

Waste Protocols Project

---

# Tyre-derived rubber

Partial Financial Impact Assessment of a Quality Protocol  
for the production and use of tyre-derived rubber

---

## Contents

---

1.0 Objective	01
2.0 Purpose and intended effect	02
3.0 The market for recycled tyres	03
4.0 Methodology and options	08
5.0 Costs and benefits to industry of the Quality Protocol	12
6.0 Small firms impact test	18
7.0 Competition assessment	19
8.0 Enforcement, sanctions and monitoring	20
9.0 Compensatory simplification	21
10.0 Conclusions	22
11.0 References	23
Annex A: Assumptions used in the analysis	24
Annex B: Technical Advisory Group membership	27
Annex C: Current regulatory position	28
Annex D: Competition assessment filter questions	30

## 1.0 Objective

- 1.0.1 The Quality Protocol for the production and use of tyre-derived rubber materials.
- 1.0.2 This Financial Impact Assessment (FIA) focuses on the potential impacts on industry of the introduction of the Quality Protocol.
- 1.0.3 A Technical Advisory Group (TAG) made up of different industry representatives supported the development of the Quality Protocol and this FIA. Although the TAG provided evidence and expert opinion which aided the development of this FIA, they may not all agree with all the conclusions of the analysis. See Annex B for a list of the TAG members.
- 1.0.4 This is a partial impact assessment that focuses on the financial costs and benefits of the Quality Protocol to those involved in the supply of tyre-derived rubber materials. It excludes social and environmental impacts. Furthermore, the analysis focuses only on the financial costs and benefits to the waste producers, processors and users. Impact to those involved in the supply of virgin or other secondary materials are not included.

## 2.0 Purpose and intended effect

### 2.1 Objective and rationale for Government intervention

- 2.1.1 There is uncertainty among many buyers over the quality of tyre-derived rubber materials and this is constraining the development of some higher value end market applications. The uncertainty relates to the variable chemical composition of the product as well as its physical and visual properties.
- 2.1.2 There is a need to create diverse and long-term stable markets for tyre-derived rubber materials especially now there is a ban on the disposal of used tyres (whole and shredded) to landfill. Industry needs to be able to adapt if there is a significant collapse in demand for any of the existing large established markets.
- 2.1.3 At present the Environment Agency holds the view that tyre-derived rubber materials are waste until they are re-incorporated into their final use product/application. This contrasts with the view of many in the industry, who consider that shredded tyres are not waste. Some in industry are uncertain of where the point of full recovered actually lies. See Annex C for further details of the Environment Agency's current regulatory position.
- 2.1.4 The waste classification could be constraining the use of tyre-derived rubber materials in some end markets and is inefficient when the environmental and/or human health risks associated with the use of waste tyre products are small relative to the costs of compliance. The technical report on the manufacture of tyre-derived rubber materials (Reference 2) by the Environment Agency and WRAP (Waste & Resources Action Programme) concluded that:

'The use of tyre-derived rubber materials is not, in most cases, likely to give rise to significant environmental impact or cause detrimental impact on human health'.

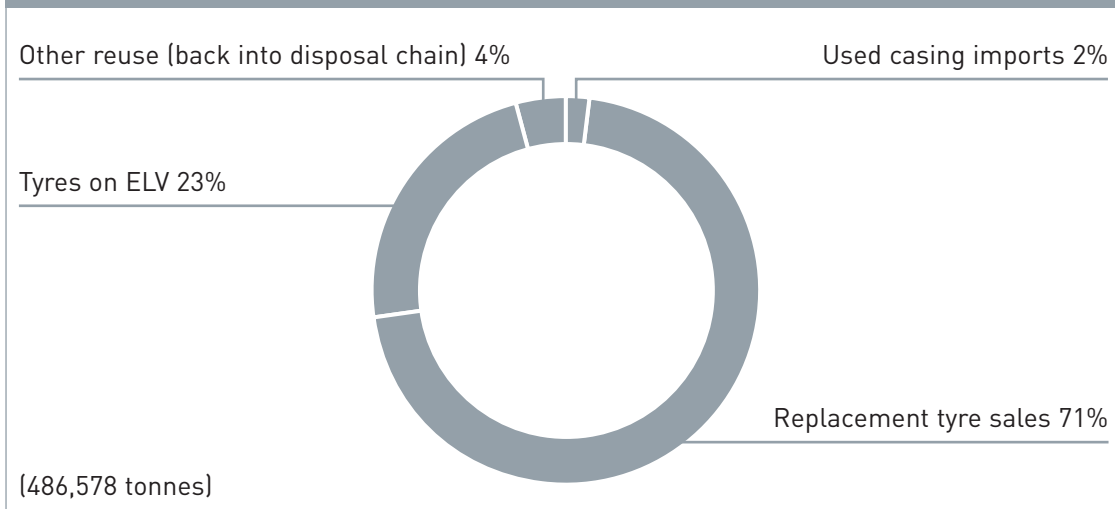
This is reflected in the widely visible use of tyres in day-to-day applications such as playgrounds, docks and harbours.

## 3.0 The market for recycled tyres

### 3.1 Waste tyre arisings and end uses

3.1.1 Used tyre statistics for the UK for 2005 compiled by the then Department of Trade and Industry (DTI) are available from WRAP (Figure 1 and Figure 2).

**Figure 1: Used tyre arisings in the UK, 2005**

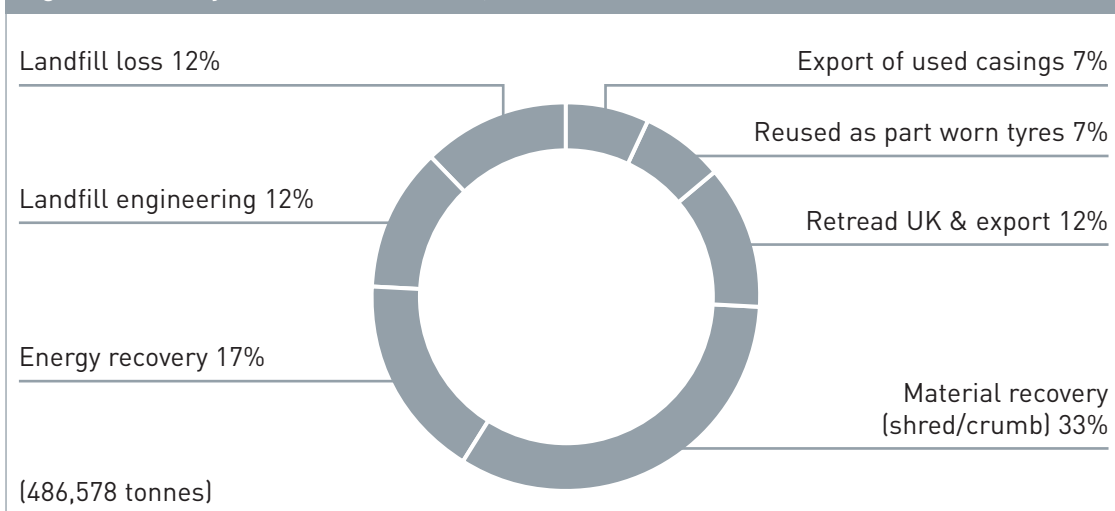


Source: WRAP ([http://www.wrap.org.uk/construction/tyres/dti\\_used\\_tyre\\_statistics/2005\\_dti\\_tyre.html](http://www.wrap.org.uk/construction/tyres/dti_used_tyre_statistics/2005_dti_tyre.html))

Note: ELV is End-of-Life Vehicles.

3.1.2 Figure 2 is based on DTI statistics for 2005, which were the latest figures available at the time of writing. The situation has changed markedly since then as a result of the 2006 ban on shredded tyres being disposed of to landfill. Information from TAG members indicates that a large proportion of the surplus created by the ban has been used in landfill engineering. In 2005, 59,000 tonnes was used for landfill engineering; this figure could now be close to 100,000 tonnes. So far the ban has not led to big increases in stockpiles of used tyres.

**Figure 2: Used tyre end uses in the UK, 2005**



Source: WRAP ([http://www.wrap.org.uk/construction/tyres/dti\\_used\\_tyre\\_statistics/2005\\_dti\\_tyre.html](http://www.wrap.org.uk/construction/tyres/dti_used_tyre_statistics/2005_dti_tyre.html))

Note: The term 'landfill loss' is used to describe disposal to landfill.

3.1.3 Table 1 gives a full market breakdown for the UK of the source of recycled tyre materials in 2005.

Source of used tyres	Tonnes
Replacement tyre sales (71%)	344,839
Tyres from end-of-life vehicles (ELVs)* (23%)	110,909
Other reuse (back into disposal chain) (4%)	20,000
Used casing imports (2%)	10,830
<b>Total used tyres arising</b>	<b>486,578</b>

Source: DTI

\* The ELV Directive applies to cars and vans, not vehicles over 3.5 tonnes.

## 3.2 Collection, recycling and distribution

### Collection

- 3.2.1 Used vehicle tyres are collected through a nationwide network of tyre distributors, vehicle dealer networks, contracted vehicle maintenance companies, end-of-life vehicle processors, and vehicle servicing and repair outlets (Reference 2).
- 3.2.2 The major tyre collection companies and recyclers appear to have a significant influence on the market as their networks and relationships with recovery outlets predispose the used tyres they handle to a certain route. A list of the numerous recovery and collection agents is available online<sup>1</sup>. Vehicle owners pay retailers to take their used tyres. Collection companies then pay a smaller gate fee to processors. It is estimated that at present there are around 100 specialist waste collectors of used tyres in the UK recycled tyre market<sup>2</sup>.
- 3.2.3 Collected used tyres are generally taken to a centralised processor (often located within the main zones for used tyre production in the UK, e.g. the West Midlands). The processors slice the tyre into several pieces to make its onward transportation more efficient by reducing the volume. These tyre slices (in the category >300 mm) may be used directly for landfill engineering or processed further (potentially in a separate facility) into finer grade materials.

### Recycling and distribution

- 3.2.4 Information collected by WRAP suggests there could be in the region of 50 processors (shredders/crumbers) in the UK<sup>3</sup>:
- 20 installations carrying out shredding only;
  - 20 installations carrying out shredding and crumbing; and
  - 8 installations carrying out crumbing only.
- 3.2.5 In 2004, shredding capacity in the UK was estimated to be (Reference 5):
- major companies – total of approximately 400,000 tonnes/year; and
  - smaller companies (some with mobile shredding equipment) – estimated total 80,000 tonnes/year.

<sup>1</sup> [http://www.letsrecycle.com/equipment/tyre\\_recyclers.jsp](http://www.letsrecycle.com/equipment/tyre_recyclers.jsp)

<sup>2</sup> [http://www.letsrecycle.com/equipment/tyre\\_recyclers.jsp](http://www.letsrecycle.com/equipment/tyre_recyclers.jsp)

<sup>3</sup> From a list of tyre processors supplied by WRAP.

3.2.6 There is likely to be enough spare shredding capacity in the UK to handle the kinds of probable increases in the near future (based on the historic growth in arisings). Additional capacity is expected in 2007 in the form of a crumbing plant with the capacity to process 30,000 tyres annually (Reference 2).

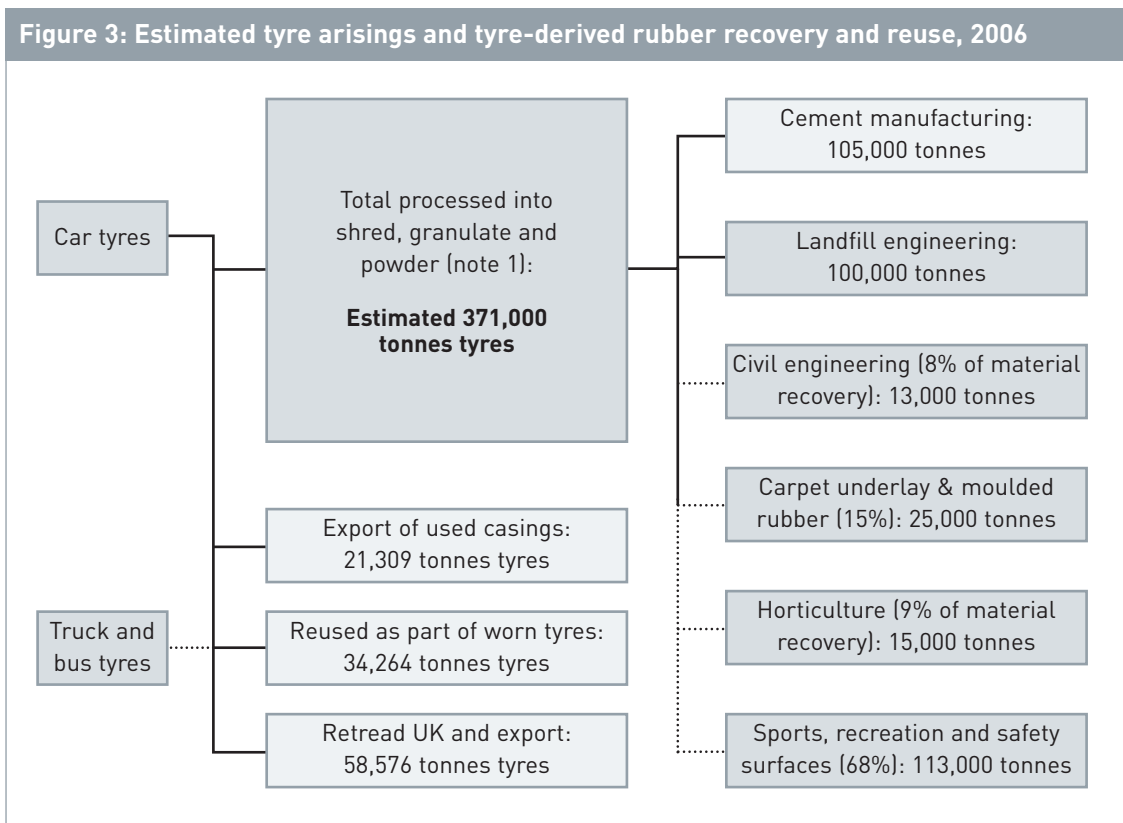
3.2.7 Processors charge a gate fee to take used tyres. The processed tyre-derived rubber materials are then sold to various end markets.

**3.3 Existing markets for recycled tyres**

3.3.1 Crumbed or shredded recycled tyres are reprocessed for various applications in the UK. These are summarised in Figure 3.

3.3.2 The average price for tyre-derived rubber material sold for landfill engineering at around £10 per tonne compares with as much as £300 per tonne for certain moulded products<sup>4</sup>.

3.3.3 In 2005, annual arisings of car tyres and bus/truck tyres in the UK were 284,686 and 144,451 tonnes respectively (DTI used tyre statistics for 2005). The dashed lines in Figure 3 represent activities that predominantly involve the use of truck or bus tyres.



Source: Figures are based on DTI used tyre statistics for 2005.

Note 1: To estimate the tonnages for the material recovery end uses, the proportions in 2006 were assumed to be the same as those given in Reference 5 for 2004.

Note 2: Arisings of used tyres were assumed to have increased by 2% from the DTI figures for 2005.

Note 3: Assumed that 70 per cent of the weight of tyres that would have gone to landfill disposal if the ban had not been introduced go to landfill engineering in 2006 and the remaining 30 per cent go to energy recovery.

Note 4: The figures for sports, recreation and safety surfaces etc include tonnages to pathways.

Note 5: The figures are the tonnage of arisings going to each of the end uses. For material recovery end uses the amount of rubber material available for market use will be less. The tonnage falls when steel and fibre are removed during processing.

3.3.4 Virgin rubber is generally considerably more expensive than used tyre-derived rubber.

3.3.5 A current estimate for the total market value for PAS 107<sup>5</sup> related uses for used tyres is approximately £22 million per year (Figure 4)<sup>6</sup>. PAS 107 specifies minimum requirements for the collection, initial storage, production and final storage of size-reduced tyre-derived rubber materials intended for a range of applications in existing and emerging secondary end markets. The quantity (tonnes) of tyre-derived rubber material going into each of the end markets is on the horizontal axis and the price per tonne is on the vertical axis. The area of the rectangles represents the market value for each of the end applications. Applications for tyre-derived rubber materials in the UK included in the Quality Protocol are listed in Table 2.

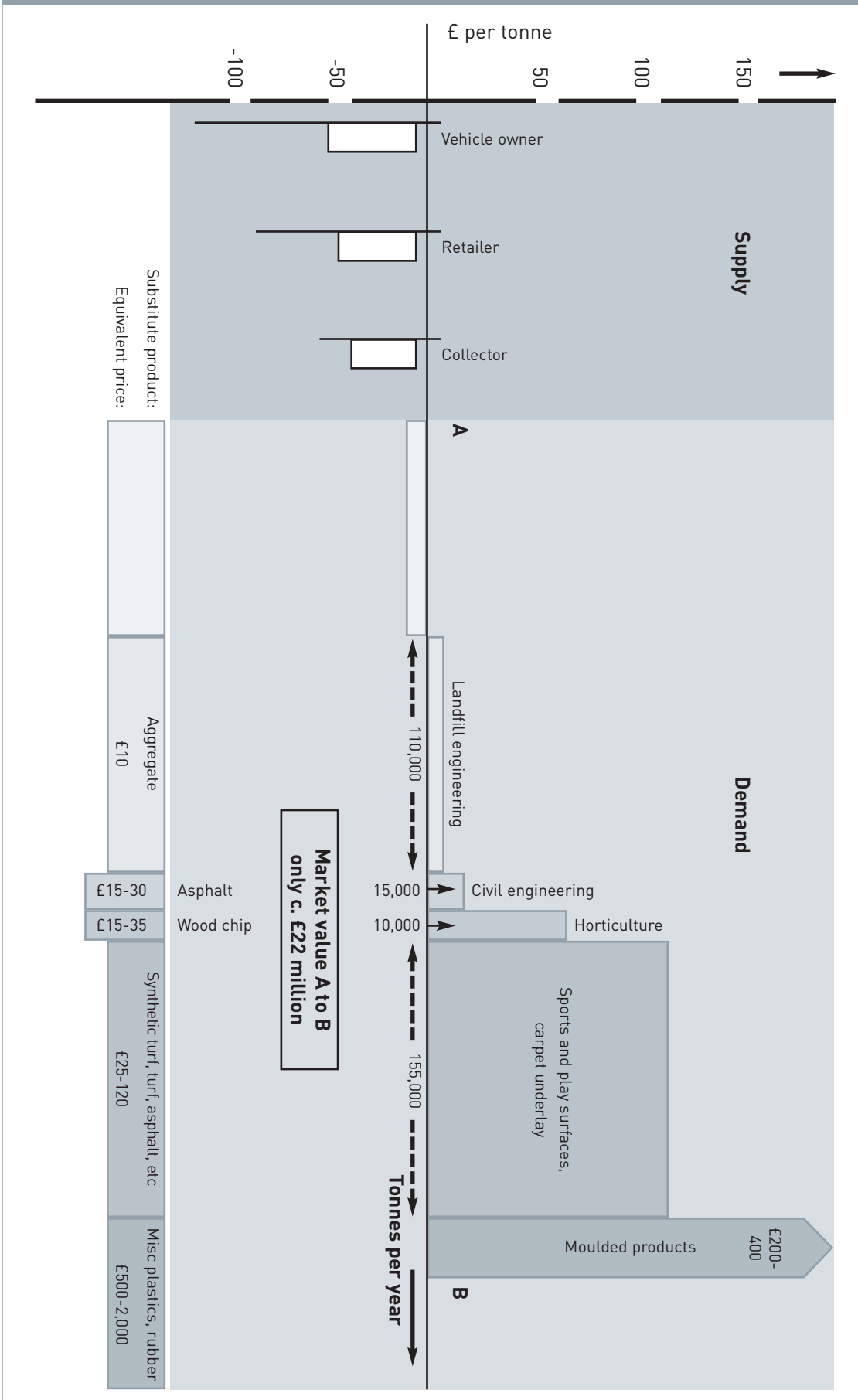
**Table 2: Applications of tyre-derived rubber materials in the UK included in the Quality Protocol**

Market sector	Applications
Landfill engineering	Shredded used tyres can be used as a stabilisation and/or drainage layer in landfill construction. The substitute is stone. Shred is cheaper and has the same performance.
Civil engineering (non-road)	Construction products – can include uses such as drainage filler, alternative to traditional aggregates in block applications and railway crossing matting. Recycled tyres perform as well as aggregate but are cheaper.
Civil engineering (road)	Road repair and maintenance – can include use of granulated rubber in modified asphalt and shred as road way base layers. The alternative is to use aggregate stone. The performance is equivalent.
Sports, recreation and safety surfaces	Loose surfaces – including equestrian ménages, bridleways, play surfaces such as artificial turf pitches and pathways including cycle and footpaths. Bound rubber sports surfaces and safety surfacing for playgrounds. Equestrian (steel removed) – the price and performance of tyre shred are comparable to its substitutes of wood fibre, silica sand and grass. Sports surfaces and playground surfaces – competes with plastics, both of which are more expensive but are available in more colours. Some surface providers use virgin rubber or alternatives on the top layer (having used tyre-derived crumb as the base layer) to benefit from the greater choice of colours.
Consumer and industry	Moulded rubber products – includes carpet underlay, rubber blocks, composite slates, internal construction board and items of street furniture.

<sup>5</sup> BSI PAS 107: Specification for the manufacture and storage of size reduced tyre materials. See the WRAP website for more details of PAS 107 <http://www.wrap.org.uk/construction/tyres/>

<sup>6</sup> £22 million is an estimate provided by David Fitzsimmons (Oakdene Hollins Ltd). The market value for all PAS 107 related uses is defined as the summation of the market value for each end application of recycled tyres covered in PAS 107. The market value for an end application is calculated by multiplying the price received by processors multiplied by the quantity sold into the end market.

Figure 4: Estimates of market value for PAS 107 related uses for used tyres



## 4.0 Methodology and options

- 4.0.1 The options assessed within the financial impact assessment are:
- Option A – Business As Usual (BAU); and
  - Option B – Introduce the Quality Protocol.
- 4.0.2 Annex A explains in more detail the assumptions made in order to perform the assessment.

### 4.1 Option A – Business As Usual

- 4.1.1 This is the baseline. Under this option no Quality Protocol would be introduced.
- 4.1.2 There would continue to be uncertainty among some processors and purchasers over the point at which tyre-derived rubber materials cease to be waste. There would continue to be uncertainty over how the regulations will be enforced in the future.
- 4.1.3 There is a risk that the use of used tyres in some higher value end applications would be held back to some extent by buyers' concerns over quality and consistency, although PAS 107, which was recently released, is likely to alleviate this to some extent. In the baseline there is likely to be some shift of processed used tyres from low value end applications such as landfill engineering to higher value end applications (sports surfaces, moulded products etc) partly because of the likely increased uptake of PAS107.
- 4.1.4 Tyre-derived rubber materials supplied from all processors would still be classified as waste. Buyers would be required to comply with waste regulations. Given the low human and environmental risks associated with the storage/handling/transport of tyre-derived rubber materials, companies may face unnecessary compliance costs coupled with the uncertainty and risk that the regulatory regime might be applied differently in the future.

### Assumptions used in option A

- 4.1.5 It is assumed that the Environment Agency's low risk approach regarding the storage of shred destined for recovery will remain in place throughout the period of the assessment. It is possible that the low risk approach, which is not legally binding, could be removed in the future but this is highly unlikely.
- 4.1.6 It is assumed that 70 per cent of the surplus of used tyres generated by the ban on disposal to landfill will go to landfill engineering and 30 per cent to energy recovery.
- 4.1.7 The end markets will expand anyway with the increase in annual arisings. For the sake of the analysis, it is assumed that arisings expand by 2 per cent per year. Some end markets will increase more than others and markets such as carpet underlay are probably saturated. However, other applications could continue to grow and it is expected that the momentum provided by the three-year WRAP Tyres Programme<sup>7</sup> will encourage the introduction of new end applications for used tyres.
- 4.1.8 PAS 107 could well lead to some extent to a switch from landfill engineering to higher value end applications (civil engineering, sports and play surfaces, carpet underlay, moulded products etc). It is assumed that the switch from low to high value end applications results in an annual growth in the quantity going to higher value end applications of 1 per cent above the overall rate of increase of arisings of used tyres. So the annual quantity going to higher value end applications rises by 3 per cent. The quantities going to landfill engineering fall accordingly. This is less optimistic than the WRAP projected increase in material recovery tonnage of 5 per cent per year (Reference 5).

<sup>7</sup> See <http://www.wrap.org.uk/construction/tyres/index.html>

## 4.2 Option B – Introduce the Quality Protocol

- 4.2.1 The proposal is to produce a voluntary Quality Protocol for the production and use of tyre-derived rubber materials that is recognised by, and produced with, the support of industry. The Quality Protocol is a formalised quality control procedure and has three main purposes (Reference 1):
- i. to provide users with confidence that the tyre-derived rubber materials that they purchase conform to agreed quality standards comparable with those crumbed and granular materials made from materials of a non-waste origin<sup>8</sup>;
  - ii. to protect human health and the environment by setting standards for the production and use of tyre-derived rubber materials in market applications; and
  - iii. to ease the regulatory burden by defining when the tyre-derived rubber materials cease to be waste and no longer need to be subject to regulatory control.
- 4.2.2 The Quality Protocol sets out criteria for the production of tyre-derived rubber materials. Compliance with these criteria is considered sufficient to ensure that the recovered product may be used without harm to human health or the environment and therefore without the need for waste regulatory control. The Quality Protocol indicates how compliance may be demonstrated and points to best practice for the use of the recovered product. It aims to provide increased market confidence in the quality of tyre-derived rubber materials and so encourage sales in higher value end markets.
- 4.2.3 The Quality Protocol moves the point of full recovery<sup>9</sup> back along the recycle supply chain to when tyre-derived rubber materials (produced in line with the specification defined by the Quality Protocol) leave the processor's site. Companies downstream of that point will no longer be subject to the requirements of the waste regulatory regime or the risk of future requirements should elements of the regime be applied differently in the future. See Annex C for more details of current waste regulations relating to the use, transport and processing of tyre-derived rubber materials.
- 4.2.4 To be compliant with the Quality Protocol, processors must conform to PAS 107. The Quality Protocol documentation (Reference 1) gives more details of its requirements.
- 4.2.5 The Quality Protocol does not cover:
- whole tyres that are reused, and
  - whole or shredded tyres entering cement kilns.
- 4.2.6 The Quality Protocol is voluntary. If processors do not comply, they can still continue supplying tyre-derived rubber materials but it will still be waste and their buyers will need to comply with waste regulations.
- 4.2.7 The Quality Protocol will:
- provide buyers with an assurance of the physical quality and consistency;
  - enable buyers to distinguish between high and low quality material more effectively; and
  - help to consolidate established markets and develop new and fledgling ones;
- 4.2.8 In addition, the Quality Protocol will provide regulatory certainty and remove the risk that regulations are applied differently in the future.
- 4.2.9 Adoption of the Quality Protocol is likely to increase investment in processing that favours the higher added value uses shown in Figure 4. The Quality Protocol will increase awareness of PAS 107 and is likely to increase its uptake. In addition it will provide added assurance of quality. The analysis attempts to recognise the potential value of using the Quality Protocol in this market. It models a modest switch from landfill engineering towards higher added value uses (civil engineering; consumer and industry; sports, recreation and safety surfaces; and moulded products etc) resulting in an increase in market value relative to the baseline.

<sup>8</sup> This is the purpose of PAS 107. The Quality Protocol requires compliance with PAS 107.

<sup>9</sup> The point of full recovery is the point at which the material is no longer classified as waste.

- 4.2.10 There will be a fall (relative to the baseline) in the amount going to landfill engineering because it is being diverted to higher end markets.
- 4.2.11 There is a large amount of uncertainty regarding the impact of the Quality Protocol and the analysis uses a simple model to illustrate the potential benefits and not to set out what will definitely happen. In many cases, buyers are already aware of the quality and consistency of the material they are purchasing as tyre-derived rubber materials have been utilised in many of these end applications for several decades.
- 4.2.12 In practice, the uptake of the Quality Protocol is expected to be phased in slowly. Should some operators be unable to meet the standard, a price differential would develop between material complying with the Quality Protocol and material that does not.
- 4.2.13 The level of compliance with the Quality Protocol cannot be predicted reliably. It could be quite high given that there is a general desire by recyclers and end users to regularise the industry's view that tyre-derived rubber is a 'product'. It will partly be dependant on the costs of compliance with the Quality Protocol, which for some will only be the cost of certification if they are already delivering the standards required by PAS 107. A key driver for compliance could be if significant numbers of end market buyers demand Quality Protocol compliant tyre-derived rubber materials.
- 4.2.14 It is highly unlikely that there will be 100% compliance amongst processors. Some buyers will still want to purchase the cheaper lower quality non compliant tyres.

#### **Assumptions used in option B**

- 4.2.15 Two scenarios are considered for the purposes of calculating benefits<sup>10</sup>:
- lower level of Quality Protocol uptake resulting in assumed sales increases in higher end applications of 1 per cent a year above the baseline increases; and
  - higher level of Quality Protocol uptake resulting in assumed sales increases in higher end applications of 3 per cent a year above the baseline increases.
- 4.2.16 The different scenarios are an attempt to model the large amount of uncertainty involved in making predictions.
- 4.2.17 For simplicity it is assumed that the quantities being sold into the higher value end markets will increase by the same percentage as a result of the Quality Protocol. This is unlikely. For example, communications with the TAG suggest that the market for civil engineering may increase more than others. However, it was concluded that such refinements would not add much value to the analysis given:
- the uncertainties involved in the underlying growth assumptions; and
  - modelling these different growth rates may not affect the overall benefits significantly.
- 4.2.18 It is assumed that the Quality Protocol will have no impact on the prices received for tyre-derived rubber materials used for civil engineering, sports surfaces etc. Prices will stay constant in real terms over the assessment period (increasing in line with inflation). However recyclers' revenues should increase since they are selling more in higher priced markets and less in lower priced markets relative to the baseline.
- 4.2.19 The average prices per tonne of tyre-derived rubber material sold in end markets is assumed to be the same in both options A and B. The assumed prices are<sup>11</sup>: landfill engineering (£10); civil engineering (£15); sports and play surfaces (£120); and moulded products (£300). In both options it is assumed that these prices stay constant in real terms. They increase in line with inflation. The impact of different price levels is investigated in the sensitivity analysis in section 5.4.

<sup>10</sup> Scenarios of 2% and 5% growth above the baseline growth were originally suggested by David Fitzsimmons (Oakdene Hollins Ltd) as a starting point for discussion. These are larger than the scenarios used but include the impact of PAS 107 as well. Since PAS 107 is in the baseline the growth rates were reduced to take account of this.

<sup>11</sup> Average prices in 2007 provided by David Fitzsimmons of Oakdene Hollins Ltd.

4.2.20 See Annex A for more details of the assumptions used in the analysis.

### 4.3 Methodology

4.3.1 The method used to assess the financial impact of the Quality Protocol for tyre-derived rubber materials involved comparing option A (baseline) with option B.

4.3.2 The quantifiable benefits and costs of the Quality Protocol were calculated for each year over a 10-year period. They were then discounted at 3.5 per cent (following Green Book guidance) (Reference 8) and summed to provide the total present value benefit or cost. The period of assessment is 2008 to 2017 and the analysis is in 2007 prices.

4.3.3 For example, the annual additional total market value attributable to the Quality Protocol was calculated by subtracting the annual total market value<sup>12</sup> for option A from the annual market value for option B. To calculate the market value the price of the material supplied into the end market is multiplied by the quantity. This is repeated for each market the material is supplied into and then the products are summed to provide the total market value. This was repeated for each year over the 10-year assessment period. The annual market value for option B is greater than the annual market value for option A because a larger quantity of tyre-derived rubber materials are being sold in higher value end markets in option B. These additional market values were then discounted (using 3.5 per cent) and summed to provide the increase in market value as a result of the Quality Protocol over the period. This produces an over-estimate of the benefits. The true benefits are the increase in profits. It was not possible to estimate this value for reasons of confidentiality. Normally higher value end applications of tyre-derived rubber materials provide greater margins per tonne<sup>13</sup> so a switch from lower value end uses to higher value end applications should increase profits.

4.3.4 Because the benefits could continue beyond the 10-year assessment period, the estimates are an under-estimate.

4.3.5 The model used is simple and involves several simplifying assumptions. It is an attempt to give an indication of the possible benefits of the Quality Protocol. Resources were not available to develop a more complicated model to better reflect reality and produce a more detailed picture of the response to the Quality Protocol. Even with a more sophisticated model there will always be a high degree of uncertainty when predicting how markets will react. A shortcoming of the analysis is that it makes no attempt to model the impacts on imports and exports.

---

<sup>12</sup> To calculate market value, the price received by recyclers for the tyre-derived rubber material was multiplied by the quantity sold in the end market. This was repeated for each end market and the products summed. A switch from low value applications to high value applications will increase the total market value.

<sup>13</sup> Communication with Stephen Slater, Oakdene Hollins Ltd.

## 5.0 Costs and benefits to industry of the Quality Protocol

- 5.0.1 This section sets out the costs and benefits of the Quality Protocol, including the sectors and groups affected.
- 5.0.2 There could be impacts on carbon dioxide emissions from the Quality Protocol resulting from changes in haulage distances and the displacement of other materials used in higher value end uses. However, due to relatively modest increase in material flows assumed to result from the Protocol, uncertainty over the possible effects on haulage distances and the multitude of virgin materials used as substitutes across high value end uses, it was decided not to attempt to quantify carbon dioxide impacts.

### 5.1 Benefits of the Quality Protocol and groups effected

#### Increasing regulatory certainty

- 5.1.1 The main benefit of the Quality Protocol identified by the TAG is that it will provide regulatory certainty and remove the risk that waste regulations could be enforced differently in the future. The consultation revealed that some of industry is unsure about whether they need to comply or not, and would welcome a Quality Protocol to resolve the issue. The Quality Protocol would regularise the common view in the industry that tyre-derived rubber material is a product not a waste.

#### Additional market value

- 5.1.2 Several end users mentioned standardisation of quality. They were positive about the Quality Protocol on the grounds that it will help improve the consistency of the quality of the recycled output (i.e. degree of removal of metal and fibres from the tyre-derived rubber). Some consultees highlighted the potential use of the Quality Protocol as a marketing tool, essentially because it promotes the uptake of PAS 107. This assurance may be most valuable in new emerging markets.
- 5.1.3 Table 3 sets out the estimated additional market value that could potentially result from the introduction of the Quality Protocol. They are based on different assumed increases (above the baseline) in the sales of tyre-derived rubber material in higher end markets. The figures are designed to provide some indication of what is realistically possible.

**Table 3: Possible additional market value as a result of the Quality Protocol**

Assumed increase in sales in higher value end applications (above baseline growth)	Additional market value	
	10 years Net Present Value	Annual Average Value
1%	£7.4 million	£0.94 million
3%	£23.4 million	£3.0 million

## Avoided waste regulation compliance cost (admin burdens)

- 5.1.4 The Quality Protocol would reduce the costs of complying with waste regulations<sup>14</sup>. This can involve obtaining environmental permits, registering as a waste carrier and following the Duty of Care. The application costs for environmental permits is £4,211 to £8,419<sup>15</sup> depending on the quantity involved. There are also admin costs for firms in making the application<sup>16</sup> and yearly charges. However the total avoided waste regulation compliance costs are expected to be relatively insignificant. Amongst firms in end user markets who currently purchase tyre-derived rubber material, compliance with waste regulations is likely to be significantly lower than 100 per cent. In addition some of the storage and processing of tyre-derived rubber materials is covered by the Environment Agency's low risk approach (Reference 6) or paragraph 14 exemptions, which have no cost. Due to lack of accurate information the avoided waste regulation compliance costs have not been modelled. See Annex C for more details of the waste regulations relating to tyre-derived rubber material and waste exemptions.
- 5.1.5 The TAG highlighted the specific potential benefit that the Quality Protocol would enable processors to store large quantities of supplies in temporary satellite sites near a client's construction site without needing an environmental permit, subject to local planning consent. Currently if the quantities stored exceed the Environment Agency's low risk approach threshold (1,000 tonnes), then the processor currently needs to apply for an environmental permit for the temporary site. This will incur a cost and takes time to process. Processors are often given little warning from customers. The TAG noted that on occasions, requests to supply construction projects have been turned down by processors because of the need to comply with waste regulations for the use of temporary sites. Complying with the Quality Protocol will enable processors to increase supplies to construction applications such as civil engineering.

## 5.2 Costs of the Quality Protocol

- 5.2.1 The costs of complying with the Quality Protocol will fall on the processors. The protection of human health and the environment is of paramount importance therefore robust and transparent record keeping and auditing is required and is key to building confidence in the use of tyre-derived rubber materials. The application and exact detail of record keeping and auditing has not been fully determined at the time of the consultation as this aspect is an area upon which the Environment Agency is seeking consultees views. Therefore accurate cost figures are not currently available. Many processors will already be operating to the standards required by PAS 107 and so will only need to comply with the certification process.
- 5.2.2 The costs of complying with PAS 100 and the Compost Quality Protocol could provide some indication of the possible costs involved. The largest compliance cost to comply with PAS 100 was estimated at just over £6,400 during the verification year, dropping to just under £5,000 in subsequent years (Reference 7). This includes man hours, quality testing etc. Estimates for additional record keeping to comply with the Compost Quality Protocol were approximately £740 per site per year (50 man hours at £14.72 per hour). The fee to the Quality Protocol certification body was estimated to be £260 per year per processor so the total costs of complying with the Compost Quality Protocol beyond complying with PAS 100 is estimated to be just under £1,000 per site per year (Reference 7).

14 In 2008 Environmental Permitting Regulations were introduced to combine PPC and Waste Management Licensing (WML) regulations into a single regulatory framework.

15 From [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk) at the time of writing. Represents application costs for a Waste Management Licence.

16 It would be expected that costs for Consultants to complete a WML application would be around £7,500-£8,000 for a new site (this assumes that the site does not qualify for a fixed licence). The time requirement can be translated into internal firm costs by assuming the work is completed by a member of staff rather than a consultant. Assuming an Environmental Manager's average salary of £25k to £30k and standard hours of 1,957.5 per annum, internal resource costs could be reduced to £2,000 to £2,500.

- 5.2.3 Table 4 sets out some possible total costs over ten years for processors of complying with the Quality Protocol for the production and use of tyre-derived rubber materials. In all four scenarios it is assumed that the cost per site of complying with the Quality Protocol beyond complying with PAS 107 is £2,000<sup>17</sup> per year. All four scenarios assume that the average cost of complying with PAS 107 is £6,000 per site per year. These are likely to be the upper levels of costs and are used here in an attempt not to underestimate the costs involved.
- 5.2.4 Scenario 4 is highly unlikely to occur. It is used to provide an estimate for the maximum possible compliance cost. It assumes in the baseline (if the Quality Protocol is not introduced) the proportion of processors complying with PAS 107 does not increase over the assessment period (stays at 30 per cent). This is highly unlikely and the other scenarios assume the proportion using PAS 107 rises to 50 per cent by 2017 in the baseline. Scenario 4 and scenario 3 assume that if the Quality Protocol is introduced by 2017 all processors will be Quality Protocol, and therefore PAS 107, compliant. This is also unlikely. Scenarios 2,3 and 4 assume that the introduction of the Quality Protocol results in an uptake of PAS 107 beyond what would have happened in the baseline.

---

17 E-mail communication with John Dorken (British Tyre Manufacturers Association).

**Table 4: Possible total cost of complying with the Quality Protocol**

Scenarios	Total Cost of complying with the Quality Protocol present value over 10 years (3.5% discount rate)
<p><b>Scenario 1</b> Assumptions: Option A Baseline: proportion of processors that comply with PAS 107 reaches 50% by 2017. Estimate for current PAS 107 compliance is 30%<sup>18</sup>.  Option B introduce Quality Protocol: compliance with Quality Protocol reaches 50% of processors by 2017. So compliance with PAS 107 reaches 50% by 2017.</p>	£0.35 million
<p><b>Scenario 2</b> Assumptions: Option A Baseline: proportion of processors that comply with PAS 107 reaches 50% by 2017. Estimate of current level of compliance with PAS 107 is 30%.  Option B introduce Quality Protocol: compliance with Quality Protocol reaches 70% by 2017. So compliance with PAS 107 reaches 70% by 2017.</p>	£0.7 million*
<p><b>Scenario 3</b> Assumptions: Option A Baseline: proportion of processors that comply with PAS 107 reaches 50% by 2017.  Option B introduce Quality Protocol: compliance with Quality Protocol reaches 100% of processors by 2017. So compliance with PAS 107 reaches 100% by 2017.</p>	£1.22 million*
<p><b>Scenario 4</b> Assumptions: Option A Baseline: proportion of processors that comply with PAS 107 stays constant over the assessment period (assumed currently 30%).  Option B introduce Quality Protocol: compliance with Quality Protocol reaches 100% of processors by 2017. So compliance with PAS 107 reaches 100% by 2017.</p>	£1.47 million*

\* Includes the cost of complying with the Quality Protocol beyond PAS 107 and the cost of complying with PAS 107 where the Quality Protocol has resulted in an increased uptake of PAS 107.

Note 1: Assumed cost of complying with PAS 107 is £6,000 per site per year.

Note 2: Assumed cost of complying with Quality Protocol beyond complying with PAS 107 is £2,000 per site per year.

Note 3: Estimate of 48 used tyre processors (shredders, crumbers) for 2007. Assumed number of processors increases by 2% a year in the baseline and scenarios, based on 2005 figures from the DTI.

- 5.2.5 In scenario 4, 100% of processors are assumed to be Quality Protocol compliant by 2017 and the Quality Protocol is achieving the greatest uptake of PAS 107 relative to the baseline. It could therefore possibly deliver significant benefits.
- 5.2.6 If it is assumed that the cost of certification is £1,000 per site per year not £2,000 then the costs of the scenarios become: £0.18 million, £0.5 million, £0.93 million and £1.2 million respectively over 10 years.
- 5.2.7 The Quality Protocol is voluntary. If processors perceive the costs of compliance to be high relative to expected benefits then they can choose not to comply and still sell waste.

18 A sample of 10 processors were contacted. 3 were using or are going to use PAS 107.

- 5.2.8 If buyers in the market readily respond to the voluntary Quality Protocol, such that it becomes a normal requirement, other operators will be forced to make investments to upgrade their operations to meet the Quality Protocol standard. But by improving the quality of their output by complying with the Quality Protocol they should be able to raise their prices. The price gap between those operating under the Quality Protocol and those selling waste could widen significantly.
- 5.2.9 With the Quality Protocol the Environment Agency is stepping back from regulation. The regulatory responsibilities will be reduced as end user firms drop out of waste regulation. This benefit has to be set against the fall in income from reduced receipts from charges for licences. The charge for environmental permits and waste carriers registration is set at the level to recover processing costs. Therefore the Quality Protocol is unlikely to deliver significant benefits or costs to the Environment Agency.

### 5.3 Sensitivity Analysis on added market value benefits of the Quality Protocol.

- 5.3.1 Table 5 sets out the added market value delivered by the Quality Protocol for the two growth scenarios in Option B if there are changes in some of the key variables in the analysis. The first is the base case outlined in sections 4.1 and 4.2 above.

**Table 5: Additional market value sensitivity analysis**

	Option B Scenario 1: 1% growth in higher value end applications above baseline. Present value over 10 years.	Option B Scenario 2: 3% growth in higher value end applications above baseline. Present value over 10 years.
<b>1:</b> Assumptions: Prices per tonne: sports and play surfaces (£120); moulded products (£300); civil engineering (£15); landfill engineering (£10). Assumed 2% per year growth in used tyre arisings. Assumed 1% growth in higher value end applications switch from landfill engineering in baseline. So in baseline overall growth of 3% per year in higher value end applications.	£7.4 million	£23.4 million
<b>2.</b> As above except arisings increase by 1% a year.	£6.8 million	£21.7 million
<b>3.</b> As above except arisings increase by 4% a year.	£8.6 million	£27.4 million
<b>4.</b> As above except the assumed annual growth in higher value end applications (switch from landfill engineering) in the baseline rises from 1% to 2%.	£7.8 million	£24.8 million
<b>5.</b> As 1 above except assumed 20% higher prices for higher value end applications: sports and play surfaces; moulded products, civil engineering, landfill engineering.	£8.8 million	£28.1 million

- 5.3.2 Doubling the assumed annual growth in used tyre arisings results in a 16 per cent rise in the added market value of the Quality Protocol.
- 5.3.4 The added market value benefits are not very sensitive to changes in the assumed annual growth in higher value end applications (switch from landfill engineering) in the baseline. Increasing this variable by 100 per cent increases the added market value by 5 per cent.
- 5.3.5 An obvious result is that the Quality Protocol benefits are highly sensitive to the assumed prices of tyre-derived rubber material sold in the end markets. An increase in all the prices by 20 per cent results in the added market value increasing by 20 per cent.
- 5.3.6 Based on the above analysis and taking into account the costs described in the previous section, the maximum net present value of the Quality Protocol is £27.2 million and the minimum is £5.8 million.

## 6.0 Small firms impact test

- 6.0.1 As well as members of the Technical Advisory Group (TAG), a number of producers of tyre-derived rubber material and end users, including small business, were consulted. The vast majority of those contacted welcomed the proposed Quality Protocol, although there was a wide variation in views on the extent of the possible benefits.
- 6.0.2 End users were keen to remove the uncertainty regarding the application of waste management regulation and the costs (time and money) of complying. The Quality Protocol is a voluntary code, which if followed, removes the waste status of the material produced i.e. waste regulations no longer apply. Regulations tend to impact disproportionately on small businesses so the Quality Protocol is likely to disproportionately benefit smaller end user businesses.
- 6.0.3 Compliance costs can be disproportionately higher for smaller businesses but the costs of compliance are likely to be very small relative to the normal operating and capital costs, even for the smaller operators. The costs of compliance can be avoided by choosing not to comply.
- 6.0.4 Due to scope and size of this analysis and difficulties in gaining access to commercially confidential data, it has not been possible to quantify the costs to firms of different sizes.

## 7.0 Competition assessment

- 7.0.1 The key market affected by the introduction of the Quality Protocol for the production and use of tyre-derived rubber material is the tyre reprocessing (shredders/crumbers) industry. See Annex D for the answers to the competition filter questions.
- 7.0.2 The Quality Protocol would not create any barriers to entry into this market and is unlikely to reduce the number of processors. Any costs of compliance are likely to be very small relative to the normal capital and operating costs. Many of those firms who choose to comply will already be operating to near or at the standard required. Existing firms will face the same compliance costs as new entrants. Firms can avoid the cost by choosing not to follow the Protocol and still operate in the market, although if most end users start to demand Protocol compliant material it will become more difficult to avoid compliance.
- 7.0.3 The Quality Protocol may encourage an increase in the number of processors in the market. It may increase the possible range of end user markets and provide greater access to higher value end applications. It will provide certainty on the application of waste regulations and enable processors to market a product not a waste.

## 8.0 Enforcement, sanctions and monitoring

### 8.1 Certification

- 8.1.1 Processors must be able to demonstrate compliance with the requirements of the Quality Protocol. Compliance can be demonstrated by obtaining a certificate from an approved certification body. The approved certification body will agree scheme rules with the Environment Agency and obtain *accreditation* on an annual basis from the United Kingdom Accreditation Service (UKAS) to BS EN 45011: 1998 *General requirements for bodies operating certification systems* (or any subsequent amendments). The certification body or its authorised contractor will carry out at least one site inspection per year to verify on site documentation and to oversee the sampling of at least one batch of tyre-derived rubber materials.
- 8.1.2 There will be a public register of certified companies published on the internet and made available to the public.
- 8.1.3 Certification is overseen by an impartial committee, which adjudicates on any matters of non-compliance in line with the requirements of BS EN 45011: 1998.
- 8.1.4 As part of the certification process, the processor will normally be expected to:
- keep and retain specified records for a minimum of four years; and
  - make them available to the certification body for certification purposes.
- 8.1.5 These requirements are additional to any statutory record-keeping requirements under waste regulatory controls.
- 8.1.6 There has not yet been a decision on which organisation should be the approved certification body.

### 8.2 Enforcement

- 8.2.1 Where the Quality Protocol is not complied with (e.g. the tyre-derived rubber materials are not produced to the approved standard), the end user must comply with the correct regulatory controls and may be committing an offence if they do not do so.
- 8.2.2 Even if the Quality Protocol is complied with, the material may become waste again and subject to waste management controls if, for example, it is at any stage:
- disposed of; or
  - stored indefinitely with little prospect of being used.
- 8.2.3 The method of enforcement has not yet been decided.
- 8.2.4 There could be loss of income and costs of the Quality Protocol process to the Environment Agency and related partners. However, depending on the regulatory arrangement for introducing and monitoring the Quality Protocol there could also be less work for the Environment Agency to do and therefore lower costs. The charges for waste regulation are set to cover the costs and it could be argued that there would not be any significant net costs to the Environment Agency.

## 9.0 Compensatory simplification

- 9.0.1 Following the introduction of the Quality Protocol, it will not be necessary for businesses to comply with existing waste regulations if the materials they are using meet the required standards. Thus, compensatory simplification measures are not relevant to the analysis.

## 10.0 Conclusions

- 10.0.1 The main benefit of the Quality Protocol identified by the TAG is that it will provide regulatory certainty and will remove the risk that waste regulations could be enforced differently in the future. The vast majority of those consulted were in favour.
- 10.0.2 One of its aims is to increase the number of new entrants and the quantity of sales in higher added value uses where uncertainty regarding quality and consistency continues to impede an increase in their market value from £22 million. The recent introduction of PAS 107 could well help to some extent.
- 10.0.3 If the Quality Protocol achieves its objective of reducing uncertainty among buyers for uses that are more valuable than cement kiln fuel and landfill engineering purposes, then the value of the market will increase. Although processors' revenue is increasing so is their cost but it is likely that a shift to higher value applications will lead to an increase in profits.
- 10.0.4 There is a large amount of uncertainty over what will happen in the future and it is important not to overstate the possible added value provided by the Quality Protocol. The consultation revealed that some recyclers and end users of tyre-derived rubber materials did not think the Quality Protocol would have a significant impact. The current regulatory uncertainty and regime does not inhibit demand for tyre-derived rubber materials for some of the established end markets. However, many of the companies consulted did suggest that a Quality Protocol along with PAS 107 would be useful as a marketing tool.
- 10.0.5 It is no longer possible to dispose of used tyres to landfill for disposal and some of the current large markets may decline in the future. There is a need to generate diverse long-term stable markets. The Quality Protocol and PAS 107 in combination with other initiatives would help to develop tyre-derived rubber materials in new and fledgling markets by removing regulatory uncertainty and providing assurance of quality.
- 10.0.6 The Quality Protocol will provide some benefits for end user firms in terms of the avoided waste regulation compliance costs although these are not likely to be significant.
- 10.0.7 Accurate figures for the cost of complying with the Quality Protocol have not been investigated. However the cost of complying with the Quality Protocol beyond complying with PAS 107 could be up to £2,000 per processor per year<sup>19</sup>. Some processors are already complying with PAS 107 and there maybe some who are unaware of PAS 107 but are producing to a high standard. Others may not be and in this case the cost of complying with the Quality Protocol will include the cost of complying with PAS 107 and the additional certification cost. The compliance costs could be up to £1.47 million over ten years but are likely to be lower.

---

<sup>19</sup> E-mail communication with a TAG member.

## 11.0 References

1. Environment Agency and WRAP, 2007. *The Quality Protocol for the Production and Use of Tyre-derived Rubber Materials*.
2. Environment Agency and WRAP, 2007. *Technical Report on the Manufacture of Tyre-Derived Rubber Materials*.
3. Organisation for Economic Co-operation and Development (OECD), 2007. Improving Recycling Materials. Available from: <http://www.oecd.org/dataoecd/37/59/38093900.pdf> [Accessed 23 July 2007].
4. Akerlof G A, 1970. The market for 'lemons': quality uncertainty and the market mechanism. *The Quarterly Journal of Economics*, Vol. 84, No. 3, pp. 488-500.
5. WRAP, 2006. *UK Used Tyre Market 2004*. Project code TYR0010. Report of detailed study carried out by Oakdene Hollins Limited. Available from: [http://www.wrap.org.uk/applications/publications/tyres/publication\\_details.rm?id=9410&publication=2903](http://www.wrap.org.uk/applications/publications/tyres/publication_details.rm?id=9410&publication=2903) [Accessed 23 July 2007].
6. Environment Agency, 2006. *Environment Agency Guidance on Low Risk Waste Activities*. December 2006. Version 17. Available from: [http://www.environment-agency.gov.uk/commondata/acrobat/app\\_a\\_dec06\\_1098102.pdf](http://www.environment-agency.gov.uk/commondata/acrobat/app_a_dec06_1098102.pdf) [Accessed 23 July 2007].
7. Environment Agency and WRAP, 2006. *PAS 100 Quality Protocol Financial Impact Assessment*.
8. HM Treasury, 2003. *The Green Book. Appraisal and evaluation in central government*. 3rd edn. Available from: <http://greenbook.treasury.gov.uk/>

## Annex A: Assumptions used in the analysis

### Assumptions used in option A (baseline)

- Arisings of used tyres to increase by 2 per cent per year over the ten year assessment period (2008–2017).
- In order to estimate the amount in tonnes going to each end market in 2006, it was assumed 70 per cent of the amount previously going to landfill disposal would be used for landfill engineering and 30 per cent would go to energy recovery. At the time of the analysis the DTI tyre statistics for 2006 were not available.
- From 2008 onwards it is assumed that there is a switch from landfill engineering to higher value end uses as a result partly of PAS 107. In the baseline it is assumed there is an increase in tonnes going to higher value end uses of 1 per cent a year above the 2 per cent increase in arisings. See Table A.1 for assumed tonnes going to end applications.

**Table A.1: Assumed tonnages in the baseline**

Year	2005 000's tonnes	2006 000's tonnes	2009 000's tonnes	2013 000's tonnes	2017 000's tonnes
Tonnes arisings per annum increases by 2% a year	487	496	527	570	617
Disposal to landfill	61	0	0	0	0
Landfill engineering	59	104	106	107	108
Sports and play surfaces	79	80	87	98	110
Consumer and industry	17	18	19	22	24
Civil engineering	9	9	10	12	13

Note 1: The figures for 2005 from DTI used tyre statistics and proportions from Reference 5. Horticulture (9% of material recovery), civil engineering (8% of material recovery), consumer and industry (15% of material recovery), sports and play surfaces (68% of material recovery).

Note 2: The tonnes going into material recovery end uses are the tonnes after steel & fibre have been removed. The quantity from arisings is multiplied by 0.95 and 0.75 to produce the tonnes sold into end markets.

### Assumptions used under option B (introduce the Quality Protocol)

- Scenario 1: The Quality Protocol will result in an increase in sales of 1 per cent above the baseline in higher value end markets: civil engineering; sports and play surfaces (including carpet underlay); moulded products etc. Since the baseline growth in higher value end applications is increasing by 3 per cent per year, this gives a growth of 4 per cent per year. The tyres are being diverted from landfill engineering. Table A.2 sets out the tonnages in option B scenario 1 over the assessment period.
- The total amount recycled in option B is the same as the baseline (no tyres go to landfill disposal).
- There is no overall switch from energy recovery.
- Scenario 2: The analysis is repeated for a 3 per cent increase (above the baseline) in sales in the high end markets. See Table A.3.
- It is assumed that prices received for tyre-derived rubber materials sold into sports surfaces, civil engineering, landfill engineering etc will not change in real terms over the assessment period though they would rise in line with inflation. Table A.4 shows the prices used both in options A and B.

Table A.2: Assumed tonnages under option B scenario 1					
Year	2005 000's tonnes	2006 000's tonnes	2009 000's tonnes	2013 000's tonnes	2017 000's tonnes
Tonnes arisings per annum	487	496	527	570	617
Disposal to landfill	61	0	0	0	0
Landfill engineering	59	104	103	95	85
Energy recovery	86	106	113	122	132
Sports and play surfaces	79	80	89	104	121
Consumer and industry	17	18	20	23	27
Civil engineering	9	9	10	12	14

Note 1: the tonnes going into material recovery end uses are the tonnes after steel and fibre have been removed.

Table A.3: Assumed tonnages under option B scenario 2					
Year	2005 000's tonnes	2006 000's tonnes	2009 000's tonnes	2013 000's tonnes	2017 000's tonnes
Tonnes arisings per annum	487	496	527	570	617
Disposal to landfill	61	0	0	0	0
Landfill engineering	59	104	96	70	32
Energy recovery	86	106	113	122	132
Sports and play surfaces	79	80	92	116	147
Consumer and industry	17	18	20	26	32
Civil engineering	9	9	11	14	17

Note 1: the tonnes going into material recovery end uses are the tonnes after steel and fibre have been removed.

Table A.4: Assumed prices received by recyclers for different end markets as used in the analysis	
End market	Price (£/tonne)
Landfill engineering	10
Civil engineering	15
Horticulture	70
Sports and play surfaces	120
Moulded products	300

Note 1: these prices are assumed for options A and B.

**Assumptions used in the cost analysis**

- Assumed the cost of complying with the Quality Protocol beyond PAS 107 is £2,000 per site per year. There is currently no accurate figure available. This figure is likely to be at the higher end. It is used in an attempt to avoid underestimating the costs of the Quality Protocol. It was suggested by a TAG member that the Quality Protocol could cost up to this amount.
- It is assumed that the average cost of complying with PAS 107 is £6,000 per site per year. There are no figures available on the costs of complying with PAS 107. The figure is used based on the estimates for the cost of complying with PAS 100 (for compost). The largest compliance cost to comply with PAS 100 was estimated at just over £6,400 during the verification year, dropping to just under £5,000 in subsequent years (Reference 7).
- The number of processors increases by 2 per cent a year starting from 48 in 2007. This is in line with the assumed increase in tyre arisings. This assumptions applies in both options A and B.
- Scenario 1: In the baseline compliance with PAS 107 reaches 50 per cent by 2017 from 30 per cent in 2008. If the Quality Protocol is introduced then compliance with the Quality Protocol reaches 50 per cent of processors by 2017. The introduction of the Quality Protocol does not increase up take of PAS 107.
- Scenario 2: In the baseline compliance with PAS 107 reaches 50 per cent by 2017 from 30 per cent in 2008. If the Quality Protocol is introduced then compliance with the Quality Protocol reaches 70 per cent of processors by 2017. The introduction of the Quality Protocol increases the up take of PAS 107.
- Scenario 3: In the baseline compliance with PAS 107 reaches 50 per cent by 2017 from 30 per cent in 2008. If the Quality Protocol is introduced then compliance with the Quality Protocol reaches 100 per cent of processors by 2017. The introduction of the Quality Protocol significantly increases the up take of PAS 107.
- Scenario 4: In the baseline compliance with PAS 107 stays at 30 per cent until 2017. If the Quality Protocol is introduced then compliance with the Quality Protocol reaches 100 per cent of processors by 2017. The introduction of the Quality Protocol significantly increases the up take of PAS 107.

## Annex B: Technical advisory group membership

Annex B: Technical advisory group membership		
Organisation	Representative	Type
British Tyre Manufacturers Association	John Dorken	TAG member
Charles Lawrence Group	Roger Hicks or John Bramwell	Either will attend TAG meetings 2 and 3 only.
Credential Automotive	Steve Patterson	TAG member
DTI	Paul Hallett	TAG member
Entec	Keith Lawton	TAG member
Environment Agency	Suzanne Laidlaw	TAG member
Environment Agency	Michelle Steer	TAG member
Environment Agency	Dominic O'Neil	TAG member
Environment Agency	Clare McCallan	Correspondence member
Environment Agency Wales	Rebecca Favager	Correspondence member
Legal consultant working for Environment Agency	John Comber	Correspondence member Mann Environmental plc
Diane Robson	TAG member	Michelin Tyres
Geoff Holmes	TAG member	National Industrial
Symbiosis Programme (NISP)	Dr Adrian Murphy	TAG member
Scottish Environment Protection Agency (SEPA)	John Harris	Correspondence member
Tyre Recovery Association	Peter Taylor	TAG member
Veolia	Sabrina Rubio	TAG member
WRAP	Steve Waite	TAG member
WRAP	Sarah Clayton	TAG member

## Annex C: Current regulatory position<sup>20</sup>

Table C1 summarises the current legislative controls on the transaction and use of tyre-derived rubber materials. Note that In 2008, Environmental Permitting Regulations were introduced to combine PPC and Waste Management Licensing (WML) regulations into a single regulatory framework.

Table C1: Summary of legislative controls on the transportation and use of tyre-derived rubber materials		
Activity	Current control	Current approach
Storage of shredded used tyres destined for recovery	Shredded used tyres stored prior to processing are considered to be waste. The Duty of Care Regulations and Waste Management Licensing Regulations therefore apply.	The Environment Agency has set out a Low Risk Regulatory Position on the storage of shredded used tyres.* The storage must be secure <sup>†</sup> and the amount stored no more than 1,000 tonnes.  No such low risk position applies in Scotland or Northern Ireland, where normal regulatory controls apply.
Delivery of tyre-derived rubber materials to end user (consumer)	The transport of waste is a regulated activity and the Duty of Care Regulations and Waste Management Licensing Regulations apply. People transporting tyre-derived rubber materials need to register as waste carriers.	Normal regulatory controls apply until such time as the tyre-derived materials are re-incorporated into their final use product/ application.
Use of tyre-derived rubber materials by the consumer	The handling of waste is a regulated activity and the Duty of Care Regulations and Waste Management Licensing Regulations apply.	

Source: Reference 2

\* See Annex A of Reference 6.

† The definition of secure is that waste must be kept in a suitable container, building or place and that all reasonable precautions must have been taken to prevent the waste escaping or members of the public accessing that waste.

### Low risk regulatory position

If an activity is considered low risk, it means the Environment Agency takes the view that it would not be in the public interest to require a waste management licence for the activity although legally one is required. The low risk position relates only to waste management licences.

The *Environment Agency Guidance on Low Risk Waste Activities* (Reference 6) includes the following low risk approaches:

- recovery of shredded waste tyres in underground construction works including drainage and insulation;
- a limit of 1,000 tonnes on the secure storage of shredded waste tyres destined for recovery (above this amount, the Environment Agency needs to be contacted to establish whether a waste management licence is necessary); and
- the use of waste tyres in the construction of fish habitats.

<sup>20</sup> Information was prepared prior to public consultation between 7 January and 7 April 2008. Information presented in this Annex therefore does not reflect changes introduced under the Environmental Permitting (England and Wales) Regulations 2007, which came into force on 6 April 2008.

The second point covers all storage of shredded tyres in its end uses. It also means that distributors/wholesalers do not need waste management licences for storage provided they do not also treat/shred the tyres. The low risk approach does not cover companies shredding tyres.

The low risk status is not legally binding. The Environment Agency can remove it at any time and require waste management licences for the above activities.

### Paragraph 14 Exemption

For certain activities involving tyre-derived rubber materials, a waste management licence is not needed although but the company needs to register for a Paragraph 14 Exemption from waste management licensing. This is a simple exemption and there is no charge.

#### Paragraph 14 Exemption

##### *Manufacture of finished goods from waste*

14 (1) The manufacture of finished goods from any of the following kinds of waste namely waste metal, plastic, glass, ceramics, rubber, textiles, wood, paper and cardboard.

(2) The storage of any such waste intended to be used in reliance upon the exemption conferred by sub-paragraph (1) above if –

- a. the waste is stored at the place of manufacture; and
- b. the total amount of any particular kind of waste stored at that place at any time does not exceed 15,000 tonnes.

Source: <http://www.environment-agency.gov.uk/subjects/waste/1416460/1334460/1329426/1329651/>

An example of an activity suitable for registration under a Paragraph 14(1)(2) exemption is rubber granulate produced from the shredding of waste tyres that is supplied to a manufacturer of low impact surfacing for play areas.

## Annex D: Competition assessment filter questions<sup>21</sup>

The following competition filter test questions originate from the Cabinet Office Guidelines for RIAs and can be found here:

[http://www.cabinetoffice.gov.uk/regulation/ria/ria\\_guidance/competition\\_assessment.asp](http://www.cabinetoffice.gov.uk/regulation/ria/ria_guidance/competition_assessment.asp)

The answers below relate to reprocessors (crumbers and shredders)

Question	Answer Yes/No
Q1: In the market(s) affected by the new regulation, does any firm have more than 10% market share?	<b>Yes</b>
Q2: In the market(s) affected by the new regulation, does any firm have more than 20% market share?	Possibly
Q3: In the market(s) affected by the new regulation, do the largest three firms together have at least 50% market share?	Possibly
Q4: Would the costs of the regulation affect some firms substantially more than others?	<b>No</b> The cost of complying with the Quality Protocol may have proportionately higher costs for smaller reprocessors but the costs will be minimal relative to the normal capital and operating costs. Many of those who choose to comply will already be producing to near the required standard. Reprocessors can avoid the cost of compliance by choosing not to follow the Protocol.
Q5: Is the regulation likely to affect the market structure, changing the number or size of firms?	It could possibly lead to an increase in reprocessors but is unlikely to lead to a decrease. The Quality Protocol is not a barrier to new reprocessors. They will face the same costs as existing firms if they choose to comply. New firms could choose not to comply and still operate in the market.
Q6: Would the regulation lead to higher set-up costs for new or potential firms that existing firms do not have to meet?	<b>No</b>
Q7: Would the regulation lead to higher ongoing costs for new or potential firms that existing firms do not have to meet?	<b>No</b> Both existing firms and new firms would both have to face the same cost of Protocol compliance if they choose to comply.
Q8: Is the sector characterised by rapid technological change?	<b>No</b> There are alternative technologies available but they have not yet been widely adopted.
Q9: Would the regulation restrict the ability of firms to choose the price, quality, range or location of their products?	<b>No</b> The Quality Protocol could enable reprocessors to sell tyre-derived rubber materials into a greater range of end applications including greater access to high value end applications.

While steps have been taken to ensure its accuracy, the authors cannot accept responsibility or be held liable to any person for any loss or damage arising out of or in connection with this information being inaccurate, incomplete or misleading.

This material is copyrighted. It may be reproduced free of charge subject to the material being accurate and not used in a misleading context. The source of the material must be identified and the copyright status acknowledged. This material must not be used to endorse or used to suggest WRAP's endorsement of a commercial product or service. For more details, please refer to our Terms & Conditions on our website – [www.wrap.org.uk](http://www.wrap.org.uk)

---

**Waste & Resources  
Action Programme**

November 2008

The Old Academy  
21 Horse Fair  
Banbury, Oxon  
OX16 0AH

Tel: 01295 819 900  
Fax: 01295 819 911  
Email: [info@wrap.org.uk](mailto:info@wrap.org.uk)  
[www.wrap.org.uk](http://www.wrap.org.uk)

Helpline freephone  
0808 100 2040



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

Tel: 08708 506 506

E-mail: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)

