

EXPLANATORY MEMORANDUM & REGULATORY IMPACT ASSESSMENT

Explanatory Memorandum to The Environmental Permitting (England and Wales) (Amendment) Regulations 2014

This Explanatory Memorandum has been prepared by the Department for Environment of the Welsh Government and is laid before the National Assembly for Wales in conjunction with the above subordinate legislation and in accordance with Standing Order 27.1.

Minister's Declaration

In my view, this Explanatory Memorandum gives a fair and reasonable view of the expected impact of The Environmental Permitting (England and Wales) (Amendment) Regulations 2014. I am satisfied that the benefits outweigh any costs.

Alun Davies AM

Minister for Natural Resources and Food

10 February 2014

1. Description

The instrument amends the Environmental Permitting (England and Wales) Regulations 2010 (S.I.2010/675) (“the 2010 Regulations”). The amendments do the following:

- require certain material recovery facilities (MRFs) that separate out single stream waste materials from mixed waste materials of household or similar origin, to sample the quality of their input and output material streams and to make this information transparent;
- make provisions relating to the enforcement of EU Regulation (493/2012) laying down detailed rules for the calculation of efficiency levels for recycling waste batteries and accumulators;
- remove the requirement for waste businesses to have to secure planning permission for certain waste operations in advance of any environmental permit being issued (the ‘planning bar’), meaning that the regulator will be able to issue an environmental permit before the operator has received planning permission for the project (a situation that already exists for many large industrial activities that require an environmental permit);
- provide a registration scheme for low-risk discharges to groundwater from some Ground Source Heating and Cooling systems;
- remove the requirement for local authorities to maintain duplicate copies of the Natural Resources Wales systems of public registers containing information connected with permit determinations;
- make a number of other more minor miscellaneous proposals to simplify permitting procedures for regulators (including service of notices, revisions of standard rules and variations of permits);
- clarify the position relating to the exercise of functions in relation to waste mobile plant;
- make some minor corrections following the introduction of regulations to transpose the Industrial Emissions Directive (2010/75/EU) in February 2013.

2. Matters of special interest to the Constitutional and Legislative Affairs Committee

The legislation is being made on a composite basis and forms part of a suite of regulations which deliver the environmental permitting regime. This regime operates across England and Wales. In particular, this statutory instrument amends the Environmental Permitting (England and Wales) Regulations 2010 (‘the 2010 Regulations’). The 2010 regulations, their predecessors (the Environmental Permitting (England and Wales) Regulations 2007 (S.I. 2007/3538) – ‘the 2007 Regulations’) – which are the origin of the single regulatory permitting framework that we have today) and subsequent amendments have all been made compositely, reflecting the commonality between the English and Welsh regimes. This established composite approach remains appropriate for the Environmental Permitting (England and Wales) (Amendment) Regulations 2014.

The power to make these regulations is contained in section 2 of the Pollution Prevention and Control Act 1999 (“the Act”). That power was transferred to the

National Assembly for Wales, except in relation to offshore oil and gas exploration and exploitation, in accordance with the National Assembly for Wales (Transfer of Functions) Order 2005 (S.I. 2005/1958). Those functions are now exercisable by the Welsh Ministers by virtue of section 162 of and paragraph 30 of Schedule 11 to the Government of Wales Act 2006. In accordance with section 2(7) and (8) of the Act the regulations are subject to the negative procedure in the National Assembly for Wales (and in both Houses of Parliament).

In accordance with section 2(4) of the Act, the Welsh Ministers have consulted, amongst others, the Natural Resources Body for Wales (NRW). The requirement to consult was introduced by virtue of the amendment to section 2(4) by article 4 of and paragraphs 394 and 395 of Schedule 2 to the Natural Resources Body for Wales (Functions) Order 2013 (S.I. 2013/755 (W.90)).

3. Legislative background

Prior to the coming into force of the 2010 Regulations on 6 April 2010, the environmental permitting regime was set out in the 2007 Regulations (S.I. 2007/3538). The 2007 Regulations created a single regulatory framework in England and Wales for waste management licensing and pollution, prevention and control activities. They transposed the provisions of 11 EU Directives which impose obligations required to be delivered through permits or capable of being delivered through permits. The 2007 Regulations were amended in 2009 to transpose the permitting and compliance requirements of the Mining Waste Directive (Directive 2006/21/EC) and the Batteries Directives (Directive 2006/66/EC) and to revise the provisions relating to exempt waste operations. The amending instruments were S.I. 2009/890, 2009/1799 and 2009/3381.

On 6 April 2010 the 2007 Regulations were revoked, subject to some savings and exceptions, and were re-made as the 2010 Regulations with the addition of permitting regimes covering water discharge consenting, groundwater authorisations and radioactive substances regulation. The Environmental Permitting (England and Wales) (Amendment) Regulations 2014 will amend the 2010 Regulations.

The power to make the 2007 Regulations, the 2010 Regulations and subsequent amendments is contained in section 2 of the Pollution Prevention and Control Act 1999. That power was transferred to the National Assembly for Wales, except in relation to offshore oil and gas exploration and exploitation, in accordance with the National Assembly for Wales (Transfer of Functions) Order 2005 (S.I. 2005/1958). Those functions are now exercisable by the Welsh Ministers by virtue of section 162 of and paragraph 30 of Schedule 11 to the Government of Wales Act 2006.

4. Purpose & intended effect of the legislation

The instrument makes a number of amendments to the environmental permitting regime. The MRF amendment will help stimulate the market conditions necessary to improve the quality of the material produced by MRFs,

so that it can be more readily recycled. Currently the market is not working, partly because MRFs are not measuring the quality of their output material or where they are measuring, making this information transparent, which causes inefficiencies in the market and MRFs delivering recyclate of sub-standard quality. The instrument will enable monitoring of the quality in MRF outputs in a robust manner, helping to support objectives in the revised Waste Framework Directive, as well as the economy and growth of the recycling industry.

The removal of the 'planning bar' will make it easier for all waste businesses to decide how they want to sequence their applications for planning and environmental permissions, providing them with the same flexibility as businesses in other sectors. On ground-source heating and cooling, a more targeted risk-based approach will mean that low-risk activities need only to register with Natural Resources Wales rather than obtain a permit. There will be no reduction in the level of environmental protection. Other changes will improve the procedural rules under which regulators conduct the permitting process. Specifically, the instrument makes amendments that will:

- (a) provide greater flexibility in the service of notices on permit holders. Current provisions allow the service of notices solely on the secretary or clerk of a company. The instrument will extend this arrangement to include company directors.
- (b) deliver greater consistency in the regulators' handling of permit transfers from one operator to another. As things stand, regulators are able to vary the conditions of a permit when it is partially surrendered by the operator but the same option does not exist in relation to the notification of a partial transfer from one operator to another. Secondly, under current provisions where an enforcement notice applies to a permit it continues to apply when the permit is transferred from one operator to another, but no equivalent provision exists for suspension notices. The instrument will correct these anomalies.
- (c) Speed up the process of introducing revisions to standard rules for applicants for new permits. Under existing arrangements, before revisions to standard rules permits are made by the regulator, any operator who holds a permit that would be affected by the proposed revisions must be notified of those revisions and the date that they will come into force (which must not be less than three months from the date of the notification). This is a necessary protection for existing permit holders, as it allows operators time to decide whether they want to be subject to the new rules or withdraw from them, but can be problematic for new operators because it delays for three months the application of revised rules, which are usually relaxations to compliance requirements. The instrument will remove this delay, allowing (for new applicants) revisions to take effect upon their publication;
- (d) clarify requirements in respect of the exercise of regulatory functions relating to waste mobile plant. The mobile nature of some waste treatment plant means that specific provisions relating to the exercise of regulators' functions exist in the current regime. The instrument will amend these

provisions for the purposes of providing greater clarity;

- (e) remove the need for local authorities to maintain duplicates of the Natural Resources Wales register of certain environmental permitting information, thereby reducing the administrative burden on regulators. Information will remain accessible through NRW and the public will continue to be engaged in the permitting process by NRW in line with their existing public participation arrangements;
- (f) deliver clarity in respect of notice provisions relating to off-site permit conditions. The current regulatory arrangements allow for the imposition of off-site conditions in environmental permits and require third parties to grant access to operators (subject to compensation) so that they can comply with any such off-site condition. Where the regulator proposes to include an off-site condition in a permit it must serve a notice on each of these third parties. However, in the case of combined sewer overflows and emergency sewer overflows, at the time of permitting it is not possible to know whose land the sewerage undertaker might need to access in the event of a spill in order to clean-up sewage debris. The Instrument will therefore clarify the position in that the notice requirements do not apply to permits for combined sewer overflows and emergency overflows.

EU Regulation No 493/2012 of 11 June 2012 lays down detailed rules on calculating the efficiencies of the recycling processes of waste batteries and accumulators. It also requires the recyclers of batteries and accumulators to report on the efficiency of their operation to the competent authority in their member state. It applies to recycling processes from 1 January 2014, with the first report required by 30 April 2015. As an EU Regulation it is directly applicable to battery and accumulator recyclers in the UK and across the EU. The UK is legally obliged under the Batteries Directive to report annually to the European Commission on levels of recycling achieved and whether the stipulated recycling efficiencies have been met. The Instrument will therefore:

- Designate NRW as the 'competent authority' for Wales for the purposes of the EU regulation; and
- Require NRW to exercise its relevant permitting functions (including enforcement and monitoring of the environmental permit) so as to ensure compliance with the EU Regulation.

In addition, provisions are included in the Instrument that will:

- make minor corrections to the regulatory amendments that were introduced earlier this year for the purposes of transposing the Industrial Emissions Directive; and
- make minor amendments to existing provisions that set out the environmental permitting functions of the Environment Agency and Natural Resources Wales in respect of mobile waste treatment plant in order to deliver greater clarity for the regulators and for operators.

5. Consultation

Details of consultation undertaken are included in the Regulatory Impact Assessment (RIA) below.

REGULATORY IMPACT ASSESSMENT

The draft Regulations will make the following changes to the operation of the existing environmental permitting regime:

- (a) remove the need for waste businesses to have planning permission in place for certain waste operations before an environmental permit can be issued (the 'planning bar')
- (b) replace the requirement for a full permit with a registration scheme for low-risk discharges to groundwater from Ground Source Heating and Cooling (GSHC) systems
- (c) clarify notice provisions relating to off-site permit conditions
- (d) correct oversights in relation to permit transfer
- (e) allow greater flexibility in the service of notices on corporate bodies
- (f) remove the requirement for local authorities to keep duplicate copies of NRW registers of information about permitting decisions
- (g) implement the new EU Regulation 493/2012, which entered into force on 11 June 2012 and lays down detailed rules on calculating efficiency levels for recycling waste batteries and accumulators. It applies to recycling processes from 1 January 2014 (LF/AD/1010/13 refers)
- (h) require certain Materials Recycling Facilities (MRFs), which sort mixed household waste into separate streams (such as paper, plastic, glass and metals), to sample the quality of their input and output waste streams and to make this information transparent;
- (i) make some minor corrections to the regulatory amendments that were introduced earlier this year for the purposes of transposing the Industrial Emissions Directive.
- (j) Clarify the environmental permitting regulatory functions of the Environment Agency and Natural Resources Wales in respect of mobile waste treatment plant deployed across England and Wales.

For the purposes of the impact assessment the proposals are considered below as a number of separate packages. The impact assessment in respect of each proposal was conducted on an England and Wales basis. Proposal (i) has not been included because of its minor, corrective, nature. Instead, it was consulted upon via existing industry forums, with no concerns expressed about the proposals. Proposal (j) has not been included because its purpose is simply to deliver greater clarity over existing provisions in the regulations, rather than make any substantive changes to the nature of existing provisions.

Proposals (a) to (e)

Options

Option 1 (maintaining the status quo) would result in a failing to introduce any of the benefits associated with the measures and reduce costs and burdens on businesses and regulators. A non-regulatory approach cannot be considered as this is a regulatory based requirement and the proposed changes need to be underpinned in law to be brought into effect. Option 2 (the regulatory option) is to introduce measures to reduce burdens to business and further simplify environmental permitting processes and procedures. This is the preferred option.

Costs & benefits

Table 1. Summary of costs and benefits associated with pursuing option 2

	Transition costs	Annual costs (best estimate)		Annual benefits (best estimate)	
		To business	To public sector	To business	To public sector
Proposal (a)	0	0	0	£0.55m (from 2014 onwards) from reduced costs of admin, legal and possibly applying for a bespoke permit	£0.45m (from 2014 onwards) from reduced costs relating to checking and liaising with the Local Planning Authority, reviewing delayed applications and legal issues
Proposal (b)	£0.01m (to public sector in first year only)	0	0	£0.01m (from 2014 onwards) reduced costs of shifting from a permit to a registration system	0
Proposal (c)	0	0	0	0	Negligible
Proposal (d)	0	0	0	0	0
Proposal (e)	0	0	0	0	Negligible
Total	£0.01m (first year only)	0	0	£0.56m (from 2014 onwards)	£0.45m (from 2014 onwards)
* All impacts cover the 10 year period of 2013 to 2022, using the Impact Assessment calculator version which expires on 27 September 2013 and calendar year GDP deflators.					

The present value of the net benefit to business of the regulatory option (option 2) is £4.27m in 2012 pounds and a present value base year of 2013 i.e. £4.19m from proposal 1 and £0.08m from proposal 2. This is then converted into 2009 pounds giving a net benefit to business of £3.99m and then the present value base year is rebased from 2013 to 2010 giving £3.60m. The latter is then divided by the annuity rate (8.60769) to give an equivalent annual net cost to business of -£0.42m (i.e. a saving of £0.42m).

Proposal (a) - removing the requirement for waste businesses to have to secure planning permission for certain waste activities before an environmental permit can be issued

The Environment Agency, Natural Resources Wales and, in limited circumstances, local authorities determine applications for waste activities under the Environmental Permitting Regime. For certain waste activities that were previously regulated through the waste management licensing system until 2007, an environmental permit cannot

be issued until planning permission is in place. For other regulated activities - including waste incinerators and other large industrial plants – permits may be issued once the determination has been completed, regardless of the status as regards planning permission. This prerequisite need for planning permission is termed the 'planning bar'.

The planning bar brings no environmental benefit but adds a significant administrative burden on business and regulators. By removing the requirement to secure planning permission a range of activities would no longer be required (and their associated costs, as detailed in Table 2, would no longer be incurred). It is estimated that 15% of applications for waste management activities across England and Wales have to be cross-checked with local planning authorities. It is also estimated that 10% of applications for permits for waste activities affected by the 'planning bar' are delayed because the status of planning permission is not clear at the time of applying. In the worst cases, where planning decisions are delayed by appeal proceedings, permit decisions can take up to 36 months, the costs of which are detailed below.

Data assumptions are based on the Environment Agency's England and Wales permitting database for 2009/10. At that time the Environment Agency was the relevant regulator for both England and Wales. A sample of 91 applications was taken from the Warrington permitting office which, at the time, was one of the four national permitting offices including one in Wales and is representative of those other offices. The database tracks progress of applications and records the reasons why certain applications are delayed. From this data set it was shown that 10% of relevant applications are directly affected. For the year 2009/10 this amounted to 45 permit applications. This information is used as the basis for estimating the benefit of reduced administrative costs for this policy proposal to business and the regulators.

The costs to the regulators in England and Wales of requesting additional information, dealing with the Local Planning Authorities, reviewing delayed applications and involving legal counsel in considering appeals and judicial reviews is estimated to be £172,000 (£3,822 per permit directly affected) – see Table 2 Costs Column (a). The costs to operators of additional administration, legal counsel and actions such as applying for a bespoke permit are estimated at £47,392-£374,092 (£1,053-£8,313 per permit directly affected) – see Table 2 Costs Column (b). Applying a calendar year GDP deflator uplift of 1.0704346 to convert the above figures into 2012 pounds¹ gives cost savings (i.e. benefit) of extra administrative costs avoided (see next para) per application of £4,091 for EA, and £1,127 to £8,899 for operators.

Benefits are calculated as the avoided costs related to the requirement for prior planning permission. The number of relevant waste permits was assumed to grow from 2010 to 2012 as the exemptions transitions grew and as a result of structural growth in certain types of relevant waste permits. In 2010/11 the Environment Agency (EA) issued 152 bespoke and 557 standard rules permits for waste activities that would have required planning permission in advance (i.e. 709 in total). In 2011/12 the EA issued 191 bespoke permits and 750 standard rules permits for waste activities that would have required planning permission in advance (i.e. 941 in total). By 2014 we expect this to have grown due to bigger exemption transitional tranches coming through. Therefore an increase to 1,100 might be a reasonable estimate. It is assumed that the number of relevant applications will then remain steady at 1,100 and the number of affected permits remains at 10% of these 1100 applications i.e. 110 directly affected applications. Costs per affected permit are assumed to remain similar

¹ For the purpose of applying the GDP deflator in calendar years, it is assumed that the financial year 2009/10 is equivalent to the calendar year 2009.

to the EA figures calculated for 2009/10, adjusted to the 2012 base price year. This gives estimated annual savings to the regulators of £450,058 across England and Wales and savings to operators of £124,006 to £978,855.

Overall benefits occur annually during the period 2014 to 2022 are estimated to fall in the range of £4.4m to £11.0m NPV: between £0.9m and £7.4m for business and £3.4m for regulators. Best estimates of benefits overall are £7.7m NPV: £4.2m to business and £3.4m to regulators. We consulted on the possibility of any unintended consequences of this proposal (such as an increase in number of applications as a result of the likely less expensive and less complex procedure) and no additional consequences were highlighted in the responses received.

Proposal (b) – providing a registration scheme for low-risk discharges to groundwater from some Ground Source Heating and Cooling (GSHC) systems

GSHC systems use energy stored in the ground to heat or cool buildings. Groundwater temperature at depth generally maintains an approximate constant temperature throughout the year whilst the air temperature fluctuates. The difference between the building temperature without heating and cooling and the groundwater temperature enables groundwater to be used for both heating and cooling purposes. Electricity can be used to power the heat pumps and they can typically provide three or four times the amount of energy used to drive the system.

There are two types of scheme: open and closed loop. Closed loop schemes are not regulated under the environmental permitting regime as no water abstraction is involved. Open loop schemes, on the other hand, do abstract water from the environment, removing heat or cold from the water via a heat exchanger and then return the water back to the environment. For these schemes permits/licences are required for groundwater investigation (for test drilling of the borehole), abstraction of water and for the discharge of effluent.

There are a number of environmental risks associated with the discharges from open loop ground source heat pumps systems. Some of these systems pose a higher risk to the environment than others, yet the discharges all currently require a bespoke environmental permit. A more risk based approach would offer savings to business and regulators with negligible detriment to the environment. The proposal is therefore to deregulate a number of these systems, where the discharge falls below a certain threshold which in turn is dependent on the type of heating/cooling system or combination thereof. Permits will be replaced with a requirement for operators to register the systems with the regulator as exempt from the need for a full permit.

There are currently 59 open loop systems in England and Wales and all of these would continue to be subject to the annual subsistence charge, which is based on volume for discharges to the ground of hotter or colder water (2012/13 charges):

- £102.60 for 20 - 100m³/d
- £205.20 for 100 - 1000m³/d
- £307.80 for 1000 - 10000m³/d

Assuming under the baseline that the uptake seen in the past few years will continue, we estimate that there would be around eight new schemes per year. As the majority (80%) of existing schemes are in the private sector, we also make the assumption that the new schemes will be in the private, rather than public sector.

It has been estimated that new entrants pay approximately £5,000 per permit application. This figure accounts for filling in the application form, gathering information associated with the application and any additional monitoring (chemical sampling or drilling monitoring points) that may be required. There are no hard numbers on this as each applicant may require different amounts of work and some may even employ consultants to fill in the application, so this is simply a best estimate based on industry practice which would also take account of overheads, employer contributions to pension and national insurance.

There are also administration costs for the regulator to work on each new permit, which have been estimated to be £2,176 per permit based on an average determination of 64 hours at a cost of £34 per hour (as per Treasury Green Book guidelines paragraph 15 page 59). Any costs incurred by the regulator are subsequently recouped through the regulator's cost recovery system and are calculated to include overheads and employer costs such as pensions and national insurance contributions.²

Under the proposals, 15 out of the 59 existing schemes would be exempt. We therefore use this same proportion of 25% to calculate what new schemes would be exempt. As a result, we calculate that two schemes per year will be eligible for exemption. We also use a low estimate of one and a high estimate of three in order to present a range.

Costs - there would be a transitional cost to the regulators in order to modify IT systems to enable people to register. This has been estimated to be £10,000 and would be incurred in the first year only.

Benefits - new schemes: where there is an exemption, there would be a benefit to business of £5,000 per application form. We estimate a low and high range of savings based on one and three applications, with the best estimate based on two applications (see para 5.2.8). Therefore this equates to a best estimate of £10,000 per year in savings (£5,000 for low and £15,000 for high estimates). It should be noted that this is a saving to business, rather than representing a true economic benefit.

Discounting the benefits from the costs over 10 years leads to a best estimate of total net present value of £0.07m: low estimate of £0.03m and high estimate of £0.10m.

Benefits not included - for any new scheme costs incurred by the regulators are subsequently recouped through their cost recovery system, which is calculated to include overheads and employer costs². The regulators' costs are estimated to be £2,176 per permit application. For existing and new schemes, businesses that would be exempt will no longer need to pay the annual subsistence charge. However, we assume there is a cost recovery system in place for permits previously issued as businesses would have had to pay an application fee (£885), followed by an annual subsistence charge based on volume. These fees would cover the costs that the regulators incur. However, there is uncertainty in the process as to how long it takes to recoup costs so these are not included in the calculations.

² <http://www.environment-agency.gov.uk/business/regulation/38823.aspx>

Proposal (c) - clarifying notice provisions relating to off-site permit conditions

The Environmental Permitting Regime (EPR) allows for the imposition of off-site conditions in environmental permits and require third parties to grant consent to operators (subject to compensation) so that the operator can comply with any off-site condition. However where the regulator proposes to include an off-site condition in a permit, it must serve a notice on every person who would have to grant rights of entry to the operator so that the operator could comply with the condition. The notice served by the regulator forms part of the consultation on the proposed permit.

Historically water discharge consents under Water Resources Act 1991 (now water discharge activity permits under EPR) relating to water company combined sewer overflows and emergency overflows had a condition ('clean-up condition') requiring the clean-up of sewage debris around the overflow and in waters and adjoining land downstream of the sewer outfall. This condition was subject to appeals that were upheld but some water companies have now suggested that these conditions should be the subject of off-site consultation. Regulators take the view that the off-site consultation provisions were not intended to cover situations of this type and do not need to be interpreted in this way. However, an amendment would be beneficial to clarify the position.

The condition in water discharge activity permits relates to permit holders clearing up when the discharge from their overflow results in solid sewage matter being deposited in waters or on banks of waters. At the time the permit is granted it cannot possibly be known whether the condition will be engaged as unless and until there is an unacceptable discharge of sewage from an overflow there is no breach of condition if sewage is not cleaned up. Therefore it is impossible for the regulators to comply with requirements of paragraph 9 of Part 1 of Schedule 5 in respect of the clean-up condition because it will not know at the time of the application for a permit which landowners or occupiers have to be consulted. There could be a number of third parties onto whose land the water company may need to have access to clean-up sewage debris but that would not be known until the discharge has occurred i.e. once the permit is granted and the water discharge activity operational. This proposal is therefore intended to clarify the regulatory position and no costs or benefits are associated with the proposal.

Proposal (d) - correcting two oversights relating to permit transfers

Two technical corrections are proposed that will bring greater consistency in how the regulator can handle the transfer of permits. Firstly, the regulator is currently able to vary the terms of a permit when it is partially being surrendered by the operator but it does not have the same ability in relation to the notification of a partial transfer from one operator to another. Secondly, where an enforcement notice applies to a permit it continues to apply when the permit is transferred to another operator, but there is no equivalent provision for suspension notices. This proposal will correct these anomalies. There are no quantifiable costs or benefits associated with this proposal.

Proposal (e) - allowing greater flexibility in relation to the service of notices on corporate bodies

Regulation 10 of the Environmental Permitting (England and Wales) Regulations 2010 governs the service of notices etc. In the case of 'bodies corporate', it specifies that

service must be on the secretary or clerk. However, some companies do not have a secretary or clerk and this hinders the service of such notices etc. This proposal would expand the regulation 10 provision to include the director of a company as well as the secretary or clerk to allow greater flexibility. There are no quantifiable costs or benefits associated with this proposal bar a potential minimal administrative saving to regulators.

The status of a recipient of notices served on corporate bodies does not change and will not be subject to any special treatment with regard to liability or similar. Any costs associated with the serving of a notice on a recipient will not be affected by their status or position within the organisational structure of the corporate body involved.

In summary, proposals (a) to (e) are estimated to have an overall NPV of £4.41m - £10.99m (£7.68m best estimate).

Table 2: Breakdown additional tasks undertaken for the determination of permit applications requiring prior planning consent

TASKS	(a) Costs to Regulator (£k)	(b) Cost to Operator (£k)
<p>1. Assessing relevant applications planning status The applicant tells the regulator the status of planning when they apply. The regulator checks that the information on the application form is correct, i.e.: does permission exist or if not is there evidence it has been applied for; does the description of the permission cover the applied-for activity; does it cover all of the area on the site plan for the applied-for activity. [Installations take longer to asses due to the complexities of the operation]. Applications for Sites of High Public Interest (SHPI) require greater scrutiny given the risk of legal challenge. 2 hours @ £125* x 14 installations = £3,500 1 hour @ £125* x 145 specified waste permits = £18,125 1 hour @ £125* x 288 standard specified waste permits = £36,000 additional 3 hours@ £125* x 23 applications that are SHPI = £8,625</p>	66.25	
<p>2. Additional information requests. Some applicants don't provide enough information on planning status with their application form. The regulator must request the information and then have to wait for the response. 1 hour @ £125* x 12 incomplete permits = £1,500 This delays the start of determination by about 2 weeks.</p>	1.5	
<p>3. Liaising with Local Planning Authorities. In some cases planning status is unclear and the regulator needs to write to the Local Planning Authority (LPA) to attempt to clarify. These cases can range from a few simple exchanges between the regulator, the operator and the LPA, to cases where all parties seek Counsel's opinion. The Environment Agency has estimated that 15% of relevant waste operation (RWO) applications require cross-checking with the LPA and fall into the following categories:</p>		

<p>Simple cases: 10% (45 applications) x 2 hours @ £125* = £11,250 Medium cases: 4% (18 applications) x 4 hours @ £125* = £9,000 Difficult cases: 1% (4 applications) x 8 hours permitting officer @ £125* = £4,000 60 hours legal support for queries @ £125* = £7,500</p> <p>**Operators and LPAs incur costs in this category as well. It is assumed that operators incur the same time as above for administrative staff (on a salary of £26,000 including overheads based on current industry data) and a further 0.5 hours of senior staff time (assumes a salary of £58,500 based on current industry data). Legal support costs are assumed the same based on the likelihood professional expertise will be charged at a similar rate. Further breakdown is in Table 3.</p>	31.75	11.10
<p>4. Checking the progress of a relevant planning application.</p> <p>The regulator has to check progress on the planning application where permission is not in place: this applies to 5% RWO installations, 20% bespoke permits and 33% standard permits. If planning is delayed the regulator has to keep repeating this process.</p> <p>2 hours @ £125* x 96 applications = £24,000</p> <p>Delays to the permit determination caused by a lack of planning vary. It can range from less than 1 month to 36 months if there is an appeal following refusal of planning permission.</p>	24	
<p>5. Reviewing permit conditions for delayed planning consents.</p> <p>Where planning has delayed issue of the bespoke permit decisions (15 cases annually), the regulator has to review the draft decision to check if the conditions are still appropriate and update them if needed. The longer the delay the more likely the necessity to revise conditions.</p> <p>8 delayed for >6months <12 months x 1 hour @ £125* = £1,000 5 delayed for >12 months < 24 months x 4 hours @ £125* = £2,500 2 delayed for 24 plus months x 8 hours @ £125* = £2,000</p>	5.5	
<p>6. Refused permit appeals.</p> <p>In cases where the regulator has no evidence that the operator is progressing planning permission or they (and usually the LPA) disagree that planning permission is in place for what has been applied for, then they will refuse the permit application. This usually results in an appeal.</p> <p>On average there is one appeal on these grounds per year. Costs include preparation time and the actual hearing</p>		

<p>Typical costs per appeal: 2 days permitting staff costs £900 plus legal support of £1100 (which may require Counsel's opinion) = £2,000.</p> <p>**The operator also bears costs for an appeal proceeding with the assumption that time incurred is assumed similar to the regulator, with administrative staff salaries as above, at £26,000 p.a. Legal support assumed the same at £1,100. Detailed workings are in Table 3.</p>	2.0	1.3
<p>7. Managing Judicial Reviews.</p> <p>When determining a permit application for a potential SHPI past evidence indicates an increased likelihood of a Judicial Review (JR) being raised against the application. This would be based on the challenge that the planning permission provided does not accurately reflect the operation being permitted. This is most likely to occur where the operator is relying on planning permission obtained in the past or on established use rights, where there can often be considerable doubt about the precise scope of the planning permission. The prior planning requirement means that arguments about the scope of the planning permission or established use rights can be made as a challenge to the permit. The regulator is not well placed to deal with such challenges as the subject matter is the responsibility of the local planning authority. Even if such challenges do not reach court, a lot of resources may have to be spent, including legal counsel. By removing the planning bar then this legal challenge can no longer be brought against the regulator's permit and if progressed would have to be taken against the original planning decision.</p> <p>The regulator may have a JR threat on this point, once per year. Costs to fend off a JR vary considerably, but on average assumed at about £6k. A full blown JR costs the regulator about £177k. The EA has assumed that they might get one full JR involving this point, every five years, the 'annualised' cost is estimated at £35k. Added to the £6k annual cost gives a total cost of £41k.</p> <p>Operators have to bear the costs of judicial proceedings as well. The assumption is that costs are similar for all parties. In this case, the majority of costs relate to the legal costs for judicial proceedings and are assumed to be similar to the estimate of costs incurred for the regulator. Although administrative costs may differ slightly, in the interests of proportionality, it is reasonable to assume that overall costs incurred will be similar. The £6k costs by the regulator of fending off a JR are assumed not to be incurred by businesses.</p>	41	35

<p>8. Confirmation that permit and planning waste types align.</p> <p>When determining a standard rules permit (SRP) the regulator presently has to check whether any associated planning permission includes waste types not listed as acceptable for a SRP. Where a waste type does not align with the type of permit being applied for then the operator may need to either amend their planning permission or apply for a different permit type. Currently time is spent by the regulator engaging with the planning authority and the operator to determine the correct position and appropriate course of action. By removing this cross checking requirement, the potential for ambiguity and misunderstanding arising from the information submitted in both planning and permit applications will be avoided. The onus will be on the operator to ensure they comply with the conditions of their planning permission and environmental permit.</p> <p>There is no available data to provide any trend analysis of how many times this occurs and so we have provided costing's based on none of the potential 45 permits having to change from a SRP to a bespoke permit, which represents the minimum cost, to all of the 45 permits being changed which represents the maximum cost to business.</p> <p>A bespoke permit costs £8,350 compared with £1,590 for a SRP and annual subsistence fees are £500 more. If all 45 permits had to apply for bespoke permits it would cost industry an additional £304.2k in application fees and £22.5k in subsistence per annum.</p>		0 – 326.7
Totals	172	47.4 – 374.1
<p>* The £125 per hour figured used throughout Table 2 includes overheads, employer costs such as national insurance and pensions as well as support.</p> <p>** Basic salary for administrative staff of £20,000 p.a. is £26,000 including standard 30% overheads. Assuming 7.5 hour working days, this is £13.33 per hour. For senior staff, salary of £45,000 is a total salary cost of £58,500 including standard overheads. Assuming 7.5 hour working days, this is £30.00 per hour. These figures have been calculated based on salary data collected from waste businesses for equivalent personnel who would be involved in permitting activities plus the 30% uplift for overheads.</p>		

Table 3: Detailed breakdown of calculations for costs to businesses

Liaising with local planning authorities	applications	hours	Hourly rate of staff	costs £
simple	45	2	13.33	1,200.00
medium	18	4	13.33	960.00
difficult	4	8	13.33	426.67
Senior sign off for all cases	67	0.5	30.00	1,005.00
60 hours legal support for queries (assumed same as EA)		60	125	7,500.00
Total				11,091.67
Refused Permit appeals				
legal support (assumed same as EA)				1100
2 days admin time	1	15	13.33	200.00
Total				1300.00

Consultation

Consultation was undertaken between 7 February and 4 April 2013. Government response to the consultation was published on 10 December 2013.

Competition Assessment

The competition filter has been applied and the outcomes listed in the table below:

The competition filter test	
Question	Answer yes or no
Q1: In the market(s) affected by the new regulation, does any firm have more than 10% market share?	Y
Q2: In the market(s) affected by the new regulation, does any firm have more than 20% market share?	Y
Q3: In the market(s) affected by the new regulation, do the largest three firms together have at least 50% market share?	Y
Q4: Would the costs of the regulation affect some firms substantially more than others?	N
Q5: Is the regulation likely to affect the market structure, changing the number or size of businesses/organisation?	N
Q6: Would the regulation lead to higher set-up costs for new or potential suppliers that existing suppliers do not have to meet?	N
Q7: Would the regulation lead to higher ongoing costs for new or potential suppliers that existing suppliers do not have to meet?	N
Q8: Is the sector characterised by rapid technological change?	N
Q9: Would the regulation restrict the ability of suppliers to choose the price, quality, range or location of their products?	N

Proposal (f)

Options

Option 1 (maintaining the status quo) would result in a failing to introduce any of the benefits of reduced costs to regulators. A non-regulatory approach cannot be considered as this is a regulatory based requirement and the proposed change needs to be underpinned in law to be brought into effect. Option 2 (the regulatory option) is the preferred option as this is the only viable choice.

Costs & benefits

Table 1. Summary of costs and benefits associated with pursuing option 2

Proposal	Transition costs	Annual costs (best estimate)		Annual benefits (best estimate)			10 year NPV
		To business	To public sector	To business	To public sector	To society	
Reduction in the requirement for the public registration of environmental permits.	0	£0.0005 m	0	0	£0.58m savings from reduced postage costs and staff time	0	£4.39 m

* Note all impacts are estimated over the period 2013-2022, with all annual impacts occurring from 2014 onwards.

Currently, in most cases, the EPR requires local authorities to maintain a duplicate record of the publicly available environmental permitting information relevant to their area that is held by the Environment Agency (EA) and Natural Resources Wales (NRW). The EPR also requires the regulators to provide local authorities with the information necessary for it to comply with this duty. A straw poll of 17 local authorities provided evidence that these duplicate entries at local authority offices are not referred to by the public or businesses to justify the costs associated with the process. Seventy-five per cent had had no visits to view this part of their public registers in the past 10 years, 15% had had one visit and 10% had had more than one visit. The aim of this proposal is therefore to remove this obligation. A move to a single register will result in savings for the Environment Agency/Natural Resources Wales and local authorities.

The savings to regulators are accrued from reduced EA/NRW staff time spent on compiling the information and despatching it to local authorities, reduced stationery and postage costs and from local authorities no longer having the need to store information and provide access to it.

Costs for EA/NRW to send data to local authorities comprise:

- Stationery costs - based on a study done in North West Region of the Environment Agency the paper cost is approximately £800 per annum. Extrapolated across all areas leads to an estimated cost of £16,800 per year. In addition, the Environment Agency's National Permitting Service (NPS) (which operated across both England

and Wales until April last year) receives over 10,000 pieces of correspondence a year, all of which needs to be sent to the local authorities, half of which are sent as letters and half as CDs. Estimated NPS stationery costs are £13,500 per year. Total stationery costs are approximately £30,000 per year.

- Postage costs - the North West Region of the Environment Agency posts around 2,000 pieces of correspondence per annum. Postage costs are based on weight & size and some assumptions have been made on most of the hard copy data fitting in a large letter or packet but some will be larger. The overall postage cost in North Area is approximately £1,550 per annum. Extrapolated across all areas leads to an estimated cost of £32,600 per year. In addition, the Environment Agency's National Permitting Service (NPS) post approximately 15090 CDs and 5030 pieces of correspondence (hard copy) at a cost of approximately £11,500 per year. Total postage costs are approximately £44,000 per year.
- Staff time - based on information supplied by the Environment Agency, the average time spent on sending information to Local Authority public registers is 0.2 FTE per year, predominantly at AO level but with some supervisory oversight, amounting to an area cost of £10,900 per year including overheads and employer costs such as National Insurance and pensions. Extrapolated across all areas leads to an estimated cost of £229,000 per year. In addition, the National Permitting Service estimates that about 1.6 FTE is dedicated to providing this service, amounting to £70,500 per year. Total staff costs are approximately £300,000 per year.

The overall total cost is therefore approximately £374,000 per year.

The approximate cost in the storing and maintaining the information provided by the EA/NRW and the associated staff time dedicated to it and providing access to registers was on average £594 per year per authority. Extrapolated across all 340 local authorities leads to an estimated overall cost of £204,000 per year.

The overall annual saving between the period 2014 to 2022 to the EA/NRW and local authorities is therefore approximately £0.58m, giving a best estimate of the 10 year NPV of £4.40m. Based on the low number of visits to local authorities to view public registers (approximately 20 visits per year across England and Wales), it is estimated that the additional cost to business of having to travel to an EA/NRW office, rather to a local authority office, incurring a 50 mile round trip at 50p per mile, would be approximately £500 per annum between the period 2014 to 2022. We tested this assumption as part of the consultation with no respondent raising any concerns.

Consultation

Consultation took place as part of the consultation on proposals (a) to (e) that was undertaken between 7 February and 4 April 2013. Government response to the consultation was published on 10 December 2013.

Competition Assessment

The competition filter has been applied and the outcomes listed in the table below:

The competition filter test	
Question	Answer yes or no
Q1: In the market(s) affected by the new regulation, does any firm have more than 10% market share?	Y
Q2: In the market(s) affected by the new regulation, does any firm have more than 20% market share?	Y
Q3: In the market(s) affected by the new regulation, do the largest three firms together have at least 50% market share?	Y
Q4: Would the costs of the regulation affect some firms substantially more than others?	N
Q5: Is the regulation likely to affect the market structure, changing the number or size of businesses/organisation?	N
Q6: Would the regulation lead to higher set-up costs for new or potential suppliers that existing suppliers do not have to meet?	N
Q7: Would the regulation lead to higher ongoing costs for new or potential suppliers that existing suppliers do not have to meet?	N
Q8: Is the sector characterised by rapid technological change?	N
Q9: Would the regulation restrict the ability of suppliers to choose the price, quality, range or location of their products?	N

Proposal (g)

Introduction and options

The EU Batteries Directive (2006/66/EC) aims to (a) increase substantially the collection and recycling rates for waste batteries, thereby reducing the amount going to landfill, and (b) strengthen limits on the use of hazardous materials in battery production (e.g. cadmium, mercury). It includes the following targets:

- Collection rates for portable batteries of 25% by 2012 and 45% by 2016 (from 3% in 2007).
- Recycling efficiencies of battery recycling operations of – 65% for lead-acid batteries, 75% for nickel-cadmium batteries, and 50% for other batteries.

The UK is legally obliged under the Batteries Directive to report annually to the European Commission on levels of recycling achieved and whether the stipulated recycling efficiencies have been met.

In recognition of the need to harmonise reporting formats to be used by battery recyclers across the EU in order to monitor compliance with the recycling efficiency targets, the Directive allows the Commission to lay down detailed rules regarding the calculation of recycling efficiencies.

EU Regulation 493/2012, which entered into force on 11 June 2012, lays down such detailed rules on the calculation of recycling efficiencies for recycling processes of waste batteries and accumulators. It also requires the recyclers of batteries to report on the efficiency of their operation to the competent authority in their member state. It applies to recycling processes from 1st January 2014, with the first report required by

30 April 2015 – so 2014 is the first year that recyclers must start preparing the specified information to send to competent authorities. As an EU Regulation it is directly applicable to battery recyclers in the UK and across the EU.

However, the EU Regulation does not define who the competent authority is nor establish any sanctions should a recycler choose not to report to the competent authority; such arrangements are left to Member States to decide in relation to their respective territories.

Consequently battery recyclers in the UK do not know to whom they should report. Furthermore, in the event that a UK battery recycler failed to report their recycling efficiency to a competent authority there would be no way in which to take enforcement action against the recycler. Indeed, it is unlikely that recyclers would report this information without some form of sanction if they failed to do so as those that did report would be placed at a marginal disadvantage to their competitors due to the (albeit minor) cost of recording the information needed to calculate the recycling efficiency.

Therefore there is currently insufficient clarity or incentive to ensure recyclers report information in the manner and timeframe required. This is borne out by the fact that Defra has previously written to battery recyclers in the UK to request information on their recycling efficiencies on a voluntary basis but there was nil response. Without a complete set of information on recycling efficiency from all recyclers the UK would be unable to fulfil its reporting obligations under the EU Directive and would be at risk of infraction.

The proposal

The proposal considered in this triage assessment is concerned with an amendment to the Environmental Permitting (England and Wales) Regulations 2010 to:

- designate the Environment Agency (EA) and Natural Resources Wales (NRW) as the competent authorities in England and Wales respectively for the purposes of the EU Regulation, and
- enable effective enforcement to secure compliance with the requirement to report under the EU Regulation.

Similar proposals will be implemented in Scotland and Northern Ireland, but are not covered in this assessment.

The proposal will enable the EA and NRW to take enforcement action against a battery recycler in the event of any identified failure to report as required by the EU Regulation. With this sanction in place we would expect all seven of the battery recyclers in England and Wales to report on their recycling efficiencies in the manner prescribed in the EU Regulation. This will help enable the UK to meet its own obligation under the Batteries Directive to report on recycling efficiencies achieved to the European Commission.

For the avoidance of doubt, the proposal does not:

- introduce requirements on battery recyclers to report upon the efficiency of their recycling process; these already exist within the EU Regulation.
- introduce any new offences; rather it expands the existing offence for breach of permitting requirements to encapsulate this obligation to report on battery recycling efficiencies.

Viable policy options (including alternatives to regulation)

Non-regulatory approach – It is unlikely that recyclers would report the required information to the relevant Agency without some form of sanction to do so. Indeed, as highlighted earlier, a previous request to recyclers to report the required information on a voluntary basis yielded a nil response. Therefore we believe that non-regulatory options are not a practical alternative in this situation as it concerns a backstop of enforcement for UK businesses compliance with an EU Regulation.

Regulatory approach – Two regulatory options were considered:

Option 1 – Amend Schedule 19 of the Environmental Permitting (England and Wales) Regulations 2010, which deals with operations in relation to waste batteries and accumulators, to require the competent authority to exercise its relevant permitting functions (including enforcement and monitoring of the environmental permit) to ensure compliance with Article 3 of EU Regulation 493/2012. This would mean that the requirement to produce the annual reports as required by the EU Regulation forms part of the permitting regime and is enforced via that.

Option 2 – Amend the Waste Batteries and Accumulators Regulations 2009 to enable the Environment Agencies to enforce the reporting provisions for recycling efficiencies contained in the EU Regulation.

Option 1 is the preferred option. This is because all UK batteries recyclers are required to have an environmental permit and as such comply with the provisions of the Environmental Permitting Regulations already. However, registration under the Waste Batteries and Accumulators Regulations 2009 for the purposes of issuing and selling evidence of recycling to producers of batteries is entirely voluntary and as such compliance with the terms of the Waste Batteries and Accumulators Regulations 2009 is not mandatory for all batteries recyclers.

Costs and benefits

The number of businesses affected by the EU Regulation, and hence the proposal, is small with just seven companies recycling batteries in England and Wales.

The cost of the proposal is likely to be negligible and unlikely to exceed £1m because it does not impose any new requirements on these seven businesses; it is the EU Regulation which applies new requirements directly to recyclers of batteries (i.e. rules for calculating recycling efficiency and reporting to the relevant competent authority). The proposal simply clarifies to whom recyclers must report and defines the enforcement mechanism in the event of a breach of the requirements of the EU Regulation.

The only cost impact likely to arise from the proposal is an increase in resource required by the EA and NRB to check compliance with the requirements of the EU Regulation. Given the small number of recyclers, and the ability to absorb the compliance checking activity within wider activity under Environmental Permitting, the costs to the EA and NRB are expected to be minimal.

Furthermore, given the information needed to calculate the efficiency of a recycling operation is readily available to operators we expect full compliance with the EU Regulation; hence it is expected that minimal resource will be required by the EA or NRB to pursue enforcement action. In considering whether to take enforcement action for breach of the requirement to report on recycling efficiencies the EA and NRB, as

responsible regulators, would apply the Macrory Penalty principles set out in the Regulators Compliance Code.

Consultation

We consulted on proposal (g) between 13 August and 10 September 2013. There was a nil response.

Competition Assessment

The competition filter has been applied and the outcomes listed in the table below:

The competition filter test	
Question	Answer yes or no
Q1: In the market(s) affected by the new regulation, does any firm have more than 10% market share?	Yes
Q2: In the market(s) affected by the new regulation, does any firm have more than 20% market share?	Yes
Q3: In the market(s) affected by the new regulation, do the largest three firms together have at least 50% market share?	No
Q4: Would the costs of the regulation affect some firms substantially more than others?	No
Q5: Is the regulation likely to affect the market structure, changing the number or size of businesses/organisation?	No
Q6: Would the regulation lead to higher set-up costs for new or potential suppliers that existing suppliers do not have to meet?	No
Q7: Would the regulation lead to higher ongoing costs for new or potential suppliers that existing suppliers do not have to meet?	No
Q8: Is the sector characterised by rapid technological change?	No
Q9: Would the regulation restrict the ability of suppliers to choose the price, quality, range or location of their products?	No

Proposal (h)

Introduction and options

1. Introduction

On 1 February 2013, the Government published a consultation seeking views on draft Regulations for Materials Recovery Facilities (MRFs)³ for incorporation alongside a number of other amendments to the Environmental Permitting (England and Wales) Regulations 2010. The consultation, which describes the policy proposals, and related impact assessment are available on the Government website.⁴

The draft MRF Regulations contained requirements for operators of MRFs to test the composition of samples of the material they put into the sorting process, the residues, and the useable output. The intention was that the test results would be made fully transparent, via the Environment Agency, to local authorities, reprocessors and others. It was anticipated that information on the quality of recyclate produced by MRFs would help stimulate the market conditions necessary to improve the quality of the material produced by MRFs so that it could be more readily recycled. This information would also help demonstrate compliance with the separate collection requirements of the revised Waste Framework Directive.

The proposed Regulations were part of a wider package of proposed measures which aim to promote high quality recycling. The Government's vision for improving the quality of recycling, and the full range of measures we plan to take to achieve this, is described within a Quality Action Plan (England only).⁵

The consultation closed on 26 April. The Government has considered the responses submitted and has taken the decision to legislate along the lines proposed in the consultation, revised appropriately to take account of points raised through the consultation. A summary of the final legislative proposals is provided in Section 5. The impacts of the proposed legislation are described in Section 6.

2. Problem under consideration

Market signals regarding quality are not working in the way they should, partly because MRFs are not all measuring the quality of their output material or making this information transparent to the market where they do. This is

³ A Materials Recovery Facility (MRF) is a specialised plant that receives mixed dry recyclable materials (e.g. paper, plastics, metals, glass) which it then sorts, via a combination of manual and automated processes, into separate material streams and prepares for marketing to reprocessors.

⁴ <https://www.gov.uk/government/consultations/draft-materials-recovery-facility-mrf-regulations-for-insertion-into-environmental-permitting-england-and-wales-amendment-regulations-2013>

⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/221028/pb13875-qap-recycling.pdf

causing inefficiencies in the market and MRFs delivering recyclate of sub-standard quality in some cases. Government intervention is needed to address the market failure of imperfect information, and demonstrate to the European Commission where co-mingling is capable of supporting the WFD objective of high quality recycling.

For a given amount and cost of recovered material, the aim must be to maximize the benefit of using the recovered material, compared to having to extract and treat virgin material. The higher the financial and environmental cost of using virgin material, the greater the benefit of recycling. In most cases this would occur when the recovered material is being used for high quality applications⁶, and examples include:

- The use of recovered glass in remelt applications to create new glass products (rather than for aggregate in construction);
- The separation of recovered plastic into individual polymers to produce, for example, new food and drinks containers (rather than the use of mixed polymers for low grade construction products);
- The use of recovered paper for the production of new paper products (rather than other uses such as animal bedding, insulation etc.).

Indeed, the revised Waste Framework Directive (rWFD) requires us to promote high quality recycling as a way of maximizing the environmental benefits of recycling. The rWFD also recognises that high quality recycling operations, which turn waste back into the same product as it came from, need good quality material as feedstock. Specifically, Article 11 states:

*Member States shall take measures to promote high quality recycling and, to this end, shall set up separate collections of waste where technically, environmentally and economically practicable and appropriate **to meet the necessary quality standards for the relevant recycling sectors.***

When we talk about the quality of recyclates we are generally referring to its grade (e.g. polymer type) and composition (i.e. how much of the consignment is made up of **target material** compared to the amount of **non-target material** and other **non-recyclable material**).

Only target material is likely to be recycled, so a high proportion of non-target and non-recyclable material will reduce the quantity of recycling, or yield. A high proportion of non-target and non-recyclable material can also make it more difficult for reprocessors to achieve 'high-quality' recycling and if the recyclate is of poor quality it is more likely to end up being down-cycled or, in more extreme cases, sent to other recovery or landfill.

⁶ This is not to say that there isn't a place for 'down-cycling', and it is recognised there will be limitations, such as cost, market demand/capacity and food contact issues, to the amount of material that can be subject to closed-loop recycling.

The Waste Review recognised quality of recyclates as one of the principal challenges that need to be addressed if we are to realise our longer-term vision of a green, zero waste economy. The Waste Review states that we want to:

Ensure our approach to extracting recyclables, such as paper and plastic, from our waste generates material of sufficiently high quality to meet the needs of reprocessors here and abroad and to comply with the international rules on waste shipments. (para 32 of the Waste Review)

We believe that the market should deliver recyclates of sufficient quality to meet the needs of reprocessors. However, although buyers and sellers are agreeing prices in the market for recyclates, there are strong indications that market signals regarding quality appear not to be working in the way they should. This is resulting in inefficiencies in both economic and environmental terms, and delivering material of sub-standard quality in some cases.

Whilst MRFs are capable of meeting the quality specifications of reprocessors, there is evidence that this is not always the case in practice. Table 1 summarises the results of WRAP research⁷ which identified a broad range in quality with some good quality outputs but also some with high levels of non-target and non-recyclable material. A WRAP survey⁸ indicated that reprocessors saw the need for there to be improvements in the quality of material from UK MRFs:

- Over 60% said only “some” or “hardly any” output from MRFs met their quality specification
- Over 75% said the quality of outputs from MRFs was worse than material from other sources.

Table 1: Percentage of MRF non-target and non-recyclable material

Target material	Min %	Mean %	Max %
Aluminium	0.0	2.5	8.1
Steel	0.4	6.2	23.8
News and PAM	1.9	9.8	22.0
Mixed Paper	2.1	15.8	36.7
Card	1.9	12.0	57.4
Mixed Plastic	0.6	18.2	43.5
Mixed Plastic Bottles	0.5	12.2	23.0
HDPE Coloured Plastic Bottles	3.3	8.7	12.2
HDPE Natural Plastic Bottles	0.8	4.5	14.6
PET Clear	0.5	7.5	20.1
PET Coloured	3.0	8.1	13.2

⁷ MRF Quality Assessment Study, 2009

⁸ MRF Output Material Quality Thresholds, 2009

The causes of this problem are complex; one contributing factor is that a significant proportion of MRFs do not currently measure the quality of their input and output material streams on a routine, robust or consistent basis, or where they do measure, make this information transparent to customers. This has a number of negative impacts, including:

- If a MRF doesn't measure quality, then it cannot manage quality; and
- Customers of MRFs (e.g. local authorities, reprocessors) experience difficulty differentiating between high and poor quality MRFs, therefore market signals for quality outputs are not as strong as they could be and there is little competition between MRFs on grounds of quality.

3. Policy objective

To help stimulate the market conditions necessary to achieve an improvement in recyclate quality, and support the objective in the rWFD to promote high quality recycling, by establishing a consistent, industry-wide method for sampling and compositionally testing the quality of input and output material streams from MRFs in a robust manner.

Delivering high quality recyclate is important because:

- It can help **support growth and the economy** by maximising the economic value of the waste material collected. Higher income levels from the sale of quality recyclates can return value to local authorities, householders and businesses. Conversely, poor quality recyclates can undermine the viability of recycling and have significant environmental and economic costs (e.g. represents a lost opportunity to recycle material and increases the need to mine and process virgin materials).
- It can help **increase public confidence and participation in recycling**. There is a certain amount of cynicism amongst the public about what happens to their recycling. Householders and businesses want to know that the action they are taking is making a genuine contribution towards protecting the environment and improving resource efficiency.
- It can help **increase the environmental benefits of recycling**. Lower contamination levels in recyclates will reduce the amount of waste discarded during the recycling process, which typically ends up in landfill.

4. Rationale for intervention

4.1 Market failures

Recycling policies have traditionally addressed the market failure related to the environmental externality. The developing markets for recycled materials can also be subject to non-environmental market failures and barriers, such as imperfect information, market power and transaction costs which impede the smooth functioning of markets. Evidence (Improving Recycling Markets, OECD

2006) shows that presence of non-environmental market failures reduces efficiency of recycling activities and there is a potential case for intervention.

As mentioned previously, many MRFs do not assess the quality of the recyclable material they produce, and for those that do, the information is not made transparent to the market. This is due to competitive pressure on operating costs, e.g. those MRFs that do measure quality and make the information available may be undermined by those that either do not measure quality, or provide inaccurate information. Reprocessors are often conflicted between a desire for high quality material, and concern about maintaining their suppliers, where demand outstrips supply. Of those MRFs that do measure quality, very few are transparent about this information due to concerns about revealing information that competitors may capitalise on. It may also be the case that in the absence of mandatory standardised sampling and reporting, a signal of quality from any single MRF is not seen to be credible. Consequently, there is a lack of robust and consistent information on quality of outputs.

In a market where there can be a wide variation in quality, and if it cannot be immediately identified at the point of purchase, there can be impediments to improving market efficiency. A lack of flow of information through the recycling supply chain can also impede development of the market. Some parts of the recycling supply chain are not wholly incentivised to ensure the efficiency of the collection and recycling process and maximising revenue relative to costs. For example, most local authorities are charged a fixed gate fee per tonne of material sent to a MRF and therefore do not routinely request this information. In a market with an export outlet for a range of quality of recyclate, some reprocessors accept a range of quality, despite preferences for higher quality recyclate.

In the worst case a lack of information can cause a bias towards lower quality. This occurs if customers are only willing to pay a lower price, regardless of quality as they would rather not risk overpaying. At the same time sellers may not be willing to produce higher quality material if they are not certain that it will fetch a higher price. This lack of information for buyers and sellers creates a bias towards lower quality output, even though both parties could benefit from selling higher quality output. For example, the sellers could obtain a higher price, and the buyers would receive more recovered material in each batch thus reducing the volume of material that would need to be processed and potentially delivering efficiency gains. There is evidence that reprocessors can incur high costs from low quality recyclate (Resource Association report "The Costs of Contamination" estimates the cost of contamination to the reprocessing sector at £51m). This market failure leads to market inefficiency, as both parties could see an improvement in their revenue and/or costs from a move to higher quality recyclate.

The existing voluntary RRS should have been an opportunity for businesses in the higher quartile to distinguish themselves and achieve a higher price. It is unclear why those who did measure quality did not reveal it, but it is possible that uncertainty due to imperfect information across the whole sector was an impediment to this. Those MRF operators that did measure quality felt that they

could have been at a competitive disadvantage for disclosing, compared to those who did not measure quality.

The regulatory proposal aims to address this market failure by making it mandatory for MRFs to measure recyclate quality, and for all MRFs to measure and sample recyclate quality in exactly the same way (e.g. weights and frequency of sampling are specified in the regulations) and to make this information transparent.

4.2 Legal drivers

The two main legal drivers for Government intervention are the EU revised Waste Framework Directive and the EU Waste Shipments Regulation.

Implementing the revised EU Waste Framework Directive (rWFD)

The rWFD requires us to take measures to promote high quality recycling and, to this end, to set up separate collections of waste to meet the necessary quality standards for the relevant recycling sectors.

The Government supports the objectives of the rWFD but believes there should be flexibility about the choice of collection system employed in any given area as each system has its strengths and weaknesses. However, if collection systems other than separate collection, involving some degree of co-mingling, are employed then it is important they deliver the requirements of the rWFD and promote high quality recycling.

The regulatory proposal is part of our approach to implementing the “separate collection” requirement of the rWFD and represents the minimum necessary to achieve compliance (i.e. it is not gold-plating). It will help ensure co-mingled collections and MRFs are producing, and have the information to demonstrate they are producing, recyclate of sufficient quality to meet the needs of reprocessors.

The information currently recorded in Waste Data Flow identifies amounts sent to different MRFs and amounts rejected for each LA. This information could be used to calculate the effective rejection rates for each MRF but it is not currently based on a robust methodology and therefore is insufficient to meet the requirements of the revised Waste Framework Directive.

Implementing the EU Waste Shipments Regulation

The UK needs to meet the requirements of the waste shipment controls. It is illegal to export waste for disposal,⁹ but the controls allow for so-called “green list” recyclates to be exported for recovery overseas in a manner that represents a broadly equivalent standard of environmentally sound management. Recyclates can only be exported as “green list” if they are classifiable under one entry under Annex II (Green List) of the Waste Shipments Regulation. The regulations prohibit exporting low quality recyclate

⁹ Exports for disposal are prohibited save for the exceptions identified in the UK Plan for Shipments of Waste.

contaminated to the extent that any would need to be disposed of in the receiving country, or pre-sorted before recycling. This effectively means that no further sorting is necessary to separate out different entries in the Green List once it reaches its overseas reprocessing facility – e.g. paper being exported for recovery should not require further sorting, and as such should not include other materials such as glass, metal or plastic.

The export of such recyclate does not require notification to the Environment Agency (EA), but paperwork accompanying the shipment must be completed by the person or company exporting the recyclates. Some countries may not have the equivalent controls on wastes that are disposed of, leading to pollution. Consequently the environmental externalities – such as the cost of disposal, where in the UK this is captured by the landfill tax – would not be captured. Such exports are illegal and the EA will take action against such activity.

The regulatory proposal aims to provide the Environment Agency with access to information which will help them identify, and take effective action against, those not complying with the law. This will increase confidence that exports of dry recyclates are legitimate and confidence of a level playing field.

4.3 Alternatives to regulation

A voluntary approach has been attempted by the waste management industry already. The mandatory option being consulted upon, builds upon the provisions of the existing 'Recycling Registration Service' (RRS) which was launched in April 2007 by the Environmental Services Association (ESA), the trade association for waste management companies. The RRS established similar monitoring requirements, but it failed to attract significant uptake (only about 20 MRFs, 15% of total MRFs).

Feedback to the ESA from its members suggests that the main reason for its failure was because it was a voluntary scheme; many MRF operators felt compliance with the code would leave them at a competitive disadvantage. Industry needs assurance of a level playing before they are willing to invest in the quality assurance programmes required by the code.

The Government worked closely with stakeholders from across the supply chain in developing the policy proposals ready for consultation. A series of events were held during 2012, involving local authorities, MRF operators and reprocessors, to discuss drafts of the QAP and MRF Regulation. The majority of stakeholders present at the events supported the vision set out in the QAP, and all agreed to the principle that MRFs must measure quality and that this requirement must be made mandatory if it is to work. MRF operators saw the value in measuring quality as it helps protect the image of their industry and root out illegitimate operators. However, they were clear that the requirements would not be implemented unless they were made mandatory as they were concerned they would otherwise be undercut by competitors. This view was supported more widely through responses to the consultation (see Section 5).

4.4 Summary

In order to stimulate the market conditions necessary to realise an improvement in quality of recyclates, and support the objective in the rWFD to promote high quality recycling, MRFs need to measure and report the quality of their input, residual and output material. Robust, consistent and transparent information on quality will help:

- Government demonstrate that it is meeting its commitments under the rWFD.
- MRFs manage quality effectively and react efficiently to prevailing market demand.
- Reprocessors identify suppliers of higher quality recyclates, reducing additional costs arising from further sorting, damage to machinery, and the disposal of unrecyclable material to landfill.
- Local authorities to make adjustments to their collection systems, provide further advice or information to householders and businesses if there are particular issues with quality, and decide which MRF to contract with.

Mandatory requirements will provide MRF operators with the level playing field they need to invest in the quality management systems, and share information with reprocessors, without fear of being put at a competitive disadvantage.

The Quality Action Plan (published in February) outlines our vision for high quality recycling in England and proposals for achieving this. It recognises the need for transparent information on quality but also identifies that a range of other actions across the entire supply chain are necessary if we are to be fully successful in achieving our vision.

5. Description of options considered

The consultation IA considered two options:

Option 0 – do nothing, so maintaining the status quo, not introducing the proposed changes

Option 1 – introduce a mandatory requirement on MRFs, via an amendment to the Environmental Permitting Regulations, to monitor the quality of their input and output material streams.

The majority of responses to the consultation agreed with the rationale for Government intervention (90%) and supported the Government's proposal to make the requirements to monitor and report quality mandatory i.e. Option 1 (63%).

Therefore the Government has taken the decision to proceed with Option 1 and make the requirements to monitor quality mandatory in order to demonstrate compliance with the rWFD objective to promote high quality recycling and the separate collection requirement.

The regulations will make it a requirement for MRFs to put in place robust quality management systems and checks which will yield information on the levels of target, non-target and non-recyclable material contained in the inputs and outputs to the facility by material type (i.e. paper, glass, plastic and metal). The requirements will be limited to just those permitted MRFs with an output of more than 1000 tonnes per annum.

The main changes made to the regulatory proposals to take account of issues raised through the consultation include:

- Removal of the requirement for an independent audit; instead greater reliance on the Environment Agency and Natural Resources Body Wales to check compliance with the Regulations. The EA will consult on the necessary charges to do this early in 2014.
- Increase in the weight and frequency of the sampling requirements for both input and output material as per the table below. This follows further discussions with the main trade associations.

	Final Arrangement for the E&W MRF Regulations		
	Sample Weight (kg)	Sample Frequency (1 sample/tonne)	
		Initially	After 2 years
Input	60	160	125
Paper	50	80	60
Plastic	20	20	15
Metals	10	20	20
Glass	10	50	50

- Removal of both the time-based minimum sampling frequency and the requirement to sample the residual stream
- Improving the clarity of some of the definitions (e.g. “MRF”)

Of the 88 consultation responses, 36% agreed with the assumptions made in the consultation IA, 16% did not agree and 47% made no comment / were unclear. 61 responses made some form of other comment on the consultation IA including:

Comment	Government Response
<i>Rationale for intervention</i>	
The proposed Regulations will not drive up quality on their own; entire supply chain needs to take action e.g. quality of input needs to be addressed through controls on local authorities.	The need for other action to promote high quality recycling is recognised in the final IA in Section 4 and in the recently published Quality Action Plan.
<i>Costs and benefits / assumptions</i>	
The impact assessment should take account of costs to local authorities as it is likely that	Impact Assessment only quantifies direct costs to MRF operators but recognises in

MRF operators will seek to pass on any increase in operating costs via increased gate fees.	Section 6 that they may seek to pass on these costs either via increased gate fees (paid by LAs) or higher recyclate value (paid by reprocessors). In any case, this would be a transfer rather than an additional cost. Given the uncertainty with how MRF operators may choose to pass on costs, the indirect costs to LAs have not been quantified.
A number of responses questioned whether higher quality recyclate would lead to higher prices – various reasons given including a lack of transparency around prices and a lack of willingness to pay by reprocessors in the current economic climate.	A recent Resource Association report highlighted the costs to reprocessors of dealing with contamination. It is not unreasonable to expect that reprocessors would be willing to pay more for higher quality recyclate to avoid these costs. Other responses to the consultation, and our discussions with some reprocessors, support our view that higher quality recyclate will attract a higher price.
Underestimated labour costs (e.g. regional differences, holiday and national insurance contributions) but overestimated time for taking samples and some capital costs (e.g. cost of scales).	Labour costs, capital costs and time for taking samples have been revised for the final IA (see Table 11).
Would like greater clarity behind cost assumptions made in Annex 1 of the impact assessment, particularly in relation to the sampling methodology that was assumed.	Annex 1 now contains a brief description of sampling methodology assumed for the purposes of estimating costs to businesses.
Impact Assessment fails to consider the full costs incurred by reprocessors as a result of poor quality material (several references to the recent Resource Association report on costs of contamination). Suggestion made that the IA should include a cost:benefit analysis of costs to MRFs vs. benefits to reprocessors.	We do not have sufficient information to be able to construct a separate cost benefit analysis as the actual impact up and down the recycling chain is uncertain. That said, Annex 2 estimates the benefits of a step improvement in the quality of recyclate produced by MRFs.
Several responses highlighted an error made on page 10 of the impact assessment relating to the assumed size bands of MRFs.	Corrected.
Concern expressed that the IA is based on information obtained from waste management companies; need to seek information from reprocessors	Rationale for action and assumptions underpinning the estimation of costs and benefits in the consultation IA were based on discussions with and information provided by both waste management companies and reprocessors. All parties were invited to comment as part of the consultation process.
<i>Unintended consequences</i>	
An increase in recyclate cost will mean it is uncompetitive compared to virgin material	We consider it unlikely that recyclate costs will increase to the extent that it will become uncompetitive compared to virgin material. Whilst there will be an increase in costs, there will also be an increase in quality (and confidence in this), so it is expected that there will be a concurrent increase in willingness to pay. The effect on demand for recyclate is therefore ambiguous. In any case, the impact is expected to be small as the costs per MRF

	are estimated to be very low relative to other costs and turnover.
Better information on contamination levels could lead to a drop in recycling rates	We accept that there could be a small drop in reported recycling rates in the short term. However, robust and transparent information on quality is important to maintain the long-term viability of recycling. Other measures are in place to ensure recycling targets are met.
SMEs may struggle to comply as cost is disproportionate for small operators. For example, a MRF processing 5,000 tonnes will incur an annual cost per tonne of £2.65 to meet the legislative requirements whereas a large MRF processing 75,000 tonnes will incur a cost per tonne of £0.75 (or less for higher tonnage processed)	The Government has removed the time-based sampling frequency to help address this. This final IA considers the costs to different sized operators in terms of pounds per tonne of material throughput.
Need to consider how this affects UK competitiveness relative to other EU countries	We do not expect any negative impacts on UK competitiveness. MRF operators have a choice on how to pass on costs. Other European countries often have their own arrangements for ensuring quality of recyclate. Our work on quality is, in part, to protect UK position in competitive global market.
Need to ensure smooth transition and integration with enforcement of Transfrontier Shipment Regulations and avoid disruption to compliant exports	We are working with the Environment Agency to consider how information on quality can help enforcement of export controls.
Proposals may increase production of RDF (refuse derived fuel)	We expect collecting and sorting co-mingled waste for recycling to remain more attractive economically than producing RDF as the costs per MRF are estimated to be very low relative to other costs and turnover.
A weak Code of Practice may not address quality issues	We will keep the effectiveness of the Regulations under review.

The costs and benefits (Section 6) have been updated in light of changes to the legislative proposals and comments submitted in response to the consultation – the main changes are summarised in Table 17.

Changes made following the RPC opinion in August.

Number of MRFs: The Environment Agency has carefully considered the number of MRFs that will be in scope of the regulations, taking into account their permitting records and the views of their technical experts. They have advised us that the regulations will apply to 167 MRFs in England and Wales.

Sampling: The sampling requirements in the regulations have reduced since the IA was submitted to the RPC in the summer. The revised sampling proposals were broadly agreed by the three main trade associations (Environmental Services Association, Resource Association and the Local Government Association). The revised sampling is as follows:

	Final Arrangement for the E&W MRF Regulations		
	Sample Weight (kg)	Sample Frequency (1 sample/tonne)	
		Initially	After 2 years
Input	60	160	125
Paper	50	80	60
Plastic	20	20	15
Metals	10	20	20
Glass	10	50	50

It is further assumed that 38 MRFs already undertake sampling to 80% of the specification required, a further 40 MRFs undertake sampling to 50% of the specification, a further 19 MRFs do so to 20% of the specification, with the remaining 70 MRFs assumed not to undertake any sampling.

Output of those MRFs in scope is estimated at 3.31m tonnes in 2011. The growth rate is estimated to range between 0-5% (2.5% best estimate). Waste arisings, household recycling rate and collection method (kerbside sort or co-mingled) all interact to influence the amount of co-mingled municipal waste requiring sorting by a MRF.

6. Costs and Benefits

This policy is aimed at MRFs that primarily deal with co-mingled material collected from households or is similar in nature to that from households.

The number of MRFs in scope has been updated following a review of data by the Environment Agency (EA); the number of facilities in scope has increased from 74 to 167. The EA data shows the target waste removed, allowing a split by size (which is necessary as some costs will differ according to size). The MRFs have been classified as small (less than 20,000tpa throughput), medium (between 20,000 and 75,000tpa) and large (over 75,000tpa). It should be noted that estimates are based on data from operator returns, permit information, other data held by the Environment Agency and web site information. There are therefore limitations to the data and the number of sites likely to be in scope can only be an estimate. The Environment Agency intends to write to all those MRFs who are in scope before the regulations come into force. The results are in Table 2 below.

A number of sites will already be taking measures which, to varying extents, will satisfy the requirements of the regulation. This will particularly be the case for those sites which are members of the Recycling Registration Scheme (RRS). The existing level of testing will determine how much additional cost will be faced as a result of the regulations. Further detail on this is presented in the following section. Advice from WRAP on the number of MRFs already testing to different extents leads to the split shown in table 3. It should be noted that these are not based on actual data, rather they are the best available estimates, based on a programme of visits to MRFs undertaken by WRAP.

According to our figures, there are 46 MRFs that are not captured by the regulations due to the 1000 tonne de minimis. As a proportion of the total waste, these facilities only account for about 1% of the tonnage of dry recyclates handled by MRFs in England and Wales. This demonstrates that it is not proportionate to include these facilities in the scope of the regulations.

Table 2: Classification of sites in England and Wales by size and number required to implement the regulations

Number of MRFs	Small	Medium	Large	Total
England and Wales: previous	51	20	3	74
England and Wales updated	113	47	7	167

Table 3: Estimated extent to which MRFs in England and Wales already implement sample measurement to comply with the regulations (based on RRS membership and WRAP advice)

	Small	Medium	Large	Total
MRFs testing to 80% of the requirement	16	17	5	38
MRFs testing to 50% of the requirement	24	15	1	40
MRFs testing to 20% of the requirement	16	3	0	19
MRFs not currently testing	57	12	1	70
Total MRFs	113	47	7	167

EA data shows that for the 167 sites estimated to be in scope, the overall output (target waste removed) was 3.31m tonnes (mainly 2011 data, using 2012 or 2013 where necessary; previous estimate was 2.38m tonnes). The growth rate is estimated to range between 0-5% (2.5% best estimate). Waste arisings, household recycling rate and collection method (kerbside sort or co-mingled) all interact to influence the amount of co-mingled municipal waste requiring sorting by a MRF. In the absence of government intervention, the level and range of quality of MRF output is not expected to change. The Quality Assessment Study found no causal relationship between quality and either the age or size of MRF.

Table 4: Estimated growth in tonnage throughput of MRFs in scope

Total MRF input (m tonnes)	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
low estimate (no growth)	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31
Best estimate	3.48	3.57	3.67	3.77	3.88	3.99	4.10	4.23	4.36	4.49	4.63
high estimate (5% growth)	3.65	3.84	4.03	4.23	4.44	4.66	4.90	5.14	5.40	5.67	5.95

It is assumed that initial costs of sampling and monitoring will be in 2014, in order to comply with the policy in 2015. An assessment period of eleven years (rather than the standard ten) is used, as the regulations will now not come into force until 2014 and it is desirable to consider a full ten years with the policy in place, in order that this Impact Assessment is comparable to the Consultation Stage Impact Assessment. One-off costs to business are the acquisition of testing equipment and systems costs. Annual costs relate to the requirement to sample input and output material to a given frequency and are based on estimates from WRAP and the Environmental Services Association, calculated for three size bands of MRFs. Table 3 shows the numbers of MRFs undertaking sampling already, and the broad extents to which they do so. MRFs can also expect inspection visits from the Environment Agency /National Resource Wales every year, which will require resource to facilitate.

Introduction of this proposal and associated measures is expected to increase the availability of information about the quality of MRF output. Although there are initial costs to business of this measure, there are potentially greater benefits of higher quality recycling from avoided embedded GHG emissions, sales revenue from a greater tonnage of material being recycled (see Section 8), plus avoided landfill externalities. These greater benefits will be as a result of the measures proposed in the Quality Action Plan and require action by the whole supply chain.

6.1 One-off costs

In the consultation impact assessment, all businesses were expected to incur the cost of the annual audit. It is now estimated that MRFs are already implementing the requirements to varying extents.

WRAP and the Environmental Services Association (ESA) have provided estimates of costs related to sampling and adopting IT systems to measure the quality of outputs. Depending on the size of MRF it is expected there will be one off equipment costs such as weigh scale, mesh sorting table and input and sorting bins. Details are provided in Annex 1. The costs for equipment have been reduced following comments made on the consultation IA (see Table 17).

Compliance checking will be performed by the EA/NRW as part of their inspection regime under the Environmental Permitting Regulations. This has replaced the requirement for a 3rd party audit which would have been expected to be performed by the ESA, and costs have been altered to take this into account. Therefore a pre-entry audit is no longer required but it is expected that time will be required to train staff on sampling processes. It is estimated to take:

- for each small and medium MRF, 0.5 day for a technical operator to attend training course (to be run by WRAP) on sampling requirements, plus 0.5 day for technical operator to train 2 x manual workers back at the MRF; and
- for each large MRF, assuming the training will be done in-house as they will already have necessary knowledge on sampling techniques, 0.5 day for a technical operator to run training course for 3 x manual workers.

It may be necessary to install the required IT systems to ensure consistency across the sector. The figures in table 5 show ESA estimates of cost relating to installing IT systems.

Table 5: Estimate of maximum one off costs to business by size of MRF (further detail in Annex 1)

Size of plant	Small	Medium	Large
one off equipment costs (£)	3,150	4,150	5,850
management systems (£)	2,500	11,875	28,125
Training costs (£)	173	173	212
Total one off costs (£)	5,823	16,025	33,975

The policy is expected to be required from October 2014 (the regulations to be laid early in 2014 with a 6 month transition to allow MRF operators time to prepare) and one off costs are assumed to be incurred in 2014. The range of estimate takes into account new businesses over the period of analysis that are expected to incur the costs of this policy. The total one off costs of the policy in 2014 are in tables 6, 7 and 8 below. (underlying calculations are in Annex 1). It is assumed that all MRFs that are currently undertaking some sort of testing will already have the equipment, therefore only those MRFs not yet undertaking any testing face the cost of purchasing equipment. It is assumed that current management and training costs for auditing and enforcement purposes are borne in proportion to the amount of testing assumed to be already taking place; additional management and training costs are therefore only applied to those portions of the requirement that are not yet being met (i.e. a MRF testing to 80% of the requirement would only face an additional 20% of the auditing and enforcement cost).

Table 6: Estimate of total one off equipment costs

Size of MRF	Small	Medium	Large	Total
one off equipment costs (£)	3,150	4,150	5,850	
number of MRFs not yet testing	57	12	1	70
total one off eqpt cost (£)	179,550	49,800	5,850	235,200

Table 7: One off management and training costs

Size of MRF		Small	Medium	Large	Total
One off management systems (£)		2,500	11,875	28,125	
Training costs (£)		173	173	212	
Total one off cost per site (£)		2,673	12,048	28,337	
number of sites	80% compliant	16	17	5	38
	50% compliant	24	15	1	40
	20% compliant	16	3	0	19
	0% compliant	57	12	1	70
Total one off costs (£)		227,247	304,827	70,843	602,917

Table 8: Estimate of total one off costs

Total one off costs	0% growth in tonnage	5% growth in tonnage	2.5% growth in tonnage (central estimate)
Total one off equipment costs (£)	235,200	315,113	275,157
Total one off systems and training costs (£)	602,917	746,928	674,923
Total one off costs (central estimate) (£)	838,117	1,062,041	950,079

6.2 Annual costs

Annual costs relate to the cost of taking input and output samples, sorting and recording data and performing the annual audit. The sampling frequency and associated costs are shown below. Annual sampling costs are estimated by WRAP and inspection/auditing costs are estimated by the EA. In response to the consultation process, the sampling requirements have been changed as outlined in Section 5 to take account of consultation responses.

Table 9: Annual sampling frequency for MRFs

Size of plant/sampling frequency	Small	Medium	Large
Inputs	100	450	1000
Outputs	374	1232	2737

The costs of sampling are calculated based on employee rates and estimated time taken to separate out and sort samples, sampling and recording of data. The increased frequency of sampling is expected to increase the annual labour costs. Some consultation responses indicated that the labour cost assumptions were too low. The figure in the consultation document of a £7 median wage, and an assumption of 25% overheads was based on WRAP estimates. An

alternative figure, using the standard cost model, for a refuse and salvage operative is estimated at £7.25 (2005 prices, £8.47 in 2013 prices). Following the consultation, advice from industry suggested a more realistic figure of £7.75¹⁰ should be used with a further 25% overheads added as estimated by industry experts¹¹. Tables 10 and 11 below shows the expected annual labour costs and Table 12 shows the estimated total cost based on the current tonnage. A growth rate in tonnage of 5% is assumed for higher estimate and 2.5% growth for the central estimate. A detailed breakdown of sampling costs is in Annex 1.

Table 10: Central estimate of annual costs of sampling to business by size of MRF in first two years of policy (2014 and 2015)

Size of MRF	Small	Medium	Large
Annual labour costs (£)	2,137	9,599	21,313
Estimated average throughput (tonnes)	10,000	45,000	100,000
labour costs per tonne (£)	0.21	0.21	0.21

Table 11: Central estimate of annual costs of sampling to business by size of MRF in all subsequent years

Size of MRF	Small	Medium	Large
Annual labour costs (£)	2,664	12,000	26,664
Estimated average throughput (tonnes)	10,000	45,000	100,000
labour costs per tonne (£)	0.27	0.27	0.27

Table 12: Estimate of total annual labour costs for sampling, first two years of policy

		small	Medium	large	total
Annual labour costs (£)		2,137	9,599	21,313	
number of sites	80% compliant	16	17	5	38
	50% compliant	24	15	1	40
	20% compliant	16	3	0	19
	0% compliant	57	12	1	70
total cost (£)		181,634	242,856	53,281	477,771

¹⁰ £9.69 including 25% overheads as estimated by industry.

¹¹ The SCM recommends 30% but an industry workshop indicated 25% was more realistic for this type of wage.

Table 13: Estimate of total annual labour costs for sampling, all subsequent years

		small	Medium	large	total
Annual labour costs		2,664	12,000	26,664	
number of sites	80% compliant	16	17	5	38
	50% compliant	24	15	1	40
	20% compliant	16	3	0	19
	0% compliant	57	12	1	70
total cost		226,421	303,598	66,659	596,677

As described in Section 5, each MRF can expect an announced inspection visit from the EA/NRW each year. Businesses will also incur labour costs to deal with the annual site inspection. It is assumed a manager will use approximately 1 hour of time and various staff spending 15 minutes to respond to auditor questions for the material testing element, incurring a total of 3 hours of technical operator time. The estimate of time taken is based on estimates from WRAP and is multiplied by the wages for a manager and a technical operator from the Standard Cost Model Annex, up-rated using the GDP deflator to 2013 prices¹².

The EA have estimated that inspection will cost them an annual £1,884 per site. This includes staff time for site visits, technical advice, planning and analysis of data, legal costs, administration costs, and financing costs. It is expected that costs may decrease in future as knowledge improves and practices bed in, but given the uncertainty over the extent of this it has not been monetised.

Table 14: Annual auditing and enforcement costs

	Number of Sites	Annual Cost per site (£)	Total cost (£)
Total costs for Environment Agency	167	1,884	314,664

For the total annual costs, we have placed a range of 25% around the lower and higher estimates of growth to provide a range to reflect uncertainty of actual costs incurred by business and the actual amount of sampling activity currently undertaken.

¹² Technical operator based on SCM81 process/plant and machinery operative wage of £10.27 in 2005 prices, £12.00 in 2013 prices using the GDP deflator.

Table 15: Central estimate of total auditing cost incurred by all MRFs (Central estimate; 2.5%

Auditing and enforcement (£)	2015	2016	2017	2018	2019	2020	2021	2022	2023
Site inspection auditing costs	322,531	330,594	338,859	347,331	356,014	364,914	374,037	383,388	392,973
Business costs of dealing with site inspection	7,607	7,797	7,992	8,192	8,396	8,606	8,822	9,042	9,268
Total auditing and enforcement costs	330,138	338,391	346,851	355,522	364,410	373,521	382,859	392,430	402,241
Of which costs to business	330,138	338,391	346,851	355,522	364,410	373,521	382,859	392,430	402,241

growth)

Table 16: Summary of central estimate (2.5% growth) annual costs

Summary of central estimate of annual costs (£m)	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Annual costs to business of sampling		0.49	0.50	0.66	0.68	0.70	0.72	0.74	0.76	0.78	6.03
Annual audit & enforcement costs to business		0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.40	0.41	3.35
Central annual cost estimate	-	0.82	0.84	1.01	1.04	1.07	1.10	1.13	1.16	1.20	9.38

6.3 Summary of costs

The impact on business is £0.95m initial costs (a range of £0.7m-£1.2m taking 25% in either direction; £0.90 in PV terms) of purchasing new equipment for sampling, installing IT systems and performing a pre-entry audit for existing businesses and new business entrants. Annual costs of sampling and an annual audit/inspection are assumed to impact on businesses directly and sum to an estimated £9.38m over 10 years of the policy as shown in table 16 (present value of £7.59m, with £4.9m - £10.7m range of 25% lower than the 0% growth estimate, and 25% higher than the 5% growth estimate). The total impact on businesses is £8.49m (£5.6m - £12.0m) PV over 10 years. This includes the costs to the public sector (EA) which are assumed to be passed on to business, and therefore represents the total cost of the policy. This is slightly higher than the estimate in the consultation IA and is due to the combination of a higher number of MRFs, higher sampling weights and frequencies, a reduction in sampling costs, and changes in auditing costs and monetisation of the cost of enforcement. The costs to business have increased correspondingly. These are the direct costs of the policy and are included in the summary sheets. The changes in costs following responses to consultation are detailed in Table 17 below.

Table 17: Summary of changes following consultation responses

Assumption	Consultation IA	Changes to final IA	Impact
Number of MRF	Assumes 74 MRFs	Assumes 167 MRFs	Increase in costs
Tonnage throughput	Assumes 2.375mt	Assumes 3.31Mt	Increase in costs
Auditing	Assumes initial audit then annual	Assumes no initial audit but annual inspections by EA/NRW.	Net increase in costs
Equipment costs	Input bin – £200 each Weigh scale - £5k each Sorted material bins - £20 each	Input Bin – Additional bins required to suit increased sample weights. Sample Bin Trolley – Weights in consultation could have been lifted by hand. This will not be the case with increased sample weights, therefore, a trolley is required. Weigh Scale – A consultation response suggested that weigh scales could be purchased at £1k. Sorted Material Bins – Cost of bins increased slightly	Reduction in costs
Number of samples taken per annum	Assumes 800 for a small MRF, 1650 for a medium MRF and 3600 for a large MRF	Using no glass targeted arrangement, assume 374 for a small MRF (10,000 TPA), 1683 for a medium MRF (45,000 TPA) and 3737 for a large MRF (100,000 TPA) ¹³	Increase in costs
Hourly wage	Assumed £7 + 25% for overheads	Assume £9.69 for technical operator, £15.98 for manager (including overheads)	Increase in costs
Time taken to obtain and take a sample	0.52 hour	Varies according to sample size, however a datum has been taken at 0.67hour to capture, weigh, sort, weigh sorted, empty and record of a 40kg input sample	
Sampling requirements for residual stream	Assumed sampling was required.	Requirement removed following consultation responses.	Reduction in costs
Total impact			Increase in costs

6.4 Direct and indirect impact of the regulations

The costs of regulation could be passed on through the recycling supply chain to local authorities, who pay for the services from MRFs in the form of higher gate fees. The anticipated higher prices for recyclate paid by reprocessors,

¹³ An error was made in the consultation IA when scaling up the required sampling frequencies set down in the draft Regulations into the total number of samples required per year for different sized MRFs; this meant sampling costs were overestimated in the consultation IA.

who purchase the output of MRFs, could also help cover the costs of regulation. A response to the consultation asked for a separate cost benefit analysis for MRFs and reprocessors. We do not have sufficient information to be able to construct a separate cost benefit analysis as the actual impact up and down the recycling chain is uncertain. This impact assessment identifies and quantifies direct impacts but is expected that there will be some pass through of costs and benefits through the recycling chain of this proposal. The impact is expected to be small as the costs per MRF are estimated to be very low relative to other costs and turnover.

Some responses to consultation questioned whether higher quality recyclate would lead to higher prices as there is a lack of transparency and some cited a lack of willingness from reprocessors to pay in the current economic climate. The Resource Association report on the cost of contamination and our analysis indicate that there are economic drivers to reprocessors being willing to pay a higher price as higher quality is expected to reduce costs. It is expected that this additional cost will help drive an improvement in efficiency in the recycling supply chain which could be expected to improve efficiency. For example, if a MRF is receiving recovered material that has high contamination rates, it may be incentivised to communicate with LAs to try and reduce those rates. In turn, if a reprocessor is receiving material of lower quality, and has information about other material that is of the preferred quality, it may change contracts or try and negotiate for higher quality output. In some cases, there may be no change in the supply chain at all, but all the parts of the chain have better information to make decisions.

7. Non monetised costs

Previously non monetised costs such as costs to the Environment Agency of monitoring and management of information have now been monetised.

8. Potential wider impacts of measuring quality

Following consultation, this section has been updated to take into account the higher number of MRFs and tonnage throughput. Material prices have been updated to May 2013 prices which are lower than at the time of consultation. The net impact is a higher level of potential benefits than had been previously estimated.

The Wales Quality Thresholds Scoping Study – Background Report states ‘there was general consensus from stakeholders that, by introducing more transparent testing and reporting systems within the supply chain, the quality of recyclates would improve, even if thresholds were not set’. It goes on to state that increased quality and pricing could be expected, but could not be quantified. The analysis set out below attempts to consider a scenario of behaviour change resulting from the proposed regulations. The costs and benefits analysed here are not included in the summary sheets of the impact assessment due to the uncertainty of the scale of behaviour change.

The availability of robust information on quality and associated measures could drive behaviour change in reprocessors. Those reprocessors receiving low quality recyclate, would now have robust, readily available information on the range of quality of feedstock available to them and may seek to change some supplier contracts. This analysis does not assume there will be a significant shift of customers at this stage, but that the threat and actual shift by a small number of customers could drive behaviour change. It assumes a small shift by these customers can trigger lower quality MRFs to take measures to improve quality or face a potential loss of customers. This analysis assumes there will still be a range of quality of recyclate, but those customers unhappy with receiving the lowest quality will have sufficient information to confidently shift to other MRFs.

One potential scenario of an improvement in quality is analysed here, and in further detail in Annex 2.

As a result of the proposed amendment and additional measures, a small proportion of lowest quartile MRF customers (10% assumed) could be expected to shift to the upper quartile in terms of quality, as they can directly benefit from such a move through higher yield and reduced landfill costs of the contaminated percentage that cannot be used. This shift (2.5% of total output) is assumed to occur relatively rapidly as there are a proportion of reprocessors with flexible contracts and who deal on the spot market. Contracts between collection bodies and MRFs are long term (between 6-20 years) but there is a proportion of the market that is not fixed into these contracts. This actual or potential loss of customers gives an incentive for lower quality MRFs to increase the quality of their outputs, either by improving input quality or investing to improve sorting processes/slowing down plant throughput. It is assumed there will be a shift by the remainder of MRFs in this quality segment (22.5% of total output) to the average quality of the sector. This should reduce the overall amount of MRF input that ends up in landfill be that in England or overseas, (assuming the higher quality MRFs have a lower non-target and non-recyclable rate) and also increase the total amount of value (both environmental and economic) gained from recycling the material for the industry as a whole (prices are assumed to reflect the reduction in non-target and non-recyclable rate). A greater amount of material recycled also benefits society through reduced greenhouse gas emissions from landfill and avoided embedded emissions. An increase in total production of recyclate is assumed to be absorbed by the reprocessing market without an impact on material prices as there is anecdotal evidence of a shortage of supply and prices are influenced by global conditions and production activity.

The methodology for the cost benefit analysis from an improvement in quality of recyclate is taken from Porter (Waste Economics Ch 9, citing Ackermann 1997) and calculates the net impact of a shift of material from landfill to recycling as:

Table 18: Impact of a shift of material from landfill to recycling

Benefits	Costs	Source
<p>Additional revenue from recyclate, calculated using the differential in material compositional analysis in lower, and upper quartiles and average quality and applying the relevant material price to calculate the aggregate improvement in recovered material revenue</p>		<p>Tonnage estimated using WRAP MRF Quality Assessment mid point of quartile ranges.</p> <p>Material prices: Let's Recycle 2013</p>
<p>Avoided gate fee and haulage of sending less material to landfill</p>	<p>Costs of collection of material for recycling (in this case zero if the increased quality results from better sorting at MRFs)</p>	<p>WRAP Gate Fees report 2011, estimate of haulage costs (WRAP)</p>
<p>Additional carbon benefit of avoided virgin material extraction, calculated applying carbon factors to the avoided production for each material</p>	<p>Carbon cost of recycling material calculated by applying the carbon factor for recycling activity</p>	<p>Scottish Carbon Metric, DECC traded and non traded carbon prices</p>

The lack of disclosure on contractual arrangements between MRF and reprocessors results in a lack of detailed evidence of the relationship between price and quality of recyclate. Anecdotal evidence from reprocessors indicates they are willing to, and do pay for higher quality. In addition, given a higher quality material will have a higher output yield for the reprocessor, theoretically the reprocessor should be willing to pay more for higher quality when it is clearly identifiable. The evidence from WRAP shows there is a range of quality. The existing voluntary RRS should have been an opportunity for businesses in the higher quartile to distinguish themselves and achieve a higher price. As mentioned above, it is unclear why those who did measure quality did not reveal it, but it is possible that uncertainty due to imperfect information across the whole sector was an impediment to this. By requiring consistent information, these proposed regulations should remedy this.

In markets where there is quality measurement and a grading system, such as in some scrap metal markets, publicly available data (e.g. London Metal Exchange) shows a relationship between price and quality. The relationship between price and quality can be undermined by lack of consistent information on quality. It is assumed that only the marginal increase in recovered material received by those customers that switch MRF receives a higher price. Some consultation responses questioned the relationship between quality and price. As detailed previously, there are economic drivers to support an assumed relationship between quality and price as high rates of contamination can incur higher costs. It is estimated that a small shift of buyers from the lower quartile to the upper quartile of producer of quality generates benefits both from more revenue for higher quality material and a reduced contamination rate that sends

less material to landfill. This scenario assumes that the supply chain can adjust to changes in demand, which given the small percentage change and existence of some flexible contracts may be a reasonable assumption. As the total volume through the sector is not expected to change, costs of increasing throughput for the high quality MRFs is assumed to offset the reduction in costs related to lower throughput at the lower quality MRFs. It is possible the high quality MRF will face higher costs of operation, but given the small amount of volume that is assumed to shift (2.5% of total) and the high proportion of fixed costs at a MRF, it is difficult to estimate the specific cost differential.

At this stage, it is expected that reprocessors will benefit from the reduced cost of landfill gate fees and also benefit from improved plant efficiencies related to having higher quality throughput. This benefit has not been monetised, but it is expected that the benefit of reduced landfill costs and improved efficiencies are more than paying for higher quality material.

Table 19: Potential benefit from a shift of 2.5% of customers from the lower quartile to the upper quartile of quality (further detail in Annex 3, Table n)

Benefits of shift of 10% of lower quartile customers to higher quartile (2.5% of total)	Benefits to business: avoided landfill gate fees ¹⁴	Benefits to business: increased material revenue	Benefits to society: reduced greenhouse gas impacts	Total benefit
(11 year NPV)	£1.2m-£2.0m	£4.2m-£6.5m	£1.6-£2.3m	£7.0m-£10.8m

Table 20: Potential benefit of a further shift by 22.5% of total capacity from lower quartile to average quality of sector (further detail in Annex 3, Table p).

Benefits of shift of 22.5% of tonnage from average of lowest quartile to average quality	Benefits to business: avoided landfill gate fees	Benefits to business: increased material revenue	Benefits to society: reduced greenhouse gas impacts	Total benefit
(11 year NPV)	£5.9m-£8.9m	£19.0m-£26.7m	£6.5m-£8.6m	£31.7m-£44.0m

Taking into account the initial and on-going costs to business of sampling and testing the net benefit to society of this scenario over 10 years is £25.7m (£11.1m - £39.8m) PV. This breaks down into initial cost to business of £0.9m (£0.6m-£1.2m) and £16.1m (£10.9m-£21.9m) PV annual costs to business over 10 years of the policy for sampling and investment to improve quality. The costs to business are expected to impact directly on MRFs, but the costs could be expected to be passed on partially through gate fees and also incorporated in prices for recyclate sold to reprocessors. To the extent that the Packaging Recovery Note system acts as a 'top up' between the cost of sending material to landfill and the cost of recycling, this cost may affect PRN prices. Total benefits over 10 years are estimated as £37.2m (£30.6m-£43.9m) PV to business and £9.5m (£8.1m-£10.9m) PV of lower greenhouse gas emissions

¹⁴ Landfill gate fees are estimated £20 per tonne and haulage £10 per tonne (source WRAP)

resulting in a net benefit of £25.7m (£11.1m-£39.8m) PV over 10 years of the policy being active. As there is uncertainty on the scale of benefits calculated, they have not been included in the summary sheets, although the intended impact of the measures in the revised Waste Framework Directive are to deliver the benefits of high quality recycling. See Annex 2 for a detailed breakdown of costs and benefits.

The potential impact of better feedback of information back through the recycling chain to Local Authorities and householders has not been monetised. Better information may lead to higher quality of inputs into the sorting process. The greater availability of information on outputs and therefore potential revenue could result in more revenue sharing contracts between local authorities and MRF operators which will help to align incentives to improve both the quality of input material and the efficiency of MRF operations. This could have a temporary impact of reducing reported recycling rates as the amount of output from MRFs may initially fall. However better communication through the recycling chain should lead to getting a better return from material intended for recycling. It is also assumed that higher prices paid for higher quality material reflect the improvement in efficiency at reprocessors from having better feedstock. It is possible there are wider benefits to reprocessors such as reduced front end costs that have also not been monetised here. A report on the costs of contamination by the Resource Association indicates that there could be significant reductions in costs. Reprocessors have commented that the lack of availability of high quality feedstock has been one of the barriers to future investment in the sector. The actual balance of costs and benefits through the recycling chain is difficult to identify, but the market driven nature of the recycling sector could be expected to result in any costs or benefit being passed on through the recycling chain.

8.1 Sensitivity analysis

The composition of MRFs input was from the sampling in the WRAP study in 2009. This is now 4 years old, but is still the most recent robust evidence on composition. Anecdotal evidence combined with responses from a recent questionnaire survey (2012/13) reported composition figures from a selection of MRFs and indicates that the composition may have changed over the period. The composition is reported below in table 21. The table indicates the percentage of glass, newspaper and plastics may have changed over the period. The actual impact on the analysis is not significant as the improvement in quality has a more significant impact than the composition of the recovered material and average material price. Under the assumptions used in this analysis it is estimated that the impact of this alternative composition compared to that used in the main analysis is to reduce the total benefits of the policy by around 1% on average and reduce the total costs by around 4% on average. The overall impact on the net benefit of the policy is a change of less than 1% and is considered insignificant.

Table 21: Recent anecdotal composition of input to MRFs

	MRF input (robust sampling 2009)	MRF input reported 2012/13
	%	%
alu	4.031	1
card	14.572	6
glass	2.45	22
HDPEcol	2.653	0.4
HDPENat	6.026	1.6
MxPa	5.105	32
MxPI	3.794	2
MxPIbott		2
NP	31.698	17
PETclr	6.552	2.5
PETcol	1.297	0.5
PIFlm	2.208	2
Steel	11.23	3
	91.616	92

The future growth of tonnage throughput at MRFs is uncertain, and the sensitivity of the policy to this uncertainty is tested by considering lower and upper bounds of 25% below and above the 0% and 5% growth scenarios respectively. These figures are used to give the low and high NPV figures on the summary sheet.

9. Equivalent Annual Net cost to Business

The Equivalent Annual Net Cost to Business (EANCB) calculated according to RPC guidance (see table 22) produces a figure of **£0.80m**. The EANCB is applicable from the implementation date, therefore a 10 year period from 2014 is applicable.

Table 22: Equivalent Annual Net Cost to Business

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
Total costs to business (£m):				0	0.81	0.82	0.84	1.01	1.04	1.07	1.10	1.13	1.16	1.20
in 2009 prices (£m):				0	0.74	0.75	0.77	0.92	0.95	0.98	1.00	1.03	1.06	1.10
<i>Discount factors:</i>														
1	0.9662	0.9335	0.9019	0.8714	0.8420	0.8135	0.7860	0.7594	0.7337	0.7089	0.6849	0.6618	0.6394	
Discounted value (£m)				0.64	0.63	0.63	0.73	0.72	0.72	0.71	0.71	0.70	0.70	
												PVNCB (£m)	6.89	
2009 prices												Annuity rate	8.6077	
2010 PV base year												EANCB (£m)	0.80	

10. One in Two Out

The MRF Regulation is the minimum necessary to comply with the separate collection requirement of the rWFD (see Section 4.1 for further information). Therefore it is not gold-plating and is not within the scope of OITO.

11. Unintended Consequences

The measures outlined above could result in unintended consequences in the recycling supply chain. Better information on contamination rates could lead to a drop in the reported recycling rate. The current measure of recycling rate is based on information in Waste Data Flow. The figures are based on data reported by local authorities which identifies MRFs and reject rates. This information is not currently based on consistent robust sampling and therefore these regulations could result in a higher reject rate than previously reported. It is expected that the better information flow between MRFs and local authorities should provide an opportunity for working through the recycling supply chain to improve yield and quality.

A response to the consultation highlighted a concern that the proposal could result in an increase in refuse derived fuel. However, we expect collecting and sorting co-mingled waste for recycling to remain more attractive economically than producing RDF as the costs per MRF are estimated to be very low relative to other costs and turnover.

12. Small firms impact test

In developing the regulatory proposals, the Government took steps to ensure that SMEs would not incur disproportionate costs. These included:

- limiting the scope of the requirements to just those permitted MRFs with an output of more than 1000 tonnes per annum, the effect of which is to exempt 25% of MRFs in England and Wales but less than 0.5% of the total tonnage of dry recycle handled every year.
- linking the sampling frequency to the tonnage throughput, with smaller MRFs required to sample less often which reduces their operational costs.

Costs to business are considered and presented according to their size in a number of places within this IA (e.g. Tables 6-8 and 10-13)

The Government engaged with representatives of SMEs, and operators of small MRFs, during the development of the regulatory proposals in particular those aspects which are intended to ensure SMEs will not incur disproportionate costs. In light of consultation responses, the Government has removed the time-based sampling frequency as it was felt this disproportionately impacted small businesses – the result is that annual costs per tonne are identical across the different sized MRFs considered in the IA (Table 10).

Microbusiness Exemption Rule: Under the microbusiness exemption rule whereby regulation exempts organisations of 10 or fewer employees and start-ups, this measure is out of scope because it relates to implementation of an EU Directive.

Annex 1: Detailed estimate of costs

Table a: One off equipment costs (source: WRAP estimates)

ITEM	Small MRF	Medium MRF	Large MRF
Input Bin	2 x £200 = £400	4 x £200 = £800	6 x £200 = £1200
Sample bin trolley	1 x £200 = £200	1 x £200 = £200	2 x £200 = £400
Weigh Scale	1 x £1000	1 x £1000	1 x £1000
Mesh Sorting Table	1 x £500	1 x £500	2 x £500 = £1000
Sorting Tables	1 x £300	2 x £300 = £600	3 x £300 = £900
Sorted Material Bins	25 x £30 = £750	35 x £30 = £1050	45 x £30 = £1350
TOTAL £	£3,150	£4,150	£5,850

Table b: annual labour costs for sampling, first two years (source: WRAP estimates)

	Largest Sample Weight (kg)	Small MRF 10,000 TPH			
		No of Samples	Rate (£/h)	Time per Sample (hr)	Cost (£)
Capture, weigh, sort, weigh, record input sample	60	63	7.75	0.91	444.31
Grab/l shovel operator for input samples		63	7.75	0.25	122.06
Capture, weigh, sort, weigh, record output PAPER sample	50	70	7.75	0.69	374.33
Capture, weigh, sort, weigh, record output GLASS sample	10	40	7.75	0.51	158.10
Capture, weigh, sort, weigh, record output METAL sample	10	20	7.75	0.51	79.05
Capture, weigh, sort, weigh, record output PLASTIC sample	20	60	7.75	0.51	237.15
L shovel operator for output		190	7.75	0.2	294.50
overhead					427.37
TOTAL		253			£ 2136.87

	Largest Sample Weight (kg)	Medium MRF 45,000 TPH			
		No of Samples	Rate (£/h)	Time per Sample (hr)	Cost (£)
Capture, weigh, sort, weigh, record input sample	60	282	7.75	0.91	1988.81
Grab/l shovel operator for input samples		282	7.75	0.25	546.38
Capture, weigh, sort, weigh, record output PAPER sample	50	315	7.75	0.69	1684.46
Capture, weigh, sort, weigh, record output GLASS sample	10	180	7.75	0.51	711.45
Capture, weigh, sort, weigh, record output METAL sample	10	90	7.75	0.51	355.73
Capture, weigh, sort, weigh, record output PLASTIC sample	20	270	7.75	0.51	1067.18
L shovel operator for output		855	7.75	0.2	1325.25
overhead					1919.81
TOTAL		1137			£ 9599.05

	Largest Sample Weight (kg)	Large MRF 100,000 TPH			
		No of Samples	Rate (£/h)	Time per Sample (hr)	Cost (£)
Capture, weigh, sort, weigh, record input sample	60	625	7.75	0.91	8060.00
Grab/l shovel operator for input samples		625	7.75	0.25	2015.00
Capture, weigh, sort, weigh, record output PAPER sample	50	700	7.75	0.69	7455.50
Capture, weigh, sort, weigh, record output GLASS sample	10	400	7.75	0.51	474.30
Capture, weigh, sort, weigh, record output METAL sample	10	200	7.75	0.51	988.13
Capture, weigh, sort, weigh, record output PLASTIC sample	20	600	7.75	0.51	4217.32
L shovel operator for output overhead		1900	7.75	0.2	4242.35
					6863.15
TOTAL		2525		£	21312.50

Table c: annual labour costs for sampling, subsequent years (source: WRAP estimates)

	Largest Sample Weight (kg)	Small MRF 10,000 TPH			
		No of Samples	Rate (£/h)	Time per Sample (hr)	Cost (£)
Capture, weigh, sort, weigh, record input sample	60	80	7.75	0.91	564.20
Grab/l shovel operator for input samples		80	7.75	0.25	155.00
Capture, weigh, sort, weigh, record output PAPER sample	50	93	7.75	0.69	497.32
Capture, weigh, sort, weigh, record output GLASS sample	10	40	7.75	0.51	158.10
Capture, weigh, sort, weigh, record output METAL sample	10	20	7.75	0.51	79.05
Capture, weigh, sort, weigh, record output PLASTIC sample	20	80	7.75	0.51	316.20
L shovel operator for output overhead		233	7.75	0.2	361.15
					532.75
TOTAL		313		£	2663.77

	Largest Sample Weight (kg)	Medium MRF 45,000 TPH			
		No of Samples	Rate (£/h)	Time per Sample (hr)	Cost (£)
Capture, weigh, sort, weigh, record input sample	60	360	7.75	0.91	2538.90
Grab/l shovel operator for input samples		360	7.75	0.25	697.50
Capture, weigh, sort, weigh, record output PAPER sample	50	420	7.75	0.69	2245.95
Capture, weigh, sort, weigh, record output GLASS sample	10	180	7.75	0.51	711.45
Capture, weigh, sort, weigh, record output METAL sample	10	90	7.75	0.51	355.73
Capture, weigh, sort, weigh, record output PLASTIC sample	20	360	7.75	0.51	1422.90
L shovel operator for output overhead		1050	7.75	0.2	1627.50
					2399.98
TOTAL		1410		£	11999.91

	Largest Sample Weight (kg)	Large MRF 100,000 TPH			
		No of Samples	Rate (£/h)	Time per Sample (hr)	Cost (£)
Capture, weigh, sort, weigh, record input sample	60	800	7.75	0.91	5642.00
Grab/l shovel operator for input samples		800	7.75	0.25	1550.00
Capture, weigh, sort, weigh, record output PAPER sample	50	933	7.75	0.69	4989.22
Capture, weigh, sort, weigh, record output GLASS sample	10	400	7.75	0.51	1581.00
Capture, weigh, sort, weigh, record output METAL sample	10	200	7.75	0.51	790.50
Capture, weigh, sort, weigh, record output PLASTIC sample	20	800	7.75	0.51	3162.00
L shovel operator for output overhead		2333	7.75	0.2	3616.15
TOTAL		3133		£	26663.58

Above costs assume the following sampling methodology is implemented at the MRF:

- Create a sampling plan based on assumed throughput.
- Take representative samples according to the sampling guidance and sampling plan.
- Safely transport sample to a designated testing area which must be under cover.
- Each sample is to be weighed and then tipped over a 45mm x 45mm square steel mesh (12mm x 12mm for glass). Material falling through the mesh is to be classed as fines and this weight recorded.
- Material retained by the mesh is to be hand sorted for target material(s) and the five main non-target materials with the remaining non-target materials combined. Each sorted material weight to be recorded.
- An individual sample sheet is to be completed at least electronically. Contamination is to be classed as the combined weights, for each granular material, of non-target material and non-recyclable material.
- At end of each quarter calculate the total contamination mean & standard deviation for input and each targeted output material at granular level and calculate upper & lower confidence interval at 95% confidence level. An electronic sample sheet, with integral formulae to calculate the mean, SD and upper and lower confidence intervals, is to be recorded.
- Report the contamination percentage every quarter for input and each targeted material to the Regulator. For example; contamination of N&P this quarter at 95% confidence is (say) 6% +/-2%.
- Regulator will publish all permitted MRF testing results each quarter.
- If operator feels, after a qualifying period of one year, that testing results are consistent they can apply to the Regulator (at the cost of permit variation) to reduce the sampling/testing frequency. The statistical criteria required to allow a sampling/testing frequency reduction and the criteria that would trigger a reversion to the standard sampling/testing frequencies have yet to be developed.

Table d: One off training costs for non RRS members

Training costs for non RRS members	wage per hour £	Small		Medium		Large	
		number of hours	total	number of hours	total	number of hours	total
Technical operator training from WRAP	12.00	4.00	48.00	4.00	48.00	4.00	48.00
Technical operator's time to train others	12.00	4.00	48.00	4.00	48.00	4.00	48.00
Time for trainees (2 for small and medium MRFs, 3 for large MRFs)	9.69	8.00	77.50	8.00	77.50	12.00	116.25
			173.50		173.50		212.25

Table e: Initial annual staff costs to business of site inspections

Site inspection staff cost	Wage per hour £	Hours per site visit	Number of sites visited	Business costs £
Annual auditing site inspection - managerial time	15.38	1	167	2,568
Annual auditing site inspection - technical operator time	9.69	3	167	4,853
6 hour site inspection and follow up visits - managerial	15.38	0.5	167	1,284
6 hour site inspection and follow up visits - technical	9.69	2	167	3,236
Total costs to business				11,941

Detailed estimate of annual costs

Table f: One off costs

	Low estimate (-25% with 0% growth) £	Central estimate £	High estimate (+25% with 5% growth) £
one off equipment	176,400	275,157	393,892
one off systems and auditing costs	452,188	674,923	933,660
total one off costs	628,588	950,079	1,327,551
PV total one off costs	607,331	917,951	1,282,658

Table g: Annual impact of central estimate for costs for 0% growth scenario, all values £m

growth in sector	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total	
one off costs													
one off equipment	-	0.24	-	-	-	-	-	-	-	-	-	0.24	
one off systems and auditing costs	-	0.60	-	-	-	-	-	-	-	-	-	0.60	
total one off costs	-	0.84	-	-	-	-	-	-	-	-	-	0.84	
PV total one off costs	-	0.81	-	-	-	-	-	-	-	-	-	0.81	
<u>Annual costs to business</u>	-	-	-	-	-	-	-	-	-	-	-	-	
annual labour costs	-	-	0.48	0.48	0.60	0.60	0.60	0.60	0.60	0.60	0.60	5.13	
annual audit costs	-	-	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	2.97	
total annual costs to business	-	-	0.81	0.81	0.93	0.93	0.93	0.93	0.93	0.93	0.93	8.10	
PV annual costs to business	-	-	0.75	0.73	0.81	0.78	0.75	0.73	0.70	0.68	0.66	6.59	
<u>Annual costs to government</u>	-	-	-	-	-	-	-	-	-	-	-	-	
annual audit costs to government	-	-	-	-	-	-	-	-	-	-	-	-	
PV annual costs to government	-	-	-	-	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	-	-	-	-	
Total annual costs	-	-	0.81	0.81	0.93	0.93	0.93	0.93	0.93	0.93	0.93	8.10	
PV annual costs	-	-	0.75	0.73	0.81	0.78	0.75	0.73	0.70	0.68	0.66	6.59	
Total costs	-	0.84	0.81	0.81	0.93	0.93	0.93	0.93	0.93	0.93	0.93	8.94	
PV total costs	-	0.81	0.75	0.73	0.81	0.78	0.75	0.73	0.70	0.68	0.66	7.40	

Table h: Total impact of central estimate of costs for 5% growth scenario

Growth rate	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total	
<u>one off costs</u>													
one off equipment	-	0.24	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.32
one off systems and auditing costs	-	0.60	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.75
total one off costs	-	0.84	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	1.06
PV total one off costs	-	0.81	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.99
<u>Annual costs</u>	-	-	-	-	-	-	-	-	-	-	-	-	-
annual labour costs	-	-	0.50	0.53	0.73	0.76	0.80	0.84	0.88	0.93	0.97	0.97	6.93
annual audit costs	-	-	0.34	0.36	0.37	0.39	0.41	0.43	0.45	0.48	0.50	0.50	3.73
total annual costs	-	-	0.84	0.88	1.10	1.15	1.21	1.27	1.33	1.40	1.47	1.47	10.66
PV annual costs	-	-	0.78	0.80	0.96	0.97	0.98	1.00	1.01	1.03	1.04	1.04	8.58
Annual costs to government	-	-	-	-	-	-	-	-	-	-	-	-	-
annual audit costs	-	-	-	-	-	-	-	-	-	-	-	-	-
PV annual costs	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
Total annual costs	-	-	0.84	0.88	1.10	1.15	1.21	1.27	1.33	1.40	1.47	1.47	10.66
PV annual costs	-	-	0.78	0.80	0.96	0.97	0.98	1.00	1.01	1.03	1.04	1.04	8.58
Total costs	-	0.84	0.86	0.91	1.12	1.18	1.24	1.30	1.36	1.43	1.50	1.50	11.72
PV total costs	-	0.81	0.81	0.82	0.98	0.99	1.01	1.02	1.03	1.05	1.06	1.06	9.57

The best estimate is the mid-point of these 2 ranges.

Annex 2: Detailed analysis of wider impacts of MRF Regulation

This scenario analysis was conducted on the basis of assumptions made below. It is possible that the measures proposed do not deliver the exact benefits as described and therefore are not included in the summary sheets of this IA.

Quality of output material from MRFs

WRAP undertook a material testing exercise at around 20% of UK municipal MRFs in 2009 – the results of this exercise are shown in Table h. The percentages shown in the table indicate contamination levels. To note, contamination:

- for 'input material' will consist of material not accepted by the MRF (e.g. material the householder should not have put in the recycling bin);
- for 'output material' will consist of material not accepted by the MRF (i.e. the MRF has failed to sort and remove those materials the householder should not have put in the recycling bin) and material that is non-target but may still be recyclable (e.g. metal cans are recyclable but the MRF has failed to fully sort them from an output of paper);
- for 'residual output' will consist of target material that the MRF failed to identify.

In all instances, the lower the percentage the better. The best performing 25% of MRFs, in terms of material quality, are in the lower level quartile column.

The results suggest there is a wide range of quality and that few MRFs are currently able to meet the highest level of quality demanded by industry standards, particularly for paper and plastics.

Table h: Contamination levels in the input, output and residual material streams of MRFs

Material Stream	Lower Level Quartile	Median Level Quartile[why are there only 3 quartiles?]	Upper Level Quartile
Input Material			
All	< 6.4%	6.4% to 17.5%	> 17.5%
Single-stream	< 8.4%	8.4% to 17.5%	> 17.5%
Two-stream – Fibre based	< 2.9%	2.9% to 9.0%	> 9.0%
Two-stream – Container based	< 4.9%	4.9% to 22.6%	> 22.6%
Output Material			
Aluminium	< 0.9%	0.9% to 4.6%	> 4.6%
Steel	< 2.8%	2.8% to 7.1%	> 7.1%
News and PAM	< 4.6%	4.6% to 15.0%	> 15.0%
Mixed Paper	< 3.2%	3.2% to 25.3%	> 25.3%
Card	< 4.8%	4.8% to 12.0%	> 12.0%
Mixed Plastic	< 6.9%	6.9% to 26.6%	> 26.6%
Mixed Plastic bottles	< 8.3%	8.3% to 16.2%	> 16.2%
HDPE Coloured Plastic Bottles	< 6.9%	6.9% to 11.3%	> 11.3%
HDPE Natural Plastic Bottles	< 1.9%	1.9% to 4.0%	> 4.0%
PET Clear	< 2.6%	2.6% to 9.5%	> 9.5%
PET Coloured	< 5.6%	5.6% to 10.7%	> 10.7%
Residual			
All	< 28.3%	28.3% to 80.9%	> 80.9%
Single-stream	< 24.7%	24.7% to 61.7%	> 61.7%
Two-stream – Fibre based	< 33.0%	33.0% to 59.2%	> 59.2%
Two-stream – Container based	< 72.2%	72.2% to 88.0%	> 88.0%

For the purposes of this analysis, the data above is taken for the baseline of quality at MRFs. The study also showed that there is not a consistent relationship between quality and size nor technology. The baseline is assumed to be no change in the range of quality without intervention.

It is estimated there are 167 permitted MRFs in England and Wales with tonnage throughput over 1,000tpa (tonnes per annum). It is further assumed that 38 MRFs already undertake sampling to 80% of the specification required, a further 40 MRFs undertake sampling to 50% of the specification, a further 19 MRFs do so to 20% of the specification, with the remaining 70 MRFs assumed not to undertake any sampling.

Output of those MRFs in scope is estimated at 3.31m tonnes in 2011. The growth rate is estimated to range between 0-5% (2.5% best estimate). Waste arisings, household recycling rate and collection method (kerbside sort or co-mingled) all interact to influence the amount of co-mingled municipal waste requiring sorting by a MRF.

Table i: Estimate of total MRF throughput

Total MRF input (m tonnes)	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
low estimate (no growth)	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31
Best estimate	3.48	3.57	3.67	3.77	3.88	3.99	4.10	4.23	4.36	4.49	4.63
high estimate (5% growth)	3.65	3.84	4.03	4.23	4.44	4.66	4.90	5.14	5.40	5.67	5.95

Scenario of benefits of an improvement in quality of recycle

The scenario assumes benefits from an initial shift in customers are expected to accrue from July 2014. Further costs to increase quality of recyclates are not expected to occur until 2015 and benefits are expected to impact at the same time.

It is expected that customers will ask for information on quality of output as current measures of quality, such as visual inspection, are less accurate. Should the information reveal that a MRF is consistently producing lower quality output, the customer is expected to require the MRF to improve quality or change contract to another MRF producing higher quality output. Higher quality output is of higher value to the customer, so it would be reasonable to ‘shop around’. Given the high fixed cost and low variable costs of operating MRFs, in most cases it is more efficient to do better sorting at a MRF rather than sorting again at a reprocessor.

This scenario is modelled by assuming that 10% of those customers who are receiving recovered material in the lower quartile of output quality (i.e. 2.5% of total customers) will shift to those MRFs that are in the upper quartile. Given the short term and fluid nature of existing contracts, these changes are not expected to incur additional cost to normal contracting activity. Anecdotal evidence suggests there is spare capacity in the MRF sector. Further, the cost of the increase in output at the high quality MRFs is expected to offset a change in costs at the more inefficient operations that have now lost a proportion of sales.

The benefits of a shift of 2.5% of total customers of MRF output from the lower quartile to the upper quartile quality thresholds is expected to deliver higher material revenues and reduced residual material to landfill. The actual shift could be greater, given the wide divergence in quality. The higher quality material is expected to gain a higher price, corresponding to the increase in volume of recovered, non-contaminated material, illustrated in Table j below.

There will be an avoidance of tonnage of material sent to landfill, corresponding to the increase in material recovered. Finally society will benefit from a reduction in embedded emissions associated with virgin material extraction, net of the carbon impacts of reprocessing recovered material. The estimated material benefit is calculated by taking the difference between the materials recovered in higher and lower quartile MRFs in the WRAP MRF Quality assessment study and applying the prices for recovered material types (May 2013, source: Let's Recycle). We have assumed a 25% range around those prices to take account of volatility. The total volume for the sector is assumed at 3.3Mt in 2011. Estimates of growth in the sector are difficult as they are dependent on many factors including household waste arisings, household recycling rate and type of waste collection. We have estimated growth in the sector ranging between 0 and 5% over the period of analysis.

Table j: Estimation of increase in recyclate resulting from a shift in customer from low to high quality MRF operators

Input and contamination rates based on the MRF Quality Assessment Study					Impact of shift of 2.5% capacity from low to high based on yields and typical input on annual throughput of 3.31m tonnes
	MRF input %	Upper quartile threshold contamination rate%	Lower quartile threshold contamination rate%	Yield improvement of shift from low to high	Annual increase in tonnes of recyclate output (% of MRF input x yield improvement x total annual tonnage)
aluminium	4.031	0.9	4.6	3.7	124
card	14.572	4.8	12	7.2	869
glass	2.45	1.5	1.5	0	-
HDPE coloured	2.653	6.9	11.3	4.4	97
HDPE Natural	6.026	1.9	4	2.1	105
Mixed Paper	5.105	3.2	25.3	22.1	935
Mixed plastic	3.794	6.9	26.6	19.7	619
Mixed Plastic bottles		8.3	16.2	7.9	-
Newspaper	31.698	4.6	15	10.4	2,731
PET clear	6.552	2.6	9.5	6.9	375
PET coloured	1.297	5.6	10.7	5.1	55
Plastic Film	2.208	39.5	39.5	0	-
Steel	11.23	2.8	7.1	4.3	124
	91.616				6,032

This increase in annual tonnage is applied to the material prices in Table k taken from Let's Recycle May 2013 (see assumptions) and then a 25% range applied to take account of volatility in price over the 10 year period.

Table k: Material revenue per extra tonne of material

Material	material price April 2012 £	low estimate £	high estimate £
Aluminium	775	581	969
Card	70	53	88
Glass		0	0
HDPE coloured	135	101	169
HDPE Natural	295	221	369
Mixed Paper	55	41	69
Mixed plastic	15	11	19
Mixed Plastic bottles	60	45	75
Newspaper	87	65	109
PET clear	230	173	288
PET coloured	42	32	53
Plastic Film	77	58	96
Steel	140	105	175

The carbon impacts are calculated using the carbon factors from Scottish Carbon Metric in Table I. Carbon prices in Table m apply the central estimate of the traded price of carbon to the carbon impact of recycling and the non traded price of carbon is applied to the avoided impacts from landfill.

Table I: Carbon factors for impact of shift from landfill to recycling (source: Scottish Carbon Metric)

	carbon factor of avoided landfill on CO2e kg/tonne	carbon factor of benefit of recycling in CO2e kg/tonne
Aluminium	21	9245
Card	580	219
Glass	26	366
HDPE coloured	34	1901
HDPE Natural	34	1901
Mixed Paper	580	219
Mixed plastic	34	2100
Mixed Plastic bottles	34	2148
Newspaper	580	157
PET clear	34	2974
PET coloured	34	2974
Plastic Film	34	1450
Steel	21	1702

Table m: Carbon prices

Carbon value £ per tonne CO ₂ e	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
carbon value - traded	3.49	3.59	3.67	3.79	3.92	4.22	4.53	4.87	12.01	19.14	26.28
carbon value - nontraded	59.20	60.09	60.99	61.91	62.83	63.78	64.73	65.71	66.80	67.90	68.99

Source: DECC 2013

Table n: Potential benefit from a shift of 2.5% of customers from the lower quartile to the upper quartile of quality

Benefits 10 year present value	Costs 10 year present value
£5.4m (£4.2m - £6.5m) Additional revenue from more recyclate being sorted and sold to reprocessors (6,600-10,000 tonnes of material per year multiplied by prevailing price for each recyclate, averaging £90 per extra tonne with a 25% range for price volatility)	
£1.6m (£1.2m - £2.0m) Avoided gate fee and haulage of sending less material to landfill (6,600-10,000 tonnes per year, multiplied by £20 gate fee and £10 haulage (WRAP estimates))	£ estimated low and not monetised Costs of collection of material for recycling (in this case zero if the increased quality results from an equal reduction in costs at low quality MRFs and an increase in costs at high quality MRFs)
£2.0m (£1.7m - £2.3m) Additional carbon benefit of avoided virgin material extraction, net of carbon cost of recycling calculated applying carbon prices to carbon factors	£ netted off the carbon benefit Carbon cost of recycling material calculated by applying the carbon factor for recycling activity
Total £8.9m (£7.1m - £10.8m)	

This shift of a small proportion of customers in the industry could act as a strong incentive for the lower quality MRFs to improve output or face a significant reduction in revenues. For the purposes of modelling here, we have assumed the lowest quartile of MRFs will invest to improve the quality of their output to the average of the sector in the MRF Quality Assessment Study. The benefit of a shift from this lowest quartile to the average of the sector is calculated using the same methodology as with the initial shift of customers.

The investment cost is estimated on the basis of advice from WRAP, using labour costs as the primary resource, although MRFs may invest in technology, or demand higher quality inputs. Estimates of the cost of increasing labour (sorters) to achieve the improvement in yield for each material range from 2-10% according to material, and average 7% across the industry. MRFs may alternatively choose to invest in technology, slow down the speed of plants or influence input requirements through engagement with local authorities. Costs

of technology or influencing collection will also incur costs, but is difficult to quantify, so a range of 25% is applied. These are assumed to be in the same range as increasing labour. There is no assumption on an improvement in quality for the rest of the sector (75%), nor of an improvement in price, although this may occur. There is a risk access to finance may impede investment in which case influencing the quality of input may occur. Benefits of a shift from the average of lower quality to average quality and are calculated in the same way as above. These costs are applied to the estimate of the improvement in quality required to improve the tonnage throughput to the yields in Table o. A range of 25% is used around the estimates as there is limited evidence on the exact costs that may be incurred. Costs to increase quality for the MRFs accounting for 22.5% of the lowest quartile of output quality is estimated as £9.4m-15.7m NPV over 10 years. The total tonnage increase from an improvement in sorting following increased investment to increase throughput yields is around 30,000 tonnes per year (assuming 3.31m total tonnage throughput) which is a 0.9% increase in overall amount of recovered material.

Table o: Estimation of increase in recycle resulting from lower quality MRFs investing to improve quality to the average yield for each material

Input and contamination rates based on the MRF Quality Assessment Study					shift of 22.5% capacity from low to high based on yields and typical input on annual throughput of 3.31m tonnes
Material	MRF input %	average contamination rate %	bottom quartile contamination rate %	improvement in yield from shift from low quality quartile to average	Annual increase in tonnes of recyclate output (% of MRF input x yield improvement x total annual tonnage)
aluminium	4.031	2.5	0.9	2.1	2,805
card	14.572	12	4.8	0	-
glass	2.45	1.5	1.5	0	-
HDPE coloured	2.653	8.7	6.9	2.6	2,286
HDPE Natural	6.026	4.5	1.9	-0.5	- 998
Mixed Paper	5.105	15.8	3.2	9.5	16,071
Mixed plastic	3.794	12.2	6.9	14.4	18,104
Mixed Plastic bottles		18.2	8.3	-2	-
Newspaper	31.698	9.8	4.6	5.2	54,621
PET clear	6.552	7.5	2.6	2	4,342
PET coloured	1.297	8.1	5.6	2.6	1,117
Plastic Film	2.208	9.5	39.5	30	21,950
Steel	11.23	6.2	2.8	0.9	3,349

The avoided GHG emissions benefits and material revenue benefits are applied to the tonnage above, taking into account the different growth scenarios. The summary is in the Table p below.

Table p: Estimated impact of an improvement in quality by MRFs accounting for 22.5% of total output in the lowest quartile

Benefits 11 year PV	Costs
£22.9m (£19.0m - £26.7m) Additional revenue to MRFs from more recyclate being sorted and sold to reprocessors (30,000-50,000 average tonnes per year multiplied by prevailing price for each recyclate, averaging £93 per extra tonne with a 25% range for price volatility)	£11.0m (£8.2m - £13.7m) Increase in labour/investment costs/slower operation of machinery, assuming 25% range (averages £1.0m - £1.7m per year).
£7.4m (£6.2m – £8.6m) Avoided gate fee and haulage of sending less material to landfill (30,000-50,000 average tonnes per year multiplied by £20 gate fee and £10 haulage (WRAP estimates))	Costs of collection of material for recycling - this is an alternative to improving quality through sorting and therefore assumed to be covered in the costs above. In reality, there may be a mix of improved sorting and other measures to improve quality of output.
£7.7m (£6.6m - £8.8m) Additional carbon benefit of avoided virgin material extraction, calculated applying carbon factors to the avoided production for each material	£ netted off the carbon benefit Carbon cost of recycling material calculated by applying the carbon factor for recycling activity
Total £38.0m (£31.8m - £44.2m)	Total £11.0m (£8.2m - £13.7m)
Total net benefit of investment stage: £25.3m (£16.0m - £34.6m)	

Table q: Total estimated impacts of this scenario (incorporating costs of the regulations from the main body of the IA, benefits of the shift of 2.5% of customers, and costs and benefits of improvement of 22.5% of MRFs):

Costs of implementing measuring and sampling	Costs of investment to improve quality	Total costs	Benefits to business: increased material revenue	Benefits to business: avoided landfill gate fees ¹⁵	Benefits to society: reduced greenhouse gas impacts	Total benefit	Net benefit
11 year PV basis							
£8.49m (£5.6 - £12.0m)	£11.0m (£8.2m - £13.7m)	£21.0m (£15.0m - £27.7m)	£28.2m (£23.2m - £33.3m)	£9.0m (£7.4m - £10.6m)	£9.7m (£8.3m - £11.1m)	£46.9m (£38.9m - £55.0m)	£27.5m (£13.2m - £41.2m)

¹⁵ Landfill gate fees are estimated £20 per tonne and haulage £10 per tonne (source WRAP)

Key assumptions:

The greenhouse gas impacts have been calculated using the central non traded price of carbon for avoided landfill emissions and the traded price of carbon (DECC, September 2013) for impacts related to the benefit of recycling over using virgin material (source: Scottish Carbon Metric).

It is assumed up to half of MRFs are engaging in some sort of quality monitoring and may be incurring half of the costs estimated for sampling. Material prices are based on May 2013 figures for recovered material from Let's Recycle. A range of 25% around these figures is assumed to take account of cyclicalities in prices over the period of analysis.

Landfill tax is not included in these calculations as it is a transfer and not included in CBA. However, businesses may be considered to benefit from this reduction.

Consultation

We consulted on proposal (h) between 1 February and 26 April 2013.

Competition Assessment

The Competition test	
Question	Answer Yes/No
Q1: In the market(s) affected by the new regulation, does any firm have more than 10% market share	No
Q2: In the market(s) affected by the new regulation, does any firm have more than 20% market share?	No
Q3: In the market(s) affected by the new regulation, do the largest three firms together have at least 50% market share?	No
Q4: Would the costs of the regulation affect some firms substantially more than others?	No
Q5: Is the regulation likely to affect the market structure, changing the number or size of businesses/organisation?	No
Q6: Would the regulation lead to higher set-up costs for new or potential suppliers that existing suppliers do not have to meet?	No
Q7: Would the regulation lead to higher ongoing costs for new or potential suppliers that existing suppliers do not have to meet?	No
Q8: Is the sector characterised by rapid technological change?	No
Q9: Would the regulation restrict the ability of suppliers to choose the price, quality, range or location of their products?	No

Questions 1, 2 & 3

Welsh operators falling within the scope of the Environmental Permitting (England and Wales) (Amendment) Regulations 2014, are managed by a private company or local authority so no company.

Question 4, 5, 6 & 7

The regulations require all material facilities receiving 1000 tonnes or more are required to routinely measure, record and report to the same regulations.

Question 8

New technologies are developed over time to improve processes but these are not developed at a rapid rate.

Question 9

The intended purpose of the Regulations is to improve the input and output materials managed by materials facilities. Suppliers to materials facilities will have the ability to assess the performance of the material facility which will provide more choice.