

Chapter 9

Detailed Design of Buildings

9.1 The design process

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'Architecture is to make us know and remember who we are'.

SIR GEOFFREY JELICOE



Roof detailing of the Harbour Lights Cinema has resulted in differential weathering of the timber finishing, marring an otherwise exquisite façade.



This mixed use development shows a balanced composition of all elements - Birmingham.



Inappropriate 'suburban' architecture in sharp contrast with more appropriate 'urban' architecture - Southampton.



Edwardian terrace of small shops - London Road, Southampton. Fascias are slightly topsy-turvy but well colour co-ordinated except for the blue on the right hand corner. The modern building on the left corner acts as an effective stop, although the two lower storeys are over scaled.

9.0 DETAILED DESIGN OF BUILDINGS

9.1 The design process

Objective

To promote high quality, aesthetically attractive development.

This chapter gives guidance on meeting Local Plan policy SDP 9: particularly parts i, ii, iii and iv, and H 10 concerning the visual impact of the building and requiring high quality design, materials and detailing.



A steel framed building with brick panels and glass façades - Birmingham.

9.1.1 Proportions: materials, structural and aesthetic

A building is considered to be of good proportions if the design achieves a balanced composition of all elements. The proportions of a building are determined by the relationship between its height, width and depth, and its features, such as entrance structures, bays and towers. In addition the proportions defined by the building's materials and its structural design are important. The proportions of a building should relate to the materials and structural design to create a harmonious composition. They should also relate to any appropriate proportional rhythms in the context. Common building materials used in Southampton are stone and render, brick, concrete facing block and cladding panels.



A brick clad concrete framed building - Birmingham.

Stone is a traditional building material in Southampton. In particular, Isle of Wight limestone (Quarr and Bembridge); Caen Stone (for detailing); Portland Stone (since about 1920); Purbeck and Pennant Stone (for paving flags) and granite and Pennant (for kerbs) have been used. Render has also been traditionally used, as it can be detailed to give a similar appearance to stone but is cheaper. Stone laid with much narrower mortar courses than used with brick or concrete blocks has a homogeneous appearance, which emphasises the proportions of the whole building rather than that of the stone block. Stone and render are most appropriate for the façades of buildings of about three or four storeys.

Brick has been used since the Middle Ages (Southampton had its own brick maker from the 16th to 19th centuries) and more extensively since the late nineteenth century. It is aesthetically suitable for small and large buildings. Bricks may be used vertically to emphasise the vertical at, for example, external corners.

Concrete facing blocks have much cruder proportions than bricks (height to width ratio of 1:2 to 1:3 respectively), which give no significant bias to either the horizontal or vertical plane. They are best used on larger scale buildings where the massing is dominant providing they are of a high quality and appropriate to the context.



An innovative approach to façade design where the roof becomes part of the elevation - new Magistrates Court - Southampton.

Cladding panels can be designed to any specification giving the designer opportunity to proportion them to suite the overall proportions of the building. These would therefore be most suitable for large-scale buildings where the proportions are set by the building's structural design.

Structural frames used in the construction of large buildings, are usually load bearing steel or reinforced concrete. Structural grids, dictating the position of walls/columns and floors, may be set out as a multiple of a modular unit, such as a brick or the width of a car parking space. The spacing of the

horizontal grid should then be determined in relation to floor levels and window heights, to co-ordinate with the vertical grid of structural columns.

Windows, doors, openings and sub elements such as window frames, mullions and transoms, sidelights, fanlights, glazed doors, soffits and fascias should be proportioned in relation to the whole façade and may need to relate to the scale of the local context. Upvc is an inappropriate material for use in the City Centre, as it restricts variety in use of colour and tends to be mass produced in over scaled sections and poorly proportioned profiles. This is particularly true of window frames, doors and fascias.



Balconies to the left of the photograph are designed integrally as part of the form of the building. The strong frame to the windows on the right emphasises the piano nobile - London.

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9.1.2 Ordering principles

New buildings will be assessed in respect of the following characteristics:

- Axial or symmetrical design - expresses formality
- Asymmetrical design - expresses informality
- Hierarchy – relative importance in the townscape

- Rhythm and repetition - relationship to existing townscape patterns such as locally common vertical or horizontal rhythms
- Transformation – a reasoned break from an existing ordering system; particularly appropriate for a landmark building.

There is likely to be a balanced solution in each context to the question of the degree of simplicity or diversity. Designs should demonstrate an harmonious balance with the diversity or simplicity of the context townscape.



The new white rendered building responds well to the existing rhythm of Georgian window proportions and the scale of the street.



In these two examples the modern office buildings emphasise the horizontal by strip windows and panelling in line with existing storey heights, but fail to recognise the vertical rhythm of the existing façades, windows, bays, chimneys and plot widths - Southampton.



Glazing panels on the 'prow' of the Harbour Lights Cinema are proportioned according to the Golden Ratio. This is accepted as the rectangular shape with the most harmonious proportions. It's sides have the ratio of 1 : 1.618.

9.1.3 Planar elements of building form

A building form is defined by a number of vertical and horizontal inter-linked linear planes. Emphasis should be given to one or more of these planes to express elements that relate to the surrounding context. A building expressing its horizontality leads the eye quickly along the length of the façade and beyond. A building emphasising vertical linear planes encourages the eye to stop, linger and look upwards.

The design of façades should be manipulated by the introduction of a variety of planes at different depths from the frontage line. This will help add interest, by providing depth and reduce the scale of the façade. Elements, such as columns and entrance canopies, can be used to define planes and add depth to the



Columns forming a colonnade around Covent Garden add depth and interest as well as providing a sheltered place to window shop - London.



The façade facing the road is emphasised horizontally by the transformation of a regular plan to a sweeping of render and strip windows - Southampton University.



In this department store, the roof plane is emphasised by deep overhanging eaves, and the set back of the top storey. The proportions of the glazing on the corner and glazed canopy emphasise the entrance to this department store in Amsterdam.



A variety of planes of different depths and materials add interest to a large façade - Barcelona.

building form. Columns can be used to articulate the edges of a building form in space, as well as the edges of an exterior space defined within a building form.

By using a limited number of changes in colour, material and texture greater emphasis can be placed on one of the vertical or horizontal planes; for example, to mark the entrance to a building.

The roof, in particular, should be bold and articulate. The verge and eaves should have sufficient visual mass, in relation to the height and detailed design of the façade and surrounding context. Roof level services, such as air conditioning units and vents, should be designed as integral features of the roof.



This roof plane is not sufficiently dominant; the white fascia boarding is inappropriate for an urban location.



Ventilation stacks can be used to articulate the roof space.



An articulate way of juxtaposing roof planes and chimney ventilation.

9.1.4 Approaching the building

The approach to a building should be designed as an integral part of the building. This guide advocates the importance of perimeter block, which imparts greater emphasis on the siting of the entrance in relation to vistas of the building from a distance and the need for markers to indicate the location of an entrance from a distance. The approach should emphasise the pedestrian route to the building and should face outwards into the street. All approaches should allow suitable access for all people, including disabled and partially disabled persons, and push-chair users where practical. Refer also to 5.1.2 'Access'.



The entrance to the new Magistrates Courts is asymmetric but has formality and a balanced composition - Southampton.



The symmetry of approach to The Lowry in Salford is reflected both in the entrance facade and the paved forecourt.

9.1.5 Entrances

The main entrance to a building should be clearly identifiable over other secondary entrances or exits. Depending on the exposure of the entrance to the weather, it may be appropriate to recess the entrance or project a canopy over it to afford some protection. Additional emphasis should be placed on the entrances where additional variety in the façade is required. This should be achieved by making the entrance appear proportionally lower or narrower and deeper by contrasting the darkness of the entrance against the lightness of the façade, or by embellishing the entrance with ornamentation.

Entrances should always be integral to the design of the rest of the building. They should never be built solely as an extension to an existing entrance but, if necessary as part of a new facility which links internally to the existing structure.



The two storey recessed entrance to this mixed development gives an impression of grandeur which is further enhanced by the stepped approach - Birmingham. Ramped approaches are also provided.



An ingenious use of sculpture forms the pivot for a ramped approach. A radial glass canopy embellishes the entrance.



The entrance to these innovative public toilets in Winchester is defined by a large pivotal timber clad door and protected by a canopy of suspended sheet glass.

9.2 Detailed design

Objective

Detailed design should be meaningful, fit for purpose, attractive and sustainable.

9.2.1 Quality in the detail

The overall design concept for the building form must be carried through to all external details, which must be fit for their purpose. The details and materials used should be appropriate to the context of the building i.e. both its urban context and its potential exposure to coastal weather conditions, and also to potential misuse. The quality of these details should reflect both the importance of the building within the hierarchy of the urban townscape as well as the anticipated life expectancy of the building.

Under the Construction (Design and Management) Regulations 1994, all designers have a duty to 'design out' or minimise potential health and safety risks in the design of buildings. Developers must also meet the statutory requirement to carry out a fire risk assessment of their proposals. Innovative detailing may be required to enhance the design of buildings whilst reducing health and safety risks to persons who may be required to maintain the building in the future.



This sculptured stone owl embellishes the doorway at the entrance to the Central Police Station in the Civic Centre, Southampton.



Ventilation grilles and other surface mounted services should be placed so as not to distract from the overall design.

The position of electrical fixtures and fittings on facades, such as burglar alarms, ventilation grilles and street lighting, should be planned during the design process. They should not be placed arbitrarily, but in relation to openings and the design of the façade as a whole, with cables concealed in ducts internally or behind fascias.

9.3 Colour

Objective

To ensure that colour is used sensitively and creatively to achieve an exciting and attractive townscape.

“While line is only measurement, tone is measurement and weight, colour is quality”
Paul Klee.

“Rarely have cities been considered as colour compositions. But if we compare one with another – or different parts of one – this aspect becomes obvious. Roofs, walls, doors, windows and other details combine in a variety of ways with one another and with the background to give a unique expression to the place. But the picture is not static. As we move about the streets not only do we look for clues in the familiar language of colour – colours for post-boxes, telephones, fire stations, shops and public houses – but sub-consciously we read the pattern of all the colours in our surroundings, matching them with our mental maps, it is from these and their relationships that we judge the character of places.”

Michael Lancaster.

This section supports the Local Plan policies SDP 1 and 9ii and IV concerning the quality of the built environment. Whilst planning permission is not required to paint buildings (unless they are listed or subject to an Article 4 Direction), new development will involve control of the façade colour. The following



The alien pink colour of this public house in Bedford Place is particularly visually disruptive.

sections give guidance on how building colour will be assessed in the Southampton context. Appendix 3 provides a commentary on the nature and use of colour.



This fascia is too large and the colour too dominant for the shop size, although the red framing members are acceptable.



The large red area competes for dominance with the white area - Paris.



This live/work building in Auckland successfully uses an understated area of red to create a visual target.

9.3.1 Colour choices

Colour choice should depend first on a careful survey and analysis of colour in the surrounding buildings and landscape in different lighting conditions. As well as the context and cultural considerations the analysis should cover colour objectives (including advertisement) and consider means of colour co-ordination. Any relevant colour control in this document or other City Council documents should be considered. The survey should include colour photographs and sketches accompanied by a palette of colours observed in the context. Colour proposals should be made from a range of colours which co-ordinate with those existing.



These two photographs sum up the colour character of Southampton; South Western House (top) with its red brick and white detailing and (above) the white painted, rendered façade of the Royal Southern Yacht Club building and the buff stone and red tile roof of the Wool House.

Avoid attempting to match colours of different materials with one another; some degree of contrast will usually be more effective and easily achieved.

Neutral colours such as greys and muted shades of other colours can form appropriate backgrounds to brighter more saturated 'target' colours. Saturation is the intensity or vividness and purity of a colour. The right balance will involve large areas of neutral or weakly saturated hues and comparatively small surfaces of strong or highly saturated colour.

Avoid using too many colours and consider limiting the use of strong colours (except white) to restricted areas such as frames and details. Consideration should be given to how the use of colour can enhance the safety of visually impaired persons (Ref. Colour and contrast).

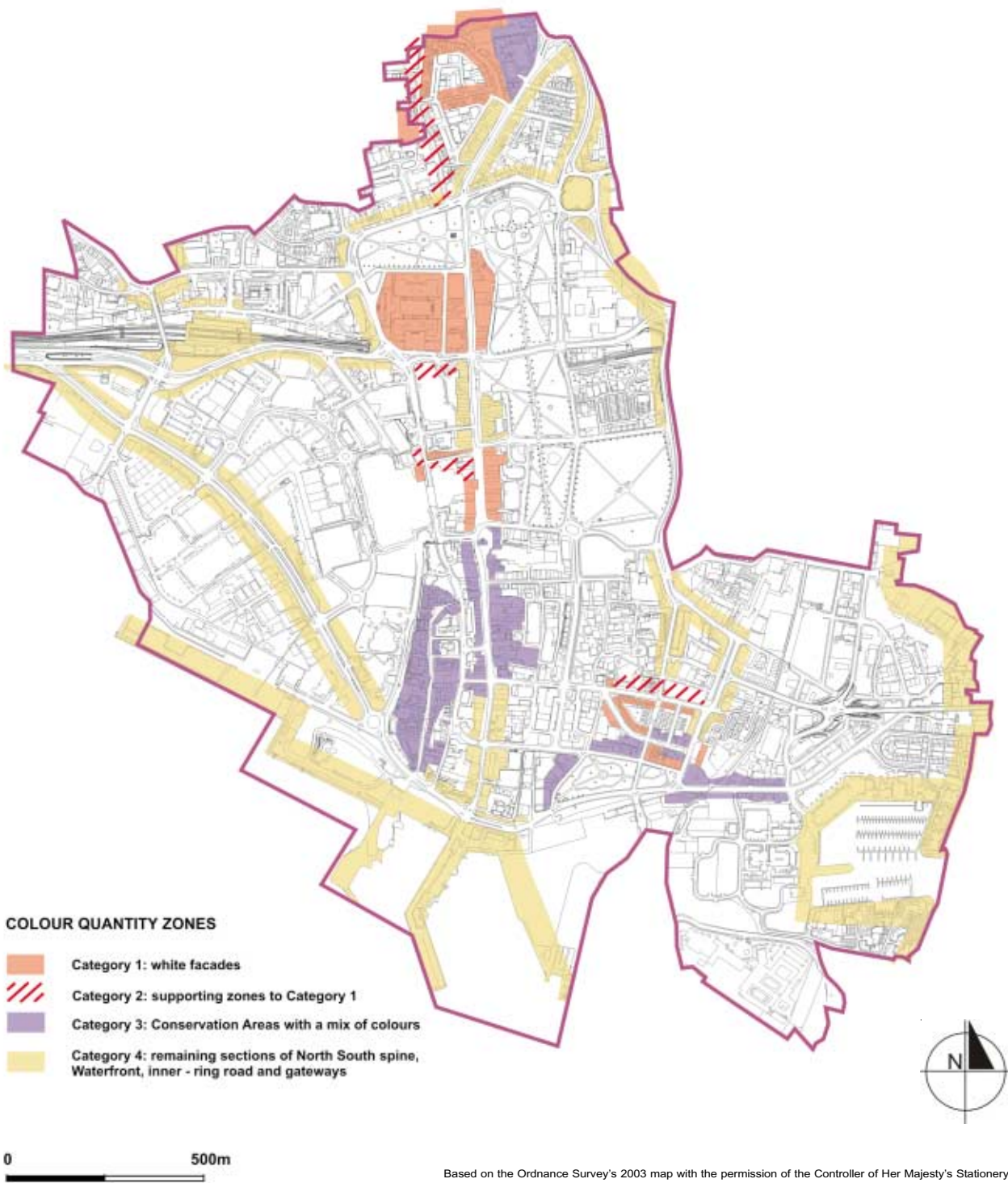
9.3.2 Southampton colour

In terms of colour Southampton has much in common with London. Whitish Portland stone, white painted stucco, red and yellow brick and yellow stone are dominant in both cities. In Southampton white stucco, and Portland stone are most common, with a lesser proportion of red brick and yellow / buff stone / brick. The Town Walls are built of a variety of yellow-grey and buff stone.



Red/buff/white of buildings and boats, and blue of sky and water is characteristic of the City Centre as a whole.

Plan 9.1 SOUTHAMPTON COLOUR



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The climate in Southampton brings blue skies more often than most other areas of Britain. Combined with the reflections in the waters of the Rivers Itchen and Test and nautical associations, when used

within the limits specified above, blue is therefore an appropriate colour for Southampton. Limited areas of blue could be used, for example, for door and window frames.



Iconographic buildings such as the Portland stone Civic Centre make a major impact on the townscape.

Plan 9.1 identifies a series of categories or colour zones. The predominant existing colours of certain areas are identified, with which new developments should be co-ordinated. This will help improve the townscape and conserve existing areas where townscape colours contribute significantly to the Southampton character.

- **Category 1**

A series of areas finished in white painted stucco or Portland stone where only creams, white and off whites will be encouraged as main colours of façades.

- **Category 2**

These are areas neighbouring some of the Category 1 Zones. In order to balance the adjacent existing white façades developments with a significant proportion of the main façades in white, cream or “off white” would be encouraged.

- **Category 3**

These are parts of conservation areas with an existing mixed palette of façade colours and a high quality townscape. Main façade colours of either cream / off white, buff (as in yellow stone or brick), or red (as in brick or terracotta) would be encouraged.

- **Category 4**

This category includes all other parts of the city centre exposed to very high levels of vehicular or pedestrian traffic, where the quality of the townscape is therefore particularly important. Main façade colours of developments, which reinforce the local predominance of white or cream, would be encouraged.

Fenestration, door and shop / office fascia and grille colours in all the above zones will be subject to careful scrutiny. Near black or white for window and door frames will be most suitable. Brilliant or ‘Day-glow’ colours are unlikely to be acceptable. Each development will be assessed individually based on its merits.



The bright colours of the façade within the block pick up the more diffuse colours of the stone building in the left foreground - Paris.



This turquoise canopy is culturally at odds with the Regency architecture of the building.



The yellow window frame gives inappropriate predominance to this terraced house in the Old Town.



Corner buildings are particularly significant in determining the colour character of an area, and emphasising the colour.



The intrusive purple on this Oxford Street shopfront is not in sympathy with the neoclassical architecture in this conservation area.

There is a shade of bluish/green used as a supplementary colour to a mainly white façade in some buildings (Above Bar, Southampton Institute and the new West Quay Shopping Centre development). This generally sits well in the Southampton townscape although it can appear timid on some of the older buildings. This is echoed in the green of weathered copper cladding on some prominent buildings such as the Civic Centre and St Michael's Church, which is suggestive of the City's maritime heritage. However because of the high colour intensity of verdigris, copper cladding should be used with caution.



Two examples of blue/green.





The red and yellow brickwork on the right is effectively picked up by smaller elements in the adjoining blocks but this colour co-ordination is disrupted by the dramatic changes in form and pattern.

9.4 Sustainability aspects of detailed design

Objective

To promote sustainable building and to contribute to sustainable communities.

9.4.1 Sustainable development according to HMG

Sustainable Development; The UK Strategy, the Government's strategy document on the matter has the following to say about sustainable development:

"The Government supports the principle of sustainable development. This means living on the Earth's income rather than eroding its capital. It means keeping the consumption of renewable natural resources within the limits of their replenishment. It means handing down to



The successful colour co-ordination of the red brick and white tower block with the context is ineffective because the tower building is so much out of scale with its neighbours.

successive generations not only man-made wealth but also natural wealth such as clean and adequate water supplies, good arable land, a wealth of wildlife and ample forests." Cm. 2426 (1994)

Sustainability of development motivates much of the guidance in this document. This section sets out a checklist of sustainability considerations for the design development of buildings. The Local Plan requires development to be sustainable. In particular SDP 13 requires development to be designed in a way which minimises their overall demand for resources.

© Bill Dunster Architects



The mixed use BedZED development shows how popular highly sustainable projects can be; all the flats were reserved without advertising - London.

The construction process produces more pollution than any other sector. Half the greenhouse gases emitted by the industrialised world arise from the use of energy related to the transport, construction and maintenance of buildings. Buildings also profoundly influence users' mental and physical health and motivation. Indoor air quality (IAQ) is particularly important in this respect. Chapter 8, Adaptability is also relevant to the sustainability of buildings and sustainability considerations of the design development of exterior spaces are contained in chapter 5. Further detailed guidance is available in 'Greening Architecture', available from Southampton Environment Centre. Many of the details discussed below are not required to achieve planning permission but the Council is keen to promote them as good practice.



The highly energy efficient NMB Bank building - Amsterdam.



Portcullis House, London, is naturally ventilated.

Refer to Part L of Building Regulations for standards on insulation.

9.4.2 General

- The design statement should clearly state sustainable outcomes and how they will be measured.
- The scheme should be subjected to a whole life cycle analysis at the design stage.

9.4.3 Water

- Consider grey water recycling
- Introduce water saving measures
- Manage surface water to reduce flooding and allow water to enter groundwater reservoir quickly and safely.

9.4.4 Energy

Use the design process to minimise energy consumption and increase the proportion of renewable energy used. The approach to energy conservation should be a balance between super insulation, passive solar design and use of green energy.

- Renewable or green energy sources such as District Heating, CHP and Geothermal as primary supplier
- Passive solar design. The tolerable solar obstruction angle for Southampton giving a 5% loss of total useful solar gains is 16.5%.

9.4.5 Materials and construction methods

- Materials should be low maintenance, long life, durable, low in embodied energy and low in transport costs. They should be produced using renewable resources and environmentally benign processes and should be capable of being recycled.
- Choice of systems and methods of construction informed by sustainability principles
- Recover and recycle materials from existing buildings
- Prepare a waste management and disposal plan
- Avoid products that emit pollutants (especially for large internal areas) and reduce indoor air quality.

9.4.6 Transport

- Ensure good public transport access and minimise reliance on private car.

9.4.7 Tender document

- Contractors to produce 'operating instructions' manuals on the materials and techniques used and most efficient way of running the building
- Tender to include measures to minimise air, water, light and noise pollution during construction phase
- Tender to include environmental policy statement of contractor.

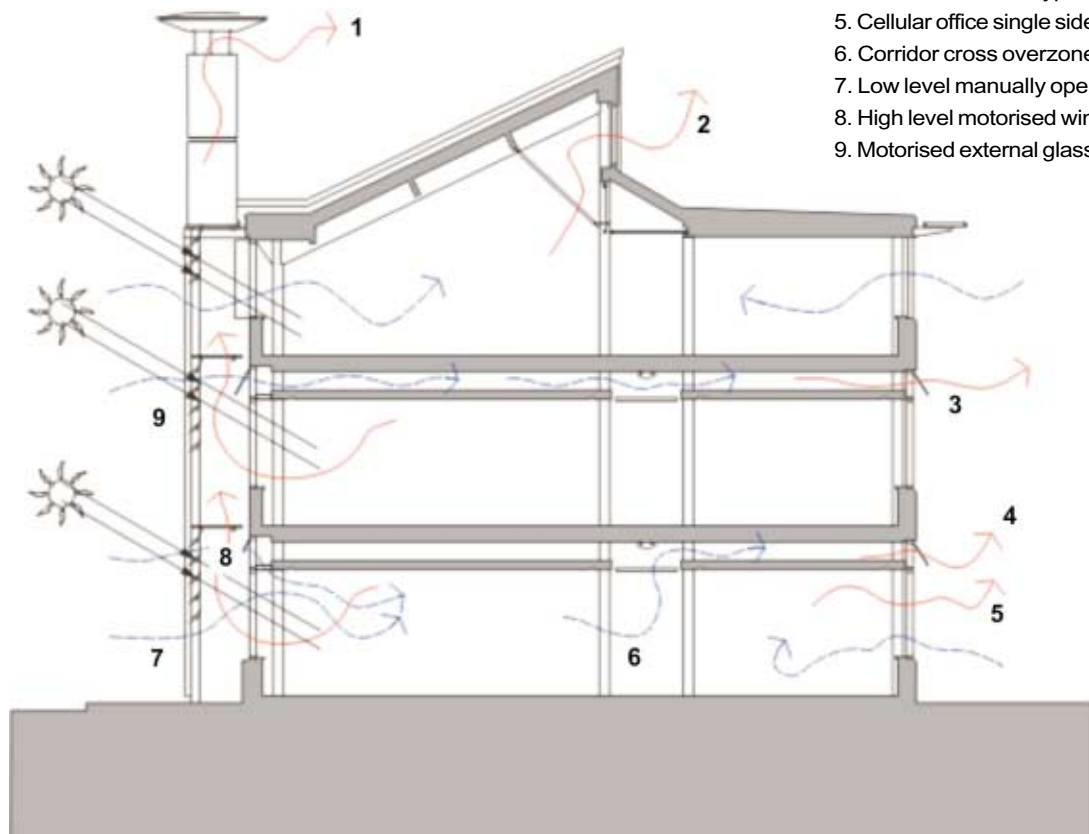
Advice on optimising the energy efficiency of new development is available from the Carbon Trust Energy Help Line 0800 585 794 or email

Admin@actionenergy.org.uk

Consultation is provided free for a minimum planned floor area for one building or group of buildings of 500m².

Design Principle 9.i: Every development of five or more units (or 500 m² and above for commercial buildings) should submit a sustainability strategy covering a whole life cycle analysis, conservation and management of energy and water and the compliance of materials selected with sustainability principles. New buildings should meet or exceed the excellent or good standard contained in the BREAM guidelines for business developments and Eco-homes guidance for residential and other developments.

The New Environmental Office, Building Research Establishment Office cross section



1. Stack ventilation for hot still conditions
2. High level BMS controlled ventilation
3. Night time purge through slab
4. Cross-ventilation bypass over cellular offices
5. Cellular office single sided ventilation
6. Corridor cross overzone
7. Low level manually operated windows
8. High level motorised windows
9. Motorised external glass shading louvres

© Feilden Clegg Bradley

9.5 Materials in use

Objective

Materials and detailing should be attractive and functional and capable of sustaining a building through its life with only limited maintenance.

9.5.1 Fit for purpose

The durability and type of materials, fixtures and fittings specified, as well as how they are detailed and finished are key to sustaining the condition and appearance of a building throughout its desired life expectancy. The suitability of materials to be used should be considered early in the design process, to minimise the costs of maintenance. The performance of a material and its detailing is affected by the weather and how it is used or abused by people.

9.5.2 Minimising the impact of the weather on buildings

Particular attention should be given to the performance of the design and materials used with respect to Southampton's coastal weather conditions.

Detailed specification should minimise the adverse effects of sun, rain, wind and air borne salts. The risk of deterioration of the building fabric caused by solar radiation through differential expansion and contraction, as well as fading of non-colourfast materials should be addressed, particularly on south facing elevations.

Rain, in particular, can cause unsightly staining and biological growth, which can hasten the deterioration of the building fabric. The extent and type of rain damage to the building fabric is caused by a number of variable factors: the porosity of the materials, the oxidation of materials, and the effect of pollutants diluted by the rain in the air.

When rain falls on the sides of a building any impediment, such as a window sill or sloping plinth, that slows down its natural progression to the ground is likely to cause staining and algae growth

and should therefore be detailed very carefully. Particular attention should also be given to exposed sites, which are more likely to suffer from wind blown rain and capillary action.



Poor quality concrete facing blocks show the effects of porosity in an exposed location.

To minimise the impact of the weather, consideration should be given to the following:

Aspect and location:

- Site exposure
- Possibility of sea spray
- North facing elevations (increased susceptibility to biological growth)
- Close proximity to trees and shrubs (can encourage biological growth and cause root damage to foundations; subsidence or heave).

Details:

- Drainage of surface water away from entrances and doorways
- Plinth/ground treatment to reduce rain splashing back at the base of the building
- Deep detail projections and drips (minimum 25mm for sills)
- Fixing of panelling and roofing materials using stainless steel fixings where possible and the correct spacings to resist wind damage
- Deep eaves and verge projections
- Weathering of timber surfaces
- Eliminating places for birds to perch.

Finishes:

- Sustainable self finished where possible
- Durable exterior quality paint or woodstain; preparation of the material surface, undercoats, primers and topcoats (marine quality and of an appropriate thickness should be used in exposed coastal locations)
- Galvanising processes with suitable primer.

Materials:

- Porosity of the material e.g. stone, brick, concrete; to reduce staining
- Resistance to frost attack e.g. stone, brick, concrete, clay tiles; to prevent spalling of surfaces
- Resistance to sulphate attack e.g. brick, concrete; to prevent efflorescence of salts to the material's surface
- Oxidation e.g. steel, aluminium, lead and copper; treatment of surfaces, such as lead with patination oil will prevent staining
- Catalytic corrosion e.g. between steel and aluminium; ensure that metals are isolated from contact with each other
- Expansion and contraction; to prevent fractures and structural weakening
- Colour fastness; to prevent fading.



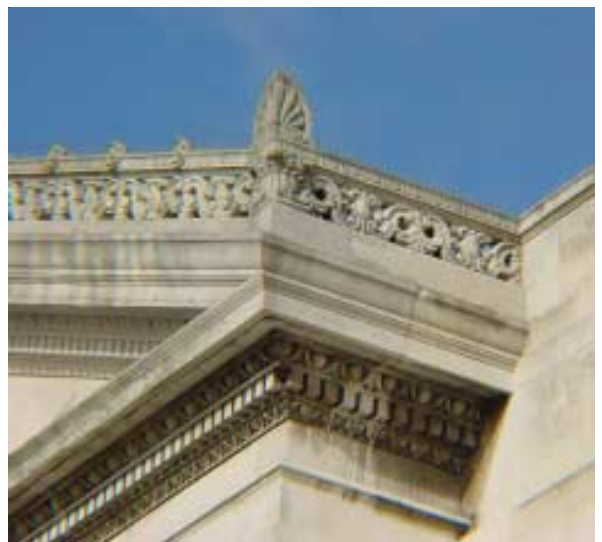
Use of wires and spikes fixed over ledges will prevent birds from perching.



Sulphates leach out of the concrete details causing severe staining.



A gravel bed adjacent to the brick wall prevents splashback.



Oxides in the rain channelled by a broken cornice wash away dirt on mouldings underneath.



Copper oxide stains on plinth.

9.5.3 Minimising the impact of use and abuse

The environment in which the building is sited should be assessed both for likely use and abuse. Buildings with expected high levels of people using them should be robustly finished.

Vandalism and abuse of buildings should be minimised by designing out potential risks, such as:

- Use of fragile materials, particularly at low level and at entrances e.g. glass should be specified in a strength suitable for the location
- Projecting details e.g. insubstantial sills and drainpipes
- Surfaces that may attract graffiti
- Use of soft materials e.g. softwood, that can be gouged by a penknife
- Potential foot/hand holds to afford access to higher level windows and roofs
- Elements of the design that might attract inappropriate use such as bicycle storage
- Elements of the design, which may attract abuse from skateboarders and BMX cyclists.