

**The University of Glasgow:
Exterior Lighting Proposal
North Front, Main Building**



Following the temporary floodlighting of the North Front late in the year 2000, it is clear that a permanent lighting arrangement for that facade is desirable.

Together with the existing lighting outside the Visitor Centre, and the proposed lighting for the Hunter Memorial and the Quincentennial Gates at University Avenue, a cohesive lighting scheme will evolve at the Gilmorehill campus.

This document recommends a method for lighting the North Front in keeping with the existing and proposed schemes, and identifies issues that form part of an overall lighting strategy for the University.

Visitor Centre.

The existing style of lighting at the Visitor Centre should be continued as recommended in the proposals given for stage two of the Hunter Memorial Landscaping Project.¹

At present the Visitor Centre is up-lit with in-ground floodlighting which finishes at the ground floor. Lighting from this angle produces exaggerated shadowing that serves to sculpt or model the shape and detail of the building from all viewing angles, thrusting the Visitor Centre forward of the massing of the Main Building behind.

This dramatic lighting angle should be continued from the balcony at the first floor level, with floodlighting of matching colour and brightness.

A third tier of lighting concealed by the cornice at roof level should continue up-lighting the conical roof, and would also light the golden finial at the roof apex.

North Front.

An important element in successful lighting of the urban landscape is to minimise glare, the unwanted intrusion of light from exposed luminaires into the eyes of an observer.

Minimising stray light in the field of view of an observer within the lit environment has many benefits, as well as creating a more pleasant experience. Where light sources are shielded and directed only at the object to be lit, the eye can relax, visual acuity increases and lower levels of illumination can be utilised. Lower illuminance means lower energy consumption, and accurately targeted lighting means most of this energy is directed at the surface to be lit, not into the surrounding environment.

Aesthetically this directed lighting ensures that the background to a lit object is kept in darkness, and so contrast is increased, and objects not intended to be illuminated and brought into the night "picture" remain unlit.

The reduction of light spilling into the night sky ("Light Pollution") is also an environmental aspect which extends beyond the University and should form part of a formal lighting strategy.²

Any lighting scheme for the North Front must also be in context with the existing lighting at the Visitor Centre.

The two design objectives of minimising glare and creating lighting complimentary to the lighting at the Visitor Centre will be achieved in the following way:

1. Uplighting of the tracery windows
2. Gentle floodlighting of the entire facade from an elevated position.
3. Low level down/up-lighters wall mounted in each bay of the facade.

Floodlighting the North Front from a low level is not recommended. This is because light from ground level shines into the eyes of passers-by, may be obstructed by parked vehicles, and may result in light overshooting the building and lighting the night sky.

Uplighting.

Uplighting the tracery windows throughout the facade is in keeping with the style of lighting at the visitor centre. A similar “warm” lighting colour should be used. The low angle of lighting will help to push the tracery into good relief.

A Fibre Optic lighting system could be used for this aspect of the design. A system which uses waterproof end-point terminations of the type used typically for lighting water fountains should be considered³, as these are small and may be discreetly installed directly to the window sills. This type of projector comes in a variety of beam angles to achieve the correct lighting coverage, and may be adjusted to point where desired.

Interior placement of the light Generators for the Fibre Optic system would allow shorter cable runs, keep the facade free of intrusive technical equipment, and enable easy re-lamping without requiring access equipment to reach fittings located on the building itself.

The Generators would be located internally nearby the end points, with the fibre optic harnesses fed through glanded sections of the window lights. The Generators would be housed in purpose made discreet enclosures. Because of the close proximity of the Generators to the end points, small generators of low power can be considered, and a suitable solution should be achieved with a generator that does not require fan cooling, meaning that the generators will be silent.

It is envisaged that the system would consist of a minimum number of five end projectors and two generators per bay of the facade. The exact number, type, and location of fibre optic end points and generators will need to be established by site testing.

Floodlighting

Floodlighting the facade will reveal the remainder of the building, and fill in some of the lesser shadows created with the up-lighting, for a more balanced picture.

The floodlights would light the facade from the first floor to the roof only, and be mounted at height so as to take the main beam out of the eyes of pedestrians and above vehicular traffic. The floodlights would also be fitted with louvres⁴ to further control the light.

Floodlights for the West side of the North Front, the Staff Dining Rooms, would be mounted on the McIntyre Building, just below the eaves.

Floodlights for the East side of the North Front, the Hunter Halls, would be mounted on poles at the same height as those fixed to the McIntyre Building, to retain continuity of lighting angle.

Low Level Lighting

Wall mounted light fittings in the centre of each bay of the facade would enhance the lighting at street level. By selecting a fitting that projects light both upwards and downwards, further uplighting of the facade would be achieved, together with pools of light at the parking bays.

The fitting should have a light source of comparable colour to the existing in-ground floodlights at the visitor centre, and be of characteristics that ensure the light source is not directly visible.

General Environs

Signage.

The new signage at the University should be incorporated into the overall lighting schemes.

The free-standing signs to at the East and West Undercroft Entrances could be lit by moving forward the in-ground fibre optic end points that are now obscured, located behind the signs. These in-ground units should be moved to a point approximately 600mm in front of the signs, and fitted with the Philips Lighting Asymmetrical Beam Accessory VZG540 AS.

Other free-standing signage in the area should be lit with conventional mains voltage in-ground luminaires or fibre optic points where appropriate.

The Hunterian Museum banner signs mounted above the East and West Undercroft doorways are not considered in this scheme. If they were required to be lit, they should be re-made as a light-box type sign. This would involve inverting the current colour scheme (placing white letters on a black background) and illuminating the sign internally. These units should be constructed so as to not emit light except through the lettering.

Recessed Upper Floor Above East and West Undercroft Entrances.

The cornicing between the main wings of the Hunter Halls/Staff Dining Halls could be up-lit with warm coloured exterior tubular fluorescent fixtures⁵.

A view to the desirability of this effect should be taken once the North Front facade has been lit.

Gable End Circular Windows

The circular windows in the Gable ends of the Hunterian Museum and the Staff Dining Halls should be lit internally.

This will give a depth to the receding darkness at roof level, and provide a point of interest in the foreground of the Tower at the Main Building.

These windows could also be traced externally with side-emitting fibre optic as a further enhancement.

Business School and Human Anatomy

The facades of the East and West outer sections of the North Front, the Human Anatomy and Business School, should be considered in an overall lighting scheme.

These must be viewed in the context of the North Front and in context of transition from the North Front into other parts of the University Gilmorehill Campus.

The Business School, in being part of the North Front and also a part of Professor Square, needs particular treatment. A similar design to that proposed for the North Front, with up-lighting of the windows and gentle floodlighting for the facades, would maintain visual resonance, but could be enhanced by moving the colour of the lighting to a "cooler" colour temperature. This would offset the outer wings from the main frontage whilst maintaining a continuity of lighting style. This style of

lighting at the Business School would be carried through to Professor Square.

The turrets could be given special attention with spotlighting that would include the finials at the top, and the windows of the turrets could be lit internally.

The lighting style adopted for the Business School would be repeated at least on the North Front of Human Anatomy.

A lighting scheme for the entrance to the Business School should be designed as part of the new proposed landscaping.

Main Gates at University Avenue.

The Main Gates at University Avenue could be lit with a similar arrangement to that described for the Quincentennial Gates. This would involve placement of in-ground fibre optic units to light the Gate Piers etcetera, and would link the thematic style of entrance/exit lighting throughout the precinct.

Technical Issues.

Maintenance.

An important part of a successful Lighting Design is the implementation of a working maintenance programme.

This requires a recognised allocation of time and resources to the proposed lighting design before installation. Lighting designs installed without consideration of long term maintenance issues may represent poor value for capital input.

A maintenance programme should include an established method for lamp replacement (spot replacement of failed lamps, bulk replacement of lamps according to a predetermined schedule, or a mixture of the two), the cleaning and aiming of luminaires when lamps are replaced, and record keeping of individual luminaire maintenance throughout the unit's lifetime. These records can then be used to identify any issues with particular light fittings or batches of lamps.

An evolved lighting strategy should also have management systems implemented that include periodic inspections of lighting installations at night. These inspections report lamp failures, errors in lamp focus (for example spotlights missing their intended targets, or luminaires with reflectors out of alignment), lighting control issues (whether time-switches are synchronised etcetera), and general working order of lighting schemes. These methods should complement existing fault reporting mechanisms.

Control

The Proposed Lighting for the North Front should be switched by the control system specified for the Hunter Memorial Landscaping Exterior Lighting.

The main component of the lighting control system is a computer based programmable controller which generates a control signal for switching remote equipment.

A connection from the lighting controller to the switch gear for the Proposed North Front lighting will be required, via either a dedicated cable or an ethernet connection.

Future lighting systems that are installed at the University could also be switched by the proposed lighting control system, as well as any other device which is controllable via "DMX512", a digital protocol that the proposed lighting controller generates and which is used widely in the entertainment industry.

It should be noted that the control system described has yet to be installed for the Hunter Memorial Exterior Lighting, and an alternative time switch or similar may be required for the Proposed North Front Lighting until such time that the main control system is installed.

1. Project Number CP98/207. University of Glasgow - Exterior Lighting for the Visitors Centre, Hunter Memorial, and Quincentennial Gates, Nich Smith, 2000.
2. "Light Pollution", the spilling of superfluous light into the night sky, is undesirable for being inefficient use of energy and resources, and disruptive in the natural world. Much of light pollution comes from street lighting, which creates the orange "sky glow" visible over urban areas at night, not specifically from considered architectural lighting. Good lighting practice accommodates methods to reduce light pollution. Further information may be found at www.darksky.org, <http://www.dark-skies.freemove.co.uk/index.htm>
3. Philips Waterproof Projector VCN810 05/15/30/45, Crescent Lighting Fibrestar CRE2223, or equivalent.
4. Louvre: An accessory fitted to the front of a light which masks the light source to an observer outside of the main beam of the light.
5. For example, iGuzzini Linealuce or equivalent, List Number 7862.

Please note that the illustrations provided are for guidance only. Actual installations may appear different.