
- The application of limewash should likewise be backed by evidence of historic use
- As a general principle the harling should always be weaker than its backing material
- Original margins around windows and doors, and corner quoins in stone or brick, must be carefully respected and should not be harled over. Where no margins exist, the harling should be carried into the window in the original manner. Raised margins around windows should not be formed artificially in render
- Where harling stops against dressed stone masonry care must be taken not to form raised edges which are vulnerable to water

ingress. Details such as raised margins and string courses offer protection, allowing the harl to be tucked in behind.

For detailed advice and guidance on mixes and types of harling, please see [Historic Environment Scotland Managing Change: External Walls](#) and [The Scottish Lime Centre Trust](#)