Daylight, Naturally Essential

Brett Martin

DESIGNING FOR DAYLIGHT

Photography: Teri Pengilley/UNP

Daylight, Naturally essential

Artificial alternatives exist in almost every sphere of modern life but research has shown that there are no substitutes for the delicate balance of benefits for our health and wellbeing, provided by natural daylight.

For more than 60 years, Brett Martin has developed advanced roof lighting systems for industrial buildings, representing the most effective source of daylight across the footprint of these large scale facilities.

This document presents the facts about how this free, abundant resource can be effectively utilised in full compliance with today's regulatory requirements, enabling a lower carbon reality combined with a healthier working environment.

Daylight - the accepted essential

The essential value of daylight has been accepted by professionals since architecture began and for decades its inclusion has been secured by regulation and the bodies reinforcing good design practice. Today a naturally lit building is widely held up as the preferred solution.

RIBA

“Design spaces with good indoor daylighting, lighting and glare control”

RIBA sustainable outcomes guide (2019)

WELL

“Light: Minimize disruption to the body’s circadian rhythm. Requirements for window performance and design, light output and lighting controls, and task-appropriate illumination levels are included to improve energy, mood and productivity.”

The WELL Building Standard® for light

EN17037 - Daylight in Buildings (2018+A1:2021)

“This standard encourages building designers to assess and ensure successfully daylit spaces. It also allows building designers and developers to target ambitions with respect to daylighting, as well as addressing other issues related to daylight design, such as view out, protection against glare, and exposure to sunlight.”

European Standard EN 17037 (BSI)

BREEAM®

“Providing occupants with the conditions that facilitate good visual comfort by designing out the potential for glare, achieving good practice daylight factors and having an adequate view out.”

BREEAM UK New Construction V6.1 Technical Manual: Version SD5079 - Issue 6.1.1 (Hea 01 Visual Comfort)

Enhancing health

Daylight provision in general has been linked to health benefits in a number of studies. Providing daylight in buildings is often a convenient way to achieve the benefits of daytime light in regulating circadian rhythms, resulting in improved health and mood.

BRE Lighting & Health FB74

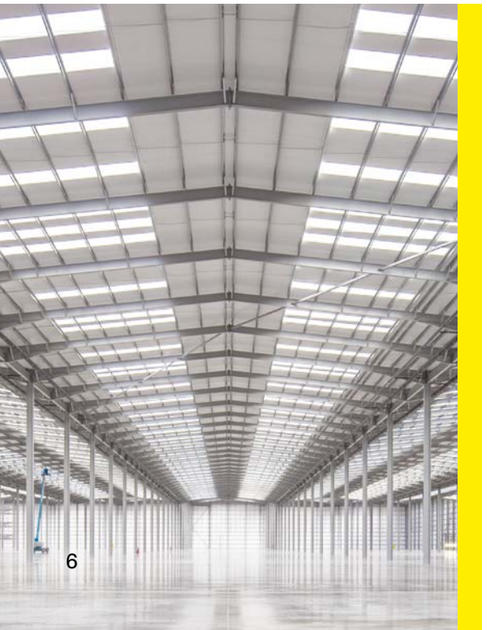
Daylight - a natural way to boost your vitality.

Studies show access to more natural light can impact productivity by 6% and creativity by 15%*. Studies also show that well daylit buildings produce less absenteeism, reducing SAD (seasonal affective disorder).

Another benefit is for patients recovering in rooms with access to natural light, who recover on average 8%* quicker than those in internal, artificially lit rooms.

Daylight absorbed through the eye helps with mental wellbeing, regulating mood and circadian rhythm, also keeping us alert and functional. Daylight absorbed through the skin helps our physical wellbeing, regulating blood pressure, body temperature, creating a better immune system and fighting disease.

**2015 Human Spaces Global Report*



Promoting a sense of wellbeing

Who doesn't prefer a window seat?

A simple experiment in a busy canteen, classroom or office will show the first seats occupied will invariably be those closest to a window.

It reflects our natural attraction to being outside in natural daylight and our innate desire to maintain a visual connection with the natural world, creating balance and a sense of wellbeing. Statistics suggest we spend as much as 90% of our lives indoors, so our need and desire to maintain this connection is strong.

In reality of course not everyone can work at a window but in an industrial building rooflights represent an ideal opportunity to provide a connection with the outside world.

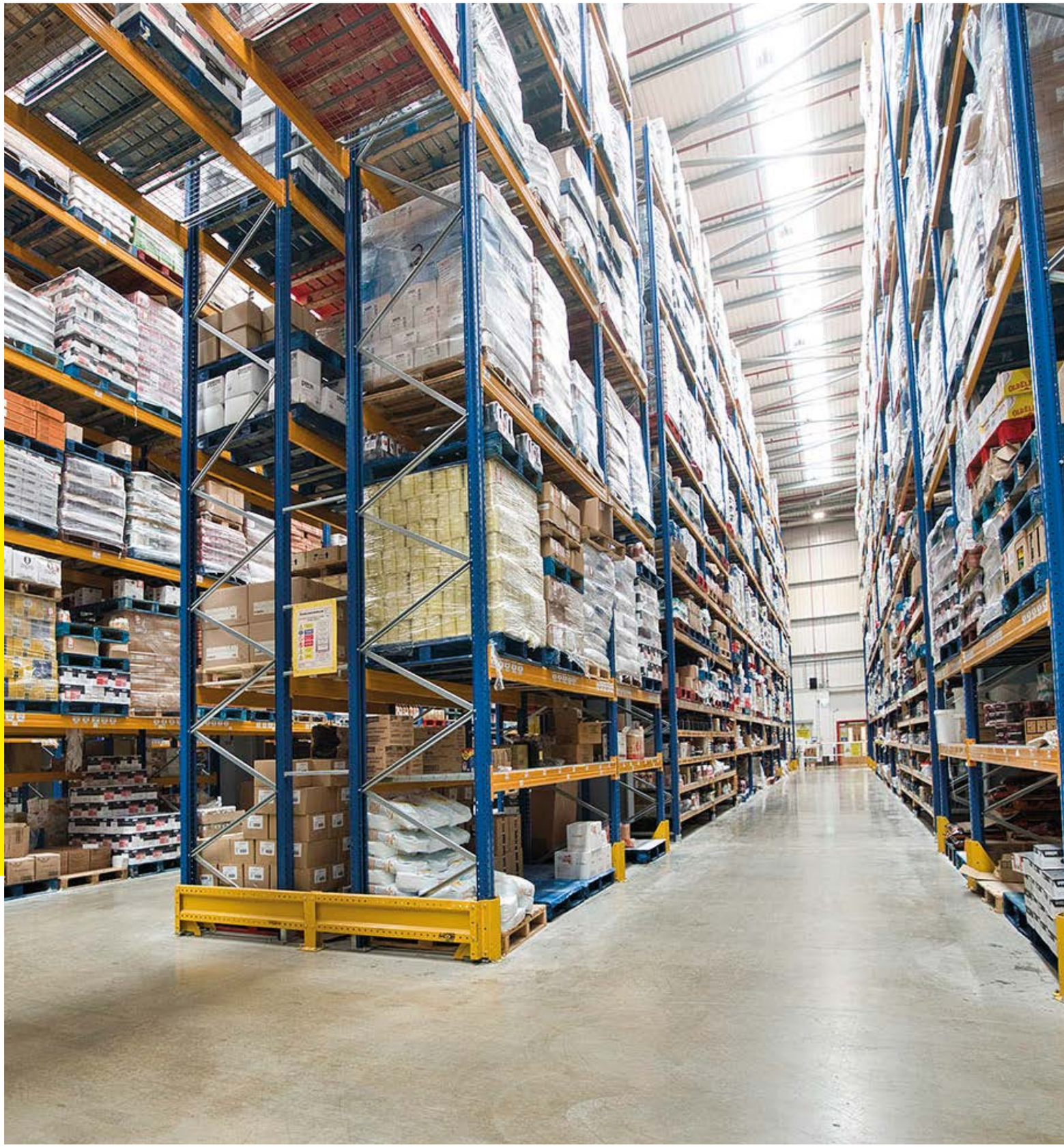
Daylight - boosting asset value

How many different tenants will use a building throughout its lifespan?

The latest statistics point to a higher turnover of lease holders than before and so designing a building for the widest possible use is the best option to boost and protect asset value.

For example, a decision to omit rooflights because a new building's first client is going to operate a fully automated "lights out" warehouse could turn out to be a severely limiting factor when subsequently remarketing the space to other potential clients.

By adopting daylight as the default specification, developers can broaden a buildings appeal to a much wider market. Recent research shows tenants are willing to pay more for a 'green' building.



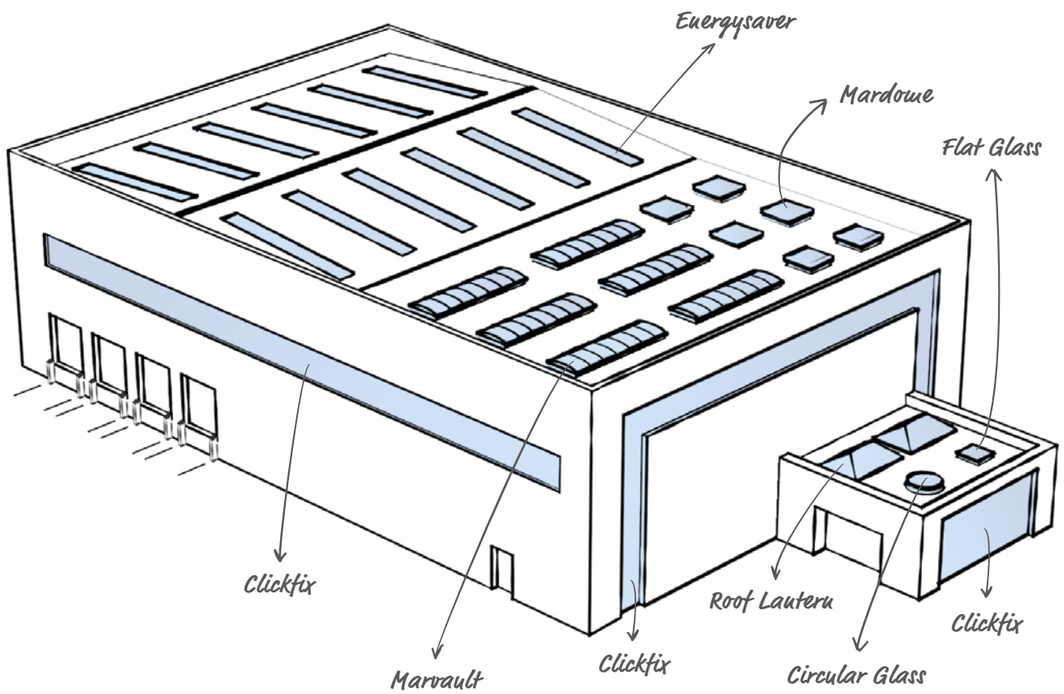
Lighting the envelope

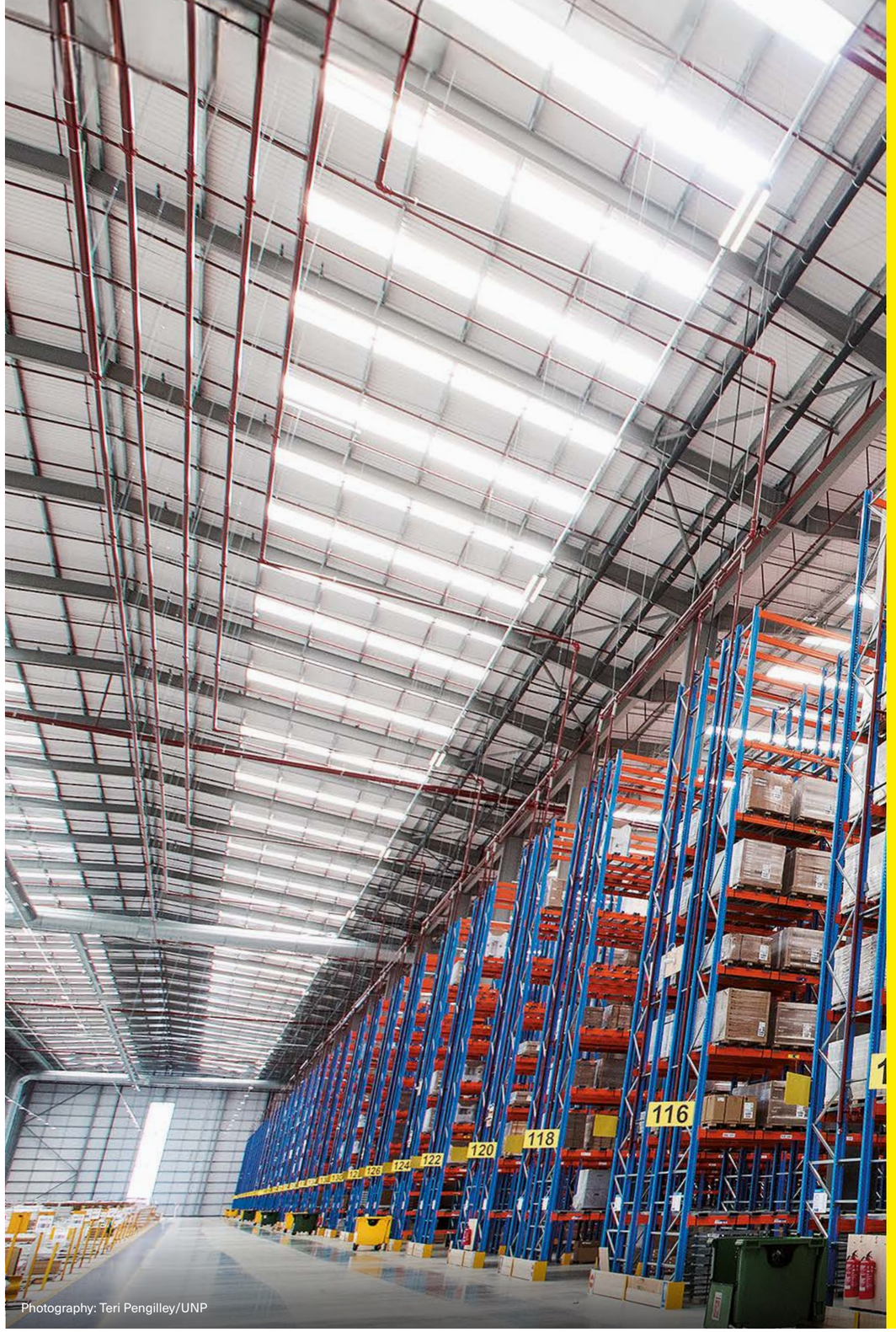
The drive for energy efficiency doesn't need to compromise wellbeing in well-designed building envelopes.

Designing in daylight to secure the extensive health and wellbeing benefits derived from the installation of rooflights is also a sound decision when it comes to compliance with building energy performance requirements.

As we move towards a net zero carbon future, primary energy use becomes a more reliable indicator of long term environmental performance as it drives specifiers to use low energy solutions in the building fabric and operation.

When designing the building, think early and holistically considering all envelope elements. Brett Martin offers thermally efficient rooflight and wall lighting solutions that comply with all UK building regulations.





Photography: Teri Pengilley/UNP

The best lighting strategy

The optimum rooflight solution is fully compatible with efficient installation of PV panels.

A key benefit of rooflights is that they can deliver an abundance of natural daylight into buildings and require zero energy.

Since daylight cannot meet all lighting requirements however, artificial lighting is needed during the hours of darkness. When used on up to 15% of the roof area, Brett Martin rooflights can combine with photovoltaic panels to deliver a thermally efficient and well-lit building that contributes to a reduction in primary energy use. In addition, there is typically no embodied carbon penalty to the inclusion of GRP rooflights as they have similar embodied carbon to that of the metal cladding system.

Photography: Andy Green, Earth Grid

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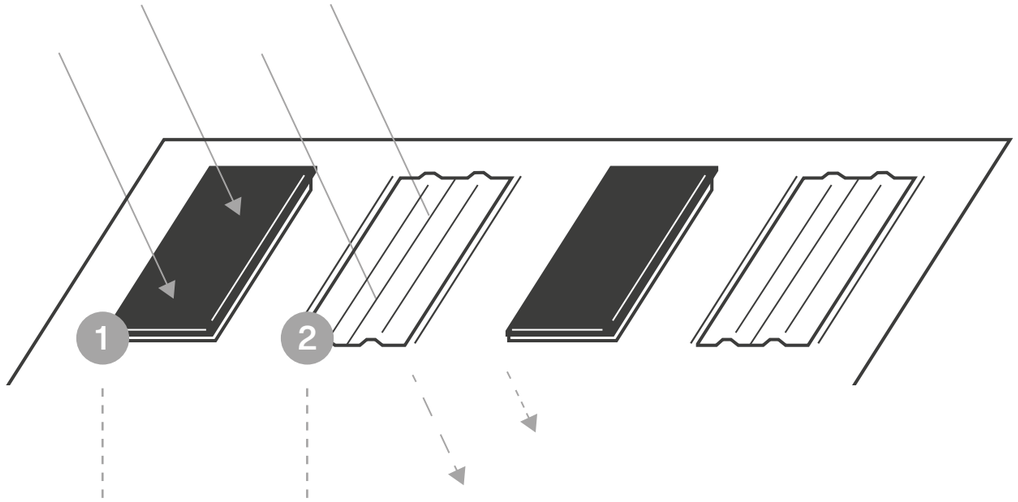
Sunlight



Photovoltaic Roof Panels

Captures solar energy and converts it to electrical energy.

Energysaver FAIRs

Allows daylight in to help reduce the need for electrical energy.

A holistic, sustainable solution

Connect to the outside via a new dimension of light at wall level.

Side glazing is the most common way for natural light to enter a building but does not provide a uniform distribution of light.

A combination of rooflights and wall glazing however, can bring daylight deeper into a building providing occupants with more access to sky and natural light.

In addition, wall lighting can transform a building on the inside and also create a striking architectural feature on the outside.

Brett Martin are specialist manufacturers of daylighting systems for roofs and walls that can support you in your lighting design.

Brett Martin offers high performance polycarbonate wall light systems which can enhance employee wellbeing by adding a new dimension of light at wall level.

These systems are also available as a BioPlus option for projects that aim to deliver the highest standards in sustainability by reducing the embodied carbon of a building.

Marlon Clickfix BioPlus

Rooflights – talk to an expert

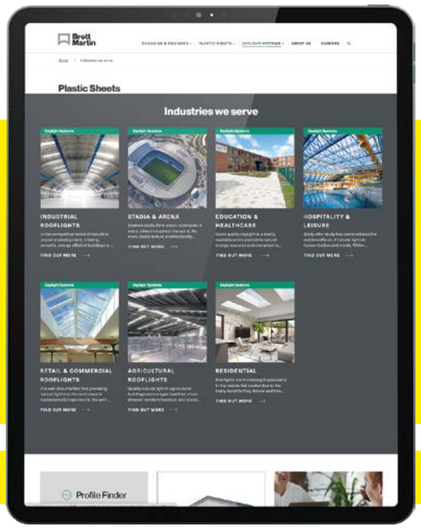
It’s good to talk to a technical expert when assessing the impact which different types of overhead rooflights can make.

Rooflights typically transmit three times more light than the same area of window in a wall.

The characteristics of the light and control of glare can be selected through the choice of materials which offer a range of effects from fully diffused to direct daylight.

The correct choice will depend on factors such as orientation and pitch of the roof, building height and use.

Visit our website for product details and useful case studies showcasing the wide range of solutions for every building type.



Brett Martin
Daylight Systems Ltd
Sandford Close
Aldermans Green Industrial Estate
Coventry, West Midlands
CV2 2QU

t: +44 (0) 24 7660 2022
f: +44 (0) 24 7660 2745
e: daylight@brettmartin.com

For the latest information visit
brettmartin.com

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