

# TYRE SECTOR PLAN

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# Preface



**SEPA has a strong track record of regulating to improve the Scottish environment. We are proud of what we have achieved since we were set up just over two decades ago in 1996. We know we need to do more over the next two decades to build on this success. Much more.**

The mounting scientific evidence about climate change, plastics in our oceans, the pressure on our freshwater and more shows us that humanity must rise to tackle major environmental challenges. This scientific knowledge underpins SEPA's strategy for how we will regulate - One Planet Prosperity. If everyone in the world lived as we do in Scotland, we would need three planets. There is only one.

So, we will regulate to help Scotland prosper within the means of our one planet. Successful businesses in future will be those that use low amounts of water, materials and carbon-based energy and create little waste. Prosperous societies will be comprised of these businesses. This can be Scotland.

In every sector we regulate, this means we will have two simple aims. We will:

1. ensure that every regulated business fully meets their compliance obligations;
2. help as many regulated businesses as possible to go beyond the compliance standards.

This sector plan outlines how we will do this in regulating the tyre sector. Persistent non-compliance and criminal activity with respect to waste tyres is a feature of the sector that we will tackle. Illegal dumping of tyres has significant impacts on local communities, creates risks from fires and also impacts on legitimate businesses that comply with environmental law. Tackling this is our top priority for the sector.

One way we will do so is by using traditional enforcement and regulatory approaches. Another way is by working with the sector to help turn the 4.2 million waste tyres generated every year in Scotland from a problem to be tackled to a valuable economic resource that can be utilised as a raw material for other things. Doing this will help the sector to become a progressive and successful one, with responsible and innovative companies vying to reduce water use, carbon emissions and other environmental impacts in ways that take them beyond minimum legal standards and which creates economic and social success from environmental excellence.

Our plan is ambitious. It spells out how we will use traditional environmental protection agency (EPA) regulatory tools, such as permits and enforcement, in clearer and more powerful ways. It sets out some completely new ways, such as novel partnerships, that we will develop and use to support innovation in this sector.

**Terry A'Hearn**

SEPA Chief Executive Officer



# 1. Introduction

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For SEPA to help create a prosperous Scotland that lives within the means of our one planet, we need to radically change the way we work. In the past our approach to regulation has been grounded in the different sets of rules we manage to protect the environment. This has helped us to deliver, for example, improvements in water quality. However, it will not enable us to make the transformational changes needed to tackle today's problems.

We are moving instead to ground our regulation in working across whole sectors. In this way we can systematically identify the compliance issues that need to be tackled by the sector. However, mere compliance and small scale incremental change will not be enough. We want to help businesses and sectors to implement successful innovation and support them in their ambitions to do more than they are required to by regulation. We call this **moving beyond compliance**: helping already high performing businesses to do more for the environment because it makes sense for them to grow in a sustainable manner. We can also identify where the biggest opportunities are for us to help the sector to go beyond compliance. In both ways this will help regulated businesses operate successfully within the means of one planet.

All businesses that we regulate in a sector use water, energy and raw materials to produce the products and services they sell. In doing so, they also create waste and emissions. We can think of these as environmental flows that need to be managed by the business (Figure 1).

We want to help as many businesses as possible to manage these flows effectively. By reducing their use of natural resources and reducing the creation of waste, we will enable them to meet their legal obligations, drive further improvements and operate their business successfully. To do this, we are preparing sector plans for every sector that we regulate.

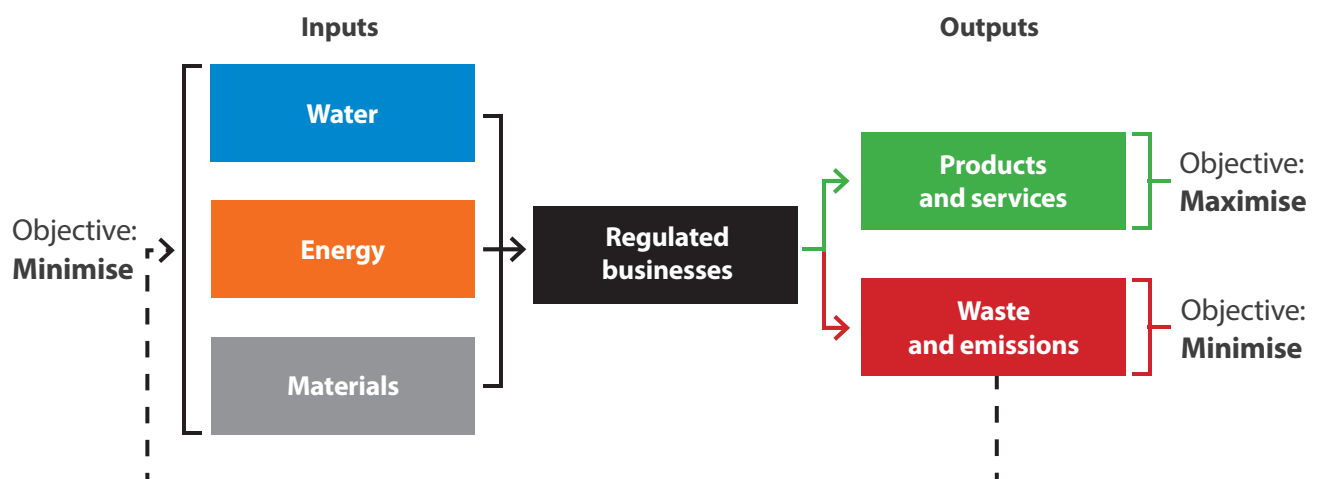
Sector plans are at the heart of everything we do, shaping the interactions with every sector and the businesses in them. Through them, operators will get the relationship that their attitude and performance earns. Those that demonstrate a commitment to good environmental performance and deliver solid outcomes will receive powerful support through guidance and advice. Those that demonstrate behaviour that leads to significant or chronic non-compliance can expect SEPA to use the most appropriate enforcement tools to bring them into compliance.



This is our plan for the tyre sector. It details how we are going to regulate the sector and work with it to protect and improve the environment. The plan focuses on the opportunities for the environment and businesses that can help tackle the problems and opportunities associated with waste tyres across the sector, from the design and production of tyres, to extending and prolonging the valuable life of tyres on vehicles, to innovative ways to recycle and recover value from waste tyres. Although this plan includes bus and truck tyres it prioritises light van and passenger vehicle tyres as the biggest challenge to One Planet Prosperity. It explains how we will work directly with the tyre sector and includes ways that we will work with them to use our shared influence to improve environmental performance throughout the industry supply chain.

There is scope in this sector for innovative recycling technologies to reduce the whole life cycle impact of tyres, improve environmental and economic outcomes, and support going beyond compliance in this sector.

### Environmental flows (Figure 1)









## 2. Our vision for the tyre sector

**The production and use of tyres and the management of waste tyres does not harm the environment or human health. Environmental crime and non-compliant behaviour in the sector is eradicated allowing responsible businesses to flourish.**

**Scotland is a leader in the global challenge to ensure all tyres are circulated back into the economy as valuable materials. Businesses in the supply chain are realising the benefits of a more circular approach.**

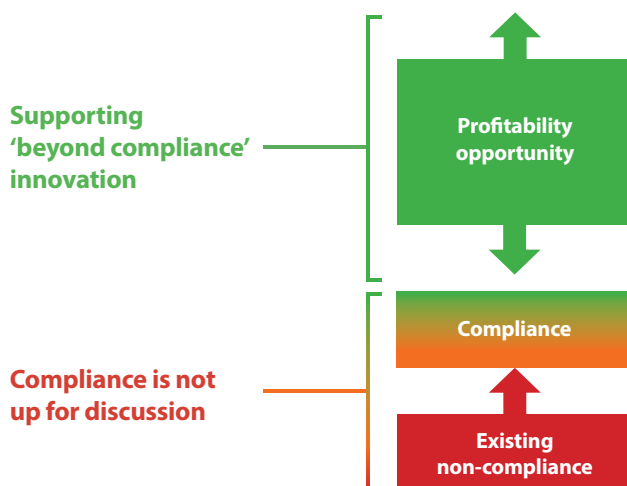
### Our objectives

The objectives of the Tyre sector plan are to:

- ensure all operators in the sector reach and maintain full compliance with Scotland's environment protection laws;
- help as many operators as possible in the sector to move beyond compliance.

This is illustrated by the sector roadmap (Figure 2):

### Sector roadmap (Figure 2)



This sector plan sets out how we will work with the tyre sector; from those who commission, design and manufacture tyres through to the businesses and operators who use, collect, recycle and recover waste tyres. For our vision and objectives to be achieved we will work with partners and facilitate liaison between them and the tyre sector to create opportunities that link business success with environmental success.

In line with SEPA's Waste to Resources Framework<sup>1</sup>, we will contribute to the vision that waste activities are compliant, waste crime is eradicated, businesses are realising the benefits of resource efficiency and maximum value is derived from resources circulating in the economy. In keeping with SEPA's Energy Framework<sup>2</sup>, we will support and encourage innovative low carbon solutions to Scotland's waste tyre problem that are beneficial to communities and driven by efficient use of energy, water and materials.

We want to bring together skilled, experienced and innovative people from across the sector to understand key challenges and opportunities to create innovative solutions. If we get this right, it will mean that the environment is not seen as a constraint, but as a platform on which economic and social success can be built, putting the tyre sector on a pathway to becoming a 'one planet' sector.

<sup>1</sup> <https://www.sepa.org.uk/media/219528/one-planet-prosperity-a-waste-to-resources-framework.pdf>

<sup>2</sup> [https://www.sepa.org.uk/media/383806/sepa\\_energy\\_framework.pdf](https://www.sepa.org.uk/media/383806/sepa_energy_framework.pdf)







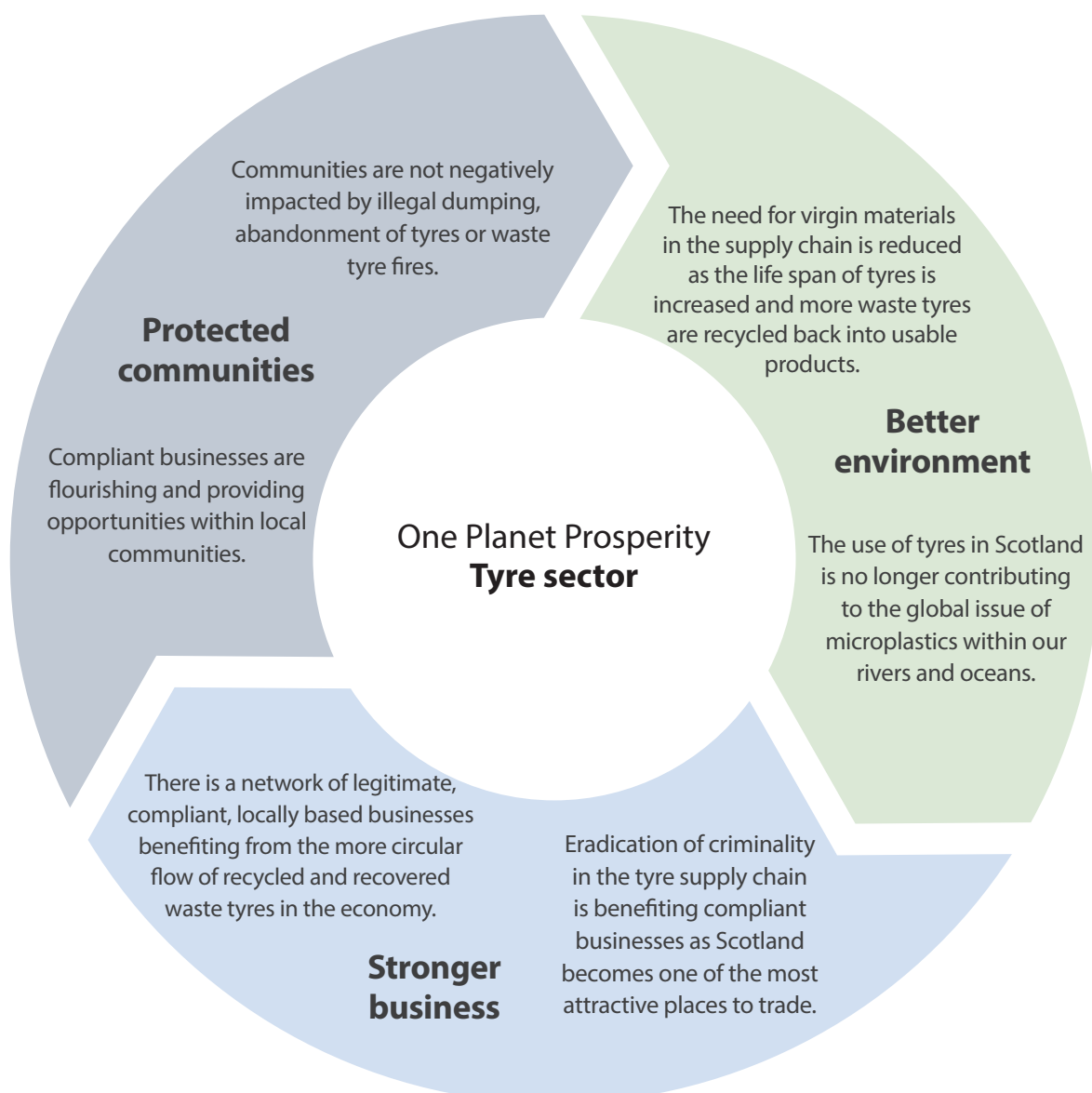
# 3. Outcomes

If we achieve the vision we have set out in this plan, we expect that we will help to:

- **protect and improve the environment;**
- **protect communities;**
- **further enable businesses to operate effectively and successfully in their markets.**

The figure below shows the outcomes we would like to achieve for the tyre sector. These are linked to actions and aspirations that we will take, as outlined in Section 7 of the plan.

**Outcomes (Figure 3)**









## 4. The tyre sector

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The UK motor industry as a whole contributed £15.8bn to GDP in 2016<sup>3</sup>. Scotland's registered 2.9 million<sup>4</sup> vehicles generate more than 4.2 million used tyres per year, 84% of which are light van and passenger vehicle tyres.

In Scotland, waste tyres, including end-of-life tyres and part worn tyres, are produced by tyre fitters, end-of-life vehicle sites and by the importation of part worn tyres from other countries.

The disposal of whole or shredded tyres in landfills was banned in 2006. Until then the majority of waste tyres were disposed of in landfill. Since the ban re-use, recycling and recovery of waste tyres have become common practice.

Each tyre manufacturer designs and manufactures its own type of tyre, however, in simple terms, a tyre is made up of over 90 components including 30 kinds of synthetic rubber<sup>5</sup>. The complexity of the manufacturing process makes the recovery of this waste stream difficult.

In Scotland waste tyres generally undergo only rudimentary treatment:

- Baling: compressing tyres using specialised machinery to produce cubes of whole tyres.
- Shredding: the use of machinery to slice and cut whole tyres to prerequisite size. This tends to be multi stage size reduction.
- Granulation: further size reduction to produce crumb of 12-15mm size.
- Metal removal: the removal of the wire structure within a tyre as well as other non-rubber material.

Alternatively waste tyres are used as a feed stock for energy or as a fuel source for cement production.

<sup>3</sup> <http://researchbriefings.files.parliament.uk/documents/SN00611/SN00611.pdf>

<sup>4</sup> <https://www.transport.gov.scot/media/41863/scottish-transport-statistics-2017-with-correction-to-table-214.pdf>

<sup>5</sup> <http://www.wrap.org.uk/sites/files/wrap/2%20-%20Composition%20of%20a%20Tyre%20-%20May%202006.pdf>



## Key facts and figures about the tyre sector (Figure 4)



**2 – 5%**

Percentage of ocean plastics caused by tyre wear and tear<sup>6</sup>



**1,500**

Number of crumbed tyres to produce one lane mile of rubberised asphalt



**4 billion**

Number of tyres stockpiled or in landfills globally<sup>7</sup>



**23,000**

Average number of miles good quality tyres can last for (on front of front drive vehicle)<sup>8</sup>



**70**

The average number of fly tipping complaints involving tyres investigated by SEPA annually



**15**

The number of years the longest running tyre fire in the UK lasted<sup>9</sup>



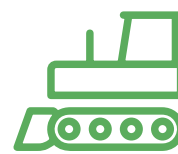
**8**

Number of fires attended by Scottish Fire and Rescue Service which involved tyres in 2013-2017<sup>10</sup>



**2 million**

The approximate number of tyres fly tipped, illegally dumped or abandoned tyres in Scotland<sup>11</sup>



**£437,000**

The cost to the public purse for cleaning up a waste tyre dump in Scotland that had 114, 000 tyres

6 <http://www.etrma.org/tyres/tyre-road-wear>

7 <https://www.wbcds.org/contentwbc/download/1105/14236>

8 <http://news.cision.com/michelin-fleet/r/six-years-of-data-reveals-true-tyre-mileage,c9273112>

9 [https://wikivisually.com/wiki/Tire\\_fire](https://wikivisually.com/wiki/Tire_fire)

10 <https://www.firescotland.gov.uk/search.aspx?s=tyres&page=1&sort=>

11 As at end 2017

In Scotland, whole end-of-life tyres are baled mainly for transportation purposes but some bales are used for drainage purposes in landfills. Used whole tyres can be re-grooved or re-treaded for domestic and international use or exported as-is for reuse. Re-grooving and re-treading for domestic use is more common for bus and truck tyres due to their design, which can allow the tyre to be used three times (doubling the life of the tyre) before it has to be disposed of. Approximately one in three replacement truck tyres are re-tread tyres<sup>12</sup>. However, this is beginning to change as cheaper imported single use truck tyres are becoming more available. Where granulated, end-of-life tyres are turned into crumb that has a variety of uses including the creation of football pitches, horse arenas and the manufacture of noise/vibration attenuation mats.

Globally, end-of-life tyres are also utilised in rubberised asphalt, as a feedstock for pyrolysis processes and also returned into the automotive manufacturing industry. Tyre manufacturers are also currently designing the next generation of tyres that will increase the life of tyres and reduce waste generation<sup>13</sup>.

### Scotland's tyre problem

**In Scotland there are limited facilities specifically developed for the purpose of recovering waste tyres. The lack of purpose built recovery facilities in Scotland can lead to an escalating series of problems:**

- 1. Garages and waste tyre producers struggle to find legitimate outlets for waste tyres.**
- 2. Licensed waste operators can end up with significantly more tyres than they are permitted to store.**
- 3. Illegal fly tipping or large stockpiles impacts communities due to criminals taking money for disposal and failing to dispose of the tyres lawfully.**
- 4. Unsecured stockpiles can be set alight – tyre fires are a major source of air pollution and a risk to human health.**

In Scotland there are limited facilities that are specifically developed for the purpose of recovering waste tyres. This often means that tyre fitters, end-of-life vehicle sites and waste tyre collectors are unable to find local outlets. There is over reliance on the small number of operators that are permitted to use waste tyres in their processes and this infrastructure cannot recover or repurpose all of the waste tyres generated in Scotland. This means that the majority are transported to England or exported overseas with limited information being available around specific end uses and compliance with duty of care<sup>14</sup>.

<sup>12</sup> <http://www.bridgestone.co.uk/truck-and-bus/retread/>

<sup>13</sup> <https://www.fleetnews.co.uk/news/manufacture-news/2017/06/19/michelin-reveals-the-future-of-tyre-technology>

<sup>14</sup> <http://www.gov.scot/Resource/0040/00404095.pdf>



Where the export of waste tyres is illegal it moves the environmental and safety risks to countries that often have insufficient capacity to deal with them. This can lead to uncontrolled burning, landfilling, potentially harmful end uses and abandonment. It is vital that all waste tyres exported from Scotland meet legal requirements and do not end up in countries that do not want them. However, limited data is available about compliance with the legislation that governs the transport of export of waste tyres (Environment Protection Act 1990 and The Environmental Protection (Duty of Care) (Scotland) Regulations 2014 and The Transfrontier Shipment of Waste Regulations 2007). Waste tyres generated in Scotland could be contributing to the global problem of tyre dumps that are on such a scale that they can be seen from space<sup>15</sup>.

A number of countries operate a producer compliance scheme for tyres. Producer responsibility schemes place the responsibility for products on the manufacturers ensuring that they contribute to the costs of collecting, transporting, recycling and responsibly disposing of the products at the end of their life cycle. Most EU Member States operate such a scheme. However, in Scotland tyres are not part of a producer responsibility scheme and responsibility for the cost of disposing of waste tyres rests with the consumer. Most tyre fitting services will dispose of waste tyres for a small fee when new tyres are purchased from them. Some may be sold on by the tyre fitter as part worn tyres.

There are four million part worn tyres sold in the UK every year. Many of these are imported from Germany, where the legal tread depth is 3mm. A tyre deteriorates faster once it reaches the 3mm tread depth so importing part-worn tyres may increase the number of waste tyres generated in Scotland as tyres are changed and discarded more quickly.

Criminals in the tyre sector employ a number of different methods to illegally dispose of tyres. This can range from small scale fly tipping to large scale illegal dumping of waste tyres with clean-up costs for both falling to public bodies and landowners. Figure 6 shows the geographical spread of fly tipped tyres in Scotland. Fly tipped tyres can be an eye sore and in a number of instances they have been set alight. Tyre fires are not easy to extinguish and can have significant impacts on the environment, local communities and the economy. Tyre fires can cause school and hospital evacuations, health impacts on the young, elderly and those with pre-existing conditions, road and transport closures as well as shutdown of the national grid.

Serious and organised crime groups have taken interest in the tyre sector with Scottish collection networks, storage sites and overseas export of used tyres being particularly susceptible to infiltration by these groups. There is a particular concentration of activities in the west of Scotland. Involvement of these groups in the tyre sector may provide an opportunity as a secondary activity to support illegal primary activities that can include money laundering, violence and corruption<sup>16</sup>.

<sup>15</sup> [https://www.google.com/search?q=tyre+dumps+that+can+be+seen+from+space&rls=com.microsoft:en-GB&tbm=isch&tbo=u&source=univ&sa=X&ved=0ahUKewiqzJCtPsHaAhXJB8AKHf\\_vB5IQsAQIU&biw=1280&bih=894](https://www.google.com/search?q=tyre+dumps+that+can+be+seen+from+space&rls=com.microsoft:en-GB&tbm=isch&tbo=u&source=univ&sa=X&ved=0ahUKewiqzJCtPsHaAhXJB8AKHf_vB5IQsAQIU&biw=1280&bih=894)

<sup>16</sup> <http://www.gov.scot/Publications/2015/06/3426>

### Tyres on fire – what's the damage?

As well as environmental concerns, tyre fires can have significant effects on communities and services. The smoke from tyre fires can impact human health, particularly the young, the elderly and those with pre-existing health concerns.

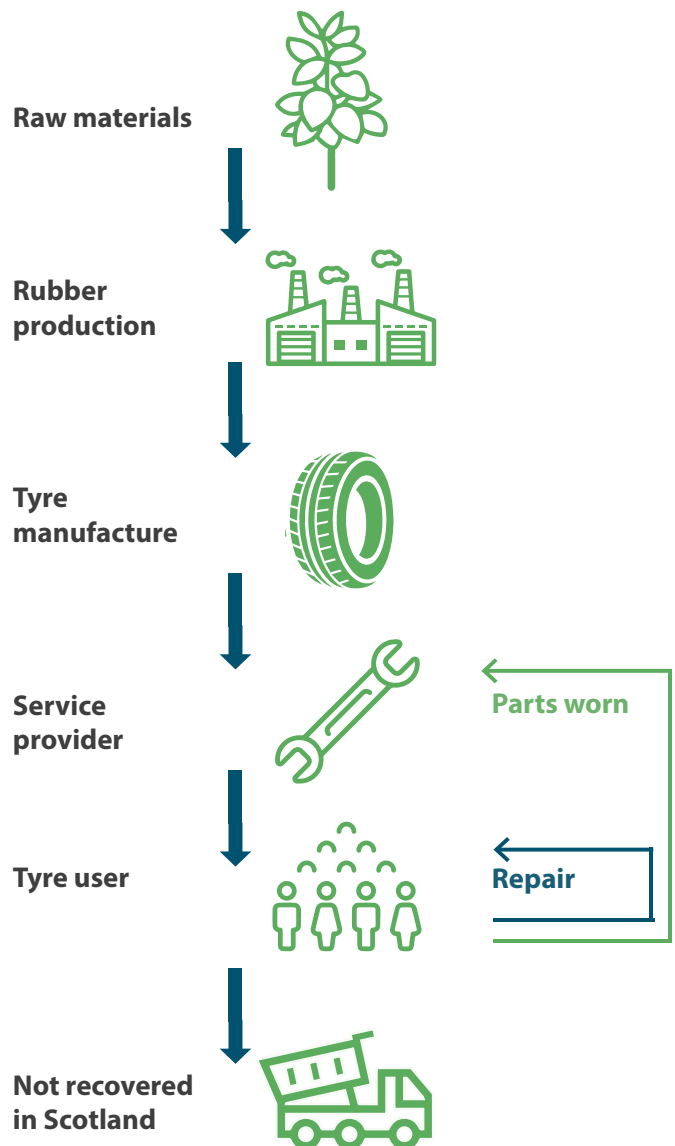
Car tyres are predominantly made of:

- rubber/elastomers (including styrene and butadiene) 47%;
- carbon black and silica 21.5%;
- metal 16.5%;
- textile 5.5%;
- zinc oxide 1%;
- sulphur 1%;
- additives including clays and heavy metals (Pb, As, Cr) 7.5%;
- carbon-based materials total 74%.

The combination of these materials means airborne releases from tyre fires include particulates, carbon monoxide, hydrogen cyanide, dioxins and carcinogens such as PCBs and PAHs.

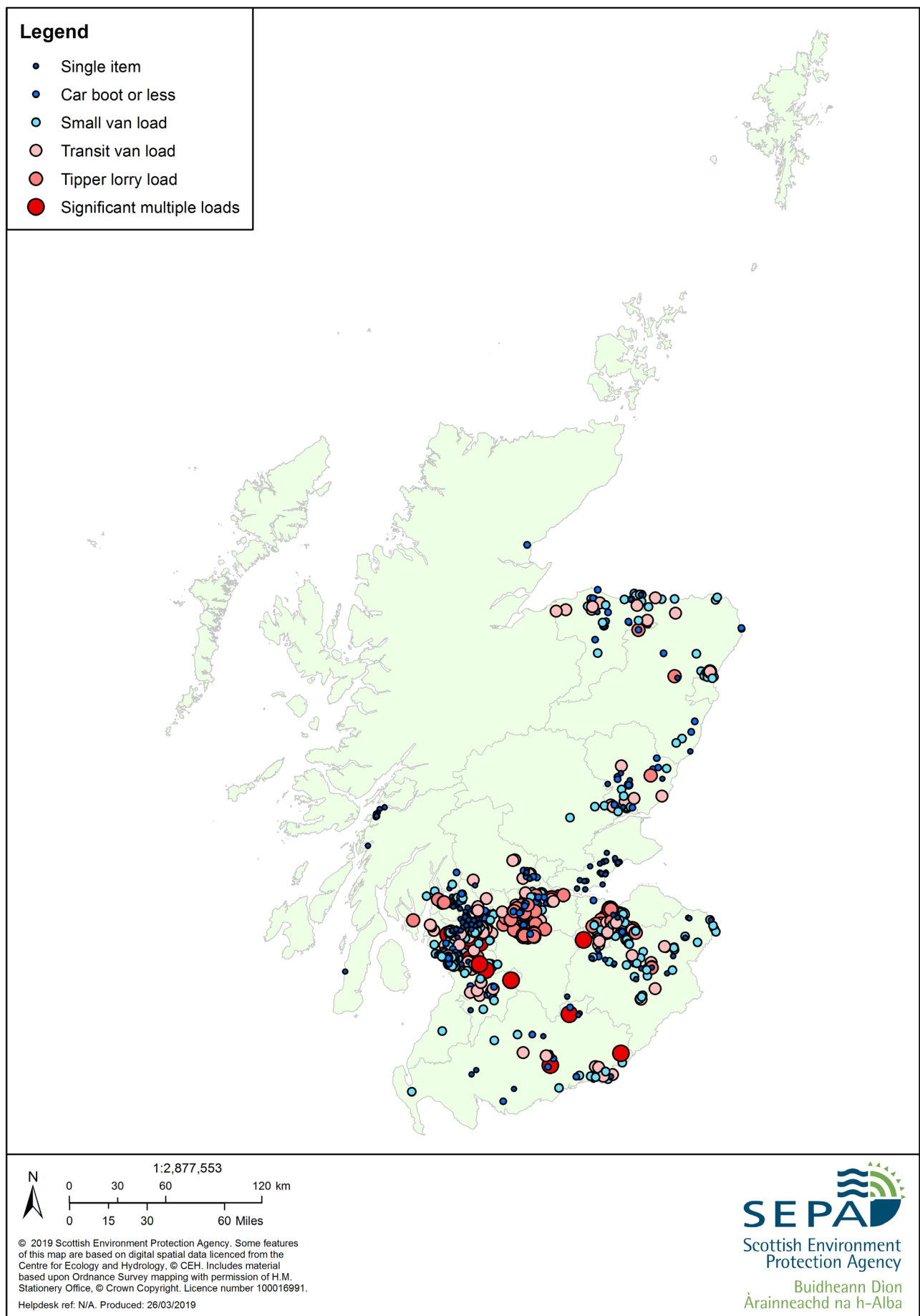
Source: <http://www.wrap.org.uk/sites/files/wrap/2%20-%20Composition%20of%20a%20Tyre%20-%20May%202006.pdf>

### **Current tyre product circular economy diagram (Figure 5)**



**Fly tipped tyres 2014 – 2018 (Figure 6)**

The map shows the locations of reported fly tipped tyres dumped between 2014 and 2018.













# 5. Potential environmental impacts and how we manage them

## Potential environmental impacts throughout the supply chain

### Environmental impacts (Figure 7)

<b>Materials</b>	<ul style="list-style-type: none"> <li>■ Dependency on EU critical raw material (natural rubber)</li> <li>■ Emissions from fossil fuel use in synthetic rubber production</li> <li>■ Greenhouse gas emissions from production and transport of materials</li> <li>■ Emissions to water at the raw material production point</li> </ul>
<b>Manufacturing</b>	<ul style="list-style-type: none"> <li>■ Greenhouse gas emissions from manufacturing process</li> <li>■ Other emissions to air including those from vulcanisation</li> <li>■ Waste/reject material disposal from manufacturing process</li> <li>■ Emissions to water</li> </ul>
<b>Tyres to market</b>	<ul style="list-style-type: none"> <li>■ Greenhouse gas emissions from transport of tyres to centralised storage and point of sale</li> </ul>
<b>Consumers</b>	<ul style="list-style-type: none"> <li>■ 2-5% of microplastics in oceans is caused by tyre wear<sup>17</sup></li> <li>■ Increased greenhouse gas emissions and tyre wear from poor driving such as harsh acceleration and excessive braking</li> <li>■ Increased greenhouse gas emissions from poor management of tyres such as under inflated tyres</li> </ul>
<b>Fitters/garages/ ELV Sites</b>	<ul style="list-style-type: none"> <li>■ Resource use from changing tyres with treads greater than legal safe limit</li> <li>■ Land contamination from poor processing and storage facilities</li> </ul>
<b>Collection/re-use/ disposal/export</b>	<ul style="list-style-type: none"> <li>■ Greenhouse gas emissions from collecting and transporting tyres</li> <li>■ Potential emissions to air, including greenhouse gas emissions, from specific recovery processes</li> </ul>
<b>Illegal activity</b>	<ul style="list-style-type: none"> <li>■ Potential risk of emissions to air, water and land from fires and vandalism</li> <li>■ Loss of amenity and community safety for local residents</li> <li>■ Worsening of general fly tipping in area</li> <li>■ Impacts on legitimate businesses</li> </ul>

## Environmental regulation of the tyre sector

### How SEPA regulates the tyre sector

There is one manufacturer of tyres<sup>18</sup> and one producer of synthetic rubber for use in the tyre manufacturing industry located in Scotland. There are also two facilities that use waste tyres as a feedstock in the production of energy or cement. All four sites are regulated under The Pollution Prevention and Control (Scotland) Regulations 2012<sup>19</sup>. The primary function of these regulations is to protect the environment from emissions to air, water and land. The sites regulated under this regime are also required to utilise the best available techniques and reduce raw material consumption by continuing to improve their processes through innovation and efficiencies.

There are two facilities in Scotland that are authorised to treat tyres by baling or shredding etc. with a further four facilities authorised to store waste tyres only. These are regulated under the Environment Protection Act 1990 and The Waste Management Licensing (Scotland) Regulations 2011<sup>20</sup>. The primary function of this legislation is to protect the environment from emissions to air, water and land.

Two of the authorised facilities in Scotland are also covered by the European Union Emissions Trading Scheme. These facilities undertake combustion activities that manufacture tyres or use tyres as a feedstock and are regulated under The Greenhouse Gas Emissions Trading Scheme Regulations 2012. The primary function of this legislation is to reduce emissions of carbon dioxide.

There is a nationwide network of tyre fitters and end-of-life vehicle sites in Scotland. End-of-life vehicle sites are regulated under The Waste Management Licensing (Scotland) Regulations 2011. Tyre fitters are regulated under the same legislation but are exempt from waste management licensing; they are not required to register the storage of waste tyres they produce at their premises. However, they must comply with the terms of the exemption and the relevant objectives specified by the legislation.

There are nearly 9,000 waste carriers registered with SEPA<sup>21</sup>. These operators can carry any waste and currently do not need to state if they intend to carry waste tyres as part of their business. Anyone who operates a business transporting waste must register as a waste carrier under the Control of Pollution (Amendment) Act 1989 and The Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991. Businesses that only transport their own waste are registered as professional collectors and transporters of waste. They are regulated by The Waste Management Licensing (Scotland) Regulations 2011, which requires them to notify SEPA of the business they carry out and the locations from which they operate.

The Environment Protection Act 1990<sup>22</sup> provides for the safe management of waste throughout the supply chain and contains a set of legal obligations or duties that apply to everyone who produces, keeps or manages waste. The Environmental Protection (Duty of Care) (Scotland) Regulations 2014<sup>23</sup> specify how meeting this requirement can be demonstrated.

<sup>18</sup> Production of tyres in Scotland by this manufacturer is due to cease in 2020.

<sup>19</sup> As at December 2017

<sup>20</sup> As at December 2017

<sup>21</sup> <http://apps.sepa.org.uk/rocas/>

<sup>22</sup> <https://www.legislation.gov.uk/ukpga/1990/43/section/34>

<sup>23</sup> <http://www.legislation.gov.uk/ssi/2014/4/contents/made>



Businesses are required to take reasonable steps to ensure their waste is managed correctly through its complete journey to disposal or recovery. This means storing it securely and separating out target recyclates from the waste produced. When you pass waste on to another person you must make sure that they are authorised to accept it. Businesses can find out more about their obligations, and get practical advice, by reading the Scottish Government's statutory guidance – *Duty of Care: A Code of Practice*<sup>24</sup>.

Duty of care compliance is important as it promotes good environmental practice at all stages of the waste management chain. It ensures that waste goes to the right place, avoiding illegal disposal and environmental harm, and promotes high quality recycling. We will help businesses to understand their duty of care obligations and make compliance as easy as possible. If businesses continue to disregard their duty of care obligations we will take enforcement action that could include the imposition of civil penalties or referral for prosecution.

Around 80% of environmental legislation in Scotland originates from the European Union (EU). As the UK leaves the EU, environmental legislation is being corrected to make sure the law keeps working as it has been to ensure that the standards of environmental protection we enjoy today, and the principles upon which they are based, are maintained. Therefore, while some of the detail of the legislation we use to regulate may change, our work to protect Scotland's environment will not. Our commitment to work with all sectors that we regulate to tackle non-compliance and to work with as many businesses as possible to help them to go further will not diminish as a result of the UK leaving the EU.

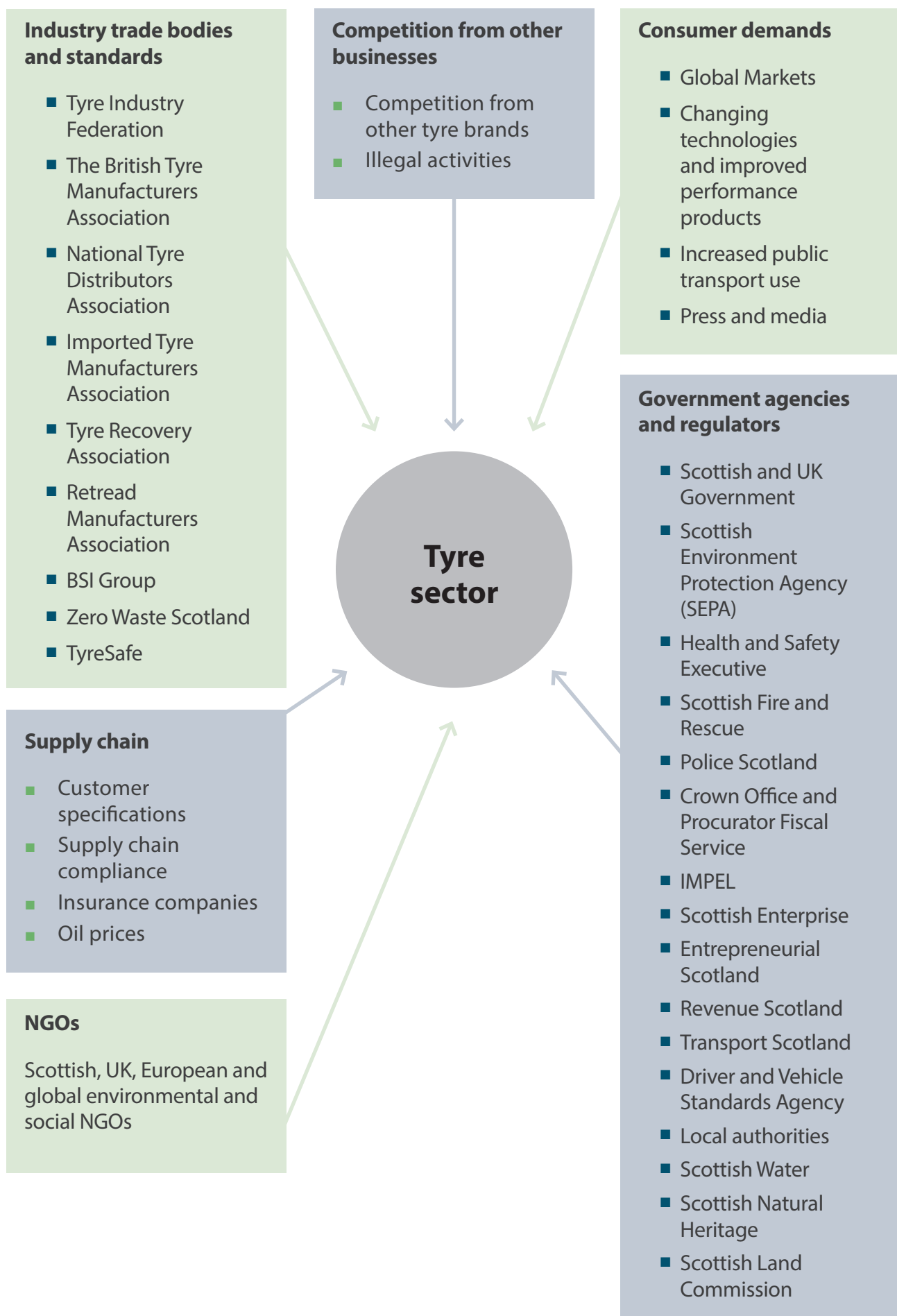
## **Wider influences on environmental performance of the tyre sector**

Full compliance with environmental legislation will not, by itself, deliver the transformational change required to secure our One Planet Prosperity objectives. The Tyre sector plan needs to unlock the potential for businesses to gain strengths in resource efficiency and environmental innovation that will help them to succeed in their markets. We recognise that other organisations have an interest in the tyre sector, for example, Trading Standards and Police Scotland have an interest in part worn tyres. To secure full compliance and help as many businesses as possible to move beyond compliance we will develop our relationships with partners and other stakeholders.

Figure 7 summarises the main organisations that influence and are influenced by operators in the tyre sector. It also identifies those that we may work with in both the short and longer term. As we implement the plan we will consider the opportunities these relationships provide and how we would like them to develop.

<sup>24</sup> <https://www2.gov.scot/resource/0040/00404095.pdf>

## Key influences on the tyre sector (Figure 7)













# 6. Tackling non-compliance and taking opportunities to go beyond

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## Compliance in the sector

Compliance with environmental law is non-negotiable and regulated businesses in the sector need to comply.

Those currently operating illegally will either be required to become compliant or our enforcement action will be focused on bringing the illegal activity to an end.

## Production of synthetic rubber

In 2017 all permitted operators had an 'excellent' compliance rating.

## Production of tyres

In 2017 all permitted operators had an 'excellent' compliance rating.

## Reprocessing and recycling

Before 2016, most operators were exempted under the Waste Management Licensing (Scotland) Regulations 2011 from the requirement to hold a waste management licence to store and treat waste tyres. Being registered as an exempt activity meant that they were not subject to the same scrutiny or compliance assessment as those who held waste management licences and the exemption was widely abused. The legislation was amended in 2016 and now all operators who wish to store or treat waste tyres are required to hold a waste management licence. Before the legislation was amended there were only two sites in Scotland who were licensed to store or treat end-of-life tyres. Neither of them were compliant. As at the end of 2017 a further four sites have been permitted to store waste tyres.

In 2017, one of the two sites licensed to bale and

shred tyres had a 'poor' compliance rating. The other site was abandoned by the operator and the landowner was left responsible for removing all of the waste tyres at their own cost.

All four sites licensed to store waste tyres were compliant in 2017.

The key issues contributing to non-compliance for licensed tyre sector operators are:

- Loose and baled waste tyres being stored incorrectly: storage of too many tyres for too long in a way that has potential to endanger human health or harm the environment.
- Failure to complete waste data reporting or basic duty of care waste transfer documentation when waste tyres arrive or leave a site.
- Site abandonment: there is a high risk of abandonment of licensed tyre facilities if excessive quantities are stored on site without securing onward end markets for the tyres. Abandoned sites have a higher risk of being set on fire.
- Lack of legitimate outlets within the market for waste tyre reprocessing or disposal.
- Incorrect identification of part worn tyres resulting in illegal storage of waste tyres.

## **Production of energy from waste tyres and fuel production from waste tyres for cement manufacture**

In 2017 all permitted operators were compliant.

## **Illegal activities**

On average, we investigate 70 environmental events involving tyres per year.

In 2017, there were 14 known stockpiles of illegally dumped tyres in Scotland, equating to over one million tyres that had been abandoned. This does not include small fly tipped piles or waste tyres stored at licensed facilities in contravention of licence conditions.

Illegal sites are not assessed under SEPA's Compliance Assessment Scheme.

## **Tyre fitting and end-of-life vehicle treatment**

Tyre fitters and end-of-life vehicle sites have a duty to ensure that they appropriately record all transfers of wastes to assist in the tracking movements of waste<sup>25</sup>. This is not assessed under SEPA's Compliance Assessment Scheme.

## **Waste carriers and brokers**

Waste carriers and brokers have a duty to ensure that they appropriately record all transfers of wastes to assist in the tracking movements of waste<sup>26</sup>. This is not assessed under SEPA's Compliance Assessment Scheme.

## **Export of end-of-life tyres**

The export of waste tyres is not assessed under SEPA's Compliance Assessment Scheme. We inspect shipments of waste tyres being exported from Scotland at the site of loading and at the port before onward transit. We take a risk based approach to these inspections and not every shipment is inspected. For shipments to be legal, the waste tyres must be shipped in a responsible manner to facilities that are licensed to receive them. Exporters and brokers have a duty to ensure that they appropriately record all transfers of wastes and to ensure each movement is accompanied with the appropriate paperwork.

## **How are we going to address non-compliance?**

We will help responsible compliant businesses to operate by making it significantly harder and more expensive for those who persistently fail to comply with environmental regulation to operate.

SEPA will:

- improve duty of care compliance across the waste tyre supply chain to ensure that waste tyres do not end up at non-compliant or unlicensed sites;
- prioritise maintaining compliance at licensed and permitted sites;
- act quickly and decisively to tackle non-compliance and serious criminality in the sector;
- fully utilise all available enforcement tools available to us that may include the imposition of monetary penalties.

<sup>25</sup> <http://www.gov.scot/Resource/0040/00404095.pdf>

<sup>26</sup> <http://www.gov.scot/Resource/0040/00404095.pdf>



## Where are the opportunities to go further?

We believe that those societies and economies that are low resource use, low energy use, low water use and low waste will be the most successful in the 21st century. Businesses that are the most innovative will best rise to the challenges of our time, such as over use of resources and climate change, and create sustainable economic growth.

In this section we describe opportunities and our aspirations to help businesses move beyond compliance. Many of these opportunities will also help to improve compliance by businesses in the tyre sector.

### Water

**Water in the right place, in the right amount and of the right quality underpins our society and economy. We need water to maintain the benefits we all receive from a healthy functioning natural environment. Scotland's water resources vary, and uncontrolled exploitation of water can affect its availability for other uses. All risks to our water resource may be increased as our climate changes. It is important that sector plans take account of risks from and to water resources.**

The tyre supply chain impacts our water environment. Microplastics generated by the abrasion of rubber tyres on roads while driving are generally transported into surface water drains or the sewerage system when it rains. Current waste water treatment works can remove 97-99% of the microplastics from the incoming sewerage system if primary and secondary settlement is used<sup>27</sup>. The microplastics removed will remain in the treated sludges (i.e. biosolids) at the end of treatment. These biosolids can then be applied to land under the appropriate controls. The microplastics can then be washed into the water environment and accumulate in oceans.

SEPA will:

- work with other public agencies to investigate appropriate use of sustainable urban drainage systems (SUDS) to minimise the discharge of tyre abrasion products to the water environment;
- work with businesses to identify and improve alternative uses of biosolids;
- work with businesses within the tyre sector to improve water efficiencies within their processes;
- collaborate with Scottish Fire and Rescue Service to produce advice and guidance that helps to minimise the risk of fires and prevent fire run-off polluting the water environment.

<sup>27</sup> <https://www.diva-portal.org/smash/get/diva2:773505/FULLTEXT01.pdf>

## Energy

**Energy is an essential resource that enables social and economic development and is one of the most important aspects of the transition to a sustainable low carbon economy. However, electricity and heat production, transmission, storage, and use can have significant environmental impacts. How we use and manage our energy resources is central to our ability to live within the resources of our planet. Cost savings and other benefits for businesses can be made by improving energy efficiency and making use of low carbon sources of energy.**

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The production of synthetic rubber and the manufacture of tyres are energy intensive. Energy consumption within the tyre supply chain continues for the whole life cycle of the tyre, for example from the transport of materials, use of tyres, on vehicles, electricity required to shred and granulate waste tyres, and the energy required to export part worn and waste tyres for re-use, recycling and recovery.

By extending the longevity of a tyre and designing for recycling or recovery there is scope for improving energy efficiency within the tyre supply chain.

Tyres should continue to be used for as long as possible and only when design limitations mean that they have genuinely reached the end of their life cycle should tyres move to the next stage of the waste hierarchy. Subsequent stages in the waste hierarchy include their use in the manufacture of other products and the provision of community heating schemes.

SEPA will:

- work with synthetic rubber producers and tyre manufacturers to encourage the introduction of, or increase the amount of, recycled rubber used in their processes;
- work with businesses, trade associations and other bodies to improve the local tyre sector infrastructure to re-use, recycle or recover waste tyres;
- work with other public agencies to promote how tyre users can contribute to reducing energy usage in daily driving and tyre purchasing choices;
- work with businesses to implement low carbon energy approaches throughout their processes and the tyre supply chain.

### Case study

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Studies have shown that a tyre under inflated by 20% can reduce its life span by 20%. Properly inflated tyres also improve fuel efficiency and reduce CO<sub>2</sub> emissions.

## Materials

**SEPA views the circular economy as a game-changing opportunity to manage resources within planetary limits. By reducing the harms associated with waste management it creates economic opportunities. We must dramatically cut waste production across the economy, recover more and dispose of only the very minimum. If waste is produced, we will encourage its productive use within a framework of strong environmental protection.**

**Resource efficiency can improve productivity and reduce costs for business. It can also bring environmental improvements and reduce our reliance on virgin raw materials.**

Natural rubber is included in the 2017 list of critical raw materials for the European Union<sup>28</sup> as it is economically and strategically important for the economy. Natural rubber can be used sustainably but the cost of recycled natural rubber can be half that of virgin natural rubber. Re-using, recycling or recovering even a small proportion of the 12.4 million tonnes of natural rubber produced in 2016<sup>29</sup> could create environmental and economic gains in the tyre supply chain.

The commission and design of tyres is the cornerstone in solving this global issue. There is potential to develop innovative products and processes that use waste tyres.

SEPA will:

- explore improved tyre design with the automotive industry, tyre manufacturers and other stakeholders to increase longevity, decrease resource use and improve recyclability;
- work with trade bodies, businesses and other stakeholders to help develop an infrastructure within Scotland to re-use, recycle and recover waste tyres.

### Case study

Car tyre manufacturers<sup>30</sup> are being innovative in how tyres may look in the future; CO<sub>2</sub> absorbing, 3D printed, rubber free and airless tyres are all a possibility.

<sup>28</sup> [http://ec.europa.eu/growth/sectors/raw-materials/specific-interest/critical\\_en](http://ec.europa.eu/growth/sectors/raw-materials/specific-interest/critical_en)

<sup>29</sup> <https://www.statista.com/statistics/275387/global-natural-rubber-production/>

<sup>30</sup> <https://www.dezeen.com/2018/03/20/six-unusual-tyre-concepts-designed-for-future-transport/>







## 7. Summary of actions and aspirations

The following table summarises the actions that we have described in previous sections to fix compliance in the sector and aspirations to help businesses take opportunities to go beyond compliance. These are described according to the key outcomes introduced in Section 3 that we would like this sector plan to achieve.

We will prioritise them alongside those in other sector plans and progress powerful actions that contribute towards achieving our one planet prosperity goal for Scotland.

Outcome sought	Actions and aspirations
Scotland has no stockpiles of illegal or abandoned tyres	<ol style="list-style-type: none"> <li>1. Use enforcement swiftly and effectively to clear new illegally dumped tyres.</li> <li>2. Continue to work with Police Scotland, local authorities, DVLA, Industry Trade Bodies, UK environment agencies and other partner agencies to divert, deter, detect and disrupt current illegal tyre activities that supports Scotland's Serious Organised Crime Strategy<sup>31</sup>.</li> <li>3. Identify and highlight compliant and non-compliant re-use, recycling, recovery and disposal routes to support producers and collectors of waste tyres.</li> <li>4. Work with landowners, insurance companies and public agencies to provide advice on the sector and their responsibility for preventing and clearing stockpiles.</li> <li>5. Make it easier for permit applicants and licence holders to understand their responsibilities.</li> <li>6. Work to improve the technical competency, financial provision and Fit and Proper Person assessments for permit applications for waste tyre management.</li> <li>7. Ensure that applications are refused where it is not demonstrated that risks to the environment and public health can be appropriately managed.</li> <li>8. Use our enforcement tools to remove licences from consistently non-compliant operators.</li> <li>9. Advise and support tyre importers on due diligence in regards to environmental performance and impact.</li> <li>10. Work with partner agencies to ensure that any new or part worn tyres imported to Scotland meet the product claims relating to quality.</li> <li>11. Work with partner agencies to ensure that serious organised crime groups do not use the importation of new tyres or part worn tyres as a cover for illegal activities.</li> <li>12. Support the Scottish Government in its review of Scotland's approach to producer responsibility for tyres.</li> <li>13. Support the Scottish Land Commission in delivering its strategic plan to promote redevelopment of vacant and derelict land.</li> </ol>

Outcome sought	Actions and aspirations
There are no serious organised crime groups in the Scottish tyre supply chain	<p>14. Analyse our data to inform focussed campaigns with our partner agencies to ensure compliance with legislation that diverts, deters, detects and disrupts current Serious Organised Crime activity within the tyre supply chain.</p>
Scotland is not exporting waste tyre related harm to other countries	<p>15. Undertake focussed monitoring of operators and brokers that export waste tyres to assess compliance with trans-frontier shipment of waste requirements and carry out appropriate due diligence checks for treatment infrastructure at the destination point of their tyres.</p> <p>16. Work with universities, Entrepreneurial Scotland and other institutions to review global producer responsibility programmes for tyres.</p> <p>17. Work with global environment agencies to ensure that export locations have the appropriate infrastructure to re-use, recycle or recover Scottish waste tyres.</p>
The impact of tyres has been eliminated through tyre supply chain innovation	<p>18. Work with global tyre manufacturers and those that commission tyres for use within the motor industry to promote design options that directly tackle longevity, minimise production of tyre abrasion products and improve recyclability of waste tyres.</p> <p>19. Work with other public bodies to investigate and promote source, site and regional SUDS that remove microplastics from runoff.</p> <p>20. Work with businesses to identify and improve alternative uses of biosolids.</p>
Scotland is a great place to be for businesses who are helping solve the global tyre problem	<p>21. Initiate a Scottish forum for the tyre supply chain that will help businesses and trade bodies identify compliant routes, generate business opportunities and innovate together.</p> <p>22. Establish a global summit to stimulate worldwide problem solving and promote ownership of the global tyre issue.</p> <p>23. Review technologies available globally that are not in use in Scotland and promote the most innovative processes that could help solve the global tyre problem.</p>



Outcome sought	Actions and aspirations
Scotland is well informed about the impact of tyres and is making decisions that make a difference	<p>24. Work collaboratively with partner agencies to provide information for use by the public to enable them to make decisions.</p> <p>25. Work with partner agencies to provide advice to businesses to help them minimise their impact from the use of tyres.</p> <p>26. Provide information to partner agencies to enable them to make decisions relating to their own tyre related statutory duties, assess their impact upon the environment from their use of tyres and develop new procurement processes that support the Scottish Sustainable Procurement Action Plan<sup>32</sup>.</p> <p>27. Work with tyre manufacturers to inform consumers about the environmental impact of their product choice not just tyre performance.</p>
SEPA is leading by example	<p>28. Ensure that the impact of our use of tyres is minimised through our vehicle use and procurement processes.</p>

<sup>32</sup> <http://www.gov.scot/Publications/2009/10/sspap>

