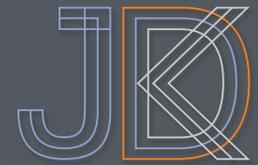


# JDDK ARCHITECTS: SUSTAINABILITY



# 20:20

A VISION FOR OUR FUTURE

JDDK DISCOVER DESIGN DELIVER

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*RSPB Visitor Centre, Sherwood Forest*



*Rivergreen Centre, Durham*

## INTRODUCTION

At JDDK Architects, we have been keenly interested in sustainable design throughout our 30 year history. However, business as usual is no longer sufficient. The climate crisis and the planet's biodiversity loss both threaten our way of life. Individuals and businesses all now have a responsibility to work together towards a better future.

The built environment contributes 40% of the UK's total carbon footprint. Clients, design professionals and contractors must come together to deliver buildings with a reduced impact on the environment. Our industry already has the technology to do this, but we need the will and commitment to make a difference.

At JDDK we recognise the important role that architects have to play in shaping a low carbon future, and that is why we're setting out our new sustainability strategy. We will work with our clients and colleagues to make a difference.

**Building on our history, we present 20:20, a vision for our future.**

## OUR PROJECTS



### Rivergreen Centre, Durham (2005)

Landmark office development with 4,000m<sup>2</sup> of managed office and conference space. Achieved BREEAM Excellent rating and won the RICS National Award for Sustainability.

[#BREEAM](#) [#Rammed Earth Wall](#)  
[#Photovoltaics](#) [#Green Roof](#)  
[#Biomass Boilers](#) [#Natural Ventilation](#)  
[#Recycled Materials](#)

### The Wynd, Amble (2007)

An innovative scheme of 12 detached houses set in a sensitive location overlooking the harbour in Amble. Achieved EcoHomes Excellent rating and won The Journal Landmark Environmental Award.

[#EcoHomes](#) [#Green Roof](#)  
[#Timber Frame](#) [#Fabric First](#)



### Saltholme Wildlife Reserve Visitor Centre, Teesside (2008)

Education, community and visitor centre for RSPB and Teesside Environment Trust. Achieved BREEAM Excellent rating and won the Regional Construction Excellence Award for Sustainability.

[#BREEAM](#) [#Rammed Earth Wall](#)  
[#Photovoltaics](#) [#Natural Ventilation](#)  
[#Recycled Materials](#) [#Reed Beds](#)  
[#Rainwater Harvesting](#)

### **The Witham, Barnard Castle (2013)**

Redevelopment of community hub and library, including naturally ventilated performance space. Won an Outstanding Award at Durham Environment Awards. (JDDK involved as delivery architects from RIBA Stage 3)

[#BREEAM](#) [#Natural Ventilation](#)



### **King Edward VI School, Morpeth (2014)**

Remodelling and extension of Advanced Learning Centre for sixth form students. Incorporated a new natural ventilation strategy to limit overheating.

[#Retrofit](#) [#Natural Ventilation](#)  
[#PV Ready](#)

### **Thorpe Hall Hospice, Peterborough (2015)**

Extension to Grade I listed building to create new hospice In Patient Unit within walled garden. Won 'Best Inclusive Building' award at LABC National Awards 2016.

[#Ground Source Heat Pump](#) [#Timber Frame](#) [#Green Roof](#) [#Inclusive Design](#)



## OUR PROJECTS



### **The Sill, Northumberland (2017)**

The design for this landscape discovery centre and youth hostel was inspired by its Northumbrian setting and shaped by public consultation. The accessible roof is planted with native grasses and provides a viewpoint to Hadrian's Wall. Winner of Selwyn Goldsmith Award for Universal Design in 2019.

[#BREEAM](#) [#Green Roof](#) [#Photovoltaics](#)  
[#Natural Ventilation](#) [#MVHR](#)

### **Beeswing House, Northumberland (2018)**

Conversion and retrofit of John Dobson designed farm steading to holiday accommodation. Used carbon negative wood fibre insulations on solid stone walls. See case study on page 16.

[#Retrofit](#) [#Air Source Heat Pump](#)  
[#Carbon Negative Woodfibre Insulation](#)



### **RSPB Sherwood Forest (2018)**

Visitor centre with a curved and twisted form inspired by the forest. Voted Sustainability Development of the Year at 2019 East Midlands Property Awards.

[#Air Source Heat Pump](#) [#Timber Frame](#)  
[#Timber Cladding](#) [#Natural Ventilation](#)  
[#SUDS Ponds](#)

### **Moor Croft, Northumberland (2019)**

This self-build project achieves high levels of energy efficiency with its insulated timber frame and triple glazing. Two large photovoltaic arrays are providing most of the home's energy. See case study on page 15.

[#Ground Source Heat Pump](#) [#MVHR](#)  
[#Triple Glazing](#) [#Photovoltaics](#)  
[#Rainwater Harvesting](#)



### **Offices, Stannington (2019)**

1,100m<sup>2</sup> speculative office development incorporating high levels of insulation. A domestic gas boiler is all that's needed to heat the whole building. The large south facing windows are shaded with a colonnade. See case study on page 12.

[#Fabric First](#) [#Triple Glazing](#)  
[#Airtightness](#) [#Natural Ventilation](#)

### **Kielder Planetarium, Northumberland (ongoing)**

This new planetarium will sit alongside the Kielder Observatory. Due to its remote location it will be 'off grid'. Using renewable technologies it will be energy self-sufficient and will be fitted with composting toilets for visitors.

[#Off Grid](#) [#Renewables](#)  
[#Composting WC](#)



# OUR THE JDDK 20:20 SUSTAINABILITY STRATEGY

In developing this strategy we have looked carefully at the role JDDK Architects can play in tackling the climate and biodiversity crisis, whilst designing buildings that are comfortable, healthy and meet the needs of our clients. Our new strategy is organised around three key strands which will guide our work and our business in the coming years.



## **Knowledge**

This describes the knowledge, skills and experience that our technical staff can bring to our projects.



## **Business**

This is how we will manage our business to minimise our own impacts on the environment.



## **Leadership**

This is how we will collaborate with others in our industry to make a positive impact beyond our own business.

In the following pages, we have set out our aims, aspirations and targets in greater detail. We will issue regular reports on our progress in the years ahead.



*Thorpe Hall Hospice, Peterborough*

# KNOWLEDGE



We will seek to embed the principles of sustainable design into every project. We will continue to ensure our staff are empowered to have knowledgeable conversations with clients, consultants and contractors about sustainable design and delivery. We will provide training for our technical staff to ensure they can provide the skills our clients need, including in Passivhaus design.

## Key Actions:

- Brief clients and project teams on the opportunities for embedding sustainability within each project at the outset, whether new build or refurbishment.
- Continue to provide training for our staff to maintain and improve their skills in sustainable design. Report annually on training provided.
- Provide in-house Passivhaus design advice by the end of 2020.
- Work towards implementing the RIBA 2030 Challenge. See Page 14.
- Invest in software and BIM tools to incorporate sustainable design into our workflow.
- Aim to create space for nature within our projects. See Page 18.
- Carry out post occupancy evaluation (POE) including monitoring of in-use energy.



# BUSINESS



We believe it's vital to carry out our day-to-day business operations in as sustainable a manner as we can. We are currently measuring our baseline carbon footprint and have set a bold target to bring this to zero. We will reduce the emissions of our business travel by supporting low carbon transport for our staff such as cycling and electric vehicles. We will reduce our consumption of water and the waste that we generate.



## Key Actions:

- Measure and report our carbon footprint annually and reduce this to zero by 2030.
- Offset 10% of our carbon emissions using tree planting schemes.
- Minimise our contribution to local air pollution by providing excellent facilities for cyclists and drivers of electric cars.
- Measure and report our water usage annually and reduce it.
- Measure and report the quantity of waste that we generate and reduce it.
- Minimise our consumption of single-use plastics.
- Volunteer for regular community projects including litter picking days.

# LEADERSHIP



Shaping our business to be greener, and creating sustainable buildings, won't be enough on its own. The whole construction industry must embrace the change needed to tackle the climate and biodiversity crisis. Therefore, we will collaborate with our colleagues to make a positive impact on our supply chain and the broader industry. We will also share the knowledge and experience that we develop along our own journey.

## Key Actions:

- Use our website, social media and Millmount News to report on the progress of our sustainability journey.
- Collaborate with our clients, colleagues and supply chain to raise awareness of the climate and biodiversity crisis and encourage industry wide transformation.
- Share our knowledge and research openly.
- Support industry initiatives on sustainability.



*The JDDK team*

## CASE STUDY: SUPER INSULATED OFFICE, STANNINGTON

The brief from our client included ambitious energy use and CO2 emission targets which we achieved through orientation and high levels of insulation in the walls, floor and roof. Large triple-glazed windows provide daylight throughout the offices, whilst a colonnade with climbing plants prevents overheating. The 1,100m<sup>2</sup> office can be heated with a single domestic-sized gas boiler.



*"JDDK understood the client brief from the outset for a strong preference for fabric first approach to achieve a long term environmentally sustainable project. We agreed with JDDK that a highly insulated building, way above building regulation requirements, was the most cost-effective solution in achieving a sustainable office development. We are currently monitoring energy usage and are achieving hugely successful results."*

**Peter Candler, Managing Director of Rivergreen Developments Ltd.**



# HEALTH AND WELLBEING



*Rammed earth wall at Rivergreen Centre*

A drive for sustainability is not just about reducing energy use and carbon emissions. There are numerous benefits from a well-considered sustainable design, particularly for health and wellbeing. Buildings that are thermally efficient provide high levels of thermal comfort for users whilst an airtight envelope with a good ventilation system can ensure that the fresh air supply will remove excessive moisture and odours from interior spaces. The careful design of windows will provide plenty of daylight whilst avoiding overheating. Finally, the specification of natural materials can help to provide good indoor air quality without pollutants, and timber construction techniques can lock up carbon from the atmosphere.



*The Sill Landscape Discovery Centre*



## ALL OR NOTHING?

It's easy to think that the climate crisis is too big to be solved with just one project. There is also a common misconception that sustainable design is expensive. Whilst some technologies can be costly, a lot can be achieved by careful design and delivery. Taking a 'fabric first' approach to energy efficiency can save money as well as carbon emissions over a building's lifespan. A lot can be achieved by making small changes to a building's design. It's not 'All or Nothing.' JDDK can help to deliver sustainable projects which remain within a client's budget, and every project can make a difference.

## RIBA 2030 CHALLENGE

RIBA 

Chartered Practice

In June 2019 the Royal Institute of British Architects (RIBA) voted to join the global declaration of an environment and climate emergency. The climate emergency demands urgent action and leadership by architects and the wider construction industry. Now, putting words into action, the RIBA has developed its 2030 Climate Challenge, an initiative setting targets for practices to adopt to reduce operational energy, embodied carbon and potable water. As an RIBA Chartered Practice, JDDK have signed up to the ambitious challenge.

### RIBA 2030 Climate Challenge Trajectories

The RIBA has set RIBA Chartered Practices a challenge of achieving the following reductions as soon as possible:

- Reduce operational energy demand by at least 75%, before UK offsetting.
- Reduce embodied carbon by at least 50-70%, before UK offsetting.
- Reduce potable water use by at least 40%
- Achieve all core health and wellbeing targets on overheating, daylighting, internal CO2 levels, and the levels of contaminants including VOC's and formaldehyde.

*"Having brought up a large family in an old country vicarage we wanted to downsize to a less labour-intensive house with fewer, but not smaller rooms and a big kitchen for family meals. We worked closely with JDDK throughout the process from design to completion. Adam was always knowledgeable and helpful and responded quickly whenever we had problems. We are now enjoying our new, warm, light, environmentally-friendly and easily-run home."*

**Anne & Brian Lowrie, Clients for Moor Croft.**



## CASE STUDY: LOW CARBON HOME, NORTHUMBERLAND

We worked with our self-build clients to develop a 'fabric first' approach to energy efficiency. The timber frame home's insulation, triple glazing and airtight measures all minimise the space heating demand, and a mechanical ventilation and heat recovery (MVHR) system provides fresh air throughout. Heat is provided by a ground source heat pump and photovoltaic panels generate almost all of the home's energy needs.



## CASE STUDY: SENSITIVE RETROFIT, NORTHUMBERLAND

The conversion of this stable block to a Grade I listed hall required the sensitive application of insulation to the solid stone walls to ensure the fabric can continue to breathe. We specified natural wood fibre and lime insulations to ensure embedded timbers aren't vulnerable to excessive moisture. The refurbished building, now providing holiday accommodation, is heated with an air source heat pump, and new timber windows maximise natural light to the interiors.



*"After the usual pressures to bring the project to completion, we were pleased to be able to welcome holiday makers through the summer holidays and the excellent feedback from all the early guests is testament to the great result from the design team and the builders. We had been aspiring to bring these lovely old buildings into a modern use for many years and we are thrilled by the way in which this property enhances the whole area."*

**Samantha Orde, Client for Beeswing House**



## CLOSING THE PERFORMANCE GAP



*Toolbox talk with contractor*

Unfortunately, too many projects don't perform as well as their designers had intended. This is known as the 'performance gap'. The causes are complex, but JDDK understands that architects have a key role to play in closing the performance gap. We will work with our construction partners to maintain the quality of design and delivery so our buildings perform as they're supposed to. We already carry out post-occupancy evaluation for some clients and will extend this so we can make continuous improvements. We also see the benefit of the quality assurance embedded within the Passivhaus Standard and are working towards offering this to our clients.

## RETROFIT AND EMBODIED CARBON

Retrofit is becoming an increasingly important solution to the climate crisis. All buildings retain 'embodied carbon', which derives from the energy and materials used to construct them in the first place. Demolition usually wastes this energy, and a replacement building will cause yet more carbon emissions. It's important to remember that the energy needed to construct a new building causes carbon emissions at the outset, often termed 'Upfront Carbon'. If we're serious about reaching zero-carbon targets as soon as possible then we must focus on retrofitting existing buildings. This will often involve repurposing, refurbishing and bringing old buildings up to the highest possible standards of sustainability. JDDK have carried out numerous refurbishment projects and can advise clients on the benefits as well as the challenges of retrofit work.

## SPACE FOR NATURE

Landscape has always played a key part in JDDK's work. Sometimes, our buildings are carefully positioned within a natural setting, such as our recent visitor centres at The Sill and Sherwood Forest. In other cases, we work closely with landscape architects to bring nature into the built environment. Part of the challenge for architects in the years to come will be incorporating 'space for nature' within our developments. We must create opportunities for wildlife to flourish, through the careful integration of green infrastructure.

At this smallest scale, this could be the provision of bat slates and bird boxes, but the bigger and more connected the green spaces are the more they will support ecological network and a wider range of biodiversity.



*St. Gemma's Hospice, Leeds*

## SOME JDDK STAFF INVOLVED WITH SUSTAINABLE DESIGN



**Adam Vaughan RIBA**  
Director | Architect

Adam joined JDDK in 2005, becoming a Director in 2016, where his work has been in a number of development sectors, whilst his particular interests in both environmentally sustainable architecture and the re-use of historic buildings has flourished. He leads the practice's work in sustainability. Adam has acted as 'Sustainability Expert' for the RIBA Awards. He is also editor of the award winning sustainability blog 'Tracing Green'.



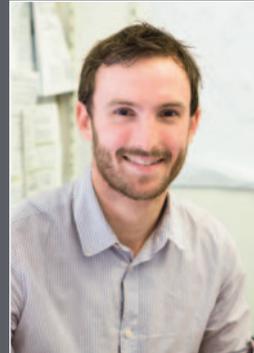
**Alison Thornton-Sykes RIBA**  
Principal Architect

Alison joined JDDK in 1991. She has worked across many sectors, often in environmentally sensitive locations. Community consultation has also been a key area in Alison's work, demonstrated in high profile developments such as The Sill Landscape Discovery Centre in Northumberland and Sherwood Forest Visitor Centre. Her design for the RSPB's hugely successful Saltholme Visitor Centre swept the board for architectural awards.



**Samantha Dixon RIBA**  
Architect

Samantha joined the practice in 2013 and her work has included a number of specialist housing projects for end-users with specific cultural, physical and emotional needs. She is a member of the RIBA Conservation Register and has been involved with the refurbishment and retrofit of a number of listed buildings. Samantha is also trained to use the Smart Carbon system and undertakes JDDK's carbon footprint assessments.



**Tristan Cooper B.Sc. (Hons)**  
Associate | Technologist

Tristan joined JDDK in 2005 and has led the detail design and delivery of much of the practice's affordable and supported housing schemes as well as working at production information stage for private house builders and on major healthcare projects within the practice. He has a keen interest in Passivhaus design and is undertaking training so the practice can deliver the standard.



## JDDK DISCOVER DESIGN DELIVER

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