

## Wood

1.1 This paper summarises the wood waste opportunities in Hampshire required to meet the Vision of the MRS. The waste stream overlaps with waste streams covered by other papers on **construction and demolition waste** and the **biowaste (green)**. This paper summarises the opportunities wood in Hampshire, required to meet the Vision of the MRS.

### **1.2 The main opportunities to meet the MRS Vision**

#### **1.3 Locally:**

1.4 The MRS partners should take a more integrated approach to the management of wood waste, and its sustainable reuse and disposal

1.5 Local Authorities need to be more involved in monitoring and the disposal of wood based wastes

1.6 The MRS partners should investigate and exploit opportunities for the use of recycled/re-used wood in the public and private sectors in the future

1.7 The MRS partners should provide more information on wood recycling to encourage producers to start recycling their wood.

1.8 Greater collection and segregation of wood wastes, together with the creation of new added value markets

#### **1.9 Regionally:**

1.10 The MRS partners should support the industry to improve technologies and practices to deal with unavoidable wood waste.

1.11 The MRS partners should keep a close working relationship with SEERA, SEEDA and other relevant organisations in order to maximise the opportunities for infrastructure development within the county and to ensure that effective management methods are used.

#### **1.12 Nationally:**

1.13 The Government (through WRAP) should support further research into the collection, processing and markets associated with recycled woods as well as issues of public perception to increase the number of uses for recycled product and to provide more stable markets.

1.14 The MRS partners should co-operate with other organisations nationally to highlight the need for greater wood recovery.

## Current wood waste resources situation in Hampshire

2.0 Wood is a highly valuable and useful resource used by nearly every industry and householder in the UK. Using wood efficiently is important from both the production and disposal perspectives. While paper recycling is well-established, the wood recycling industry in the UK has only existed for around a decade. During this period the sector has seen huge growth, however, large quantities are still landfilled. Research shows that the most common obstacle to recycling wood is a lack of markets, and the most common reasons for recycling wood are cost savings and environmental performance (Trada,2004).

2.1 The level of wood waste recycling has grown substantially since the introduction of Producer Responsibility legislation for packaging waste in 1997 and WRAP's remit under its wood programme is to stimulate a further increase in recycling levels and end markets. Legislation requires qualifying companies to recycle their wood packaging waste, including pallets, packing crates and barrels.

### 2.2 Sources and types of wood waste arisings

2.3 Very limited specific data exists on the quantities of wood requiring management in Hampshire, so it is necessary to look at the position nationally, and use that as a guide.

2.4 WRAP estimates that the UK generates between 3 and 5 million tonnes of wood waste per annum. The largest sources of wood wastes are construction and demolition which make up 44% of the total, followed by wood packaging which contributes 18% of the total. Table 1 shows the main sources of wood waste in the UK by industry sector.

**Table 1 - Sources of UK Wood Waste**

Sector	Percentage of waste stream
Construction and demolition	44
Packaging	18
Industrial	11
Commercial	10
Civic Amenity Sites	9
Furniture Manufacturing	5
Municipal Solid Waste	2
Fencing	1

(Source: Trada, 2004)

2.5 The construction and demolition industry is responsible for producing a large amount of wood waste. The opportunities for recycling and reuse of wood contained



within construction and demolition waste is covered under the paper regarding this waste stream.

2.6 Wood is extensively used in packaging with over 800,000 tonnes of wooden pallets are currently in circulation in the UK (Remade, 2004). An estimated 1.3 million tonnes of wood packaging waste is produced a year nationally (Wrap, 2003).

2.7 The amount of wood waste from green sources is unknown. However, only very limited amounts are composted in Hampshire, so it is anticipated that the majority of green wood waste is landfilled. The most promising untapped market for greenwood waste is chipping and drying for use as a reusable energy fuel. Other potential uses include composting, with a view to replacing the use of peat in horticultural products and for processing into charcoal for use in barbecues.

2.8 The following tables highlights the estimated wood arisings in the UK divided by sector and compared with the predicted levels for Hampshire. The table highlights the construction wood wastes account for the largest proportions of wood waste both nationally and within the. The next most significant sector is waste arising from unwanted furniture.

**Table 2 – Estimated wood arisings in the UK and predicted Hampshire arisings**

Sector	Quantity	% of Total	Hampshire*
Construction and demolition waste	1 760 000	44	53 658
Packaging	720 000	18	21 951
Commercial	400 000	10	12 195
Industrial	440 000	11	13 415
Household (including CA sites)	440 000	11	13 415
Fencing manufacture	40 000	1	1219
Furniture manufacture	200 000	5	6097
<b>Total</b>	<b>4 000 000</b>	<b>100</b>	<b>121 950</b>

(Source: Figures in the above table have been derived from the 3-5mt of waste wood that WRAP estimates arises in the UK – see section 2.4 of resource paper.-

\*Figures for Hampshire calculated on the basis of population, +(Source: Project Integra,2004) Regional Waste Volume Plan – HWRC’S 2003-2009)

2.9 This figure for wood arising from construction and demolition sources has been revised upwards as paper of the overall aggregation of waste arisings to correspond with the wood arisings figure estimated using different methodology in the Construction and Demolition Waste Paper. The basis for the estimate is contained within that paper. The revised figure food wood waste arising from construction and demolition sources is 77,128 and the total arisings would therefore be 145,420 tonnes per annum

2.10 Manufacturing industry creates large volumes of panel waste and a study by Cambridgeshire County Council revealed that 66% of wood waste deposited at civic amenity sites was in the form of panels.

2.11 A significant quantity of wood waste is likely to be generated by the forestry industry in Hampshire, however, no data has so far been obtained regarding the likely arisings and management methods. It is likely that a proportion is chipped and spread back on the ground.

### 2.12 Current Legislation

- Environment Protection Act 1990.
- Landfill Tax Regulations 1996
- Producer Responsibility (Packaging Waste) Regulations 1997
- Landfill Directive 1999/31/EC
- Packaging and packaging waste Directive (94/62/EC)

### Existing recovery routes and infrastructure in Hampshire

## 3.0 Current Resource Management

**Table 4 Destination of UK wood waste**

Destination	Percentage
Wood recyclers	30.7
Landfill	26.9
Burnt for disposal	12.2
Burnt for heat	12.0
Recycled into production	8.5
Reused internally	7.2
Other	2.5

(Source: Trada,2004)

3.1 It is estimated that around 800,000 to 1,000,000 tonnes of this wood is recycled (WRAP,2004), predominantly as chipboard

3.2 The number of wood reprocessors in the UK is still relatively small. The Environment Agency had only 22 registered wood reprocessors (as at April 2001) for England. There is currently at least one in Hampshire which recycles wood commercially, which is H&M Glover Recycling Ltd near Andover. There are also thought to be further facilities in Romsey and Fareham, which need further research to identify.

3.3 Millbrook Furnishing Industries are able to use their own wood wastes to power their own CHP plant, and are therefore able to reduce the volume of waste wood requiring management in the County. Wood waste is currently collected and separated at four sites HWRCs in Hampshire, these are Chapel

(Southampton), Port Solent (Portsmouth), Ivy Road (Aldershot) and Eelmoor Road (Farnborough). There are a number of companies which specialise in pallet repairs in Hampshire, and these provide a good geographical coverage.

**Table 5 – Sites which can recycle and process wood in Hampshire (tonnes per annum)**

Site	Operator	T'put	Capacity	Comment
Blackbarn Farm, Grateley	H&M Glover Recycling Ltd	3,500	50,000	Processes and sorts wood wastes
Stephenson Road, Totton	Millbrook Furnishing Industries	?	?	Furniture manufacturer, processes it's own wood wastes for CHP
Bar End Depot, Winchester	Not built yet	0	0	Might recycle wood wastes in the future
<b>Total</b>		<b>3,500</b>	<b>50,000</b>	

### 3.4 Current Management Options

3.5 Due to the wide range of treated wood characteristics, the best disposal options will vary. WRAP has conducted research in the disposal options for railway sleepers, utility poles, packaging, fencing, marine timber, construction waste, demolition waste and municipal solid waste (WRAP,2003). Packaging waste is the only type of treated wood that would be considered suitable for producing recycled board, animal bedding or compost. For all treated wood the best option is reuse, with incineration with energy recovery second. However, reuse of treated wood waste is often difficult due to a lack of suitable markets.

3.6 Garden wood waste can be composted at home by householders, or by Local Authorities and their contractors at centralised facilities. Treated wood is not suitable for composting as it is slow to break down and may contain hazardous substances. However, since wood decomposes very slowly, composting on a large scale even of clean wood is not a very practical solution.

3.7 Pallet reuse is widespread and it is estimated that 94% of companies reuse their pallets nationally. Up to 70% of pallets produced in the UK are designed for reuse and are potentially repairable if damaged during use (wasteline,2003). However, 38% of pallets produced in the UK are of non-standard sizes (Cupit and Poll,1997). Therefore, damaged or end-of-life pallets could produce a significant amount of waste.

3.8 The solid structure and durability of wood means that wood products are ideal for repair and reuse. Refurbishment of wooden products is a sustainable method of reuse, avoiding the use of virgin resources. Furniture

reuse, repair and recycling, and furniture manufactured from reclaimed materials, benefit society by reducing the quantities of wood requiring disposal. In addition, wooden products sustain a significant proportion of the antique and second hand markets, being based on the resale of refurbished wooden furniture and household fittings.

3.9 Annually, 750,000 tonnes of wood is reclaimed nationally and most of this is reclaimed for reuse. There is no data for Hampshire for reclaimed woods currently. About 6% of reclaimed wood nationally is converted to fuel pellets for energy from waste plants (WRAP, 2003). If unwanted wooden furniture is still in good condition, then a furniture recycling project may be interested in collecting it so that it can be reused. The Furniture Recycling Network estimates that 1.5 million items of furniture per year nationally are passed onto low income families and re-used.

3.10 Assuming successful separation and no contamination, wood waste can theoretically find as many applications as for virgin wood. It is estimated that about 20%-25% of the wood chip board manufacturing in the UK utilises recycled wood.

3.11 Recycled wood products may be produced entirely from wood waste or contain a proportion of virgin materials. The recycling process consists of separation of the waste wood from other waste materials, followed by shredding. The separation process for wood is quite simple compared to the separation processes for many other types of waste materials as it essentially requires the separation of treated and untreated wood wastes for further processing. Untreated woods for example from tree management, structural wood or from agricultural practice are easier to manage than wood contaminated with preservatives or paints, which is often treated as special waste. Market opportunities on a national scale for recycled wood waste include use in chipboard, use as a composting material, bulking material and carbon source in composting, pulp material and mulch, a fibre source and fibre-cement composite materials, animal bedding and equestrian surfacing, as a fuel source for CHP and EfW or as a feedstock for the manufacture of charcoal.

3.12 A survey of furniture manufacturers showed that nearly 20% currently recycle their wood waste, with the recycled wood used for manufacturing animal bedding, mulches and wood pellets (WRAP,2003). Although disposal to landfill was still a major outlet for wood waste for over a third of respondents, of those who do not currently recycle, an encouraging 62% had considered recycling as an option.

3.13 Charcoal production is an expanding British market and a growing proportion is home-produced as a high quality by-product of hardwood forest waste. Home production is mainly carried out by small-scale operators although it is unlikely that any of these are situated in Hampshire.

3.14 Wood arising from green garden waste can be composted or chipped to produce a mulch. Composting has been considered in detail in the biowaste green topic paper.

3.15 The incineration of wood waste for energy recovery will often be the best practicable option for wood, particularly for wood which has been treated with preservatives, or is contaminated with other potentially polluting or hazardous chemicals (for example spills of chemicals onto wooden pallets). The incineration of wood to produce energy in a controlled environment is preferable to the unregulated burning of wood which can produce elevated levels of dioxins and furans as many wood products are treated with preservatives or pesticides, and can therefore produce toxic emissions during uncontrolled burning. Agricultural waste wood is commonly burnt in bonfires, although this is undesirable for the reasons stated above.

3.16 Significant quantities of waste wood are currently landfilled each year. The disposal of wood to landfill is problematic for a number of reasons. Its bulkiness and density make it difficult to compact. Also wood is slow to decompose. Waste timber contributes to landfill gas generation and wood treated with preservatives can produce harmful trace components in leachate. Waste wood is biodegradable, thus wood arising in the municipal waste stream will be subject to the landfill diversion targets for the Landfill Directive.

3.17 There are no specific segregated wood waste collection services led by local authorities in Hampshire. However, Basingstoke, Chapel, Farnborough and Aldershot HWRCs currently have pilot schemes in place for collecting used wood which it is hoped to extend elsewhere, although they cannot currently accept painted or treated wood.

3.18 The application of chipped waste wood to land can improve soil quality, and benefit agriculture and ecology. The resulting product can be used for a variety of purposes such as weed-suppressing mulch or informal footpath surfacing. There is currently considerable demand from householders and other organisations engaged in landscaping work for chipped wood products.

### **3.19 Social Issues**

3.20 The newness of the recycled wood market means that buyers perceptions of product quality are often coloured by their perceptions of waste generally, and can lead to excessive concern about contamination (WRAP, 2003). Uninformed buyers will tend to err on the side of caution when evaluating whether to use recycled materials as an alternative to virgin materials (WRAP,2003).

### **3.21 Environmental Issues**

3.22 The recycling or reuse of wood is a sustainable alternative to virgin resources as it is a renewable resource. The current demand for wood is unsustainable. The conservation of all types of forest is therefore a vital part of sustainable development. The recycling and re-use of wood is essential if

we wish to stop the unsustainable use of our wood resources. Reduced logging will influence the availability of timber, particularly hardwoods, and further increase prices (wasteonline,2004). Using recycled wood is preferable to using virgin wood and there will be no difference in the quality between the recycled and virgin material. The reuse of waste wood can also reduce the need to import wood. It is estimated that 90% per cent of wood used in construction is imported, with 10% of this coming from tropical forests (wasteonline,2004).

3.23 Large amounts of usable timber are still disposed of in landfills. There is a need to establish more economically viable and environmentally friendly forms of disposal or reuse for wood wastes as an alternative to landfilling. The disposal of wood waste through bonfires is unsustainable, potentially polluting and a wasteful use of wood.

### 3.24 Economic Issues

3.25 The demand for wood means that forests are being felled at a faster rate than they can grow. Consequently, the price of virgin timber will continue to increase as demand outstrips supply (wasteonline,2003). Processing and potential end markets of wood waste material is a rapidly evolving field. The market for recycled wood and the types of products generated from wood wastes have changed substantially over recent years, with increasing numbers of recyclers entering the market.



3.26 Markets for reused or refurbished wood are good. However, some areas of the markets are not as strong as others. For example, markets for the reuse of non-standard sized pallets are poor, so these usually end up in the general waste stream. Recycled wood has also been used for garden products and this is a rapidly developing market. Wood can be recycled into a variety of wood chips and can be produced for use on golf courses, paths and gardens, children's playgrounds and horse arenas. Coloured chips are also sold to garden centres and other retail outlets.

3.27 Manufacturers in particular for the furniture industry could cut costs and boost profits through the sustainable management of their wood waste. WRAP estimates that disposal of wood to landfill costs manufacturers up to 10% of their annual turnover. With the costs of disposal to landfill rising, and in an increasingly competitive market sector, it should pay manufacturers to review their current wood waste management strategies.

3.28 Construction process improvements to develop improved techniques for the extraction and recycling of demolition wastes will avoid landfill disposal.

3.29 Manufacturers now have the financial incentives to use recycled wooden pallets. The Environment Agency states that timber pallets, repaired with new components, will not incur a recovery or recycling obligation under

the Packaging Regulations, and second-hand timber pallets are not subject to levies because they are re-used.

3.30 At the end of 2003, the chipboard industry consumed 90% of all recycled wood processed in the UK (WRAP,2003). It is the most developed market and the only one where formalised specifications currently exist. However, the specifications are very general in terms of the levels of acceptable contamination, and is intended to make supply to the mills as easy of possible as further cleaning can occur there (WRAP,2003). Chipboard manufacture requires very low moisture content in the wood chips (3%) to achieve an effective resin bond. Waste wood chips are much drier than virgin wood (15-25% moisture content as opposed to 50-60%), and therefore advantageous to use due to the lower costs involved with drying the material (WRAP,2003). The disadvantages of waste wood chips is its contamination with fittings and fixtures, chemical treatments or spillages, and general discolouration and grit levels. The market for recycled wood as a raw material for chipboard production has however remained weak, and some companies have taken the opportunity to diversify into fresh wood products such as bark and shavings in a number of applications (July,2003).

3.31 MDF is made by only two companies, and they are experimenting with using recycled fibre in the boards, but currently suffer problems with contamination effecting the smooth appearance of the boards. This is a potential future market if technological problems can be addressed.

### **3.32 Current Key players**

3.33 **Project Integra** was set up in 1993, helping to introduce an integrated waste management strategy for Hampshire. The green waste recycling infrastructure in Hampshire has been set up through Project Integra and currently provides high recycling rates of household generated green waste.

3.34 The **Waste and Resources Action Programme (WRAP)** is a not-for-profit company supported by DEFRA, the DTI, and the devolved administrations of Scotland, Wales and Northern Ireland. It is working to promote sustainable waste management by creating stable and efficient markets for recycled materials and products. **RecycleWood** is an interactive resource produced by WRAP (the Waste & Resources Action Programme) to help producers of wood waste find collection services and recycling facilities.

### **3.35 Supporting Organisations**

3.36 The **Environment Agency** regulates waste management through a system of licences. The Agency registers and monitors the transportation of waste and advice on waste management methods.

3.37 The **Department for the Environment, Food and Rural Affairs (DEFRA)** is the Government department with prime responsibility for waste and resource management, as well as other forms of environmental protection and the promotion of sustainable development

3.38 **The Department of Trade and Industry (DTI)** is the Government department responsible for encouraging growth and development of trade and industry in the UK. It aims to promote constructive co-operation between the regulated, the regulators and the UK's environmental technology suppliers who serve them.

3.39 The **Furniture Recycling Network (FRN)** is an umbrella network of over 300 UK furniture recycling projects, most of which collect, refurbish and distribute unwanted furniture and other household effects to pass on free or at nominal cost to people in need, usually referred to by social services. Most schemes receive at least partial grant support.

3.40 The **National Community Wood Recycling Project** is a not-for-profit environmental group set up in February 2003 to provide encouragement, help and practical advice to any individual or group - especially those in the community sector - interested in learning more about or getting involved with wood recycling. The aim of the national project is to see a further ten wood recycling projects set up around the country. This would lead to many thousands of tonnes of wood being saved from landfill, create more sustainable jobs, training and volunteering opportunities and make a real contribution to local waste minimisation strategies.

3.41 The **Wood Recyclers Association** was formed in March 2001 to provide sector representation to Government and regulatory authorities on wood recycling and promote the wood recycling industry. The aim of the association is to disseminate advice and guidance on subjects relevant to the sector and to provide a forum for the exchange of information between members.

### 3.42 Current Examples of Best Practice

3.43 There are a number of furniture schemes which have been set up, usually involving local voluntary or community initiatives to benefit disadvantaged people by harnessing reusable resources that might otherwise be dumped. They provide free collection of reusable furnishings and household effects which might otherwise be dumped, and offer practical help at minimal cost to those who most need it. **SCRATCH** (Southampton City & Region Action To Combat Hardship) operates a project entitled the DORCAS project in the City of Southampton and Central Southern Hampshire for poverty stricken individuals and families. At present, the various projects operate in areas such as Southampton, Winchester, Eastleigh and Romsey. The Dorcas Project deals with 2<sup>nd</sup> hand furniture & household items. The original furniture project, which began prior to the formation of the charitable company, has experienced huge success. Dorcas is a furniture recycling programme that both collects and delivers used furniture to those in need.

3.44 The **London Borough of Kingston** operates a wood recycling scheme through its HWRC'S. Plywood, Household timber, Fencing, Off cuts

and Wooden packing cases are all collected. This wood is then put through a chipper and is recycled to use to make chipboard and other products.

3.45 The **Brighton and Hove Wood Recycling Project** was set up to divert wood packaging, wood from construction and demolition sites, and household stockpiles of wood from landfill. The wood is collected before being graded and separated according to its quality. Wood over two metres long, which is sound and free of contaminants, is classed as Grade 1 material and can be sold back to the DIY market. Lower-grade wood is classed as Grade 2 material and is used by local colleges for design and technology classes. The project also uses Grade 2 material to manufacture its own products. These include bird boxes, compost bins, garden decking and shelving. The project is self-financing and is sustained by charging for the collection of the wood and by selling the material on. In March 1998 the project opened what they believe to be the world's first outlet selling nothing but wood "waste", offering the public a wide selection of our collected material for all uses.

3.46 **Hadfield Wood Recyclers** is a successful family-owned business situated in Manchester specialising in the recycling of waste timber. Hadfield Wood Recyclers specialises in recycling waste timber to produce recycled woodchip for chipboard manufacture. The Company is a major shredder operator and successful family-owned and managed business. The company runs a farm recycling facility to deal with the wastes.

3.47 The **Urban Timber Initiative** was located in the Manchester area and worked to promote the sustainable utilisation of local woodlands and recycled wood within the Red Rose Forest area to sustainably manage woodlands and street trees. The Red Rose Forest covered six Greater Manchester districts (Bolton, Bury, Manchester, Salford, Trafford and Wigan). The project proposed to add value to the street tree, urban woodland and recycled timber resource by developing innovative ways to use and market within the local area. The project was partially funded by the ERDF and although the initiative has now ended, support is still available from the Red Rose Forest team.

3.48 **Pathway Workshop** is based in Oxford and makes a range of wooden items using reclaimed and recycled timber, mostly sourced from within a 30 mile radius. A number of local companies supply the timber, including a B&Q store and similar outlets. The workshop employs disabled adults in the manufacture and supply of wooden garden furniture, compost bins and wildlife products, such as bird tables.

3.49 The **London Borough of Croydon** was an early player in producing charcoal from local wood wastes. The Borough has been producing local charcoal from street tree prunings too large for chipping and too small for milling for a number of years. The BioRegional Development Group have set up the BioRegional Charcoal Company Ltd, which has established a UK wide network of woodsmen and women supplying local charcoal and local firewood direct to national retailers such as B&Q and Safeway Scotland.

3.50 EnviroFibre project has developed a pilot scale process for recycling MDF and particle board. A vessel can break down one tonne of MDF into its constituent fibres in a chemical free cycle of about an hour

**Potential waste wood issues up to 2020**

**4.0 Future Data Required**

4.1 It is necessary to determine the likely arisings of wood waste in Hampshire by type rather than sector. This will give a better picture about the most appropriate management methods.

4.2 It is likely that more wood recyclers exist in Hampshire, than have not been identified in this paper. It will be necessary to identify these recyclers and ascertain their capacity and capability in terms of providing options for the management of waste wood.

4.3 There is no information about the main disposers of wood waste in Hampshire, and identification of the sources of wood wastes will provide more of an insight into the quantity of clean wood waste available. Clean wood has the most potential for high value end uses.

**4.4 Future legislation**

4.5 The Landfill Directive introduces progressively diminishing limits on the landfill of biodegradable municipal waste. This will affect the amount of household waste wood allowed to go to landfill, thus increasing the necessity for reduction, reuse and recycling. The introduction of Packaging waste recovery and recycling targets by the EU will also have implications on the recycling and reuse of wood waste.

**4.6 Future wood waste arisings**

**Table 6 – Wood arising in the UK compare to the predicted arising in Hampshire**

Sector	2003	2010	2020
Construction and demolition waste	53 658	57 529	63 547
Packaging	21 951	23 534	25 997
Commercial	12 195	13 075	14 443
Industrial	13 415	14 383	15 887
Household (including CA sites)	13 415	14 383	15 887
Fencing manufacture	1 219	1 307	1 444
Furniture manufacture	6 097	7 405	8 180
<b>Total</b>	<b>121,950</b>	<b>131,616</b>	<b>145,385</b>

(Source: WRAP/TRADA,2004, \*Figures for Hampshire calculated on the basis of population relative to the UK)

4.7 The figures in table 6 are based on waste growth of 1% per year in line with the projections in the Regional Waste Strategy. The revisions to the construction and demolition wood waste figure referred to in paragraph 2.9 would make the totals for 2004, 2010 and 2020 145,420, 156,913 and 170,687 respectively.

#### **4.8 Future Options for Resource Management**

4.9 Newer technologies entering the market have the potential to significantly cut operating costs for processing wood waste, and are able to process wood to a variety of end market specifications'(Remade, 2003). The introduction of the landfill tax has meant that it will become more cost-effective to divert wood packaging waste from the general waste stream. The large amount of timber still finding its way to landfill should further stimulate the formulation of wood recycling schemes throughout in Hampshire. Waste timber should only be disposed of in landfill as a last resort. Choosing the most suitable recycling option depends upon a number of variables. These include the volume, seasonal fluctuations, type, quality and purity of the waste wood produced, as well as the levels of investment required to establish the recycling infrastructure.

4.10 A reduction in the quantities of wood waste generated could be achieved through more careful product design and manufacture, and the use of alternative materials (such as recycled plastics). These measures might help reduce overall growth in wood waste, and a 1% annual increase in wood waste arisings has been assumed in line with the forecast in the Regional Waste Strategy.

4.11 A niche market exists for the reuse of good quality wood and furniture. A project is being set up in Southampton. These types of facility can only manage limited quantities of wood, and operate on low profit margins. The first project set up in Brighton. It could be assumed that Southampton, Portsmouth and Aldershot/Farnborough are conurbations of sufficient size to support such a project, which would lead to a potential capacity of 5,000tpa in the County.

4.12 The repairing and reuse of pallets is an effective way of preventing reducing the quantities of wood waste generated. A pallet will last on average around 20 trips before it requires replacement, or put another way, requires about 5% of its weight in repairs for each trip. Pallets of non-standard sizes are more difficult to reuse in this way, because they are restricted in their applications.

4.13 Construction and demolition wood waste can be separated on-site given sufficient space, time and financial incentives separation of clean and contaminated wood.

4.14 The current main recycling route for wood waste is the manufacture of chipboard. This is not a viable solution for the recycling of Hampshire's wood

because the panelboard manufacturers are not within economic distance to make the transportation of wood viable. Whilst small quantities of wood can be recycled through the use of return loads on lorries, making transportation cheaper, this can only be carried out on a limited 'ad hoc' basis.

4.15 There are a number of recycling options for clean wood, such as animal bedding, wood chips etc. These can provide good returns, but it is important that the wood is very carefully sorted and that quality control standards are very high. Contamination of any sort is likely to mean that the only management options for the wood in Hampshire are EfW and landfill.

4.16 It is estimated that a significant amount of the wood in Hampshire might be recycled in this way if sufficient investment from the private sector for the necessary plant and equipment is forthcoming.

4.17 The characteristics of wood make it a good source of energy, particularly when used in applications such as Combined Heat and Power (CHP). For wood which might be subject to limited contamination through treatments, this is the only viable management option available other than landfill. This type of use is considered as a disposal option, and is considered as part of the unavoidable waste section of the MRS. There are no current viable options for the recycling or recovery of panelboard, MDF or contaminated wood.

#### **4.18 Social Issues**

4.19 Consumers can help limit the environmental impacts of deforestation and timber disposal by improving their purchasing habits. Information and easy-to-follow guidelines should be provided with products, and customers should seek advice before making a purchase.

4.20 Research has shown that levels of wood recycled by furniture manufacturers increases if the company is approached by a wood recycler, and if they realise how straightforward it is to recycle wood. Education programs (conducted through the Environment Agency or WRAP can help put waste wood producing businesses in touch with recyclers.

4.21 A high priority for WRAP is to stimulate demand for recycled wood products through a marketing and education initiative. The WRAP targets by the end of 2004 are to double wood packaging recovery to 350,000 tonnes a year by end 2003/4 (excluding construction and demolition waste).

#### **4.22 Environmental Issues**

4.23 The manufacturing process and design of wood products should also be carefully considered to limit environmental impacts. The longer the life of a product the less waste will be generated. The re-use of wood should also be included in BVPI's as re-use is a valuable way to divert items that would otherwise end up being disposed of through landfills. This also has links to the County's PSA target agreement to reduce the amount of waste going to

landfill. Future targets for the reduction in biodegradable waste going to landfill should help to reduce the production of ammonia and methane caused by the breakdown of organic waste.

#### **4.24 Economic Issues**

4.25 Wood waste is already supplied to a number of existing wood markets. There is however, scope for increasing market share for wood waste in these markets and opening up new opportunities for recycled wood (Remade, 2004). While wood recycling in the US, Canada and a number of European countries is well established, it is only an infant industry in the UK. The relatively low value, high transport costs and demands on the specifications militate against wood recycling and this must be tackled.

4.26 New and expanding markets and products will determine the future of the industry. The rising costs of landfill have already begun to encourage the development of the emerging timber recycling industry. There are various new recycled wood products coming on to the UK market, and it is expected that the volume of wood waste used in their manufacture will increase over coming years. One example is wood plastic composite, which is manufactured by combining finely ground wood (known as wood flour) with plastics such as polyethylene. Wood plastic composites can be used to make door and window frames, decking and mouldings. These are already produced in significant quantities in the USA, and are starting to be manufactured in the UK and other European countries. The wood used in these products may be either recycled or virgin.

4.27 Charcoal production is an expanding British market and a growing proportion is home-produced as a high-quality by-product of hardwood forest waste. This industry is set for major expansion with the introduction of portable steel kilns, organised marketing, and support from important retail chains. It could provide an outlet for up to 300,000 tonnes per year of hardwood waste unsuitable for timber production, and an option for owners of neglected broadleaf woodland or tree maintenance contractors.

4.28 Financial incentives and more information on wood recycling would encourage producers (in particular furniture manufacturers) to start recycling their wood. WRAP states that there are four factors which would help increase the recycling rates of wood wastes. These are payments for wood wastes, the provision of more information on recycling, the proximity of local recyclers, and help in the segregation and sorting of wastes.

4.29 Furniture manufacturers who recycle their wood waste can make significant cost savings. Previous WRAP research, carried out by the trade association for British Furniture Manufacturers, found that businesses can cut their costs significantly by recycling their wood waste. For example, some businesses are paying as much as £260 for the disposal to landfill of a 35 yd<sup>3</sup> skip of wood waste, while others are receiving up to £400 for the same sized skip load of wood for recycling. The fact that companies can save money is

highlighted in the survey as a factor which helped some respondents to start recycling (WRAP,2003).

4.30 The recovery and recycling targets set out in the Producer Responsibility (Packaging Waste) Regulations, as amended 1999 necessitate that increasing amounts of wood packaging waste be separated at source from contaminants (such as nails) and recycled, where once such waste was consigned to landfill. New technologies now make such separation feasible.

### References

- A study of UK wood flows and recycled waste wood markets (Trada,2003)
- Facing the challenge of wood recycling (Kearley/Trada,2004)
- Identification of Feedstock Specifications for UK Wood Recycling Applications and Examples of Good Practice in their Achievement (Urban Harvest, 2003)
- Feedstock specifications for UK wood recycling applications (Urban Harvest,2004)
- Materials Recycling Week, 1999a. Re-using wood waste. 11-12, 9 April 1999.
- Treated Wood Waste Assessment of the Waste Management Challenge (WRAP,2003)
- Stakeholder Update – Wood (WRAP,2004)
- Wood recycling activities in the M62 corridor (west) (Wrap (Trada), 2004)
- Wasteonline resource sheets on wood waste
- Feedstock specifications for UK wood recycling applications (Wrap (Urban Harvest), 2004)
- Wood waste recycling good practice guide (Wrap,
- Building wood waste opportunities - Materials Recycling Week vol 183 issue 24 p13
- Recovery and Recycling of Wood Packaging, AEA Technology, November 1997 (Cupit MJ and Poll AJ, 1997)

### Other sources of information

Meeting with

Mark Glover, H & M Glover Recycling – 28 June 2004

Conference

Wood Recycling – Developing new markets, raising public awareness of and improving quality control for recycled wood (21 June 2004 organised by Materials Recycling Week and endorsed by TRADA and the Wood Recyclers Association)

## Websites

Department for the Environment, Food, and Rural Affairs

[www.defra.gov.uk](http://www.defra.gov.uk)

Department for Trade and Industry

[www.dti.gov.uk](http://www.dti.gov.uk)

The Environment Agency

[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

The Waste and Resources Action Programme [www.wrap.org.uk](http://www.wrap.org.uk)

[www.wrap.org.uk/publications/Info Sheet Wood.pdf](http://www.wrap.org.uk/publications/Info_Sheet_Wood.pdf)

LetsRecycle.Com

[www.letsrecycle.com](http://www.letsrecycle.com)

Project Integra

[www.integra.org.uk](http://www.integra.org.uk)

Recycle book: [www.recycle.mcmail.com/content.htm](http://www.recycle.mcmail.com/content.htm)

Community wood recycling- [www.communitywoodrecycling.org.uk/](http://www.communitywoodrecycling.org.uk/)

Brighton and Hove Wood Recycling Project- [www.woodrecycling.org.uk/](http://www.woodrecycling.org.uk/)

Timber Recycling Site - [www.recycle-it.org](http://www.recycle-it.org)

Reuze: [www.reuze.co.uk/home.shtml](http://www.reuze.co.uk/home.shtml)

Furniture Reuse Network: [www.frn.org.uk](http://www.frn.org.uk)

Wasteonline [www.wasteonline.org.uk](http://www.wasteonline.org.uk)

[www.wasteonline.org.uk/resources/InformationSheets/Wood.htm](http://www.wasteonline.org.uk/resources/InformationSheets/Wood.htm)

Wood Recyclers Association - [www.woodrecyclers.sagenet.co.uk](http://www.woodrecyclers.sagenet.co.uk)

[www.remade.org.uk/new site/Wood/wood.htm](http://www.remade.org.uk/new_site/Wood/wood.htm)

## **Appendix 1 Wood Waste Recycling Options**

### **Issues/Opportunities** (general)

- Capture of more separated wood waste from the commercial sector, particularly on-site separation of wood from construction and demolition sites.
- Provision of additional capacity for wood waste processing immediately
- Wood recycling is a new industry, and main market is currently panelboard manufacture which is too distant from Hampshire to be a economically viable outlet.
- Wood could be used to generate energy from waste, and there are opportunities to burn waste collected from trade sources in household waste energy from waste facilities as an end disposal option.

### **Proposed Actions** (for MRS partners)

- Support research and trials to establish local outlets for recycled wood.
- Support for waste producers in the segregation and sorting of wood wastes.
- Provision of additional capacity for wood waste processing immediately

### **Proposed Policies** (wording is indicative)

- Support small scale wood sorting a sale outlets like the Brighton and Hove wood recycling project
- Support proposals for new wood waste processing and transfer infrastructure where a need is identified.

### **Proposed Options**

#### Option 1 (baseline)

- The proposal would use the existing infrastructure, wood is processed and used for CHP (which is classed as an end disposal option and will be considered later in the MRS process).

Percentage recycled – 0%.

Infrastructure Required – None

Cost - This would be a low cost option for both households and business.

## Option 2

Collection and separation of waste from trade and household sources. Materials would be managed jointly and processed to create high quality end products from clean wood such as coloured wood chips and animal bedding.

Percentage recycled – 25%.

Infrastructure required – None, but significant investment in plant and equipment would be required

Cost - This would be a low cost option for households and medium cost to business.

## Option 3 (stretching best practice)

Significant additional public sector resources diverted to education and investment in systems to capture high levels of post consumer wood from the general waste stream. Collection and separation of waste from trade and household sources. Materials would be managed jointly and processed to create high quality end products from clean wood such as coloured wood chips and animal bedding.

Percentage recycled – 50%.

Infrastructure required – None, but significant investment in plant and equipment would be required.

Cost - This would be a medium cost option for households and medium cost to business.

Scenario	Recycling rate	Infrastructure
Option 1 (baseline)	0% recycling	No new infrastructure
Option 2	25% recycling	No new infrastructure
Option 2	25% recycling	2 new recycling and transfer facilities of 25,000tpa capacity each in the north and east of the County
Option 3 (stretching best practice)	50% recycling	No new infrastructure
Option 3 (stretching best)	50% recycling	2 new recycling and transfer facilities of 25,000tpa capacity

practice)		each in the north and east of the County
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***Other options***

Options for the use of wood wastes for CHP will be covered later in the MRS process.

Options to use wood collected from trade sources in household EfW facilities will be covered later in the MRS process when end disposal options are addressed.

The following assumptions have been made:

Data on the condition and levels of contamination of waste wood produced is not available. It has therefore been assumed that half of the wood arisings in the County could be recycled, and half could not.

## APPENDIX 2 - MRS RESOURCE STREAM ANALYSIS

### RESOURCE STREAM APPRAISAL

#### KEY FEATURES OF PREFERRED OPTION FOR WOOD WASTE

**Option Selected – Stretching Best Practice (with additional transfer capacity)**

**Arisings (tonnes per annum) – based on updated figures for CD&E waste**

	2004		2010		2020	
	Househld	C&I	Househld	C&I	Househld	C&I
Wood	13 415	132 005	14 383	141 530	15 887	154 800
TOTAL	13 415	132 005	14 383	141 530	15 887	154 800

#### Resource Recovery (tonnes per annum)

	2004		2010		2020	
	Househld	C&I	Househld	C&I	Househld	C&I
Wood Reuse	0	0	0	0	0	0
Wood Recycling*	0	0	3 595	35 383	7 944	77 400
Wood Recovery	0	0	0	0	0	0
Unavoidable Waste*	13 415	132005	3 595	35 383	7 944	77 400

\* The recycling and unavoidable waste options both includes CHP, but this will be addressed as a disposal option later in the MRS process.

#### Existing Infrastructure

There is a wood processing and transfer facility at Blackbarn Farm, Grateley which currently processes 3,500tpa. Other facilities are expected to exist but require further research.

#### Additional Infrastructure Requirements

2 new recycling and transfer facilities of 25,000tpa capacity each in the north and east of the County. CHP facilities above to burn waste wood should be permitted where there is a demand. Farms may be particularly suitable for small scale CHP facilities and be able to make use of the heat and power generated.

#### Collection Infrastructure Requirements

Collection and separation of waste from trade and household sources. Materials would be managed jointly and processed to create high quality end products from clean wood such as coloured wood chips and animal bedding.

**Societal Change Requirements**

More separation of wood wastes prior to disposal. It is important to separate high value wood resources

**Market Development / Initiatives**

Significant additional public sector resources diverted to education and investment in systems to capture high levels of post consumer wood from the general waste stream.

**Cost**

This would be a medium cost option for households and medium cost to business.

**Government Action Required**

None