



Materials

External building materials and their use in Aberdeen

Technical Advice Note
March 2020

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1. Introduction

Aberdeen the ‘**Granite City**’, has a distinctive ‘sense of place’ at its core. The production of local granite is now significantly reduced 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. 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 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.

1.1 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 well 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



2. 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, giving the city names such as 'The Granite City' or the 'Silver City'. Granite gives our city its local identity and our planning policies seek to protect our built heritage and shape future development.

Whilst some local granite is 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. This advice illustrates that with careful consideration of materials, colour and detail, new place can be created that respect Aberdeen's local context.

Development should also be 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 can root people 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 local distinctiveness, new development must select materials which will provide a successful design solution. 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. There are also innovative examples such as green roofs/walls, unusual colours and textures of cladding which offer creative design responses to their context.

Union Street – Aberdeen's Granite Mile



Regardless of the material chosen, there are several aspects involved in the selection and implementation of a material which are important. These include more aesthetic qualities of **colour, texture, module size, detailing, jointing, finish**, as well as the evaluation of **contrasting or complementary** approaches to design, and **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. Material choices should also take consideration of susceptibility to vandalism dependent on the location used.

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 into consideration the whole life-cycle and sustainability of materials, including re-use.
- consider how the chosen materials respond to future climate



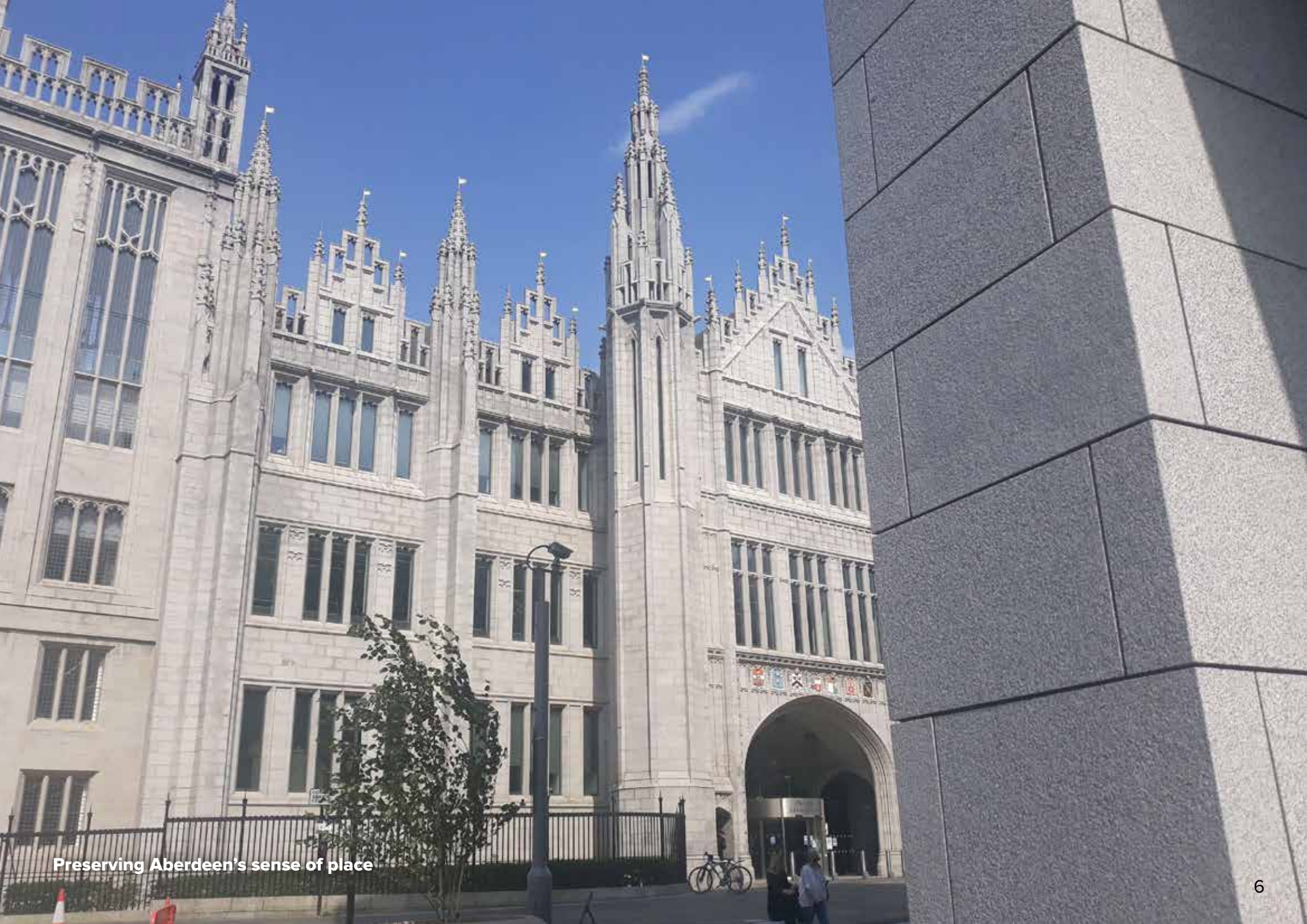
The Silver Fin The frontage faces onto Union Street, the use of light-grey granite cladding respects the street's granite heritage and colour, whilst the use of glazing in the taller element behind helps to reduce its massing



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

3. Granite

3.1 Historical context

Aberdeen, 'The Silver City', is a name derived from local granite which dominates the city's buildings, with the stone's mica sparkling 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 grey granite buildings. 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 buildings are generally built with rubble walls (of a more earthy colour palette), with relatively unworked and gathered granite of varying shapes and sizes.

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 the north-east had an abundant local source of high-quality granite from Rubislaw and the nearby Kemnay, Dancing Cairns, Craigenlow and Corrennie quarries, amongst others. This resulted in a high proportion of Aberdeen's inner city and city centre buildings being constructed of local granite.

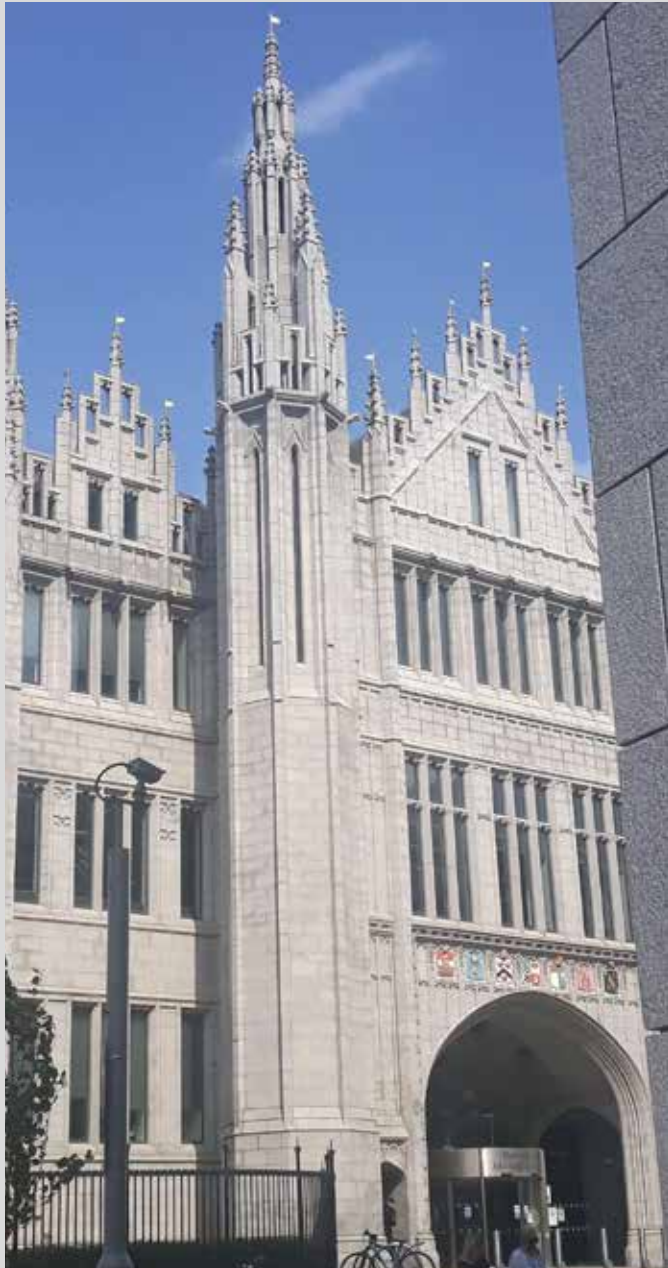
Granite Properties

- **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.

By the mid-to-late 20th century, local granite quarries were largely exhausted. Combined with an increase in the availability of cheaper, imported granite and the use of other building materials in recent decades, it has become increasingly difficult and costly 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

3.2 Contemporary use of granite

Granite is synonymous with Aberdeen's heritage and townscape character. It's existing granite built heritage should be retained wherever possible, in order to preserve and continue the city'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 imported granite could be seen as an obvious material choice for new buildings in the city, it is important to note that its use 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 is considered appropriate on new buildings in historic settings, the panels should be coloured, sized and coursed to reflect the detailing of surrounding buildings.

3.3 Detailing and Colour

Where new granite is proposed, care needs to be taken to ensure that it is a good match to the existing stonework in every aspect including: colour, size, finish, coursing and detailing.

Where new buildings in historic contexts or extensions to existing granite buildings are proposed, a choice is to be made whether to use a contrasting yet complementary material with a clear distinction between old and new, or to carefully replicate the existing specification. 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 a significant amount of architectural embellishment such as intricate carvings, instead often relying on differences in colour and finish for aesthetic value. What embellishments are present tend to be of a robust, elegant detail. 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 it is refined, strong and unfussy. Typically the quality of granite and its worked finish in building façades will be superior to that of the lesser side and rear elevations. Façades are often finished with fine ashlar blockwork and secondary elevations constructed from granite rubble.



Intricate carvings, such as those on the Archibald Simpson's public house building on Castle Street (originally the North of Scotland Bank), are rare. The majority of granite façade detailing in the city is robust and elegant.



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 successfully on new buildings in Aberdeen such as **Marischal Square**



3.4 Technical considerations

Retention & re-use of existing granite

- Existing local granite contributes to Aberdeen's identity and distinctive sense of place. All existing granite should be valued, retained and re-used.
- 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.

New granite blockwork

- Where the context allows, imported granite can have a role to play in 21st Century development in Aberdeen.
- 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.
- Historically blockwork sizes were approximately 300mm-370mm in height, with lengths between 400mm and 800mm, giving the blocks a horizontal, rectangular proportion.
- It is important to ensure that where new blockwork is proposed, the appropriate type of mortar mix and joint is utilised.

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 and the cladding is read as a contemporary addition.

- Care must be taken to ensure that module sizes and colours take cognisance of the surrounding context, which will give clues as to appropriate detailing.
- In contemporary use, a greater range of module sizes and coursing patterns may be possible, particularly on larger buildings where traditional coursing may not be appropriate.

Alternatives to granite

- The use of new granite can, in some circumstances dilute the city's existing local granite heritage and the granite's local embodied craftsmanship.
- As a result, the use of contrasting materials other than granite, such as those featured elsewhere in this document, can often be more suitable in preserving the city's sense of place.

Colour

- Although Aberdeen predominantly sees a palette of light-grey granite, there is a wide range of colours that have historically been used in the city including pinks, earthy browns, blues and even a wide variation of greys.
- The use of well-chosen alternative colours can add interest to façades, as an alternative to intricate carvings and other architectural embellishments.

4. Brick

4.1 Historical context

Although not as immediately obvious in the 'Granite City', there is a rich tradition of brick manufacture and use 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 from the 18th Century, with brickworks ceasing operations in the early 20th 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

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
- Robust and hardwearing

areas of Aberdeen is the use of red coloured brick as the coping for a 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 pre 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'.

4.2 Contemporary use of brick

Although contemporary uses of brick are not necessarily consistent with the historical precedents, the historic legacy of brick in Aberdeen is strong and therefore its use today remains 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 the range from blue to dark grey granite and cream/buff and pink/brown 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'



4.3 Technical Considerations

The use of bricks could take cues from local vernacular

- use on side and rear elevations
- stair towers
- window surrounds
- boundary wall coping
- chimneys
- porches / door detailing

Detailing

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

- **Alternating courses of vertically laid bricks with walls of horizontally laid bricks to add detail**
- **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 wall to offer visual interest**

- Using different sizes and shapes of the same brick to offer relief and expression to elevations
- Brick detailing for porches to break up elevations
- Specialist bricks can be used which provide a home for wildlife, such as for bees, bats and birds.
- White glazed bricks utilised for light wells and courtyards to aid light reflection
- Care and attention should be taken when painting brick facades, as mortar joints are more vulnerable to water penetration

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 deep plum-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 and compliment against the grey tones of granite.

Mortar joint accounts for approximately 15% of the overall wall covering, therefore the colour of the mortar and style of pointing used is also important as certain mortars and styles suit contemporary uses.



Buff coloured brick used in new housing development at **Countesswells** uses brick to 'bookend' terraces and porch detailing to offer contrast and detail against rendered buildings



Grey brick used at 2 Powis Place student accommodation offers a successful contemporary contrast to the grey tones of Aberdeen



Red brick rear elevation of 111 Gallowgate shows the historic use of red brick on rear facades



Buff toned brick used at Craiginches offers a contemporary contrast to the surrounding granite of the tenement buildings in Torry

5. Render

5.1 Historical context

Render or 'harling' is a traditional, principally wet dash, finish – originating from the term to throw or 'hurl' mortar at a wall.

Harling is an applied exterior surface treatment to buildings with the primary purpose to provide a weatherproof shield. If the harling is pigmented with a colour it avoids the need for repainting.

Traditionally render (consisting of a mix of lime, water and aggregate) is thrown, or cast-on, resulting in a rough textured surface finish.

Harling is widely found in vernacular solid wall construction buildings; the finish being particularly suited to our 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 and where irregular and weak joints would allow water ingress.

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 hydraulic lime remains the most suitable finish for traditional random rubble stone-built properties as it allows breathability (please see Appendix 2 for further information).

Over time an overall patina develops with age, which is a characteristic feature of traditionally harled surfaces.

In recent decades traditional lime harling gave way, most likely due to the rise of stone construction, before the later onset of modern renders.

5.2 Contemporary use of render

Render as a modern building material has a much wider use and application than on solid stone construction. Modern renders include a higher proportion of cement, and acrylic or silicone (for their quick drying and plastic qualities) are also now used in modern 'enhanced' render specifications.

The use of different types 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 variety of colours, including cream, buff and grey, with a recent trend towards white renders.





Smooth finish white render at Stoneywood – white render works well at 2-storey scale as is accessible and serviceable for maintenance

Render Properties

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

Random rubble granite stone walling in Aberdeen gives cues towards the tonal range of render colours



Traditional harling in **Old Aberdeen**



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



5.3 Technical Considerations

Use of render

- Render can be applied in a variety of different finishes (smooth, rough, sandfaced, pebble dash, scrapped etc), the suitability of which will be dependent upon the building and surrounding context.
- Render type should be considered as part of the whole building design – i.e. ensure that the type chosen is suitable for backing material, taking 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 level, especially around entrances, and therefore careful consideration of this should be taken at the design stage.
- Render used when extending properties, must be designed to either complement the existing building or for contemporary design to offer an assertive contrast.
- Render used when extending traditional buildings or in historic contexts should be a wet-dash finish, with a through-colour.

Detailing

- 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

- Cues should be taken from the surrounding context to inform new render colour choices.
- A wide range of colours is available for modern renders. Matching render to the buff, pink greys 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'.
- White and off-white renders often do not weather particularly well in Aberdeen's climate, particularly on exposed facades. This does not preclude the use of white render, however consideration must be given to context and maintenance implications
- Light and paler tones have reflective qualities to aid cooling of buildings in predicted warmer summers.

6. Metal

6.1 Historical context

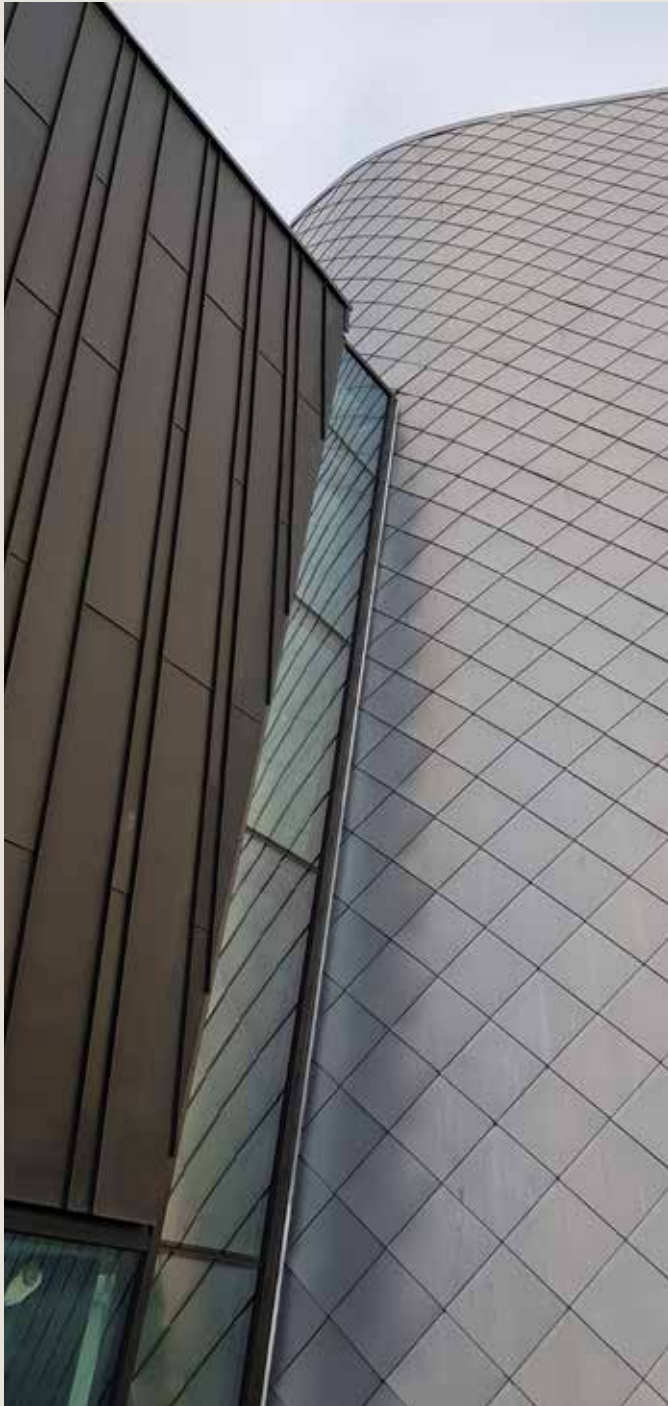
Historically in Scotland, the use of metal as a material in the external envelope of buildings has generally been restricted to roofing and functional elements such as guttering, rhones (downpipes) and, to a lesser extent, architectural embellishments such as Juliet balconies, cast iron railings and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

The historic use of metal on buildings in Aberdeen's 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 historic public buildings use 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 historic use of metal as an architectural embellishment in Aberdeen has otherwise been often limited.

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





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.

6.2 Contemporary use of metal

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 Craiginchies development.

6.3 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.

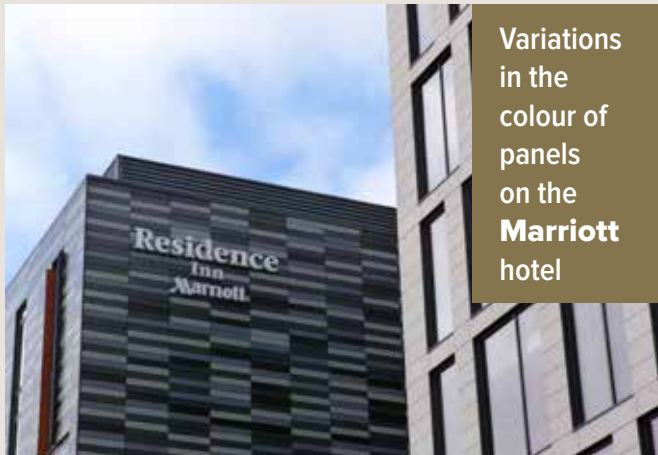
Traditionally metal roofing (particularly lead) involved the use of raised timber battens, around which each sheet of metal would be joined together. Whilst timber battens are no longer required, modern 'standing-seam' metal cladding replicates the aesthetic and the jointing adds visual interest to the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



6.4 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.

7. Timber

7.1 Historical context

Early timber construction influences across Scotland were more akin to Scandinavian countries such as Norway and Sweden due to established trade routes for timber. 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 is not as widely evidenced in Aberdeen due to the dominance of the granite industry. The use of timber was primarily for the construction of 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. These 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 perhaps as they were perceived to more closely emulate masonry construction.



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



Traditional timber sheds in **Footdee**

7.2 Contemporary use of timber

Approximately 75% of new homes in Scotland are timber-frame construction, however few buildings in Aberdeen use timber cladding to 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, a 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 works well in the domestic garden setting.

7.3 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 offer the same look as timber cladding but requires less maintenance – however can suffer from discolouration and degradation over time.
- Vertical cladding is more akin to the Scottish vernacular and allows for faster water shedding down the vertical plane of the timber, which is beneficial to cope with predicted increased rainfall.
- Opaque coatings should be moisture permeable to allow timber to ‘breathe’. However, there is a 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 weathered finishes which require less maintenance..
- 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.
- ‘Wood effect’ products offer the same look as timber cladding but we finished to minimise maintenance.



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)

7.4 Detailing

Aberdeen has a maritime climate, therefore the control of wind-driven rain penetration into the wall is important, including to help guard against 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

7.5 Colour

Timber cladding can use traditional staining and painted colours in both bright and light, and more darker-tones with a stained finish offering longer-term maintenance benefits. However, the



success of a project 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, which forms on the larch, giving a surface which

complements natural stone walls such as granite. Equally, small outbuildings, timber shopfronts, 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 low-maintenance skin to timber and this has a characteristic dark black colouring.

8. Glass

8.1 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 and windows.

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 formats.

Despite its arrival as a building material, glass remained prohibitively expensive to all but 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 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

8.2 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 surface and colour contrasts, as well as balancing solid, and void in elevational composition. Where appropriate, buildings constructed predominantly or entirely with glass should incorporate high-quality detailing to add visual interest and care needs to be taken to ensure that glare and internal lighting do not adversely affect townscape amenity.

8.3 Technical Considerations

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

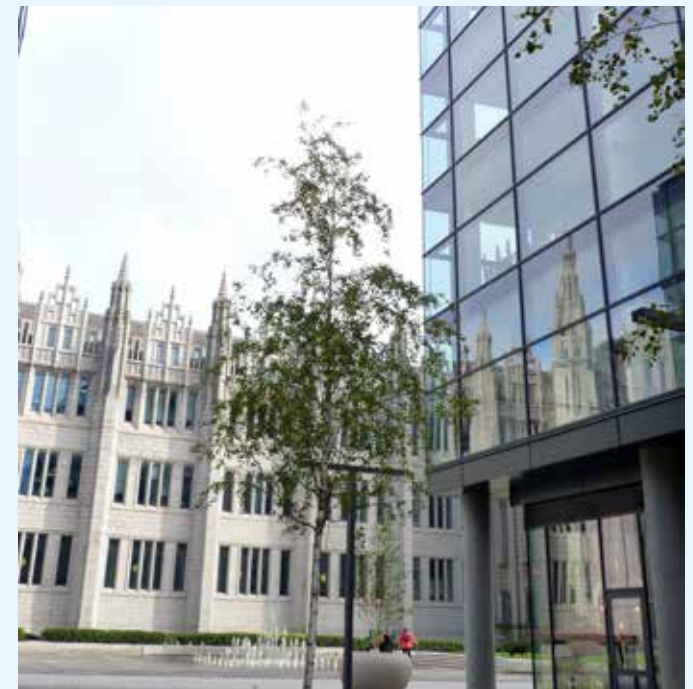
Glass Properties

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

- Glass often sits well alongside a more solid material as a complementary contrast.
- Glass will often be appropriate in extensions to existing buildings due to its transparent and reflective qualities, offering visual distinction between old and new.
- 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**

8.4 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.



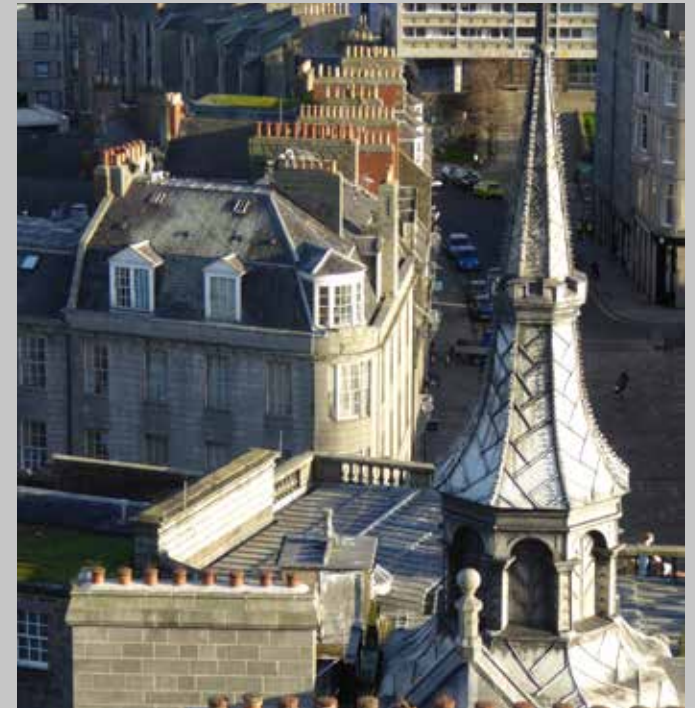
9. Roofing

9.1 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 periods of construction used red clay pantiles 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. Although pantiles would have existed up until the 19th century, surviving evidence is extremely limited as they have been replaced over time and often 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, large grand buildings of granite and slate set the urbanised 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 on roofs with shallow pitches due to its better rain resistance properties than courses of slate at pitches below 23 degrees.



9.2 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. This 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 given to 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 photo voltaic tiles can be integrated into the roofscape.

9.3 Technical Considerations

- In order to retain and reinforce the city's roofscape context the preference will be for **grey-coloured roof materials**. **Red and brown roof tiles in new developments will only be supported as part of a tonal range 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.**



10. 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 roofs 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.
- Soil 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 is 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 coursed 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-370mm 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: 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](#)

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