LEARNING PLACES

NORDAN TIMBER WINDOWS AND DOORS

LOW CARBON TIMBER WINDOWS & DOORS

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NORDAN
OUR STORY

At NorDan we are happy to be the forerunners in the transition to a sustainable construction industry. We try to lead by example - we've done it for nearly 100 years.

Founded in 1926, and still family owned, NorDan is one of Europe's leading manufacturers of high-performance timber windows and doors. NorDan windows and doors offer solutions that combine leading energy performance with longevity, to minimise environmental impact throughout their lifespan. Low embodied carbon values are a fundamental benefit of the range.

NorDan is present in Norway, Sweden, Denmark, United Kingdom, Ireland, Poland and Lithuania. Today, NorDan consists of 12 factories, approx 30 project management offices and more than 2200 employees.

We are a network of offices, factories and competence centres all interconnected by thousands of employees who share our common values towards a sustainable future.

WE HAVE
A CHALLENGE

The greatest challenge in the history of humanity. There is a world to save. Which means that each and every one of us must rethink, reprogram ourselves and change the way that we usually do things. The construction industry in the UK alone makes up 40 percent of the total CO_2 emission numbers. The king of wasteful thinking, really.

By 2030 we must reduce the CO_2 footprint from 1000 kg/ m^2 down to 300 kg/m^2 to reach a carbon neutral target. That's steep, but not impossible. And above all, necessary. At NorDan we are happy to be the forerunners in the transition to a sustainable construction industry. Of course, we try to lead by example - we've done if for nearly 100 years.

An ordinary NorDan window frame is made from more than 90% timber, a natural carbon sink in itself. With timber at the core, our embodied carbon figures are among the lowest in the industry. Embodied carbon emissions from NorDan are less than half compared to aluminium or uPVC. Even against other composite materials in the market, there is no comparison.

EPD ANALYSIS
EMBODIED CARBON

AIR PERMEABILITY

Standard Inward & Outward opening windows: 0.1m3/m²h at 50Pa

OPERATIONAL CARBON

› NorDan double glazed unit: 1.2 u-value
› NorDan triple glazed unit: 0.9 u-value
› NorDan Passive unit: 0.7 u-value

ACOUSTIC PERFORMANCE

› Double glazed unit: 44dB Rw
› Triple glazed unit: 45dB Rw
› SoundGuard unit: 60dB Rw

WHOLE LIFE COST VERSUS CAPITAL COST

LIFE EXPECTANCY	
PVC-U	20 YEARS REPLACE
Aluminium	60 YEARS
NORDAN Timber (engineered)	8 YEARS PAINT
NORDAN Aluminium-clad Timber	60 YEARS

QUALITY FROM THE INSIDE

You can't see it, and you don't think about it, but perhaps the most important reason for choosing a window from NorDan is how we impregnate the timber.

There are many ways to protect timber windows, but the single most important factor for longevity is thorough and robust impregnation of the timber that is used in the manufacturing of the window.

Vacuum/pressure Impregnation
Timber is a natural performer. But at NorDan we act to refine this material even further. NorDan windows go through a thorough manufacturing process which includes a vacuum impregnation stage.

The vacuum impregnation process is lengthy and expensive - but we have never taken shortcuts when it comes to quality. This is what allows us to quote a 60 year (plus) life expectancy and offer a warranty up to 30 years against rot and fungus.

The timber window components are placed in a chamber, which is then filled with an impregnating liquid. The chamber is then pressurised to force the preservative liquid deep into the timber. After this process, the chamber is drained of fluid and placed under a high vacuum to remove any excess fluid.

The process used by NorDan complies with the requirements of BS 8417 'Preservation of Wood Code of Practice', for a 60 year desired service life for external joinery components.

Surface penetration of 6mm in conjunction with a minimum of 150mm of end-grain penetration provides a deep barrier of preservative treatment. Couple this with naturally impregnated heartwood from sustainable cold climate forests, and the result is a timber product that is guaranteed to perform for years, in the harshest of weather conditions, without yielding to rot and fungus.

NorDan products are suitable for all locations of the UK. From high rise buildings to exposed coastal conditions - our Norwegian heritage means our products will perform for generations no matter what.

QUALITY ON THE OUTSIDE

Powder coating refers to a method of coating a material, normally metals, with a paint in the form of powder that is melted and cured onto the surface.

Aluminium cladding is the main reason we promote low maintenance of our products. Not only does this protect the timber frame, but it also provides marine grade resistance against sea air and salt water.

NorDan are proud to hold GSB Sea Proof Plus certification which is made possible via our state-of-the-art factories. NorDan aluminium is pre-treated via SAT pre anodisation. Our factory in Powodowo is the only factory in Europe to offer this level of craftsmanship.

By supplying all aluminium profiles with this level of quality for pre-treatment, NorDan has created a benchmark for the window manufacturing industry. By use of electric current in an acidic aqueous solution, a very stable and non-separable oxide layer is produced onto Aluminium (principle of anodisation).

During pre-anodisation a 3 to 8 µm thick oxide layer is produced in an aqueous sulfuric acid solution under controlled conditions. In contrast to decorative anodisation this layer is not sealed. The resulting quite cellular surface structure is an excellent adhesion base for the powder or liquid paint coating, which has to be finished within 8 hours. This pretreatment provides protection against filiform corrosion.

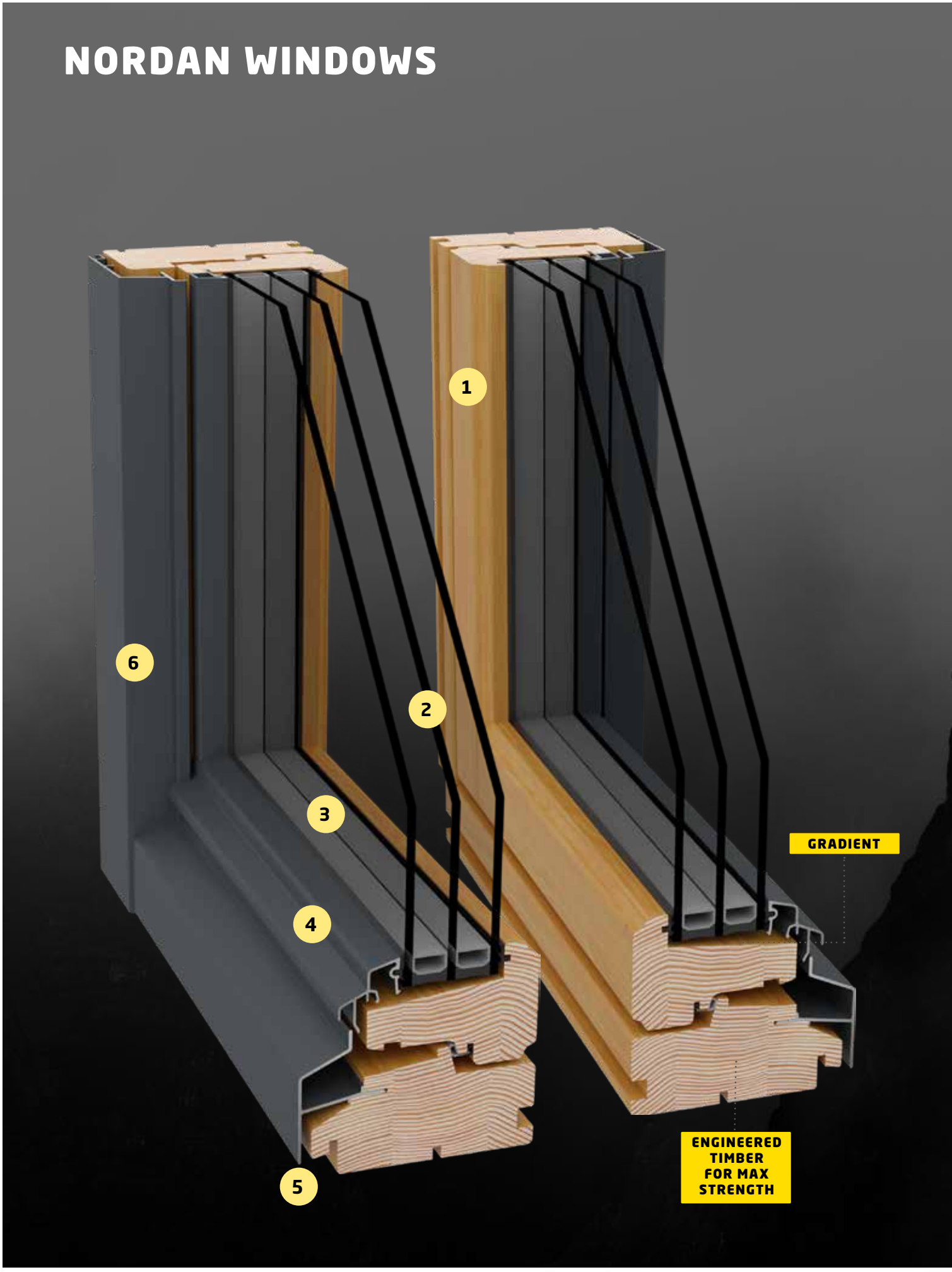
The end result is a powder coated finish, with GSB Sea Proof Plus certification, that will withstand even the toughest marine environments.

GSB INTERNATIONAL
PREMIUM
Approved Coated Aluminium
★★★
Sea Proof Plus

Some of the key advantages of our new powder coating technique are:

- The best corrosion resistance on the market - as standard - coping easily with marine environments
- No hanging marks/shadows
- All profiles coated on all outer surfaces
- More even and consistent finish

Weathering class	Impact of corrosion	Ambient conditions	Recommended pre-treatment	Corrosion test	GSB coating classes	Recommended cleaning interval
GSB - Countryside (C2)	Low	Dry or cold areas, Countryside/small towns with low pollution	Chromium-free/Cromate-free/ Containing chromate*	Condensation - constant atmosphere	**Approved**	Annually
GSB - Industrial (C3)	Medium	Urban area with medium pollution or some effect of chlorides. Coastal areas with low deposition of chlorides	Chromium-free/Cromate-free/ Containing chromate*	AASS	**Master**	Annually
GSB - Sea Proof (C4)	High	Urban areas, industrial areas with high pollution or substantial effect of chlorides. Coastal areas with medium desposition of chlorides.	Chromium-free/Cromate-free with documented process/ Containing chromate*	Filiform corrosion test (≤0.3) and AASS	**Master/Premium**	Annually
GSB - Sea Proof Plus (C5)	Very high	Areas with very high pollution and significant effect of chlorides. Coastal areas/coast lines with high impact of chlorides.	Pre-anodising	Filiform corrosion test (≤0.10) and AASS	**Master/Premium**	2 x per year


NORDAN WINDOWS
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GRADIENT
ENGINEERED TIMBER FOR MAX STRENGTH

Energy-saving, inward & outward opening windows, fixed lights, balcony and sliding doors with U-values as low as 0.7 W/m²K

1 **Frame and sash construction** uses vacuum impregnated timber, protected against rot and fungal attack. Engineered timber to improve strength and stability

2 **Triple or double pane acoustic glazing** unit with energy coated glass and filled with argon gas

3 **Insulating warm edge** spacer bar for glazing

4 **External glazing bead** fitted with concealed fixings

5 **Groove for aluminium extension cill** to drive moisture away from the building

6 **Profile design to promote removal of moisture** through self draining and ventilating

TIMBER AT THE CORE

Timber is at the core of everything we do. This has been the way for almost 100 years. Timber is a natural carbon sink - it absorbs and stores more carbon than it emits during its growth time. From a full grown tree, NorDan can extract enough timber for building at least 40 windows. And for every tree felled, we plant 5 more.

Compared to other raw materials, there is no comparison. Carbon emissions from NorDan timber windows are less than half of uPVC and aluminium emissions. Even against other composite windows types, NorDan are different - with an ordinary window made from at least 90% timber.

When a NorDan window is installed it will stay there for at least 60 years. You see, we like to commit ourselves long term. It's the only way if there's going to be a long term at all.

NORDAN LEARNING PLACES

Complete Solutions
Innovation, performance and quality never happen by chance. They result from almost 100 years of experience identifying problems and finding the right solutions. We enable a better everyday life through sustainable products that are energy-efficient, long-lasting and provide a comfortable indoor environment.

Experience
With over 40 years of business in the UK, we are the longest-serving Scandinavian company still operating at full strength. You can take our word for it, but sometimes it is better to let others do the talking.

"NorDan have provided aluminium-clad windows for many of our projects since Collective Architecture was set up in practice almost 20 years ago. NorDan has consistently provided us with high-quality service, working closely with both ourselves and the contractors we work with to ensure they can meet our design intentions at a competitive cost."
Nick Walker, Collective Architecture

Centre of Excellence
NorDan might be a window and door manufacturer, but the products are only part of the bigger picture. In 2022, NorDan developed a Centre of Excellent for Schools.

The Centre will advise architects and local authorities on how to best meet their carbon reduction targets and adhere to the Scottish Government's Net Zero Public Building Standard guidelines. This can be achieved through installing low whole-life carbon, sustainable fenestration solutions that meet BB101 Guidelines on levels of ventilation, thermal comfort and indoor air quality in schools.

"Working on numerous education projects over the years has given us an insight into the specific challenges faced by education in Scotland. I'm acutely aware of the need for windows to meet in-use requirements, regulations, budgets and net zero carbon targets, not to mention creating the best possible learning environments.

"We understand the challenges faced by contractors. By combining all fenestration elements into one package, supporting timely installation and managing the process from beginning to end, we can reduce the stress on all parties, offer remarkable cost savings, and deliver a first-rate product."
Mike Stevenson, Senior Manager Strategic Markets at NorDan UK,

Project Inception to Handover
NorDan is a prominent manufacturer, but we have kept accurate to our rapid development and quick response heritage. The earlier we can be involved in planning a building for your next project, the more significant impact we can have on its cost and environmental credentials.

Our sales offices keep close contact with our factories and sales support teams; this ensures that all enquires get a quick response. No more endless loops trying to find a recipient. We're here for you, all the way.

The benefits for future generations
Our Learning Places strategy aims to provide those involved in specification, design and build for education buildings with a solution that can consider all factors that dictate window installation, including student and teacher welfare, net zero and cost and energy efficiency.

However, we are also firmly focused on the additional benefits we can provide for future generations. When grown, harvested, processed and replenished correctly, timber is the only truly renewable building material. Carbon negative in growth, the C02 is then safely trapped in the material for the lifetime of that product.

NorDan's aluminium-clad timber windows and doors contain 50% less embodied carbon than PVCU and four times less carbon than aluminium (according to BSRIA - the Inventory of Carbon and Energy); they also offer a 60-year life span with minimal maintenance. PVCu (fossil fuel based) can only meet half of that.

North East Scotland College, Aberdeen

The building was completely regenerated extending its usable life to that equivalent of a new building. This was achieved by installing an aluminium rain screen system, with integral high performance energy effiecient aluminum clad timber windows. As well as a dramatic transformation in appearance, the building is now eco-efficent, surpassing current regulations and slashing heating energy costs by up to 70%.

Project value: £1.9m
Client: Glouchestershire County Council
Architect: Austin Smith Lord Architects
Products:
› Timber & alu-clad tilt & turn windows & doors

Mickleton Primary School, Cotswolds

Safety, secuity and low maintenance were key factors in NorDan winning this contract. Greenfield site at edge of the village required traditional design based on the vernacular form of farm buildings. Natural ventilation, good levels of natural light and high levels of insulation were important. NorDan a range of StormGuard windows which met specification requirements for restricted opening all where ensure the safety of those inside.

Milton of Leys Primary School, Inverness

In order to satisfy the key environmental elements of the Client's brief, NorDan investigated in great detail the thermal performance, air-tightness, acoustics, day-lighting, natural ventilation, material/product specification and 'A' rated constructions in line with the BRE Green Guide in order to achieve the BREEAM requirements.

Project value: £5.8m
Client: Highland Council / Morrison Construction
Architect: Keppie Design / Highland Council

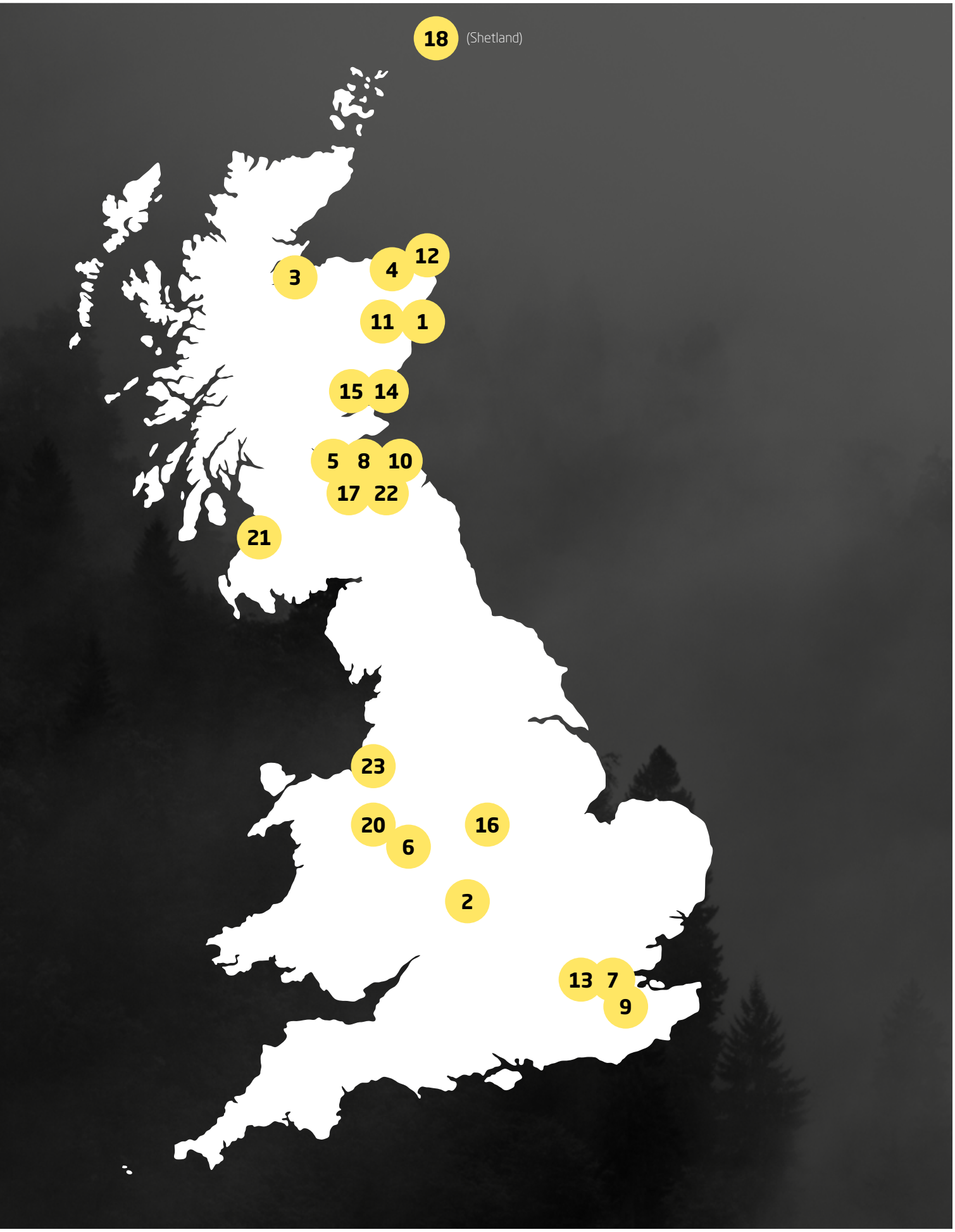
Turriff Primary School, Aberdeen

The concept of the school focuses on the creation of a large central space which is the creative and social heart of the new school. This dynamic space is 11m at its highest point and is flooded with natural light.

Project type: New build
Project value: £12M
Client: Aberdeenshire Council

LEARNING PLACES

1. North East Scotland College
2. Mickleton Primary School
3. Milton of Leys Primary School
4. Turriff Primary School
5. Edinburgh Academy
6. Ercall Wood Technology College
7. Trinity All Through School
8. Towerbank Primary School
9. Bonus Pastor Catholic College
10. Sanderson's Wynd Primary
11. Dunecht Primary School
12. Crimond School
13. Lewisham Sedgehill School
14. Ladyloan Primary School
15. Muirfield Primary
16. Lakeside Academy
17. Fettes College
18. Happy Hansel School
19. Holy Trinity
20. Charlton School
21. St Xaviers Primary School
22. Burnbrae Primary School
23. John Moore's University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Project type: Arbroath Schools Project
Project value: £8.4m
Contractor: Robertson Tayside
Client: Angus Council
Architect: Holmes Miller

Ladyloan Primary School, Arbroath

Delivered for Angus Council, Ladyloan was part of the second phase of the Arbroath Schools Project. The old Ladyloan Primary was originally built in 1974, near to Arbroath Football Club's Gayfield Park, as a replacement for the previous Victorian building.

The new Ladyloan Primary, as well as the two other projects in this phase of the Arbroath Schools Project, were constructed in phases within the existing school grounds. This enabled the facilities to keep operating in a way that minimised impact on children and staff.

Phase 1 of the project saw the new school being built over a 68-week programme, close to the coast in Arbroath. After the new building was completed, there was a transition period in order to transfer teaching facilities to the new school.

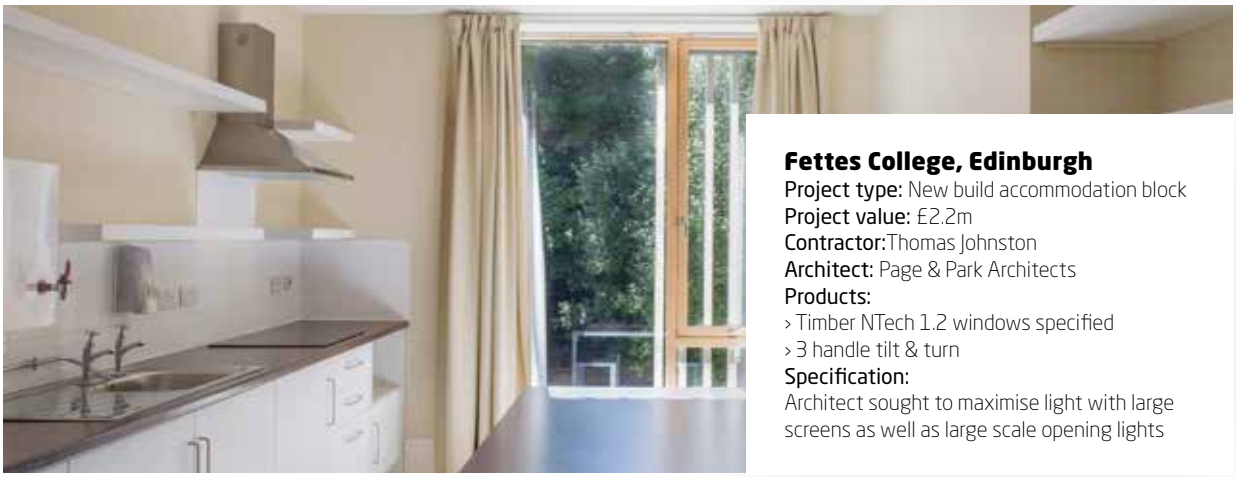
Project value: £8m
Contractor: Robertson Tayside
Client: Angus Council
Architect: Holmes Miller

Muirfield Primary School, Arbroath

The project was part of the second phase of the Arbroath Schools Project, comprising of three new schools: Muirfield, Ladyloan Primary, and a shared campus for Hayshead and St Thomas RC Primary Schools, which also includes an early years facility. The school was constructed within the existing school grounds, using a phased approach, so that teaching continued and the impact upon pupils and staff was minimised.

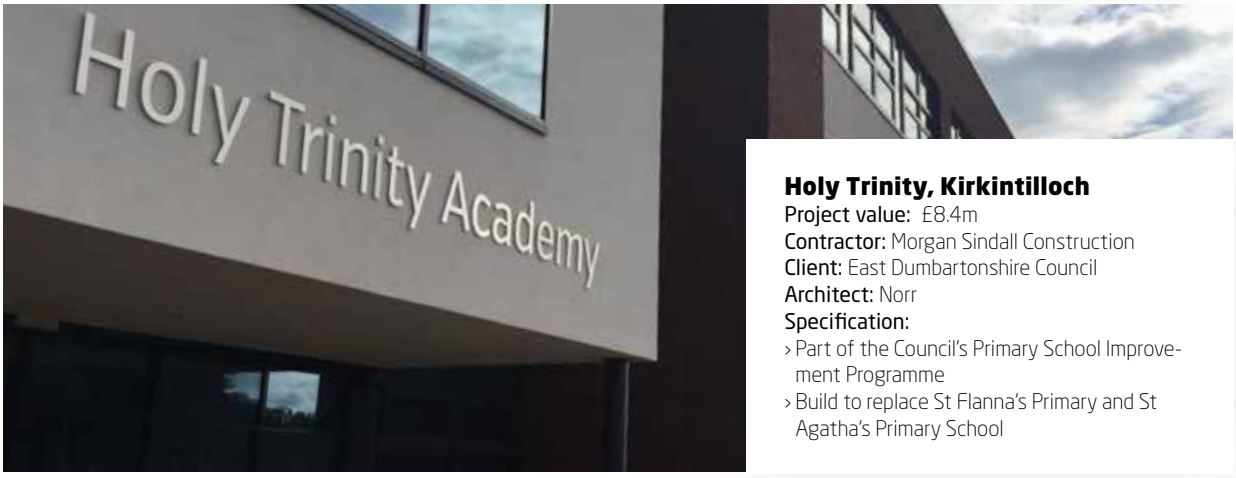
The new school is comprised of a structural steel frame and a structural timber inner leaf. As the school is built, the existing buildings will now be demolished and replaced by a new car park and sports pitch. The project won a Gold award with the Considerate Constructors' Scheme, in recognition of outstanding performance assessed across five categories: care for appearance, respect the community, protect the environment, secure everyone's safety, and value the workforce.

Lakeside Academy, Derby
Client: Shepherd Engineering Services
Architect: Faulknerbrowns



Fettes College, Edinburgh
Project type: New build accommodation block
Project value: £2.2m
Contractor: Thomas Johnston
Architect: Page & Park Architects
Products:
› Timber NTech 1.2 windows specified
› 3 handle tilt & turn
Specification:
Architect sought to maximise light with large screens as well as large scale opening lights

Happy Hansel School, Shetland
Project type: Extension
Client: Shetland Island Council
Architect: Redman Sutherland
Products:
› Alu-clad timber windows
› Inward opening glazed doorset
Specification:
Shetland - serve weather



Holy Trinity, Kirkintilloch
Project value: £8.4m
Contractor: Morgan Sindall Construction
Client: East Dumbartonshire Council
Architect: Norr
Specification:
› Part of the Council's Primary School Improvement Programme
› Build to replace St Flanna's Primary and St Agatha's Primary School

Project value: £15M
Contractor: Pave Aways Building Contractors and Kynaston Contract Services
Client: Telford & Wrekin Council
Architect: TACP Architects

Charlton School, Telford

Charlton School was built as part of NorDan's multi million pound programme with Shepherd Construction, building 6 new schools and academies forTelford and Wrekin Counci. It is part of Telfordand Wrekin's £200 million Building Schools for the Future programme. Schools completed are Adams Grammar, Burton Borough, HolyTrinity Academy, Lakeside Academy and Ercall Wood Technology College. Fully reversible Scandinavian aluminium clad timber windows from NorDan with a u value of 1.2 W/m.K are supported by electronic actuators, to manage temperatures in the classrooms in hot summers. Aluminium doors and curtain walling are also part of the full turnkey package.

Contractor: Thomas Johnston
Client: East Ayrshire Council
Architect: Austin Smith Lord Architects

St Xaviers Primary School, Ayrshire

For maximum energy efficiency and quality of life, high levels of daylight are encouraged into the buildings through large expanses of glass, reducing the need for energy for lighting, which is daylight controlled.

Project type: New build school
Project value: £5.9m
Contractor: Taylor Wimpey
Client: Midlothian Council in partnership with Ashleigh Scotland Ltd
Architect: Aedas

Burnbrae Primary School, Bonnybrigg

Products:
› StormGuard windows (alu-clad)

John Moore's University, Liverpool

CERTIFICATION

CERTIFICATION OF ENVIRONMENT, WORK AND QUALITY

Whilst every effort is made to verify and ensure the accuracy of the information in this brochure, NorDan UK Ltd do not take responsibility for any printing errors. The information should be used only as a guide and no purchasing decision should be made without consulting with your local NorDan office.

NorDan work closely with a number of government and international agencies in connection with product development and certification. The requirements ensure that you as a customer or user can make a fully informed and honest choice.

Secured by Design

NorDan UK Ltd - the leading Scandinavian high-performance timber window & door manufacturer supplying to the UK - are longstanding members of Secured by Design, the national police crime prevention initiative.

Secured by Design work closely with standards and certification bodies to ensure that their publicly available standards actually meet the needs of the police and public alike.

NorDan UK Ltd have an extensive range of products, which have achieved Police Preferred Specification and are therefore accredited by Secured by Design.

Products that are part of Secured by Design's product based police accreditation scheme are subject to rigorous testing and additionally must be fully certificated by an independent, thirdparty certification body accredited by the United Kingdom Accreditation Service (UKAS) before being allowed to carry the SBD logo. This is the only way for companies to obtain police accreditation for security-related products in the UK.

Impregnation

At NorDan AS, impregnation treatment of timber used for manufacturing is in accordance with class AB , based on the European standard EN 351-1 class P5. By impregnating the timber, longevity is increased and protected against rot and fungi. Moreover, the wood is more dimensionally stable in that it does not twist, turn or warp because of the production techniques employed. NorDan also follow requirements set in VOC for emissions to air, soil and water.

Achilles

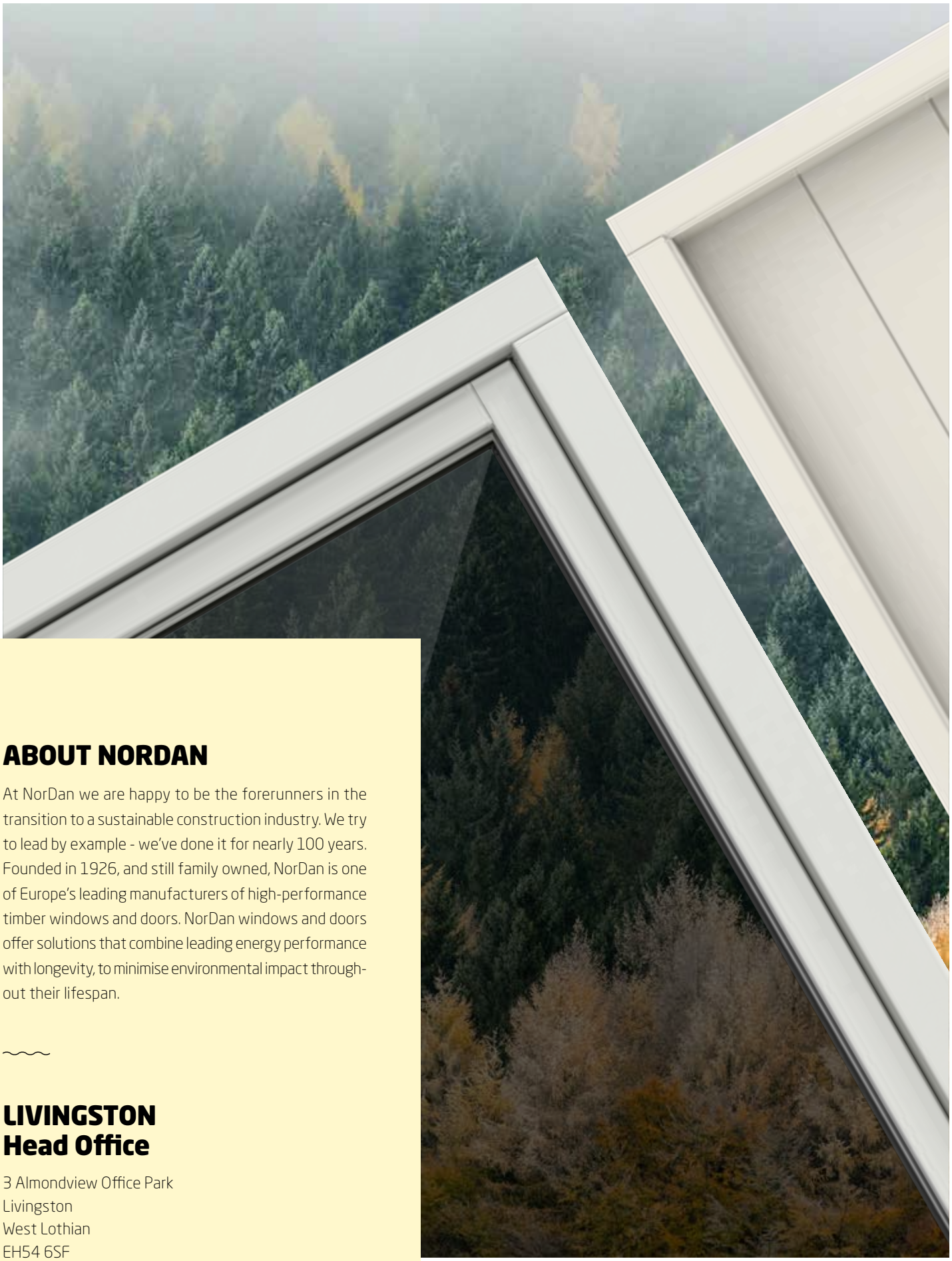
Achilles Building Confidence is designed to meet the increasingly demanding legislative and risk management needs of construction clients. Achilles Building Confidence community is managed by an industry Steering Group compromising of members from across the sector to drive industry best practice.

BBA

The British Board of Agrément is the UK's leading building products certification provider, working with manufacturers worldwide to assess new and innovative construction products and solutions to ensure they are safe and fit-for-purpose.

The organisation has developed a wealth of knowledge and expertise over the last 50 years and offers what many consider to be the very best in building product accreditation and testing. Its Agrément certificates are highly prized and are due to the BBA's in-depth and exhaustive testing and evaluation regimes – take many months to achieve. An Agrément certificate provides reassurance to construction clients that products are assessed regularly by an independent, UKAS accredited body.

The BBA has been working with NorDan UK Ltd for more than a decade and certifies a wide range of its doors and window systems, as well as working with the company on achieving Secured By Design for many of its products.



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