



ABBEY STADIUM

REDDITCH BOROUGH COUNCIL &
PLACE PARTNERSHIP

Dextra
LIGHTING

ABOUT THE CLIENT

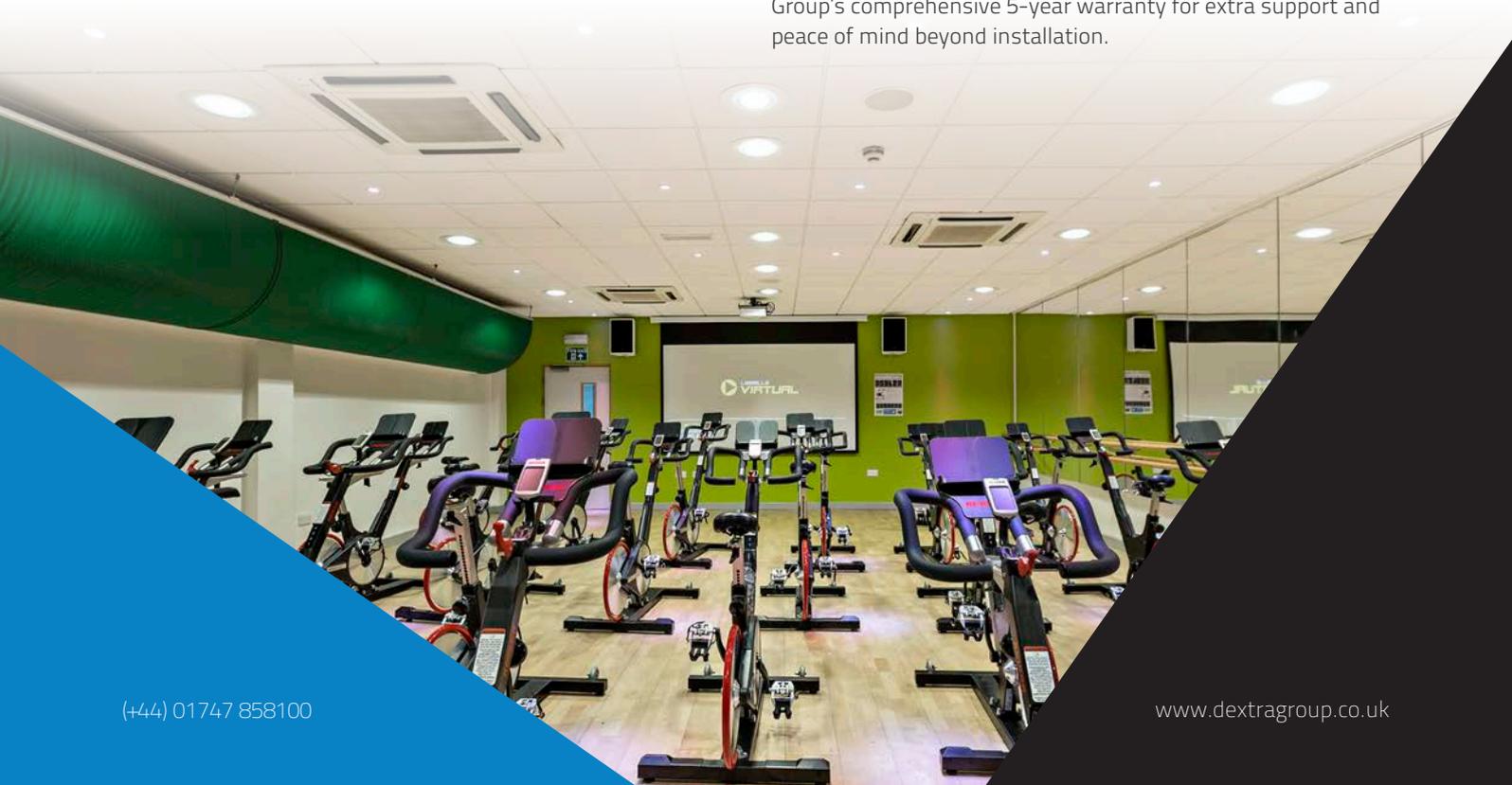
Local Authorities in Redditch continue to lead by example through their sustainable renovation of Abbey Stadium. With Dextra Lighting's precision-engineered LED solutions, the showpiece West Midlands facility has now reduced electricity consumption by 71% compared to the previous fluorescent system.

In 2015, Redditch Borough Council and five other local authorities in the West Midlands, formed a public sector asset management company known as "Place Partnership". Sponsored by the Cabinet Office, the joint property venture applies a commercial business model to maximise the value of public estates. Through its "One Public Estate" programme, it aims to deliver real-estate solutions to increase operational efficiency in public buildings, promote regeneration and economic growth in the area, and ensure that taxpayers benefit as much as possible from each investment made. By targeting the energy consumption of its estate, the council and Place Partnership will help mitigate the impact of price increases on its services whilst investing the money saved into the improvement of other public buildings.

The council has recently focussed its efforts and resources on Abbey Stadium and Leisure Centre in Redditch, to ensure the building continues to be a hallmark of sustainable development. Completed in the 2012, the £6m facility attracted national attention for its unique design, which allowed the building to reclaim excess heat from the neighbouring crematorium to heat two competition-sized swimming pools. In 2011, the innovative project won the Green Apple Award which is presented to Britain's greenest companies and organisations, and has secured its place in the Green Book as an example of environmental best practice. To continue to lead by example in the sustainable development and management of real estate, Redditch Borough Council recently invested in upgrading the leisure centre's existing fluorescent to high-quality LED equivalents.

For the initial technical assessment with INECO energy, the Council's Energy Consultants, Sports Centre Managers and Place Partnership representatives, Dextra Lighting presented a series of product samples to discuss a lighting design that would yield maximum return on investment and keep carbon emissions as low as possible. The meeting resulted in a solution that would comply with the councils invest to save funding model for the entire upgrade, with projected savings of a total of 71%; allowing the new system to be paid back in full over 5 years without interest or maintenance savings in the calculations. . Due to the long life and extended lumen maintenance of LED compared to HID or fluorescent lighting, these savings will avoid the council the ongoing expense of hiring external contractors to frequently change failed or rapidly depreciating lamps (particularly costly in high and hard to reach areas) to keep the installation running as intended.

In line with the environmental agenda of the parties involved, Dextra Group's disposal and Recycling service led by Dextraco, was included in the proposal, to ensure all the old lighting fixtures were swiftly and conveniently removed according to WEEE regulations. Due to its vast and flexible manufacturing capabilities and dedicated transport fleet, Dextra Group was able to assist INECO Energy in completing the entire renovation project whilst the leisure centre remained operational exceeding expectations of quality and cost-effectiveness. By partnering with a reputable UK manufacturer, the project was delivered sustainably by minimising the carbon miles in the supply chain. Products were supplied and installed within less than 2 weeks from the approval of the order. All LED products supplied offered Dextra Group's comprehensive 5-year warranty for extra support and peace of mind beyond installation.



THE BRIEF

INECO Energy's "Designed for Efficiency" approach aims to deliver the optimum light levels using the least resource to deliver the greatest returns. The solution proposed delivered lighting levels which met with Sport England guidelines, reducing the number of fittings by 20% to deliver the best value to the client. . LED alternatives were to be fitted in a number of locations including:

- 5-Court sports hall used for basketball, netball, badminton, volleyball, gymnastics, goal-ball and bowls.
- Two fitness suites: A free-weights room and a cardio fitness suite.
- Entrance and open-plan vending and seating area
- Changing rooms and WC facilities
- Storage and utility areas

Lighting design for sports facilities requires the appropriate task illumination levels for each sporting activity are met. Careful consideration is needed for the ongoing health and safety of the proposed solution to include, accessibility for maintenance, durability, integration with the building's architecture and emergency lighting. Therefore the new system was to abide to British Standards, CIBSE and Sports England guidelines to provide the best lighting conditions for staff and customers alike.

Purpose-built LED luminaires with intelligent controls, were selected for the project, featuring the latest high-efficiency 3535 Lumileds LED sources and a wide range of optical designs and installation formats, to ensure lighting conditions were met whilst minimising energy usage and maintenance for years to come.

For added visual comfort and clarity, as well as overall consistency, all products were to be installed in a neutral 4000k colour temperature with colour rendering of over 80 throughout the premises.



THE SOLUTION

Prosport LED - Sports Hall

High performance at low energy and maintenance costs for modern indoor sports environments

The Prosport LED is designed to make use of LED's full potential to provide optimal light quality for a safer and more enjoyable player experience whilst ensuring minimal energy and maintenance costs.

By combining the latest Lumileds LEDs with a range of highly efficient optics, the luminaire offers a high light output ratio (LOR) of over 80% and a number of distributions to suit the sporting activity. From a range of three output packages of up to 30,601 luminaire lumens, the Prosport LED was supplied in both 15,079lm and 21,288lm versions to effectively replace the existing 4x55W fluorescent fittings; achieving the 300 to 750 lux level ratio recommended by Sports England for recreational and competition use. These versions offered energy savings of at least 30% compared to the previous T5 fittings, with an improved and longer lasting quality of light.

A symmetrical optic provided a versatile distribution ideal for the multi-purpose sports hall; complying to the correct uniformity ratios and glare control required for each sport. Asymmetrical brackets are also available with this range to obtain an angled, glare-free distribution ideal for badminton or tennis applications. With these options available, the Prosport LED was able to maximise visibility of fast moving objects in all areas of the field of play for a safe and stimulating player experience.

The Prosport offers flexibility at the point of installation, with suitability for trunking, surface mounting and suspension to adapt to a wide range of architectural requirements. In this instance, luminaires were rigidly suspended from the hall's 9m ceiling to reduce damage from ball strikes, adapt to the existing trunking, as well as position the luminaires at the desired height for greater coverage. To cut the costs of installation, the Prosport was provided with a zintec spine to simplify mounting to trunking at high ceilings and was prewired to the required specifications.

Compared to the old T5 fluorescent tube fittings, the Prosport's durable LED source eliminates the risk of shattered lamps dispersing into the field of play. Unlike rapidly depreciating HID and fluorescent lamps, these high-quality LM80-verified Lumileds LEDs also offer a 90% lumen maintenance at 60,000 operating hours which ensures that once installed, the luminaire will require little to no servicing to keep light levels as originally intended. With luminaires installed at such inconvenient heights, a sparing maintenance routine will save the council the time and money of technical labour and interruptions in service. The Prosport LED's sturdy IK10-rated steel housing, polycarbonate end-caps and LED shield also ensure that the luminaire withstands the rigorous typical sports environments on a daily basis in years to come.

With a choice of DALI (Digital Addressable Lighting Interface) or HFR (analogue 1 - 10v) dimming options, the luminaire can also be customised to offer flexibility to switch light levels for different sports and work in conjunction with a choice of sensors for further energy savings.



Protec LED / Protec Display LED - Changing rooms, WC facilities, Medical room, Circulation areas, Lobby & Entrance

Maximum versatility and premium performance without compromising on energy efficiency

As one of Dextra Lighting's most versatile luminaires, the Protec LED recessed downlight was specified for a number of locations around the leisure centre. The popular luminaire can be customised with lumen outputs of up to 3000lm, coloured bezels, semi-specular or specular reflectors, colour attachments, and LED sources in various colour rendering and temperature options, making it extremely adaptable to a range of high-specification projects. Once installed, reflectors and colour attachments can be removed and replaced to adapt to future changes in colour branding schemes and layout. Custom-sized bezels can also be provided for retrofit applications.

To ensure optimal light quality and coverage, reflectors were supplied in both Optisat or Opitspec versions, in narrow, medium or open space distributions depending on the requirements of each room. Microprism diffusers can also be incorporated into the optic design to further reduce glare to the BSEN 12464 3000 candela limit and UGR (Unified Glare Rating) 19 for added visual comfort. This option is ideal for offices and areas requiring a gentler, more controlled, ambient lighting.

The Protec LED family of luminaires offers premium performance with impressive energy savings for reduced payback periods over fluorescent equivalents, making them an ideal fit for Abbey Stadium's environmental management policies whilst attending to its commitment to increase the value of public spaces. As most the fittings that needed to be replaced were 2 x 26w recessed downlights, different versions of the Protec LED with power loads of between 8.9w and 28w were chosen to suit each area offering a minimum of 46% reduction in energy use. Variants with IP44 covers were utilised, which were silicone sealed on location to an IP65 rating in wet areas such as the changing rooms, protecting the luminaires from exposure to water, dirt and light impact in the adjoining showers and WC facilities.

Luminaires were fitted quickly and cost-effectively thanks to their four point self-clamping spring brackets which offer the flexibility for installation into plasterboard, mineral fibre and metal tile ceilings of thicknesses between 3mm and 42mm.

In terms of performance, the Protec LED combines superior light quality and power with energy efficiency by using the latest Lumileds LEDs and Philips Fortimo/Xitanium drivers with efficient reflectors to offer LORs of over 90%, whilst keeping the electrical load low; ranging between low as 8.9w to 28w depending on lumen output. The durability and reliability of these high quality sources and drivers ensure that each installation requires minimal maintenance throughout its entire lifetime.

From a range of dimming options, luminaires were provided with both DALI and analogue dimming to offer flexible and accurate lighting control for different tasks, atmospheres and activities. Dimming functions can be paired with compatible sensors from Dextra's Reacta range offering both presence control and daylight regulation to maximise energy savings and improve return on investment.

The Protec Display LED elliptical scoop luminaire provided a directional angled beam for displays and accent lighting in the reception and lobby. This versatile addition to the Protec range features an adjustable housing that can be easily rotated and pivoted post-installation to adapt to layout changes and highlight displays more effectively. The luminaire offers four lumen outputs, a range of dimming variants and a prism glass cover providing an elliptical distribution as the name suggests. Its large 174mm cut-out size, matching that of most traditional HID or fluorescent fittings paired with versatile self-retaining sprung clips, allowed installation times to be kept to a minimum by avoiding ulterior modifications to the ceiling for further returns on investment. This high-performance luminaire is powered by a Tridion SLE module which allows it to offer an efficiency of up to 148 Llm/w at system level.

Manufactured in high-quality die cast aluminium, the Protec LED range of luminaires provided an aesthetically appealing finish, adding a contemporary and elegant touch to the leisure centre.



THE PRODUCTS

Hydra LED – Plant room & storage areas / Changing rooms & showers

Designed for durability, energy-efficiency and low maintenance in more challenging conditions

The durable and highly-efficient Hydra LED is purpose-built for a wide range of demanding environments such as industrial, storage and exterior applications. Its IP65-rated glass reinforced polyester housing, sturdy polycarbonate diffuser and steel gear tray offer the increased protection to light impact, dirt, dust and water ingress which was essential for the centre's utility areas and showers. The luminaire is also designed to withstand temperatures ranging between -25° and $+25^{\circ}$ making it ideal for the plant room.

Manufactured with the latest Lumileds LED source, the luminaire was an effective replacement for the previous fluorescent battens as it requires minimal maintenance once installed. Combined with highly efficient optic, the LED chip board offers significant energy savings, allowing the luminaire to offer LORs of over 90% at an efficiency of approximately 140lm/w. Stainless steel tamper-resistant screws and diffuser clips allow for toolled access for maintenance in compliance with statutory regulations.

The Hydra LED offers flexibility from the design stage through to installation and commissioning. With lumen outputs ranging from 2046lm to as high as 18,630lm across three body sizes, in either single or twin configurations installations, the luminaire can be tailored to suit specific lighting requirements in each area and maximise efficiency with each installation. The Hydra is suitable for suspension, mounting to trunking and surface mounting, which can be facilitated with a number of easy-install features and kits. This range is compatible with most mainstream dimming functions including DALI, Switch, HFR 1-10v Analogue and Digital DSI dimming.



THE PRODUCTS

Graduate Recessed LED - Office / WC facilities

Versatility and aesthetic appeal with the premium performance, low-maintenance and efficiency of LED in a single affordable package.

The popular Graduate Recessed LED was chosen to replace the existing panel lighting in the offices and a number of bathrooms. Despite featuring an attractive yet familiar direct/indirect gull-wing design common to conventional fluorescent fixtures, the luminaire outperforms its counterparts by offering a superior quality of light with outstanding energy-efficiency. To achieve this winning formula, the luminaire combines a prismatic opal extruded diffuser with the latest Lumileds LEDs to offer a high LOR at a luminaire efficiency of up to 117Llm/w.

With a wide range of customisable options including: output packages of up to 7132lm in either standard 600x600mm or 1200x600mm sizes, pull-up or lay-in installation formats, and recessed or semi-recessed versions, the luminaire offers maximum flexibility to design installations to specific energy, lighting and architectural criteria. BSEN 12464 glare limit compliant versions are also available for areas where computers and monitors are in use. A practical 25 litre per second air-handling option is also available, allowing lighting and ventilation systems to be integrated with minimal modifications to the ceiling and reduce overall installation costs, reduce clutter and improve sound control. The luminaire is compatible with all mainstream digital and analogue dimming types and a range of integral and standalone sensors which can be incorporated into the design to reduce energy usage and carbon emissions by an average of 30%.

Other products used in this project include the IP65-rated Amenity Plus LED circular and square bulkheads offering a highly-efficient, durable and low-maintenance solution for the centre's exterior at both the entrance and building perimeter.



THE PRODUCTS

Emergency

The luminaires featured in this project are available with integral three-hour emergency lighting in either standard, self-test or auto-test variants. With larger numbers of luminaires involved, automatic emergency testing functions become hugely cost-effective, saving the time, money and inconvenience of manual testing procedures. By means of LED indicators or user-friendly digital interfaces signalling faults, battery life or general status, these automatic emergency testing systems allow the entire network of luminaires to abide to BSEN 5266-1 regulations with precision, ease and additional peace of mind. These options increase return on investment in the long-term because maintenance becomes highly coordinated, organised and therefore economical.

Results

The results demonstrate the power of LEDs to maximise value for money for the public sector through increasing operational efficiency whilst making notable improvements to the functional and aesthetic aspects of the leisure facility.

Estimated	Annual	Lifetime
Energy Savings	72%	72%
Carbon Savings (tonnes)	49	490
Energy Cost Savings	£12,523	£165,385



FEATURED PRODUCTS



PROSPORT LED



PROTEC DISPLAY LED



HYDRA LED



GRADUATE LED
RECESSED