



# Woodworks

A Report on the Potential of  
Locally-Sourced Timber

# Woodworks

---

Written and edited by:

Prue Chiles  
Leo Care  
Claire Kemp

of Bureau - Design+Research,  
University of Sheffield

In partnership with:

South Yorkshire Forest  
and Sheffield City Council

This report is based on a one-day conference held in Sheffield on 15th September 2008 about the potential for using locally-sourced timber to create innovative buildings.

The conference was held to further discussions that occurred when Bureau - Design+Research were developing a masterplan for a Woodland Innovation Centre at Ecclesall Woods in Sheffield with the City Council and South Yorkshire Forest.

Essays by conference speakers are expanded with a series of facts, ideas, projects and proposals about increasing the use of locally sourced timber in construction in Sheffield, South Yorkshire and beyond.

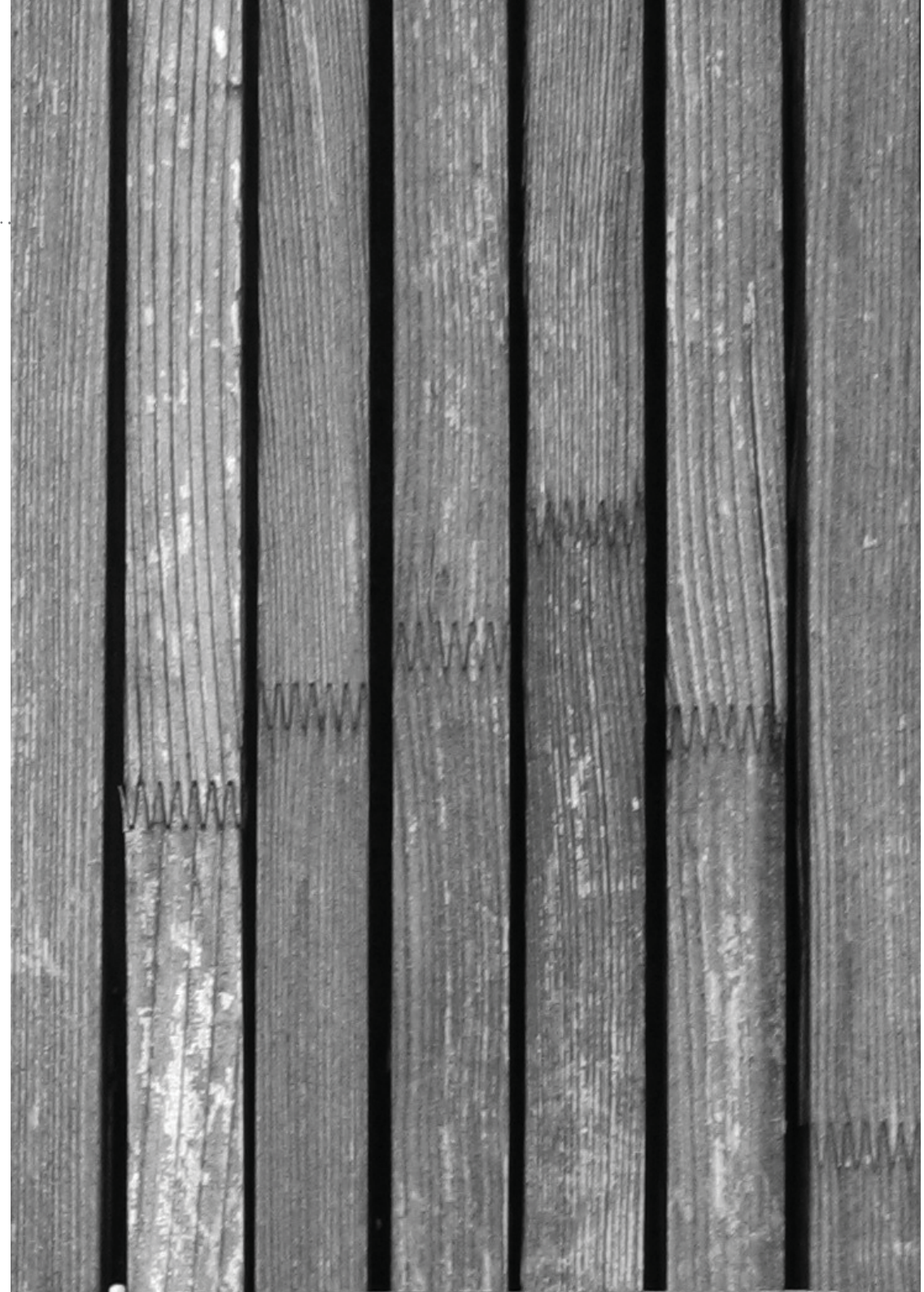


# Contents

---

## Essays, Facts, Ideas, Projects and Proposals

- 04 **Introduction**
- 06 **Proposals: Woodland Innovation Centre, Ecclesall Woods**
- 08 **Essay: Global Awareness, Local Action**  
[Leo Care, Bureau - Design+Research, The University of Sheffield]
- 10 **Facts: Timber Sourcing**
- 14 **Ideas: How can we increase the use of Local Timber in Construction?**
- 16 **Essay: Local Timber Industries Benefit Everybody**  
[Krys Craik, South Yorkshire Forest]
- 18 **Facts: Out of the Woods**
- 20 **Essay: Balancing Amenity, Silviculture and Biodiversity**  
[Nick Sellwood, Parks and Countryside, SCC]
- 24 **Idea: S-heffield T-imber E-xchange and M-art**
- 26 **Essay: Trees + People x Knowledge + Skills = Woods That Work**  
[Ted Talbot, SCC and Working Woodlands]
- 30 **Project: Gallery 37**
- 32 **Essay: Environment, Enterprise and Innovation**  
[David Saunders, Flimwell Woodland Enterprise Centre]
- 36 **Idea: Sheffield Timber Knowledge Bank**
- 38 **Essay: UK Timber: Availability and Demand**  
[Peter James, Arnold Laver]
- 42 **Idea: Local Timber Certification**
- 44 **Essay: Timber Innovation: Practice, Teaching and Research**  
[Prue Chiles / Leo Care, Bureau - Design+Research, The University of Sheffield]
- 48 **Project: LiveTimber Programme**
- 56 **Essay: Timber Futures**  
[Oliver Lowenstein, Fourth Door Review]
- 62 **Proposals: Workshops at Ecclesall Woods**
- 66 **Summary**
- 68 **Sources and Further Reading**
- 70 **Photography Credits**
- 72 **About Us**



# Introduction

---

Leo Care

Bureau - Design+Research, University of Sheffield

Woodworks the conference provided an opportunity for designers, crafts-people, woodland managers and local authorities to explore opportunities for creating a locally sourced timber industry.

In light of recent environmental awareness and the push towards sustainable certification of timber products, the broad aim of the conference was to increase the breadth and depth of knowledge of timber construction and the issues surrounding it.

The conference highlighted that innovation is crucial in the design of locally-sourced timber buildings. Also integral to innovative design is the development of new techniques for using timber that draw on old and new technologies.

Managing resources and establishing networks to support and promote this approach also require the same imagination and ingenuity to provide a sustainable and diverse industry. It became clear throughout the

day that the collective knowledge and skills of participants when brought together could begin to piece together the mechanisms and organisation needed to realise a native timber industry.

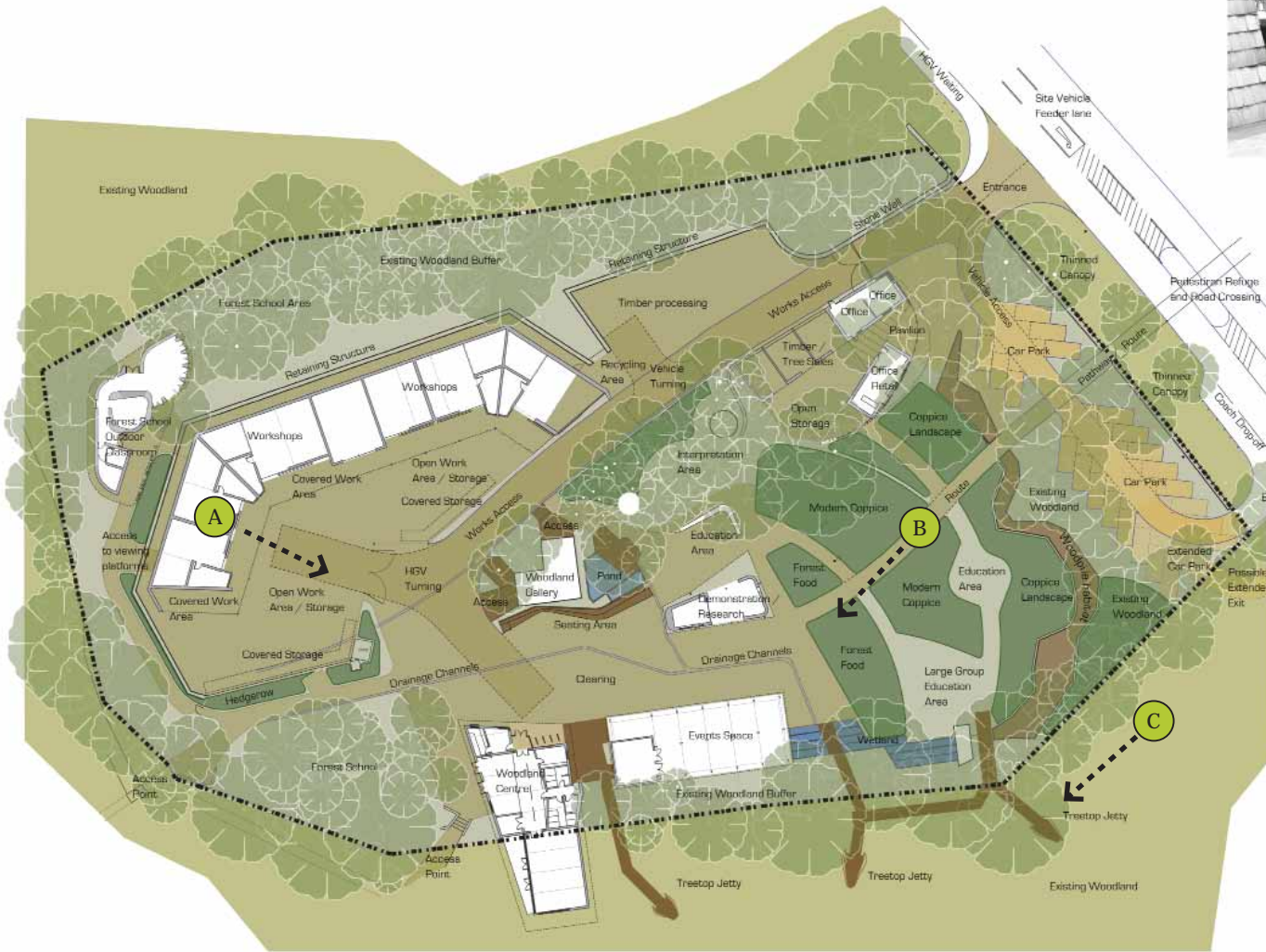
Whilst using examples of homegrown timber projects across the UK and abroad, the emphasis of the conference was on acting locally and using Sheffield as a test bed for the development of a local timber industry. Previous work to create a Woodland Innovation Centre at the former Sawmill Site at Ecclesall Woods in Sheffield provided a focus for discussing specific projects and models of procurement and organisation.

Woodworks was conceived as a pilot conference to gauge interest and start the debate. The conference has generated wide ranging interest and it is now important to use this as a springboard for further research and discussion on the subject.



# Proposal: Woodland Innovation Centre, Ecclesall Woods

The way we source timber has to change



## Essay: Global Awareness, Local Action

---

Leo Care

Bureau - Design+Research, University of Sheffield

Whilst the global timber industry is focused on certifying timber to ensure its sustainability, it is a sad irony that much of the timber produced in the UK, particularly from small producers; often inherently sustainable [and not shipped halfway round the world] is not certified. Perhaps even more concerning is that the majority of homegrown timber is undesirable and considered of low-quality by many mainstream suppliers.

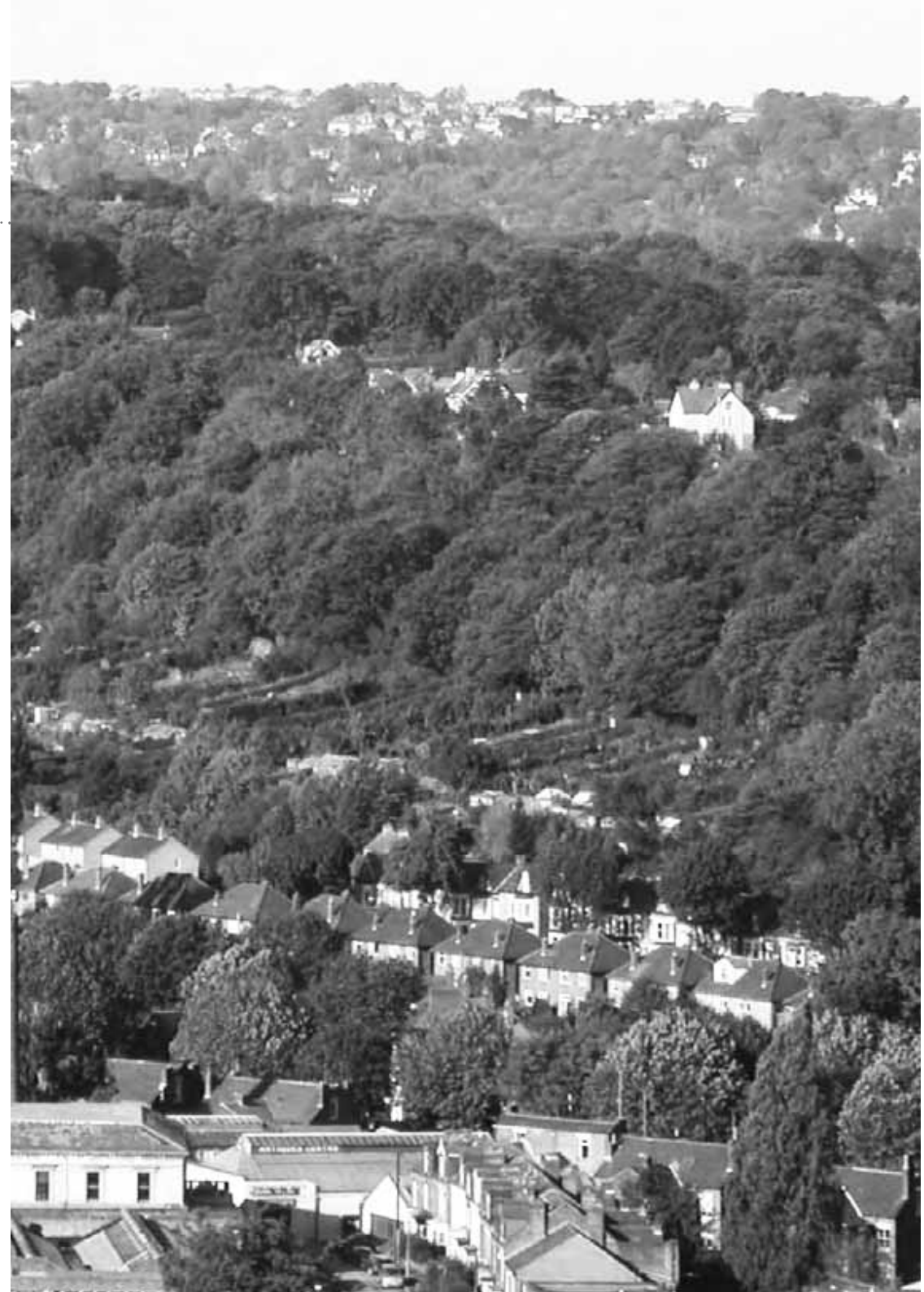
A general misconception that trees live for ever and all felling marks a degradation of biodiversity, amenity and habitat pervades. In fact, in well-managed woodlands the reverse is true. Many of our woodlands have suffered recently due to the lack of funding for active management and if not addressed may become moribund.

Many people believe that the country is losing its woodlands and forests. However, a greater level of tree planting and forestation has been implemented in recent years and replanting programmes are beginning to make

an impact.

The modern, industrialised construction industry in Britain has taken a long time to warm-up to the idea of timber frame construction. An attitude that bricks and mortar are the only way to build homes is prevalent. Continental techniques and composite products are slowly being taken up and builders and homeowners are realising how much energy and resources can be saved in building and living in timber buildings.

Using locally-produced timber for projects offers further savings in terms of energy used to transport materials and often ensures a more sustainable source of timber. Locally-sourced timber also gives opportunities to develop a new vernacular, buildings that are specific to their place and made using specialist techniques that suit the type of native timber available. The opportunities are there and the challenge is to establish networks and organisation to make the most of them.



## Facts: Timber Sourcing

The way we source timber has to change

### UK Wood Use

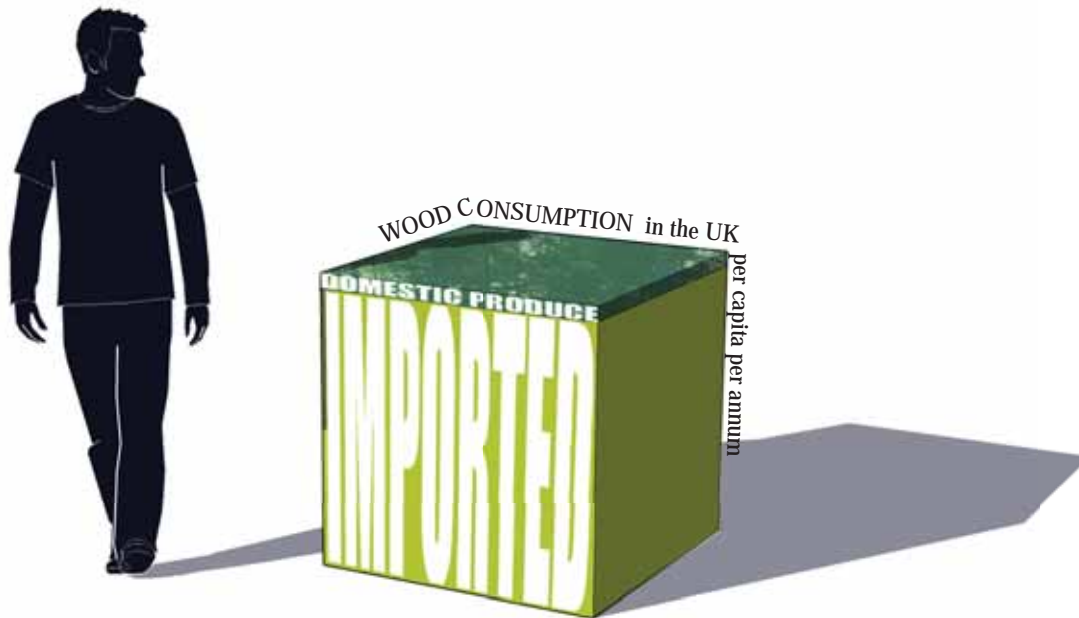
In 2007 apparent consumption of wood in the UK was 56.4million m<sup>3</sup> (Forestry Commission 2008). That equates to almost 1m<sup>3</sup> per capita each year.

In the same year the UK imported 54.1million m<sup>3</sup> of wood (Forestry Commission 2008). That equates to over 95% of consumption.

### UK Wood Use in Construction

In the UK approximately 60% of wood and wood product consumption is by the construction industry (Timber Trade Federation 2009).

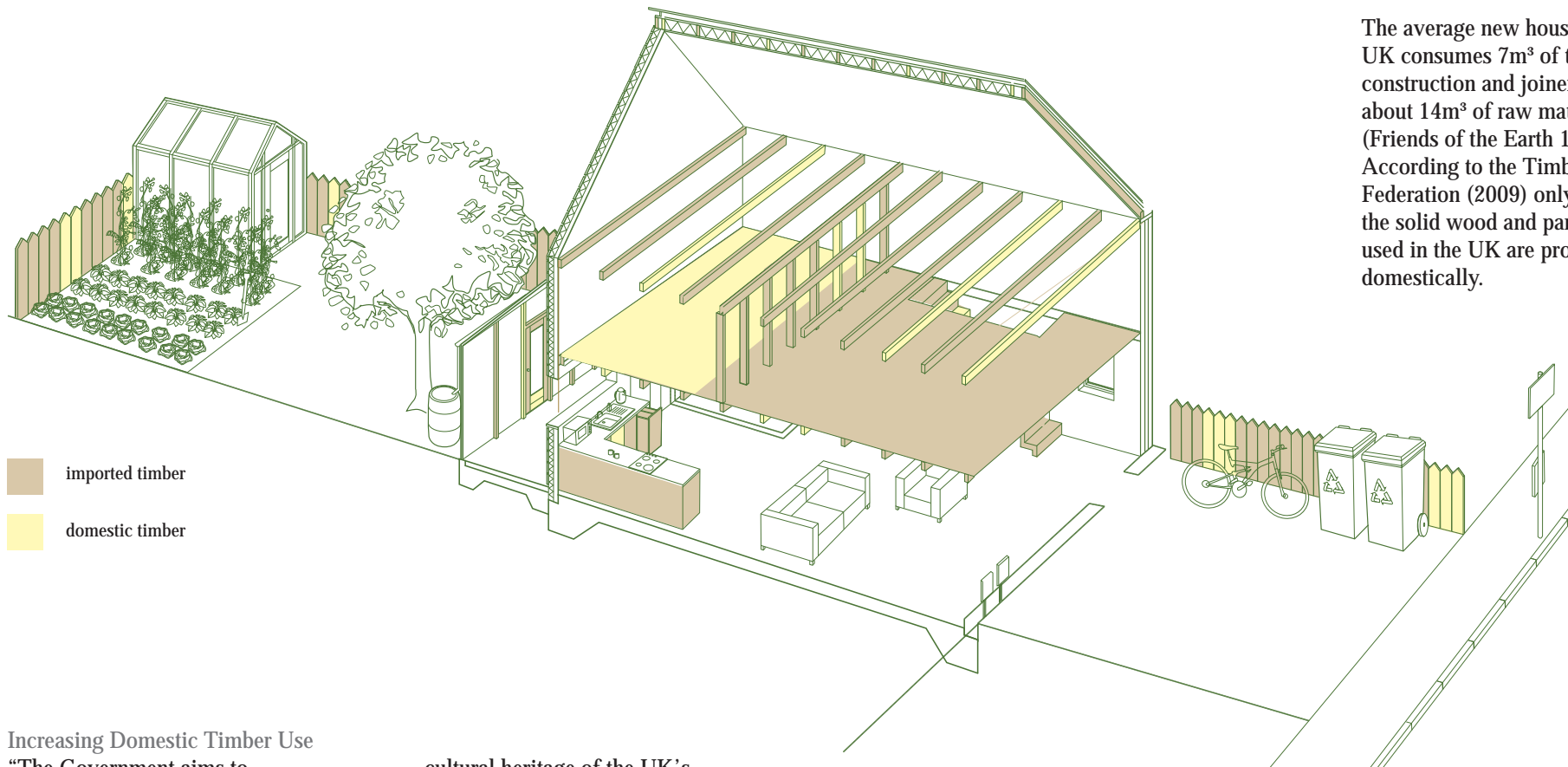
On top of that another 7% of total consumption is for fencing and other outdoor uses such as decking (Timber Trade Federation 2009).



67%  
CONSTRUCTION  
AND FENCING

33%  
OTHER [INCLUDING  
FURNITURE (15%), AND  
PACKAGING (15%)]





imported timber  
 domestic timber

The average new house in the UK consumes 7m<sup>3</sup> of timber in construction and joinery (using about 14m<sup>3</sup> of raw material) (Friends of the Earth 1995). According to the Timber Trade Federation (2009) only one third of the solid wood and panel products used in the UK are produced domestically.

**Increasing Domestic Timber Use**

“The Government aims to increase the domestic supply of good quality timber through the sustainable management of woodlands and forests and through a steady expansion of forest cover.

The objectives are to:

- protect the UK’s forest and woodlands
- expand the UK’s forest area
- enhance the economic value of the UK’s forest resources
- conserve and improve the biodiversity, landscape and

- cultural heritage of the UK’s forests and woodlands
- develop opportunities for woodland recreation
  - increase public understanding and community participation in forestry.”

(FAO European Forestry Commission joint session with UN/ECE Timber Committee, 2000. ‘State of Forestry in the Region - UK Report’).

“The establishment of local sustainable industries (whether non-wood fibres, tree planting, greater use of neglected woodlands etc) will provide community benefits in local rural areas. By producing locally, transport needs are reduced thereby conserving fossil fuels, decreasing the needs for roads and cutting down on pollution.”

(Friends of the Earth 1995, ‘Out of the Woods’)

“FSC accreditation ... should not be used to justify increased logging abroad to satisfy UK demand without first making maximum use of indigenous resources and reducing and recycling timber waste.”

(Andy Simmonds, Chairman of the Association of Environment Conscious Building)

# Ideas: How can we increase the use of local timber in construction?

A few suggestions...

> endorsing local timber use

‘Wood mileage is an indicator calculated by multiplying wood volume by the distance transported. The indicator is being used to promote the use of local wood and the reduction of energy used in transportation.’

Kyoto’s Wood Mileage Scheme - Green Building Magazine

> creating a local knowledge base

Try to understand the supply and characteristics of local species, some species are not available in quantities large enough for national markets but can service local projects.

Forestry Commission - What local timber shall I use?

> creating networks

‘This current lack of engagement, between construction activities and the local timber industry, is a problem that would not be hard to address. It requires the building of working relationships linking the design and making processes with the resource.’

Andy Simmonds - Chairman of the Association of Environment Conscious Building

> improving supply chains

To obtain locally grown wood for your timber frame house construction, or indeed for any other purpose e.g. fencing, it is not simply a matter of contacting your local builders merchant or timber merchant.

Forestry Commission - Where can I buy local timber?

> making the most of all wood sources

‘Many of Sheffield’s trees have stood for well over 100 years, making the city more attractive, healthier and habitable. But many of these are fast approaching the end of their natural lifespan and a new generation is needed to take over from these ancient guardians.’

Sheffield City Council - Tree Planting Nominations

> building on a growing economy

‘Woodlands are increasingly playing a part in our local economy as better woodland management creates a market for wood for local crafts people and as fuel.’

South Yorkshire Forest - Forestry Resources

## Essay: Local Timber Industries Benefit Everybody

Krys Craik

South Yorkshire Forest

Over the last six years South Yorkshire Forest has been making strong links between woodland management and local timber contractors and wood users. This work has social, economic and biodiversity benefits around the region.

### Productive Woodlands

There is no doubt that many of the woodlands and forests of South Yorkshire are currently a forgotten resource when it comes to growing and sourcing materials for future construction projects. SYF is committed to promoting better woodland management through its network of local stakeholders, ensuring that biodiversity, amenity and productivity are balanced.

### Construction industry and timber

There is general lack of knowledge and understanding about using timber in the construction industry. Sourcing locally-sourced and native timber is difficult due to relatively small available volume and variations in quality as well

as tracking down the appropriate timber and supplier. SYF would like to see a move towards locally-sourced timber industry and aims to influence this change through our various activities.

### Renewable energy

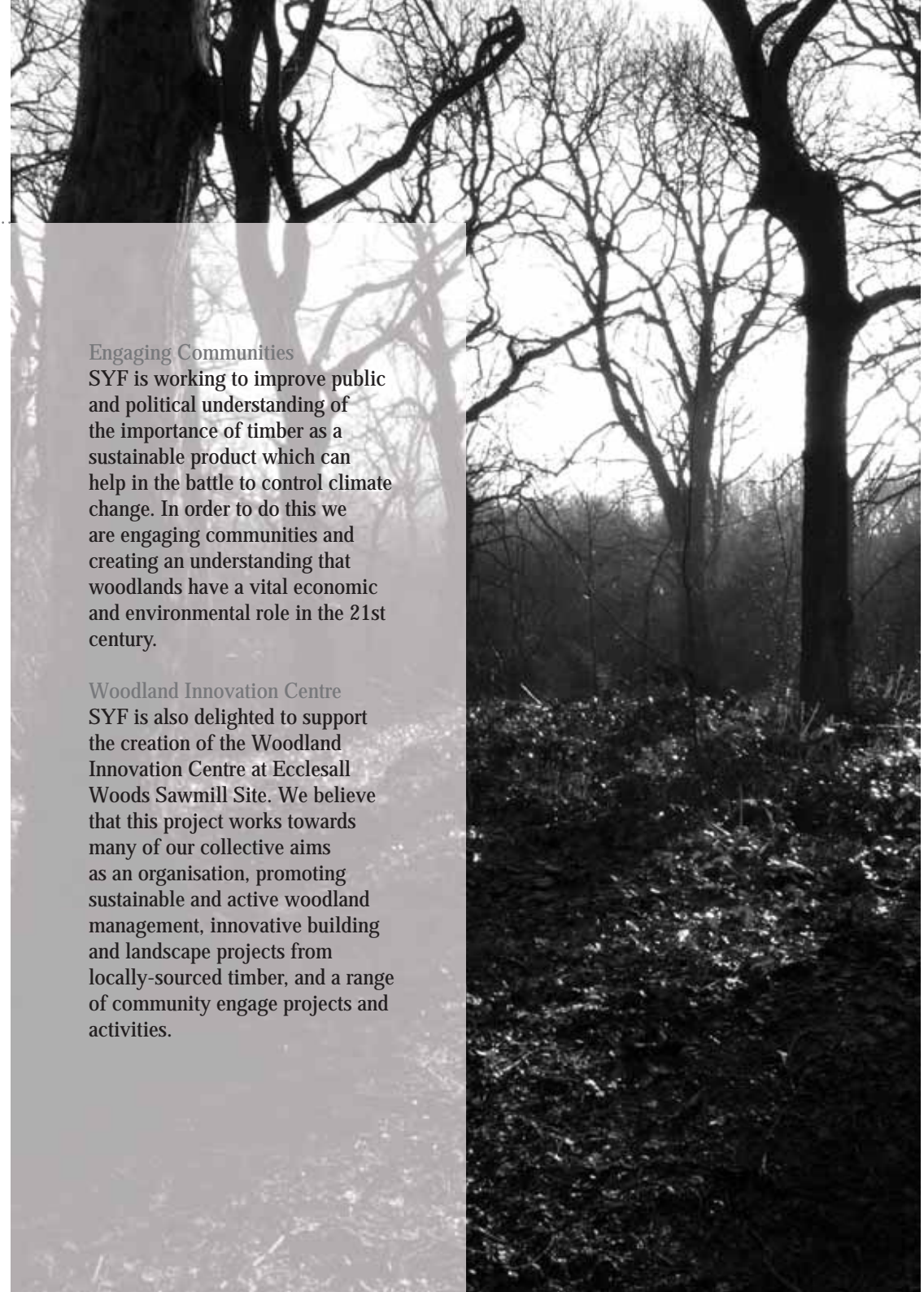
SYF has pioneered a renewable energy and woodfuel programme, encouraging people to use timber as a sustainable and carbon efficient fuel. This work goes hand-in-hand with active woodland management and is an essential part of weaving woodlands back into our everyday lives. A new project called 'Future Energy Yorkshire' is starting up as a follow-on project aiming to establish timber as the regional fuel that is sustainable in its production and use. Indeed SYF is already involved in sustainably producing wood to supply local wood users and growing biomass cluster.

### Engaging Communities

SYF is working to improve public and political understanding of the importance of timber as a sustainable product which can help in the battle to control climate change. In order to do this we are engaging communities and creating an understanding that woodlands have a vital economic and environmental role in the 21st century.

### Woodland Innovation Centre

SYF is also delighted to support the creation of the Woodland Innovation Centre at Ecclesall Woods Sawmill Site. We believe that this project works towards many of our collective aims as an organisation, promoting sustainable and active woodland management, innovative building and landscape projects from locally-sourced timber, and a range of community engage projects and activities.



## Facts: **Out of the Woods**

Creating and maintaining a thriving woodland involves balancing a range of activities



## Essay: Balancing Amenity, Silviculture & Biodiversity

Nick Sellwood

Parks and Countryside, Sheffield City Council

As the greenest city in England Sheffield is in a unique position. In common with many other cities it has a range of trees to manage, from street trees established in the Victorian era - to local amenity woodlands. Making best use of this natural resource, whilst maintaining a balance between the needs of people, trees and wildlife is one of issues that is dealt with on a day-to-day basis. So how can local authorities support and promote locally-sourced timber use?

### A Balancing Act

The area of woodland in Sheffield is increasing due to amelioration projects. This is contrary to popular belief that woodland areas are decreasing. Whilst this maybe the case in other areas, Sheffield's woodland and planted areas are growing. Lack of management has meant woodlands in the latter half of the 20th century have been allowed to develop naturally. Whilst this may be seen as environmentally appropriate it has led to woodlands that are in some places inaccessible and overgrown. This can have a negative impact

on woodland biodiversity and amenity. Recreation and biodiversity are the primary uses of the woodlands today, not timber production. This is not something that is going to change in the near future. Therefore balancing needs of people, wildlife and woodland management is crucial to success. If timber and locally-sourced timber is to become an important commodity in the future the following questions need to be addressed: Are Sheffield's woodlands working at their optimum level? Could production be increased without detriment to biodiversity and recreation?

### Managing a city's trees and woodlands

Sheffield is the most wooded City in Britain. 10.4% of the city is cover with woodland, which amounts to 4,000 hectares and growing. Sheffield City Council owns 1,550 hectares of woodland comprising: 650ha of ancient woodland [mainly urban], 400 ha of coniferous plantation [generally rural], 500 ha of 19th century and recent broadleaved plantations, etc across the City, together



spaces. The Trees and Woodlands Section lead the co-ordinated management of SCC's trees and woodlands. Split into three sub-sections: Tree management, Woodland management and Community Forestry. Sheffield City Council's woodland management is certified by the Forest Stewardship Council.

#### Woodland composition and character

Ancient and recent broadleaved woods are dominated by mature Oak, with Beech, Sweet Chestnut, and Sycamore. These woodlands were managed intensively for wood products into 19th century, especially charcoal, but much less so since. Coppice woodland with standards now makes up a large proportion of the woodlands.

#### Conifer plantations

Dominated by Spruce, Scots Pine, Corsican Pine, and Japanese Larch, planted mainly in the 1940's-1960's, conifer plantation comprise even-aged stands. These plantations are managed as commercial timber woodlands, but other interests are important as

most lie in the Peak National Park.

#### Timber certification

Certification of timber will become more important over the next few years as a drive towards sustainable sourcing of timber and woodland management is improved on a global scale. For small businesses getting certified timber is difficult and expensive, but it is important not to cut such enterprises out of the industry.

#### Timber markets

Felling of trees and sale of the timber is market driven. External contractors are employed by the local authority through a tendering system using "preferred" contractors and the vast majority of timber is sold "standing" to for felling, processing the timber to be sold on. Timber felled from Sheffield City Council's woodlands is FSC (Forestry Stewardship Council) certified. Due to the lack of large sawmills in S. Yorkshire, most of the 2,000-4,000 tonnes of softwood harvested p.a. leaves the region. The destination of each tree is not monitored by the council or

any other party once it has been processed.

A large majority of tree felling trees undertaken by the council is in relation to tree safety/risk assessment work. This activity generates lots of small quantities of mixed material. Due to the mixed quality and species of the timber it is often chipped on site or left in-situ. Of the 100-300 tonnes of Hardwood harvested per annum a high percentage is used for saw logs, firewood, chipwood and biomass. Of the timber felled locally by the council, small volumes of high quality timber are used for signposting, benches, sculptures and demonstration construction projects.

#### Recommendations

Timber felled from SCC woodlands has been used locally but could be more widely utilised. To develop an internal market within SCC would require different procurement processes and a network of active stakeholders to utilise Sheffield's timber in creative ways.

## Idea: S-heffield T-imer E-xchange & M-art

Sourcing local timber requires a network of timber suppliers

Want to buy or sell local timber? Timber can be sourced from a vast number of places other than specifically managed plantations; trees felled in gardens, fallen trees on the roadside, thinning of woodlands used primarily for recreation. The S-heffield T-imer E-xchange and M-art (STEM) would provide a platform for

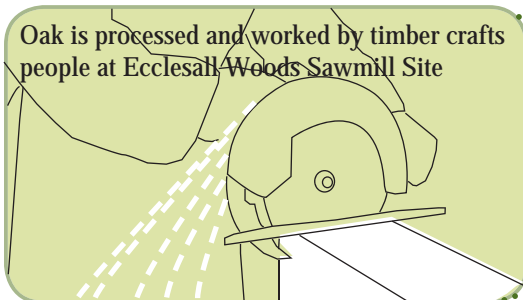
trading wood, timber products and related services within the locality.

A similar scheme, Woodlots, has been successfully implemented by WoodNet ([www.wood.netmx.co.uk](http://www.wood.netmx.co.uk)), a partnership of woodland owners and timber processing companies in the South East of England.

Storms cause oak to fall in Ecclesall Woods



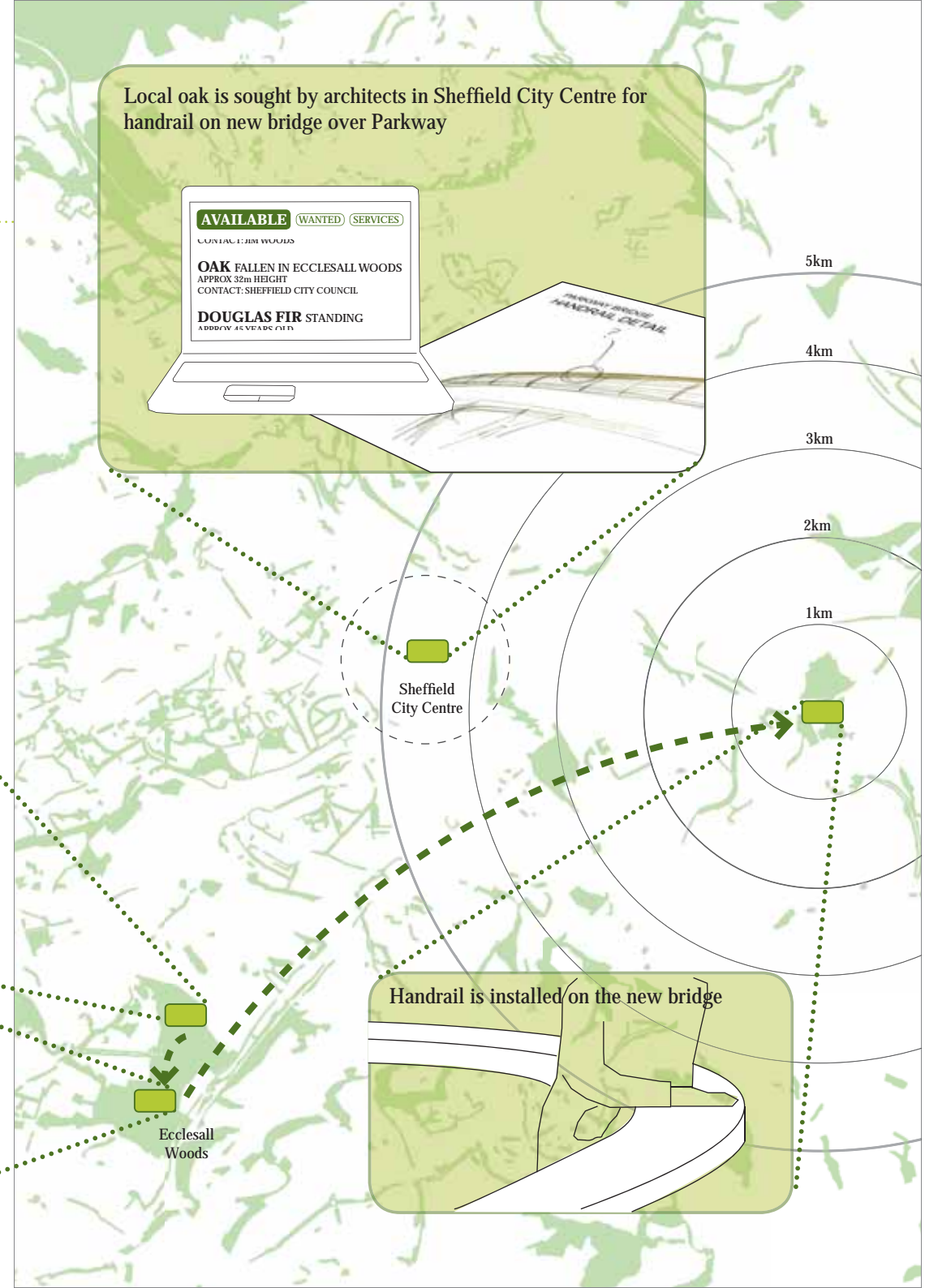
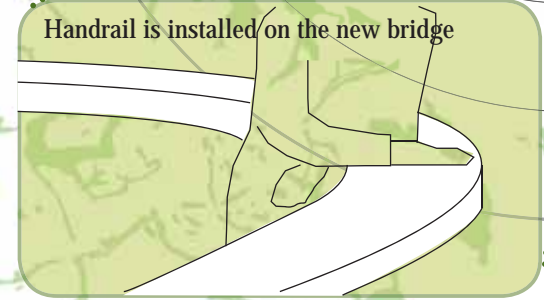
Oak is processed and worked by timber crafts people at Ecclesall Woods Sawmill Site



Local oak is sought by architects in Sheffield City Centre for handrail on new bridge over Parkway



Handrail is installed on the new bridge



## Essay: (Trees + People) x (Knowledge + Skills) = Woods That Work

Ted Talbot

Sheffield City Council & Working Woodlands

### Learning from the Past

As a useful resource and sustainable material wood has travelled with us since the dawn of civilizations. Building from timber is not a new concept. Timber buildings that were constructed hundreds of years ago, long before the days of British Standards, are still standing today. As we enter the “age of sustainability”, a lot can still be learnt from these, and much older structures as demonstrated by the discovery of Seahenge in 1998. This circle of 55 oak posts surrounding an upturned oak tree found on a beach in Norfolk provided valuable information about Bronze Age woodworking and construction techniques. Analysis of the timber shows that over 50 different axes were used to work the wood and it is considered that each of these axes represent a skilled individual who worked on the monument, indicating that it was constructed by a community of people working together.

The skills, knowledge and understanding of wood as a

material were once common and widespread within communities.

Buildings constructed before materials could be transported over long distances, such as the Bishops' House in Meersbrook, Sheffield, (circa 1500), demonstrate how structures were designed to use locally available resources. The majority of wood used in this half-timbered house has a diameter of less than 9 inches as this was the most readily available material. In the 17th Century, as supplies of oak in the UK began to dwindle and bricks became cheaper and more readily available this method of construction became less common.

### Working Woodlands

Today it can be argued that the primary value attached to trees and woods in the UK is no longer their timber value, but their social and environmental value – we import the majority of the timber that we use in construction. However, as pressures on transport costs and raw materials for construction increase, particularly those

extracted from the ground, timber is once again being seen as a viable material for building, being able to replace steel, concrete and plastics as a greener, “low carbon” solution. Whilst many people may see this renewed interest as having a potentially negative impact on UK woodlands and forests, the managed felling of trees is both necessary and beneficial for woodlands and wildlife. This economic factor is also important in the preservation of woodlands as it gives a quantifiable value to the land which leisure and ecological uses cannot easily account for.

In terms of sourcing local timber for local use there is a constant debate around economics and viability. There are now many examples of smaller scale construction projects in the UK that find creative ways of sourcing local timber effectively for buildings. The Small Woods Association, based in Shropshire is an excellent knowledge base for this approach and television programme like Grand Designs have raised the public's awareness

---

of timber in construction. A common theme in these projects is often the use of skilled crafts people and novel adaptations of traditional woodworking practices as opposed to technological solutions.

This alternative approach to forestry and large scale commercial timber practises, (which are now competing on a global market), has parallels with the recent “organic and local” resurgence within the farming sector. The fair-trade movement and other initiatives around ethical consumption have created customers who are interested in the production process, as well as price in relation to the products they buy. This is reflected in the significant charcoal market in the UK, where it is now possible to source locally produced charcoal from well managed British woods from major retailers, alongside the imported charcoal of dubious origin. Ethical Standards labelling, such as the FSC “Tree tick” are emerging in a similar way to those in organic farming.

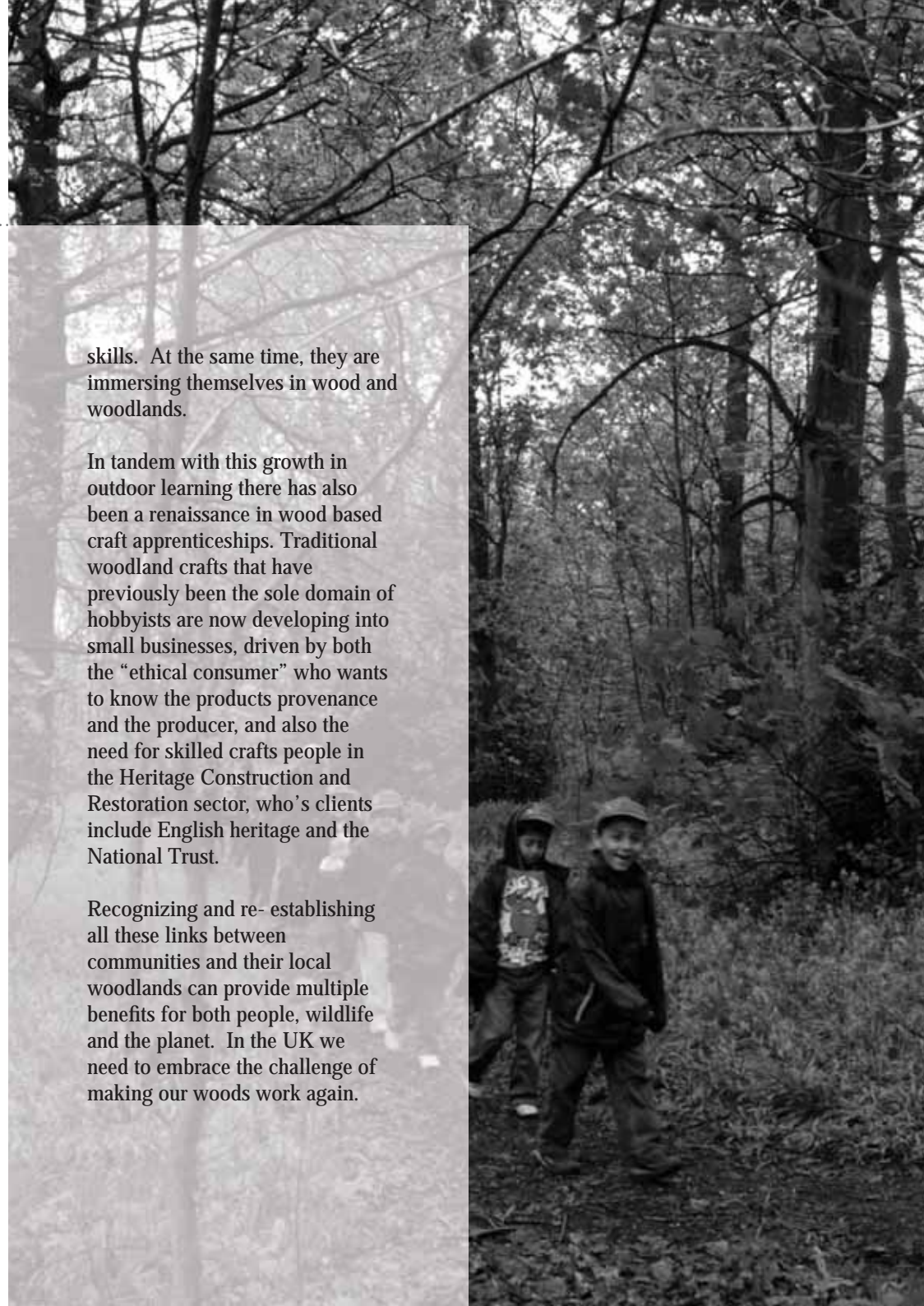
However, despite these encouraging moves, the truly sustainable use of both Britain and the World's forests remains elusive and challenging within the current economic and political framework. The key lies in achieving a balance between commercial practises, visitor use and maintaining natural habitats. Informed and knowledgeable consumers have an important role to play in driving sustainable woodland management practices.

**Re-connecting with our woodlands**  
A welcome move in recent years has been a renaissance towards the use of woodlands for education and the development of skills. The Forest Schools movement encourages young people to learn and develop themselves, through exploration and play in natural environments. By taking part in activities and challenges in the outdoors children and teenagers learn traditional craft skills, experience first-hand the opportunities and risks presented by these environments and develop confidence, team working and life

skills. At the same time, they are immersing themselves in wood and woodlands.

In tandem with this growth in outdoor learning there has also been a renaissance in wood based craft apprenticeships. Traditional woodland crafts that have previously been the sole domain of hobbyists are now developing into small businesses, driven by both the “ethical consumer” who wants to know the products provenance and the producer, and also the need for skilled crafts people in the Heritage Construction and Restoration sector, who's clients include English heritage and the National Trust.

Recognizing and re- establishing all these links between communities and their local woodlands can provide multiple benefits for both people, wildlife and the planet. In the UK we need to embrace the challenge of making our woods work again.

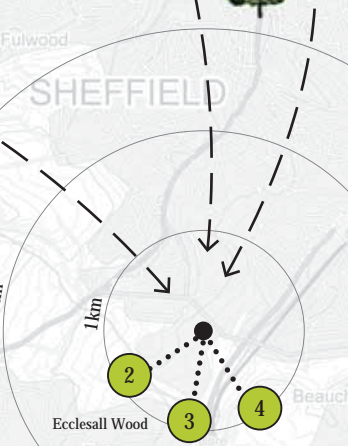
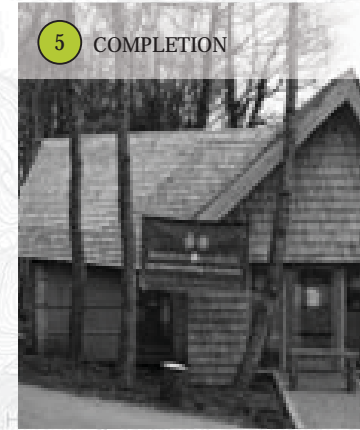
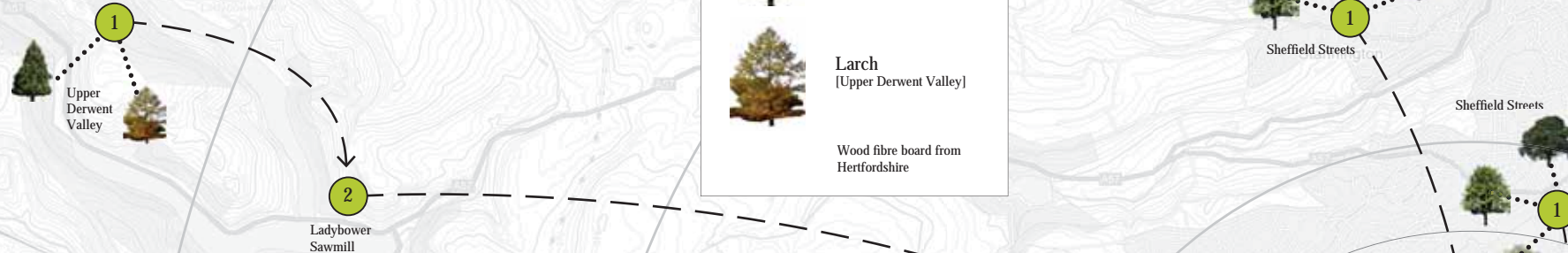
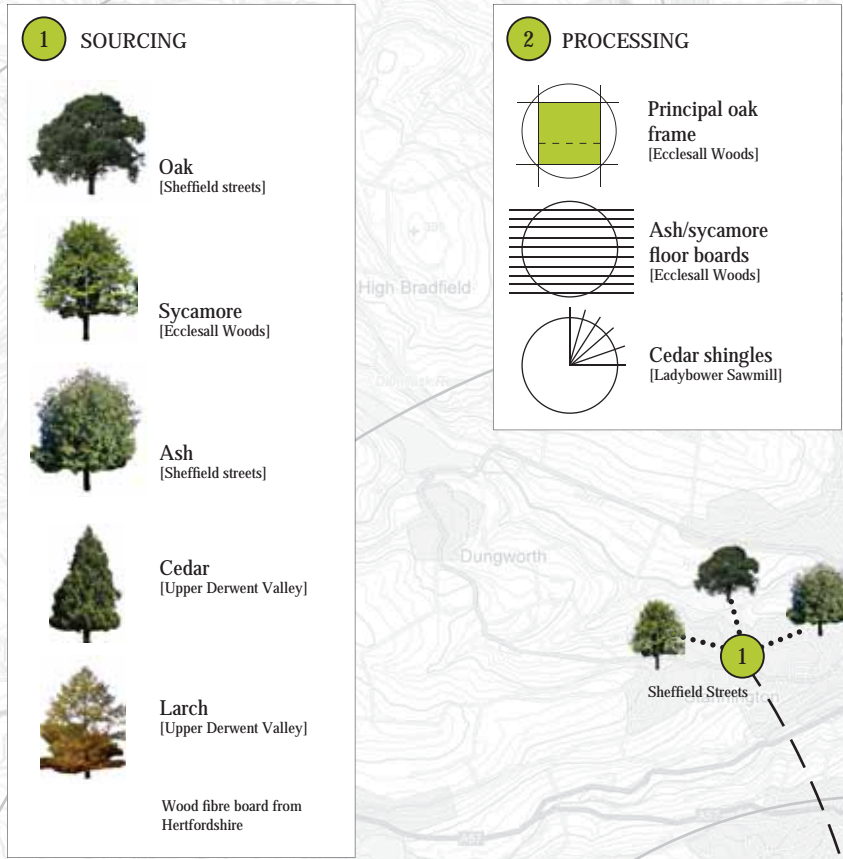


# Project: Gallery 37

A building constructed from locally-sourced timber

This project was designed and constructed by Hector and Cedric, a creative timber-framing company based at the Sawmill Site. The building was designed to house the Working Woodlands gallery and act as an information point for those visiting the Sawmill Site.

Timber was used for as many of the building elements as possible and in most cases sourced from the local area. Other materials include wood fibre board from Hertfordshire and Warmcel natural insulation.



## Essay: Environment, Enterprise and Innovation

David Saunders

Flimwell Woodland Enterprise Centre

Over the last 13 years Flimwell Woodland Enterprise Centre has been at the forefront of locally sourced timber innovation. The organisational networks, supply chain, and timber technologies have been developed and represented in a series of cutting-edge buildings, which together provide a source of practical inspiration, setting a benchmark for others to learn from.

The gridshell office building and cruck frame workshops at Flimwell Enterprise Centre utilise locally-sourced timber in ways that take established construction techniques and reinvent them through a process of innovation and reinvigoration to create a 'new vernacular' architecture. This process of development and innovation has taken a long time but the results are facilities that benefit locally communities and influence many further afield. The main office building and exhibition hall was designed following an architectural competition by Fielden Clegg Bradley [FCB] (architects) and Atelier One

(engineers), who were chosen for their proposal to create a local chestnut gridshell structure. The competition structure was key in finding a truly outstanding design. The architects' represented their in-depth knowledge of the material from the outset, utilising different parts of the tree for specific parts of the structure. The choice of chestnut as the principle building material was based on a number of locally-driven factors; it is fast-growing, locally plentiful and rapidly renewable resource with a 25 year rotation, it is a durable hardwood with high yield and minimal sapwood. New techniques for finger jointing the long strips of timber were developed between the architects, engineers and client group and the structure was tested by the Building Research Establishment [BRE]. The result is a curving barrel vaulted structure that houses Lettable Offices and an Exhibition / Conference Hall. The space can be divided to accommodate a range of activities from conferences to design workshops and furniture making classes.

Right: Woodland Enterprise Centre,  
Flimwell UK



---

The more recent building project has taken a different approach and uses larger section timber to create a modern interpretation of the cruck frame. The resulting workshop units provide 720m<sup>2</sup> of space for local business, with their aim to provide functional and flexible workspace using locally-sourced timber on comparable cost to the faceless steel industrial units are dotted up and down the country. The units have been successfully inhabited and used to house groups of timber related practices where possible. To further utilise the timber on site, waste material is now reused for fuel in a 50kw automated wood-fuel boiler, providing locally-sourced heating for the various buildings on site.

Recent developments on site have been aimed at timber construction with the establishment of a glum-lam manufacture business on site. Inwood Developments Ltd use locally-sourced timber in buildings within the region. In one recent project, Shorne Wood Visitor Centre, Gravesend, Kent

by Lee Evans Architects, the client wanted to use the chestnut coppice from their woodlands to make this visitor building which uses a laminated timber cruck frame another example of the ongoing development of new vernacular buildings.

WEC is based on a strong network of collaborators and stakeholders combining local business and the University of Brighton who join industry and academia to broaden student skills and provide opportunities for off-shoot business. As well as undertaking projects onsite in and around the buildings complex, WEC is behind Woodnet , which provide a range of web-based services including woodlots, an online exchange and mart for locally-sourced timber, timberbuild, a database of local timber frame builder and designers, along with training and conference facilities. Flimwell WEC is the hub of timber activity in the region and a source of support and guidance for anyone interested in local timber.

Right: Workshops at Woodland Enterprise Centre, Flimwell UK



## Idea: Sheffield Timber Knowledge Bank

Information on available local timber species, possible uses, timber working techniques and more...

What if there was a support, advice and information repository in place to help people make better use of locally-grown timber?



- A place to go and discuss ideas, talk details and see how other people have done things
- Best practice guidance
- Training and skills development
- Tool bank



- Information packs in a variety of formats



- An online forum and advisory service

## Essay: UK Timber: Availability and Demand

---

Peter James  
Arnold Laver

Arnold Laver is a National timber merchant with over 80 years experience in the industry. Whilst the business head quarters are based in Sheffield, where the first branch was established, Laver's now has Timber World outlets across the country. The company has a proud local heritage and is a renowned family-owned and run business. Laver's buys timber from around the world, with strong links to the Russian, Canadian and Scandinavian timber industries. The Laver Group is committed to the sustainable sourcing of timber and the innovation of new timber products as well as timber sources. Locally-sourced timber is something that the company is interested in and can source for niche markets, but Lavers are also aware of the limitations and restrictions on using locally-sourced timber in a market that is driven by demand, consistency, quality and large volume quantities.

English Hardwood and Softwood timber  
Native grown Softwoods are a

largely unreliable source in terms of quantity and quality. The nature of Softwood timber grown in England means that it is not normally up to structural grade quality and therefore rejected by many as unsuitable for their needs. This is largely due to the relatively small amount of English Softwood available. UK Hardwood by contrast has a demand in niche industries and species such as oak have a reputation for quality, durability and beauty. As a timber merchant chain, Lavers can source some timber locally where a demand is present, but this is often on a limited basis.

Locally-source timber supply chain  
The supply chain for locally-sourced softwood is also on a much smaller and more ad hoc basis that Scandinavian producers for instance. Again UK Hardwood producers tend to occupy niche markets but cannot meet the demands of mainstream timber markets that are largely dependent on imports. It is difficult to see this situation changing in the near future and would require a sea-



---

change in production but also a market demand for the timber.

#### Timber Certification

Certification is one of the major drivers in the global timber industry at the present time. Whilst Forest Stewardship Certification (FSC) is generally regarded as the top standard by many governments and NGO's there are a range of others that the UK government has given their approval to; CSA, PEFC, MTCS and SFI. The main advantages of FSC are; it's global recognition, rigorous standards and balanced representation on it's governing council between producers, environmentalist and social NGO's and the ability to revoke the FSC mark if practices are not up to standard. Many believe that this has led to an improvement in forestry activities. Because of the rigorous standards and expense than FSC brings with it, many smaller UK supplies struggle to afford FSC status, despite standards and forest stewardship being highly regulated and often more sustainable than

FSC requires. In addition, for the UK timber industry, using local timber saves massively on the carbon footprint of imported timber. For a large merchant like Lavers sustainability is incredibly important, and ironically FSC timber from South America, is often more acceptable than native timber that does not have the FSC stamp of approval. All Arnold Laver Timber World branches have a Chain of Custody implemented, which is independently audited and certified. UK producers need to meet the requirements like any other supplier.

Whilst Arnold Laver continues to invest in locally-sourced timber where a demand is present it does not see a significant increase in its use unless driven by demand. In order to achieve this awareness and understanding, new markets for locally-sourced timber need to be developed.



## Idea: Local Timber Certification

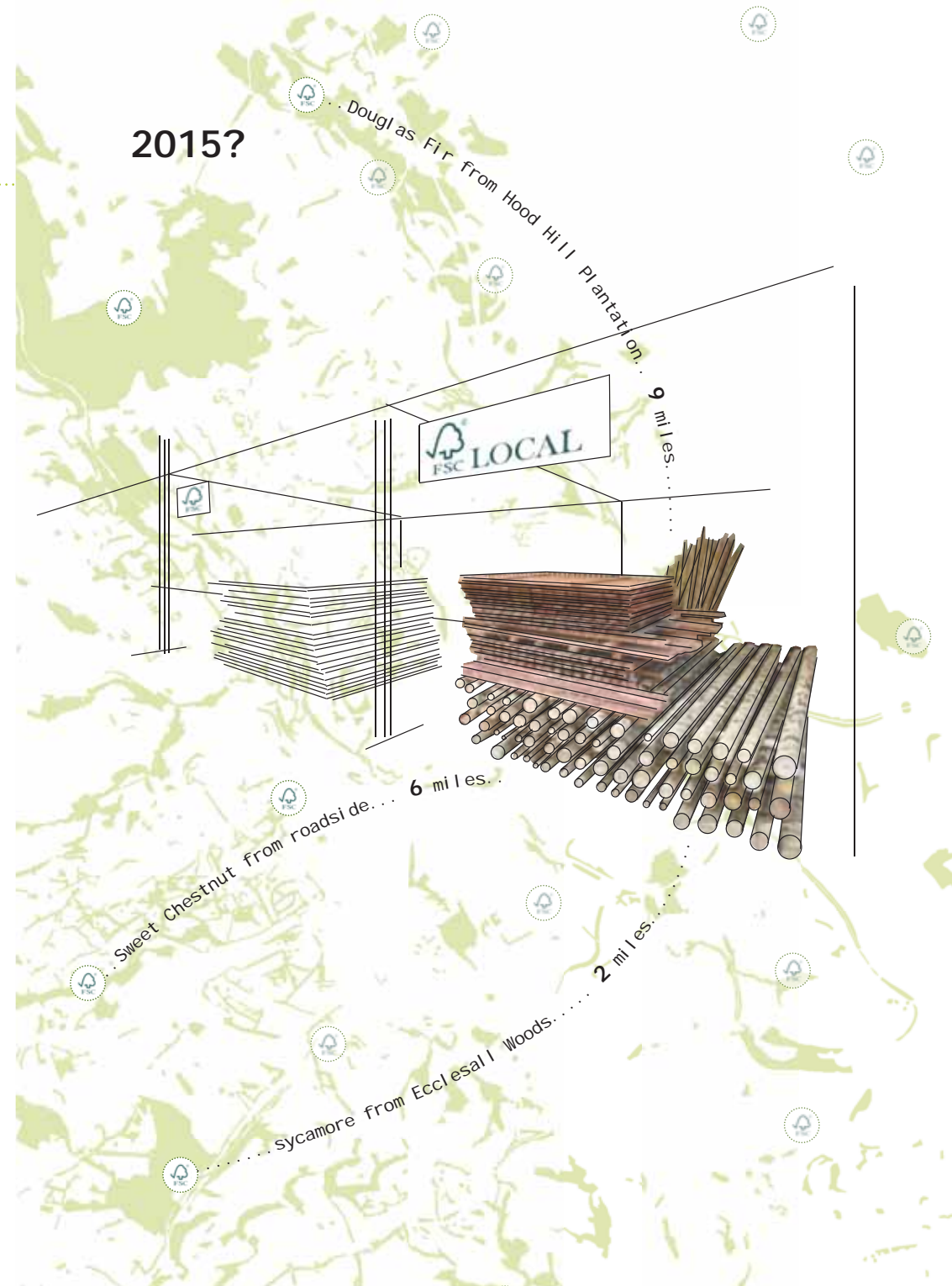
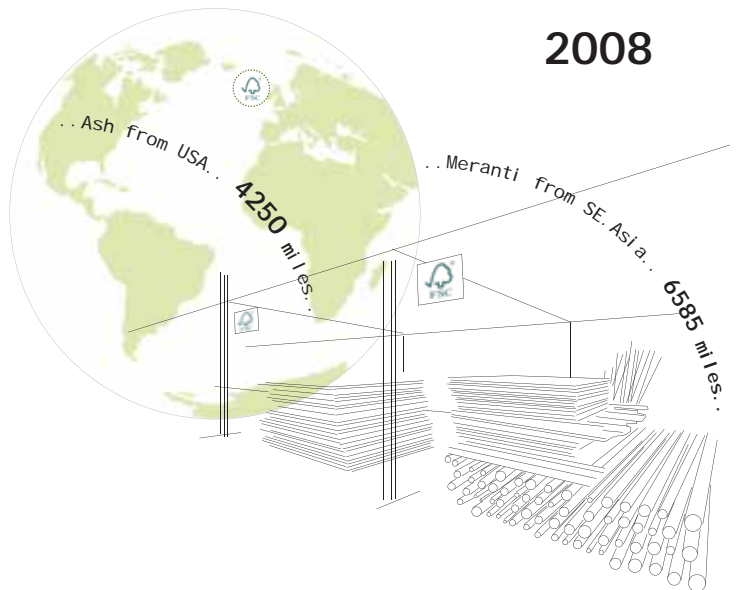
### Creating a supply for local demand

Could we consider a new certification for timber that is sustainably sourced in the locality in which it is sold?

There is a current tendency within the construction industry to use timber certified by the Forestry Stewardship Council (FSC) in order to meet demands for social, economic and environmental responsibility. Certification is more easily achieved by large scale forestry operations than small local ones and therefore means that timber purchased with the FSC label could well have travelled

thousands of miles around the world.

This scenario proposes a new certification for timber that is both locally sourced and sustainably managed. Such a scheme could build on the FSC programme and be incorporated into existing supply chains so that it is widely available and understood. It would require certification both on purchase and completion of use to prevent the timber being transported to another location after purchase.



## Essay: Timber Innovation: Practice, Teaching and Research

Prue Chiles / Leo Care

Bureau - Design+Research, The University of Sheffield

Our work in practice, teaching and research has involves a wide range of projects that focus on the use of timber as a straightforward building material, as a driver for regeneration and as a material that is familiar to people, safe to handle and easy to form. There is no other material that has the same flexibility, quality and ability to connect people to place. When using timber we have tried to source the timber sustainably and locally, and we have tried to think innovatively as well. Over time we have learnt lessons that using locally sourced timber presents many new opportunities and challenges.

To provoke discussion and debate, the following projects and experiences offer a snap shot of some the timber ventures we have been involved in.

In practice: Timber is personal, tactile and individual, but it also moves, changes, weathers and wears. All of this presents a challenge! You really need to know timber to use it. We are

offering our experience not for its particular innovation, but as an example of what many architects are thinking about.

On a residential architectural project in the Peak District National Park we worked closely with structural engineers to create a new type of engineered oak peg truss, using a traditional kingpost roof truss and adapting it in a contemporary way. Larch and oak timbers were combined to give contrasting textures and animate the building facade. Natural Danish oil timber treatment was used in an attempt to bring out the beauty of the timber and to ensure longevity of use. Re-claimed jara timber was used for the stair and landing. In a traditional architectural role we were reliant on the contractor responding to the challenge of finding reclaimed timber of large enough volume and quality.

At a house in Sheffield a timber frame was used to form complex shapes on a relatively small building. The timber formed an



Top right: House, Peak District, UK  
Bottom right: Ballifield Primary School, Sheffield, UK  
Bottom left: House, Peak District, UK

integral part of a breathing wall construction. Internally, re-claimed and locally sourced new timber made stairs, flooring, sliding doors and window frames blurring the boundaries between inside and the surrounding garden and trees.

In the Classroom of the Future at Ballifield Primary School in Sheffield, a project funded by DfES to propose a new model for a classroom, an exposed glulam timber structure was employed. The aim was to highlight a sustainable approach to creating learning environments. The structural gymnastics of the frame were revealed, along with the rest of the construction, to act as a learning tool. The resulting plywood lined classroom feels intimate and cosy, quite different to the institutionalised school.

*In teaching:* Postgraduate architecture students have been interested in the use of local timber for many years. Recurring themes include: how architecture can develop around a local timber industry, re-inventing a

building vernacular within trees and experimentation with using small-section timber. One student project was based on a 'build-your-own sawmill kit' allowing the user to create a timber sawmill as the starting point for a local timber industry and centre for learning about working woodlands. Another example looks at how a town could be transformed by the planting of woodland in suburban space. Over a period of 10-20 years the nature of housing, infrastructure and lifestyle are transformed.

*In research:* Bringing together the practicalities of building projects and the aspirations of student work, our research facilitates projects that focus on sharing knowledge, transferring skills and establishing connections between building processes and users. Timber is an ideal starting point for this sort of collaboration. Combining craft, technical innovation and design enables people to share their knowledge and skills to develop new techniques for using locally-sourced timber in a socially,

economically and environmentally sustainable way.

In a joint venture between Sheffield and Norway called STX [Sustainable Timber eXchange], we explored different attitudes to timber and young architects made timber interventions in the woodlands in both countries. In Norway forest and timber are so plentiful that children are brought up with forestry skills at hand and access to and use of woodlands is less restricted than in the UK. In Sheffield most woodland areas are part of our heritage and are both heavily used and fiercely protected. The interventions in Norway took the form of permanent structures such as platforms for creative play whereas the return projects in Ecclesall Woods were a series of temporary installations exploring issues of access, control and inhabitation of woodlands.

A series of research-based design projects undertaken at the Ecclesall Woods Sawmill Site have begun to explore a new vernacular utilising locally sourced

timber. A composting toilet, screw-lam canopy and outdoor classroom have been researched designed and created by young architects through a collaborative research, design and construction programme. Rather than just thinking about using sawn timber from a timber yard the projects have involved harvesting and felling specific trees for projects, using small section timber and using timbers that are under-utilised. In addition different types of fixings, jointing and processing of timber have created a series of demonstration projects that are both innovative and create a sense of place.

The different strands of our work have really been wound together in the development of a masterplan for a woodland innovation centre at the Ecclesall Woods Sawmill Site. It is an ambitious proposal using locally sourced timber as a medium by which people look at new interpretations of wood and woodlands – rethinking what they are for and how they are managed and used.



## Project: LiveTimber Programme

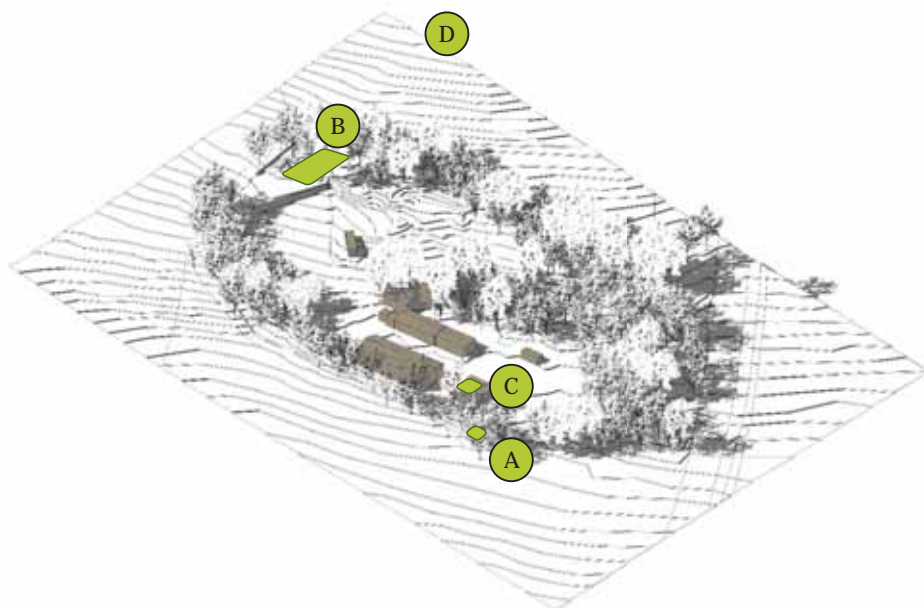
Local timber: research, design, build

LiveTimber is a new collaboration between the University of Sheffield School of Architecture and stakeholders at the Ecclesall Woods Sawmill Site.

Every year in the Autumn a team or budding young architects work for a 6 week period to research, design and build a structure using locally sourced timber.

LiveTimber has a number of benefits;

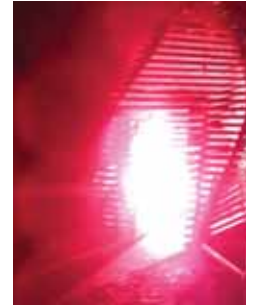
- Develops innovative new ways of using locally sourced timber
- Provides new facilities for stakeholders and users of the site
- Creates a showcase of exemplary projects for everyone to enjoy
- Gives young architects the skills and understanding to develop new ways of using timber.



### A Composting Toilet 2006

Client: SCC Parks and Countryside

Use of London Plane Street trees to create a dynamic structure with no metal fixings.



### B Outdoor Classroom 2008

Client: Archimedes Training / Forest Schools

Timber sourced, felled and worked by hand to form floor, roof and wall structures.

### C Screw-lam Canopy 2006

Client: SCC Parks and Countryside

Development a new type of bolted laminate timber known as screw-lam.



### D The Whirl, Eco House 2007

Client: Ruth Nutter

An intervention in the woodland landscape addressing ideas of place and environment.

Composting Toilet, Ecclesall Woods Sawmill Site (2006)  
 This project was a collaboration between the students and Handspring Design (a timber construction practice based at the Ecclesall Woods Sawmill Site)

with engineering input from Arup. As well as providing an extra toilet facility for tenants of the Sawmill site the project formed part of a research project into the innovative timber techniques for using small section timber.

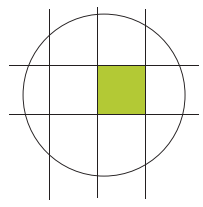
**1 SOURCING**



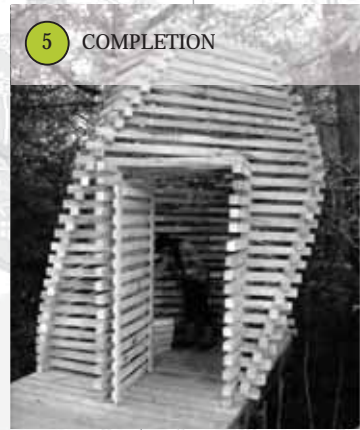
Ash  
[Sheffield streets]

London Plane  
[Sheffield streets]

**2 PROCESSING**




Sawn into sections  
[Andersons Sawmill, Blyth]



Roof Canopy, Ecclesall Woods Sawmill Site (2006)  
This project was a collaboration between architecture students at the University of Sheffield and Handspring Design with engineering input from Arup.

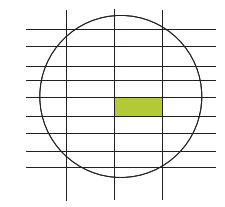
The project was constructed in tandem with the composting toilet (as previously described) and developed an innovative way to use short section timber; 'screw-lam'.

**1 SOURCING**

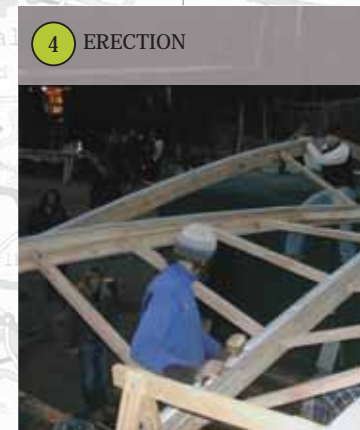


Ash  
(Sheffield streets)

**2 PROCESSING**



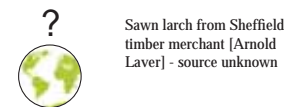
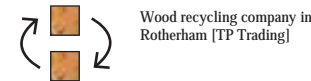
Sawn into planks  
[Andersons Sawmill, Blyth]



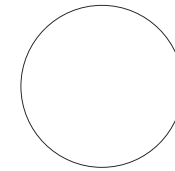
Outdoor Classroom, Ecclesall Woods Sawmill Site (2008)  
 This project was a collaboration between students of architecture at the University of Sheffield and creative timber structures company Handspring Design. The structure was designed to replace a teepee used by the Forest School with a more substantial base for the groups to use.

Most of the timber for construction was harvested from the woodland surrounding the site by the students who then constructed the classroom. Although this timber was not suitable for every element, the remaining timber was sourced from a local timber recycling company with a small amount coming from a local timber merchant. Unfortunately the source of this timber was not unknown.

1 SOURCING



2 PROCESSING



Roundwood



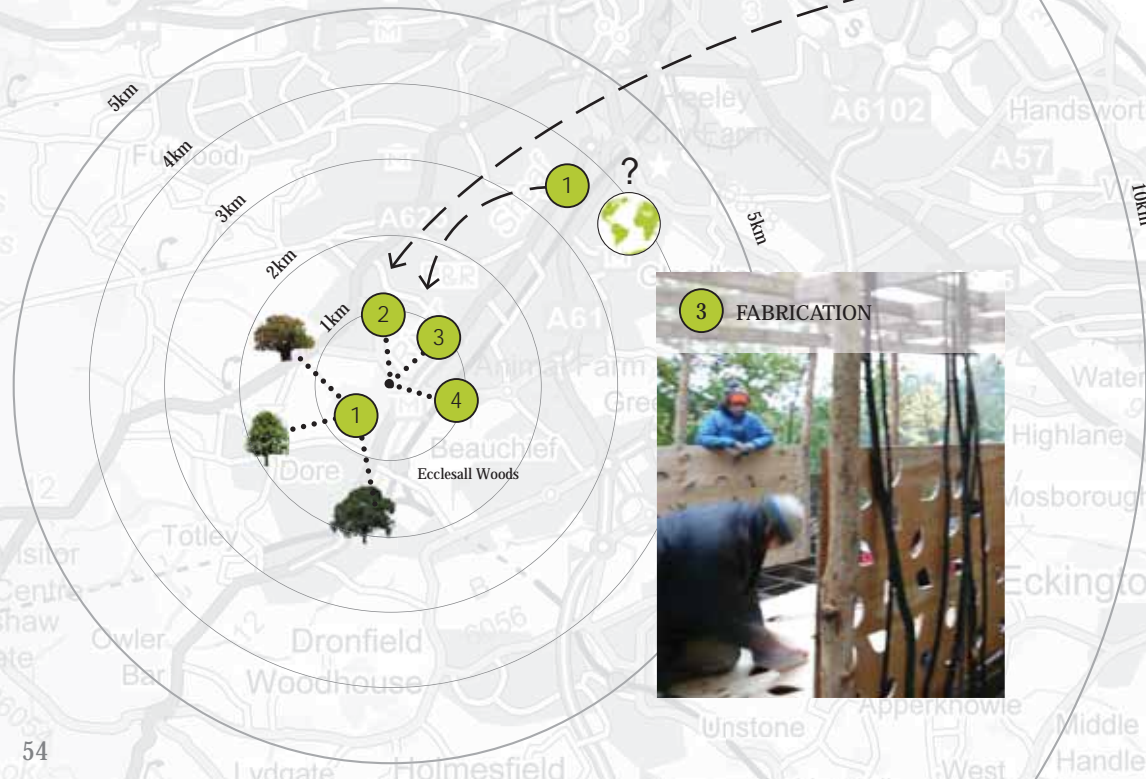
3 FABRICATION



4 ERECTION



5 COMPLETION



## Essay: Timber Futures

Oliver Lowenstein  
Fourth Door Review

### Increasing Timber Use in Construction: The Nordic Countries

For those observing the debate about how to radically draw down carbon and energy emissions from one remove, it seems clear that virtual or counter-history hasn't as yet made inroads into the environmental movements frame of mind. Yet a quick consideration of how virtual history – the exploration of alternative histories with different endings, which might have, but didn't in real life unfold – mixed in with a dollop of resource futurism, in this instance applied to the specifics of sustainability in its architectural and construction guise, and it becomes evident that the resource palette for building culture could have been very different, were different paths taken over the, say, last fifty years.

Here's one virtual futurist scenario, originally discussed in A Timberbuild Renaissance for Europe, an article in Fourth Door Review 6, and developed further through other writings in subsequent years. What if the

warnings about Climate Change and Global Warming had been heeded 50 years ago, and an adaptive strategy had emerged, where re-forestation had taken place across Europe, and used both as a continental carbon sink, and as a much more central construction resource? This may sound fanciful, and out-of-touch with pragmatic commercial realities, but I would propose remains a useful exercise in considering the possible and imaginable. It's this simple, though useful, future-scenario thinking, which formed the core of the talk given at the Woodworks symposium, aided by a cross-section of building and project examples from across Europe to show and provide examples of how timberbuild could - all other things being equal - genuinely become much more central in the palette of building materials used across the continent.

In the main the examples were drawn from the principal centres of timber building tradition, the Nordic countries; Sweden, Finland and Norway with vast swathes, with 23 million



hectares, 20 million hectares and 9 million hectares of productive forests respectively; and central Europe, Germany, Austria, and Switzerland. For instance, the Sibelius Hall in Lahti, central Finland and the METLA Forest Research Centre in Joensuu in the east of the country both showcase how engineered timber, in particular glulam, and with the latter, the application of massive wood techniques, have returned as a viable building material for contemporary construction in the Nordic countries. Although showcases, the scale and potential centrality of the building types – with another example being Oslo’s recent Gardemoen airport, which also liberally applies the structural use of glulam – the point to take is that there is no reason for many and varied building types to be constructed from timber. This underpins the argument that Europe could, even today, increase its percentage of timber construction from was around 2-3% at the start of the new millennium to 10-20%. While reforestation would presumably

inform a mid to long-term strategy, the stock of Nordic forestry stands could – and again I hasten to underline that one needs to remove the competitive market mentality from such scenario’s – be used to fuel such a timberbuild renaissance.

At a countrywide level, something of this thinking was at the root of Finland’s University Of Oulu’s ‘Wood Town project, which from 1997 onwards initiated building 20-25 new urban environments across the country using wood as the principle construction material. A further principal aim was the re-skilling of the Finnish carpentry, architectural and related building sectors, since ironically for a country so closely identified with wood culture, such skills had almost completely disappeared. Those involved organised visits to Alpine countries, as well inviting experts where these lost knowledge’s had been more completely maintained – even if they had originally learnt aspects of their craft from the Finns!) to educate a younger Finnish

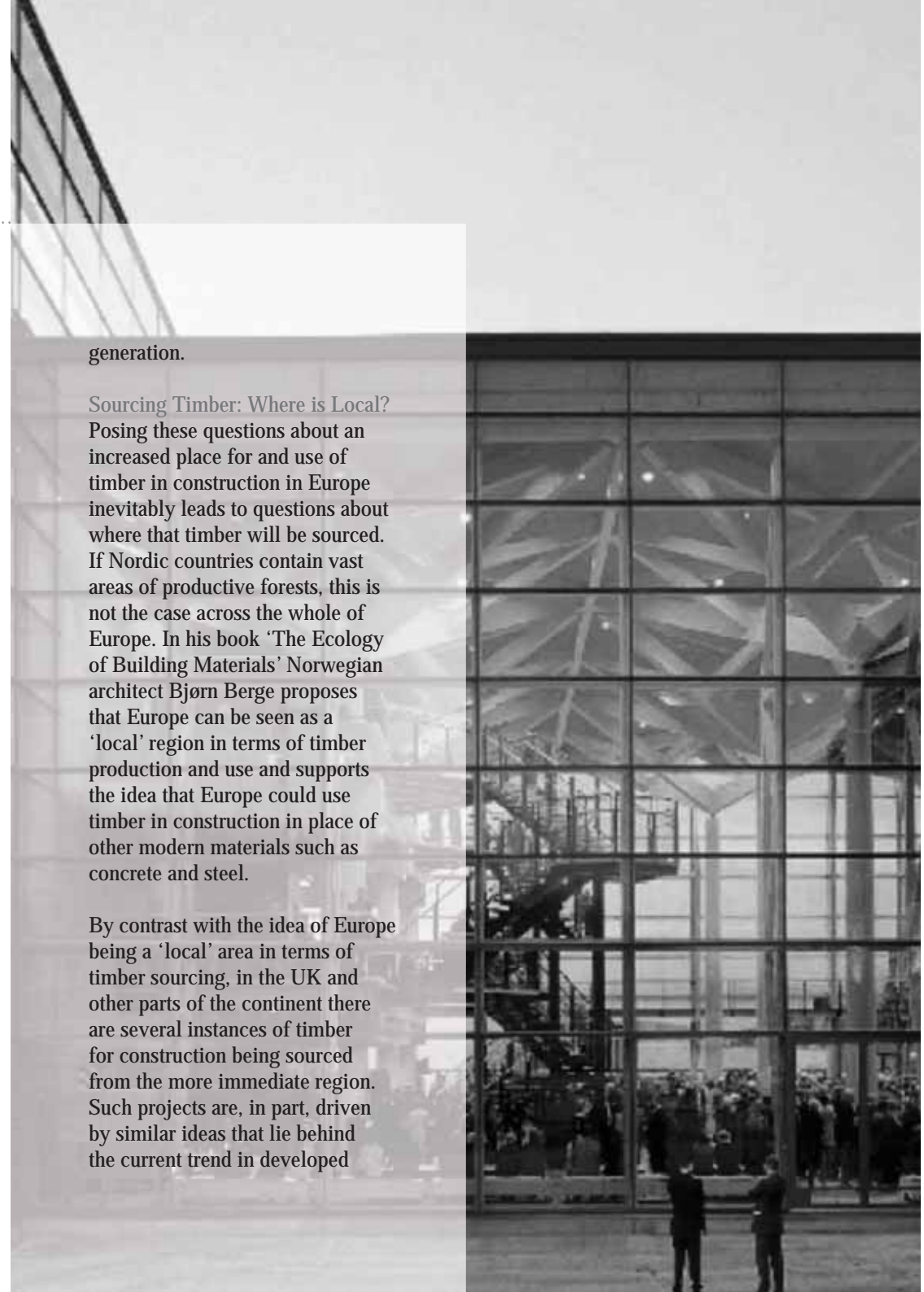
generation.

#### Sourcing Timber: Where is Local?

Posing these questions about an increased place for and use of timber in construction in Europe inevitably leads to questions about where that timber will be sourced. If Nordic countries contain vast areas of productive forests, this is not the case across the whole of Europe. In his book ‘The Ecology of Building Materials’ Norwegian architect Bjørn Berge proposes that Europe can be seen as a ‘local’ region in terms of timber production and use and supports the idea that Europe could use timber in construction in place of other modern materials such as concrete and steel.

By contrast with the idea of Europe being a ‘local’ area in terms of timber sourcing, in the UK and other parts of the continent there are several instances of timber for construction being sourced from the more immediate region. Such projects are, in part, driven by similar ideas that lie behind the current trend in developed

Right: Sibelius Hall, Lahti, Finland



countries for localisation of products such as food such as air miles and supporting local economies. One such instance are the buildings constructed since the turn of the millennium at the Woodland Enterprise Centre in Flimwell, East Sussex. Here, the technology and form of the timber gridshell structure of the main training and office building was derived from the short sections of sweet chestnut available in South East England. The cruck frame of the more recent workshop buildings was designed to use douglas fir sourced from the same region.

In the western Austrian state of Vorarlberg, a wider architectural culture, using locally-sourced timber has developed out of a desire of the local people to use materials sourced within the region. From the 1970's on a regional building culture has emerged, based around successive generations of architectural designers committed to staying in the region – some with carpentry skills and backgrounds - as well

as businesses supporting other parts of the building chain to produce this successful and comparably regional oriented building culture. Influential across the continent, Vorarlberg is considered within the European architectural and planning communities as a prototypical example of how a modern yet local building culture, engaging its community can flourish. Around 20% of new buildings in Vorarlberg are constructed from timber, often using massive wood and Passivhaus techniques, and there is a growing tradition for families to build one-off modern and sustainable homes using this material.

Scotland is probably the part of the UK with the most obvious potential for timber production and there are signs that this is being increasingly recognised. For instance, the new Loch Lomond and Trossachs National Park headquarters building, designed by Page/Park, is one example, as the largest building with a green timber frame in Britain. The

building's two storey high douglas fir structure is constructed from timber from Aberdeenshire and the north of England. Massive Wood is also beginning to be used in Scotland, and increasingly in Britain as a whole. Welcome as this is, it is some thirty years after comparable shifts on the continent, and there is so far no production in the UK. The result is that these projects are sourcing their timber from overseas, including a Massive Wood secondary school project in Acharacle, Western Scotland, and by contrast, Murray Grove in London, set to be the tallest modern timber residential building in the world (designed by WaughThistleton), where the engineered timber is being imported from Austria. Whilst this practice may be seen as 'local' by Berge, it can produce zero-carbon paradoxes. For example, were the air miles of flying a team of Austrian carpenters to and from and the UK each week taken into consideration when calculating the environmental footprint of Murray Grove?

Right: Trossachs National Park HQ, Scotland



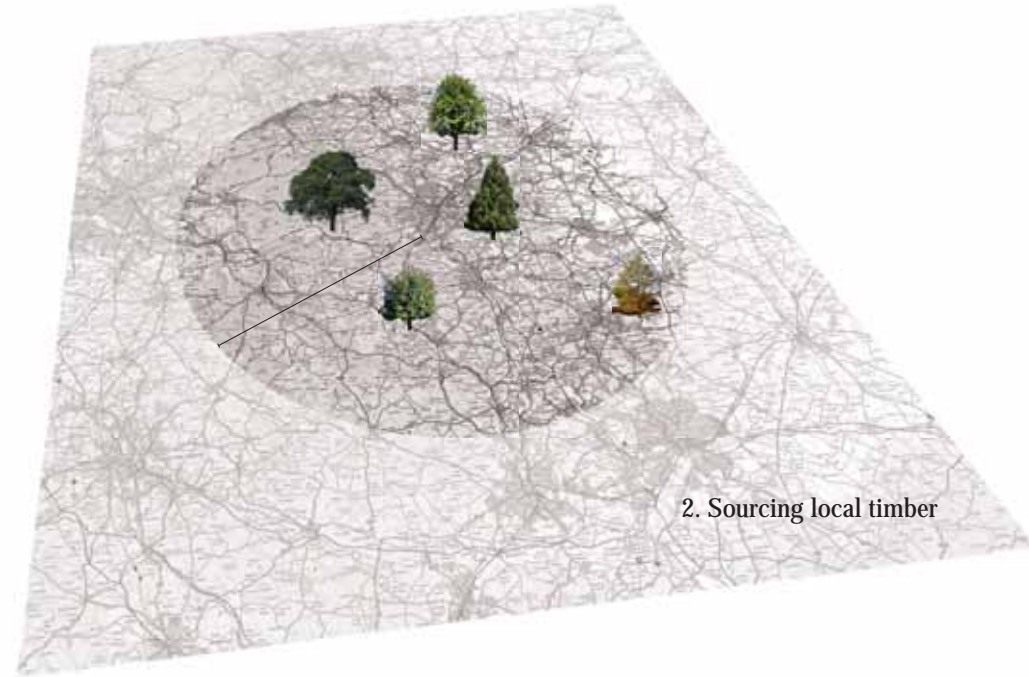
## Proposals: Workshops at Ecclesall Woods

A catalyst for developing a locally sourced timber industry

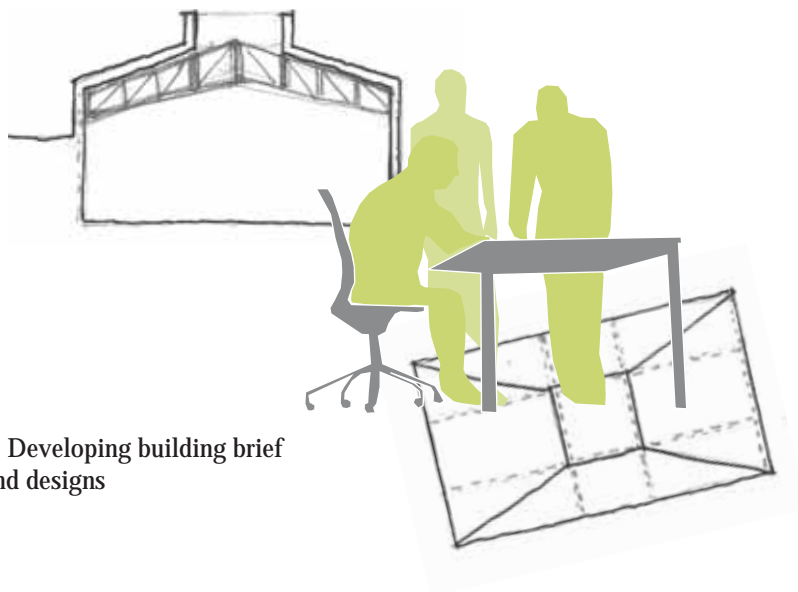
**Research, Development & Testing**  
The workshops proposed in the masterplan for Ecclesall Woods Sawmill Site pose an exciting opportunity to further research and investigate the use of local timber in construction on a larger scale. The masterplan proposes the phased construction of a series of timber built workshops that could act as working demonstration projects for the local area.

The first stage in this project would be to determine the timbers and

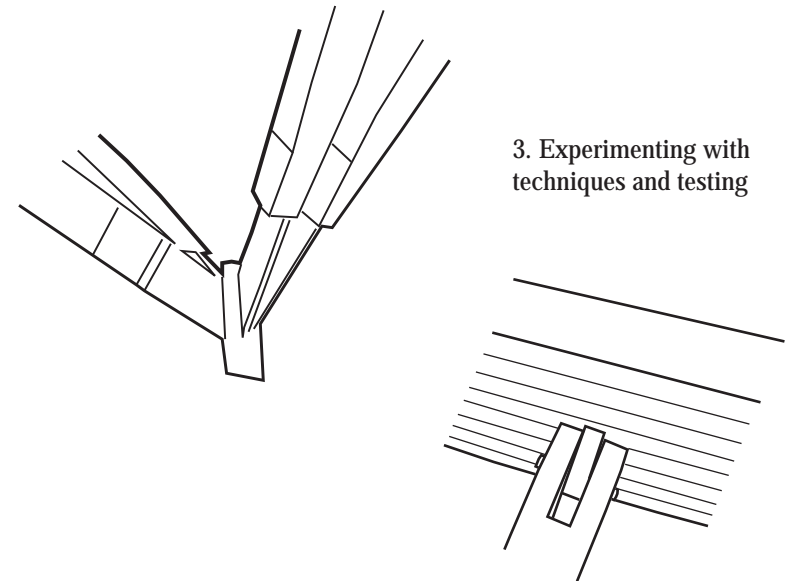
techniques available for this type of project within the local area. This information, which would be valuable to other construction projects within the area, could at this stage be collated to form the beginning of a Sheffield Timber Knowledge Bank. Combining this information with the specific brief and site for an individual building project provides the basis for forming design proposals. The Sawmill Site provides an ideal place to test and showcase ideas.



2. Sourcing local timber



1. Developing building brief and designs

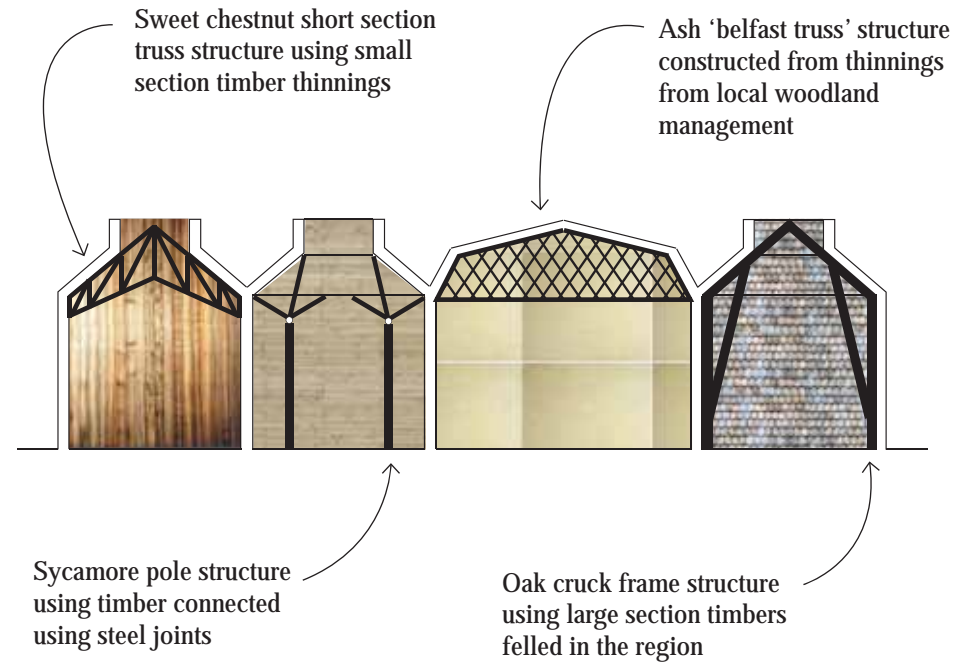


3. Experimenting with techniques and testing

What if there became a Sheffield local-timber region vernacular? The development of workshops at the Ecclesall Woods Sawmill Site has the potential to have wider implications with the Sheffield local-timber region. The knowledge and workshop prototypes developed could form the basis for a 'workshop product' that could be fabricated

at the Sawmill Site and situated throughout the region.

If several workshop prototypes were developed using different timbers available in the region, the choice of workshop structure could be determined by the local timber available at that specific time or the most appropriate local timber for the specific location.



From woodland...



... to industrial estate.



## Summary

---

What have we learnt from the woodworks conference?

By studying examples from the UK and abroad the Woodworks conference has shown that construction using timber sourced from the local area is possible in a variety of locations and for a wide variety of structures. Although the woodlands, forests and individual trees across the UK and specifically Sheffield are somewhat overlooked at present as a possible source of material for construction, they can be utilised in a much more environmentally sensitive and innovative way.

How can we increase the use of local timber in construction?

There needs to be a raft of changes to the way that locally produced timber is advertised and sold, processed and worked and new networks established to enable these changes to have a real impact. There needs to be a more considered and joined-up approach between producers and end users as well as increasing the skills base of people in the public and private sectors to support these changes. This is no mean task, but one which requires a concerted effort.

What if there was a support, advice and information in place to help people make better use of locally-grown timber?

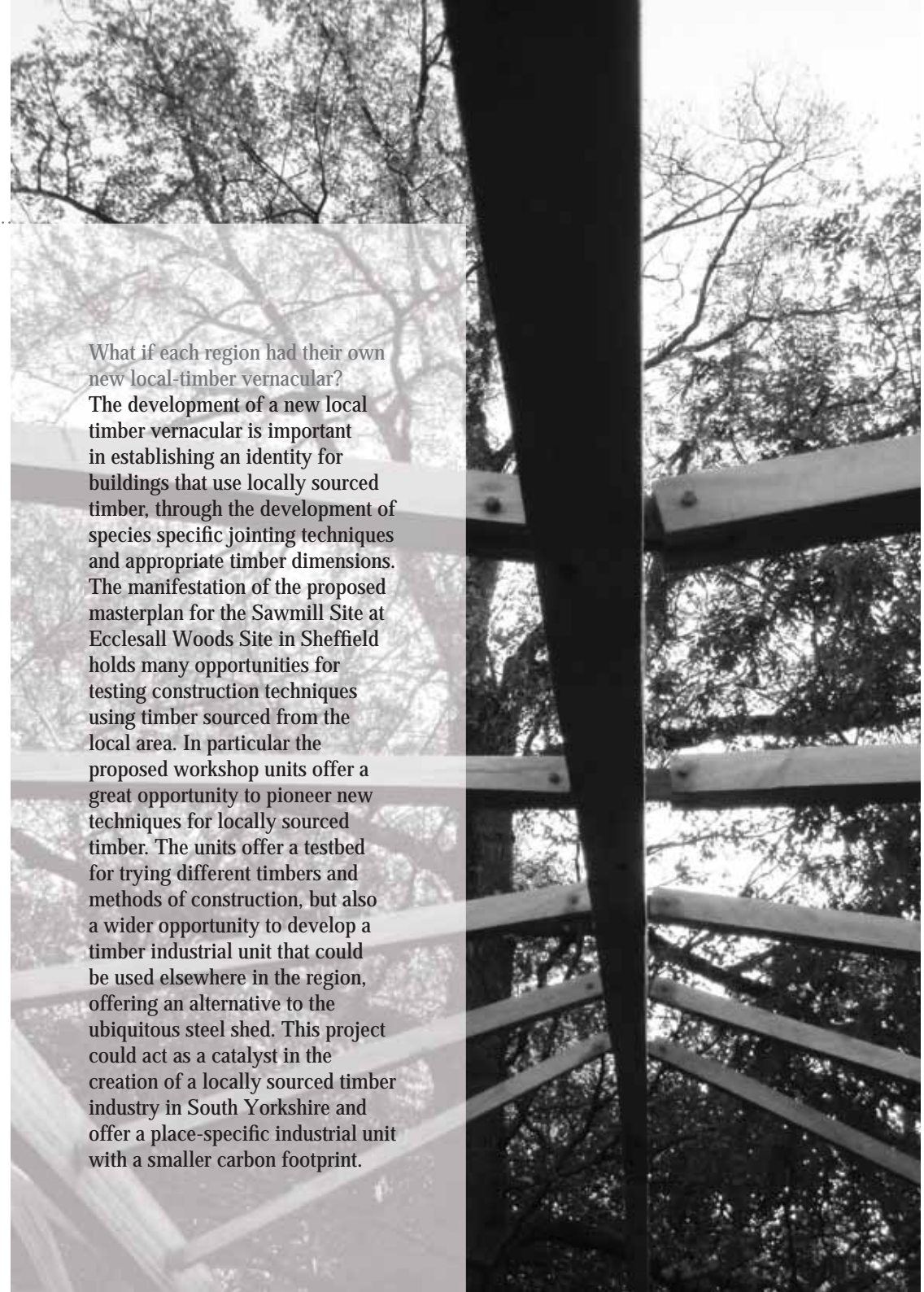
A part of the problem is that people do not know enough about local sources of timber, where timber can be procured and how to use in the best way. Whether local building contractors, eco-DIYers, designers, engineers or craft-based enterprises, support is required to make the most of local timber. Support and advice in a variety of forms would begin to fill this knowledge gap.

What about a new certification for timber that is sustainably sourced in the locality in which it is sold?

Without an appropriate local certification scheme, timber cannot be properly identified as part of a chain of custody. Existing labelling systems are not necessarily appropriate for small scale timber producers and quantities of timber. A 'local' timber label would support regional timber as part of a raft of measures.

What if each region had their own new local-timber vernacular?

The development of a new local timber vernacular is important in establishing an identity for buildings that use locally sourced timber, through the development of species specific jointing techniques and appropriate timber dimensions. The manifestation of the proposed masterplan for the Sawmill Site at Ecclesall Woods Site in Sheffield holds many opportunities for testing construction techniques using timber sourced from the local area. In particular the proposed workshop units offer a great opportunity to pioneer new techniques for locally sourced timber. The units offer a testbed for trying different timbers and methods of construction, but also a wider opportunity to develop a timber industrial unit that could be used elsewhere in the region, offering an alternative to the ubiquitous steel shed. This project could act as a catalyst in the creation of a locally sourced timber industry in South Yorkshire and offer a place-specific industrial unit with a smaller carbon footprint.



## Sources and Further Reading

---

### Articles / Publications

Bureau of Design Research, 2008. From Seed to Saw: Creating a Woodland Innovation Centre. Ecclesall Woods Sawmill Site Masterplan and Outline Design Proposals. For a pdf copy please email [bdr@sheffield.ac.uk](mailto:bdr@sheffield.ac.uk)

Forestry Commission, 2009. Forestry Statistics. Available at: [www.forestry.gov.uk/forestry/infd-7aqdgc](http://www.forestry.gov.uk/forestry/infd-7aqdgc)

Friends of the Earth, 1995. Out of the Woods: Reducing Wood Consumption to Save the World's Forests. London: Friends of the Earth Ltd. Available at: [www.foe.co.uk/resource/briefings/out\\_woods.pdf](http://www.foe.co.uk/resource/briefings/out_woods.pdf)

Lowenstein, O. and Bidgood, J., 2007. Inspiring Futures: European Timber Architecture for the 21st Century. Exeter: Centre for Contemporary Art and the Natural World.

Simmonds, A. Using FSC Timber is Not Enough. The Association of Environment Conscious Building. Available at: [www.aecb.net/PDFs/opiniontimber\(4\).pdf](http://www.aecb.net/PDFs/opiniontimber(4).pdf)

Timber Trade Federation, 2009. Timber Industry Factsheet. Available at: [www.ttf.co.uk/industry/](http://www.ttf.co.uk/industry/)

### Organisations

Forestry Commission  
[www.forestry.gov.uk](http://www.forestry.gov.uk)

Forest Stewardship Council  
[www.fsc.org](http://www.fsc.org)

South Yorkshire Forest  
[www.syforest.co.uk](http://www.syforest.co.uk)

Timber Research and Development Association  
[www.trada.co.uk](http://www.trada.co.uk)

Woodland Trust  
[www.woodlandtrust.org.uk](http://www.woodlandtrust.org.uk)

WoodNet (and Flimwell Woodland Enterprise Centre)  
[www.wood.netmx.co.uk](http://www.wood.netmx.co.uk)

Working Woodlands  
[www.workingwoodlands.info](http://www.workingwoodlands.info)

### Timber Architecture Inspiration

Meyhoefer, D., 2008. Touch Wood: The Rediscovery of a Building Material. Berlin: Verlaghaus Braun.

Seidel, F., 2008. Architecture Materials - Wood. Koln: Taschen GmbH.

Slavid, R., 2009. Wood Architecture. London: Laurence King.

## Photography Credits

---

Bureau - Design+Research: pages 3, 47, 49, 50, 51, 52, 53, 54, 55, 67, 71, 73.

David Saunders [Flimwell Woodland Enterprise Centre]: pages 33, 35, 41.

Jacqui Dace Photography: front cover and back covers, title page, pages 5, 23, 39.

Nick Sellwood [Sheffield City Council]: pages 9, 17, 21.

Oliver Lowenstein [Fourth Door Review]: pages 59, 61.

Prue Chiles Architects: page 45.

Ted Talbot [Sheffield City Council / Working Woodlands]: pages 27, 29.



## About Us

---

Bureau - Design+Research is a design-led research and consultancy unit based in the School of Architecture at the University of Sheffield.

We are a team of architects and researchers promoting and advancing design within the built environment through research, consultancy and practice.

Bureau works across the UK on a wide variety of projects at different scales - from detailed architectural design to regional visioning.

Bureau is at the cutting edge of design innovation and we collaborate with a range of specialists inside and outside the University of Sheffield.

If you have found woodworks useful and are interested in being involved in the future, please contact the Bureau at:

[bdr@sheffield.ac.uk](mailto:bdr@sheffield.ac.uk)



bureau  
design +  
research

ISBN 978-0-9556536-4-3



9 780955 653643 >