A high level assessment of the potential impact on local authorities of the EU Parliament proposals in the Circular Economy Package released on 2 December 2015, in relation to management of wastes

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Anthesis

Prepared for:

The Chartered Institution of Wastes Management (CIWM)

The 6 Joint Waste Disposal Authorities (JWDAs) in England

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Appendix 1

Executive summary

On 2 December 2015 the European Commission (EC) adopted a new Circular Economy Package (the Package) to stimulate Europe's transition towards increased global competitiveness and sustainable economic growth. The Package consists of two components: an EU Action Plan[1] for the Circular Economy and a set of legislative proposals. The announcement of the Package on 2nd December 2015 was the first step in the implementation of a long series of changes. The process of ratification by the European Parliament and the review by the Council of Ministers is likely to take up to two years, and be subject to a number of oppositions, before being passed to each of the Member States for adoption. During this period there will be far greater visibility on the impacts of the package on local authorities.

One of the key elements of the Package is a common EU target for reuse and recycling 65% of municipal waste by 2030, with a 60% interim target by 2025. The latest Defra statistics show that the recycling rate for English authorities for 2014 was 44.8%[2]. However, there is wide variation between councils, and in many regions recycling rates have flat-lined in recent years. The current recycling rate calculation used in UK only includes Household Collected Waste (a subsection of Municipal Waste), and in future it is likely that the UK will be required to move its definition of municipal waste closer to the Landfill Directive definition to align with the rest of Europe. It is therefore possible that once the calculation methodology is confirmed, the gap to achieve the 65% recycling target will be higher.

Currently there are materials that are not counted in the UK towards recycling rates, for example incinerator bottom ash (IBA). The Package includes a commitment to ensure harmonisation of the method of defining and calculating recycling rates, across the 28 EU Member States to enhance the quality of statistics and simplify the reporting systems.

According to a Local Government Association (LGA) report in May 2015[3], the pursuit of EU waste targets to date has required a doubling of spend by English local authorities to £3.28 billion since 2000[4]. The new targets for reuse and recycling within the Package is likely to place a much greater financial burden on local authorities, and this is set against a backdrop of decreasing public sector budgets. Modelling undertaken by Anthesis demonstrates that capture rates for traditional materials will need to be increased, and additional new materials will need to be added to collections, which will be both exceptionally difficult operationally and costly for local authorities.

There will be a number of overarching financial implications associated with increasing the range and volumes of materials collected, including changes or modifications to: vehicle fleets, bulking facilities, tipping frequencies; domestic container/sack provision; and potential increases in contamination, associated negative impacts on material value, waste acceptance disputes, refusals and legal costs. Urban authorities, in particular, may face difficulties in increasing the materials captured. The ability for service users to participate fully in recycling schemes is fundamental to achieving higher recycling targets; a nationally co-ordinated campaign and standardised use of bins, iconography and communications will be required to support authorities to drive behaviour change in service users, as well as investment in interventions not previously used to change behaviour. The Package also advocates the use of legislative financial incentives to properly implement the waste hierarchy, though it will be the responsibility of the UK Government to determine how these will be implemented in national law. English authorities also have other options available to them such as compulsory recycling, however, residents may currently only be fined if there is a detrimental impact on amenity, and that burden of proof is very difficult to obtain, so changes will be required if compulsory recycling is to become a future option.

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[1] http://ec.europa.eu/priorities/jobs-growth-investment/circular-economy/docs/communication-action-plan-for-circular-economy_en.pdf.
[2] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/481771/Stats_Notice_Nov_2015.pdf
[3] Local Government Association (LGA) report in May 2015 Meeting the EU Recycling Targets
[4] Total for waste and recycling collection and disposal 2013/14

It is expected that further investment in waste processing infrastructure will be required to ensure the appropriate capacity is available in the UK. The Joint Waste Disposal Authorities (JWDAs) have committed hundreds of millions of pounds to deliver the waste treatment and recovery infrastructure needed to date. However, changes in material volumes in the future could result in significant cost increases as contracts are for minimum levels, which if not met will trigger compensation and penalty clauses.

The achievement of the recycling target, and the financial viability of local authority recycling schemes is very closely linked to the availability and specification requirements of the end markets for each material stream. Volatility in the commodity markets for both virgin and secondary raw materials will also affect financial viability of recycling schemes. It is currently unclear how the Package will do anything to revive investment confidence in recyclate processing. Without sufficient demand for recyclates as raw materials, and the ability for secondary commodities to compete cost effectively with virgin materials, the required reprocessing infrastructure will not be developed and local authorities will be collecting materials to meet targets which may not be viable to recycle.

The Package makes provision for Extended Producer Responsibility, and specifically sets a target for 75% recycling of packaging waste. Although there is an expectation in the Package that this target will support the municipal waste recycling target of 65%, the mechanisms by which this will be delivered are currently unclear. There is concern about competition for good quality materials between producers and local authorities.

Financial investment in circular materials management may result from the UK review of the Producer Responsibility Obligations which was the subject of a DEFRA consultation in 2015 and the impacts of the PRN system. The EC has also committed funding of over €650 million under Horizon 2020 and €5.5 billion under the structural funds to support the implementation of the Circular Economy; however how local authorities might access this funding is as yet unclear.

The six Joint Waste Disposal Authorities (JWDAs), that commissioned this work with CIWM, have identified that they want to work with central Government to identify the best solutions for meeting the challenges of implementing a circular economy, to ensure that the UK meets its obligations and additional cost burdens are minimised. They have identified key areas where action is required to meet this objective including:

- Planning and leadership to generate long term certainty, enable effective planning and deliver the right investment in infrastructure and market development;
- Policy that will provide clarity over where in the supply chain cost burdens associated with the Circular Economy Package will impact to reduce the burden on local authorities.
- Targets and measures which encourage the best environmental or economic outcome, which might include developing alternate metrics to the current weight based approach and differential recycling targets for rural and urban local authorities. Any targets set should also aim to avoid incentivising materials to move down the waste hierarchy.
- Guidance which will bring clarity on whether IBA will be included in UK recycling statistics given the impact this can have on performance and on how commercial waste captured under the wider definition will be monitored and tracked.
- Change to enable local authorities to impose a duty to recycle and powers of enforcement where residents fail to comply.
- A joined up approach which will combine recycling requirements with market development for collection, sorting and re-processing of materials.
- Development of realistic timescales for transformation which recognises the requirement for contract variations, infrastructure development, market development and behavioural change.

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1 Summary of the significant impacts for local authorities

On 2 December 2015 the European Commission (EC) adopted a new Circular Economy Package (the Package). It aims to stimulate Europe's transition towards a Circular Economy and is focused on increasing global competitiveness, supporting sustainable economic growth and generating new jobs. The Package consists of two components: an EU Action Plan[1] for the Circular Economy and a set of legislative proposals. The Action Plan covers the whole cycle of materials and products, from production and consumption to waste management and the market for secondary raw materials. A wide range of stakeholders from across the circular economy supply chain will be involved in its delivery. The plan identifies over 50 separate actions, however many of the details are yet to be decided and some will rely on Member States adopting them through their own approaches. The annex to the Action Plan sets out the timeline for the actions[2] over the next five years.

As well as these non-legislative actions, the Package also addresses the continuation and expansion of Directives which support Circular Economy principles, including Directives on waste[3], packaging and packaging waste[4], landfill of waste[5], end of life vehicles[6], batteries and accumulators[7], and waste electrical and electronic equipment[8].

The legislative proposals on waste, set targets for waste reduction and increased recycling. Key elements of the revised waste proposal which will impact on local authorities include:

- A common EU target for reuse and recycling 65% of municipal waste by 2030 (with a 60% interim target by 2025);
- A common EU target for recycling 75% of packaging waste by 2030;
- A binding landfill target to reduce landfill to maximum of 10% of all waste by 2030;
- A ban on landfilling of separately collected waste;
- Mandatory separate collection of food and other biowaste where technically, environmentally and economically practicable;
- Promotion of economic instruments to discourage landfilling;
- Simplified and improved definitions and harmonised calculation methods for recycling rates throughout the EU;
- Concrete measures to promote re-use;
- Economic incentives for producers to put greener products on the market and support recovery and recycling schemes (e.g. for packaging, batteries, electric and electronic equipment and vehicles).

While the annex to the Action Plan sets out the timeline for when actions will be completed there is currently no specific information about when the UK Government will adopt the legislation to address the changes to the revised Directives. Due to EC and EU processes it is likely that the proposals will take up to two years before being passed to Member States for adoption.

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[1] http://ec.europa.eu/priorities/jobs-growth-investment/circular-economy/docs/communication-action-plan-for-circular-economy_en.pdf.
[2] Copies of the documentation are available at http://ec.europa.eu/priorities/jobs-growth-investment/circular-economy/docs/communication-action-plan-for-circular-economy_en.pdf
[3] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ L 312, 22.11.2008, p. 3).
[4] Directive 94/62/EC of European Parliament and Council of 20 December 1994 on packaging and packaging waste (OJ L 365, 31.12.1994, p. 10).
[5] Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (OJ L 182, 16.07.1999, p. 1).
[6] Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end of life vehicles (OJ L 269, 21.10.2000, p. 34-43).
[7] Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC (OJ L 266, 26.09.2006, p. 1-14).
[8] Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (OJ L 197, 24.7.2012, p. 38-71).

2 Definitions and calculations

One of the key elements of the Package is a common EU target for reuse and recycling 65% of municipal waste by 2030, with a 60% interim target by 2025. It is anticipated that local authorities will be the main bodies responsible for delivering this. At the heart of the waste management priorities is therefore a desire to simplify and improve waste definitions and harmonise methods of calculating recycling rates across the EU.

The definition of municipal waste, as described in the Landfill Directive[9], includes both household waste and other wastes which are similar in nature and composition. This definition includes significant quantities of waste generated by businesses which are not collected by local authorities, for example from retail, offices and institutions. This contradicts the previous use of the term in UK waste policies and nationally reported data, which referred to waste collected by local authorities. To remove ambiguity, the UK Government confirmed in 2011 that all future references will be to Local Authority Collected Waste (LACW) for which a definition was produced. In future it is likely that the UK will be required to move its definition of municipal waste closer to the Landfill Directive definition to align with the rest of Europe, however this will be the subject of further consultation at a future date. If this is the case the measure would introduce significant burdens through the extra reporting systems required to cover non-LACW, and on those collecting these wastes. The inclusion of these additional sources of waste, which would need to be accounted for under this new proposal will require extra data collection (surveys, collation of consignment data from private sector contractors) and responsibility will, most likely, fall on local authorities to compile alongside their WasteDataFlow returns.

The target for 65% recycling is applicable to municipal waste, and the Package includes a commitment to harmonise the method of defining and calculating recycling across the 28 EU Member States to enhance the quality of statistics and simplify the reporting systems. A harmonised approach is yet to be defined, but is likely to require recycling rate calculations to be based on what is actually recycled rather than what is collected for recycling and pre-processing (therefore the proposal will aim to exclude rejects and contamination). In addition, a more level playing field will be needed between Member States in relation to which material flows are included within nationally reported statistics.

Currently there are materials that are not counted towards UK recycling rates, but that other Member States include in their calculations. For example, Incinerator Bottom Ash (IBA), which is routinely recycled to produce aggregate in the UK, could contribute up to an additional 7% to municipal waste recycling rates by 2020 if it were to be counted towards municipal recycling rates (based on an Environmental Services Association (ESA) estimate of 3 million tonnes of incinerator bottom ash by 2020 and an assumption that overall waste levels remain at approximately the same level as 2013/14)[10]. According to the ESA, IBA from a typical municipal incinerator represents 20-30% of input waste. This adds up to at least 1 million tonnes of IBA waste in England and Wales each year. In 2011, nearly 90% of IBA was recycled, the majority going to the construction product sector with metals going back into the metal sector. There is also increasing interest in the potential for Air Pollution Control residues (APC) and fly ash to contribute to recycling targets as the markets develop. However these materials are mostly hazardous and difficult to recycle and unlikely to contribute significantly to recycling targets. Whilst the Package includes a legislative proposal to include metals recovered from IBA within recycling rates, it does not resolve the wider question of IBA, or potentially APC/fly ash reuse and recycling.

The CIWM commissioned a research project in 2015 to assess the differences in interpretation of municipal waste definitions and the impact that different recycling rate calculation methods have on final reported

[9] https://www.gov.uk/guidance/local-authority-collected-waste-definition-of-terms

[10] Based on an Environmental Services Association (ESA) estimate of 3 million tonnes of incinerator bottom ash by 2020 and an assumption that overall waste levels remain at approximately the same level as 2013/14, see also Local Government Association (LGA) report in May 2015 Meeting the EU Recycling Targets

recycling figures[11]. This established the extent of variations in recycling rate calculations across member states, and provides evidence for more robust measurement and reporting under any new targets. The report applied the four recycling calculation methods used across Europe as set out by the EC, to data from nine municipalities. The results show an average variance of 8.6% between the highest and lowest recycling rates. In addition, the research identified a lack of knowledge of, or implementation of data capture systems, and the potential for greater harmonisation.

The harmonised calculation is yet to be determined, however methods that exclude contaminants and materials that are not returned to productive use are likely to reduce current recycling performance across the EU. This will put local authorities under further pressure to minimise the contamination of recycling materials and to ensure that there is greater transparency over the fate of residues and contaminants within recycling systems.

The weight-based recycling target approach (which is the foundation for the current 50% recycling target), which is the basis for the proposed targets in the Package, does not differentiate between materials with different resource and environmental impacts. The CIWM backs a move towards material-specific, LCA or carbon-based targets to ensure action is focused where the impact is the greatest. Although there is no indication in the Package that this is being considered, the principle would support the overall objectives of the Package. The continued use of weight-based targets means local authorities will need to balance focus on the collection of heavier materials, with prioritising materials for which there is a viable and commercial end market. In Scotland there have been attempts to move to a carbon-based target and calculations, however the programme has experienced significant challenges, as carbon values for specific material streams are difficult to calculate and discrepancies (especially relating to the carbon metrics of textiles) have resulted in the approach stalling at the current time.

The Package will also modify legislation to enable recycled materials to be reclassified as non-waste ('end of waste' criteria) whenever they meet a set of general, standardised conditions. This amendment is meant to simplify the legislative framework for operators in the recycling business (including local authorities and their contractors) and ensure a level-playing field for end of waste across the EU. It will also support the focus on increased quality of materials in the recyclates supply chain. Existing EU-wide end-of-waste criteria (e.g. for glass or copper scrap) will remain in force. At present, there are national UK and EU-wide end of waste criteria and it is not yet clear which standards will take precedent; for some materials, UK standards may be lowered or increased depending on the decision, and this will impact recycling rates achieved.

3 Reporting, monitoring and enforcement

The latest Defra statistics show that the recycling rate for English authorities for 2014 was 44.8%[12], but the figures show continuing wide variation between councils, and in many regions recycling rates have flat-lined in recent years. The current recycling rate calculation used in UK only includes Household Collected Waste (a subsection of Municipal Waste), which is not the same calculation as will be in place after the harmonisation of the method of defining and calculating recycling across the 28 EU Member States and therefore cannot be directly compared with the capability to achieve the target of 65% recycling. It is possible that once the calculation methodology is confirmed, the gap to achieve the 65% recycling target will be higher.

Reporting and monitoring requirements are yet to be defined for Member States; this provides an opportunity for professional and trade bodies which represent UK local authorities, including CIWM and LARAC, to play leading roles in the working groups and other forums which will inform the development of standard reporting approaches. These organisations will be well suited to ensuring that the reporting and monitoring requirements are fit for purpose and realistic for authorities within the UK.

[11] http://www.ciwm.co.uk/web/FILES/Technical/EU_Recycling_Rate_Harmonisation_Project_Oct_2015.pdf
[12] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/481771/Stats_Notice_Nov_2015.pdf

Increased regulatory enforcement of the duty of care custody chain and waste hierarchy implementation, which are already required by the existing Waste Directive, could help meet the targets. However this approach would require the Environment Agency, as the regulator, to increase monitoring and scrutiny of waste management practices in both the private and public sector at a time when this public body is facing significant funding and resourcing reductions.

4 Financial and operational impacts for local authority collections

According to a Local Government Association (LGA) report in May 2015[13], the pursuit of EU waste targets to date has required English local authorities to double their spend to £3.28 billion since 2000[14]. The report states that this makes collection and disposal of waste and recycling the third highest cost service for English local authorities.

The new target for reuse and recycling within the Package is likely to place a much greater financial burden on local authorities. This is set against a backdrop of decreasing budgets, with analysis by the Financial Times in the summer of 2015 finding that local authority budgets have fallen by £18 billion in real terms since 2010 (twice the rate of cuts to UK public sector spending as a whole). In its pre-budget statement (October 2015) the LGA warned that if the public sector was to meet the 40% cuts demanded in November's Spending Review, as much as £10.5bn would be taken from spending; this represents more than all council spending on refuse collection, arts and leisure, road funding, free elderly bus travel, as well as street cleaning and lighting and parks maintenance.

There will be a number of overarching financial implications associated with the increase in range and volumes of materials, which will all have significant operational cost impacts for authorities. This will include: changes or modifications to vehicle fleets, bulking facilities, tipping frequencies; and changes to domestic container/sack provision. There is also likely to be an increase in contamination, with the associated negative impacts on material value, waste acceptance disputes, refusals and legal costs. Therefore, without access to new and different funding avenues, or clarity on roles and responsibilities of other stakeholders in the circular economy supply chain for delivery of the Package ambitions, local authorities are likely to face significant challenges in funding the requirements of the Package[15].

It is not possible to forecast the cost of meeting the recycling rate targets without detailed modelling of financial datasets, and clarity on the range of materials included in the definition of municipal waste. However, Anthesis has undertaken a basic materials modelling exercise (see Appendix 1), using a municipal waste composition study from North London Waste Authority (NLWA) from 2010/11. This helps to profile the operational, behavioural and capture rate changes which will be required to meet the 65% target based on the existing definition of municipal waste.

The modelling suggests that while paper and glass currently achieve relatively high capture rates (45%-65%), to achieve the 65% recycling target it is necessary to increase the capture rates to 85%. In addition, it will be necessary to increase capture of materials with lower capture rates by up to 50%. These figures assume that even if increased capture rates can be achieved, all of the material which is collected meets the minimum market specification for the respective recyclate markets (i.e. no contamination), which is unlikely, and that there are markets in existence requiring the material. Where quality is below the specification, new markets with higher tolerance and potentially lower value may be required. The modelling also indicates that a more diverse material profile will need to be captured than is currently collected by most authorities in England. In particular most authorities will also be required to collect more food and green waste to meet the targets.

[13] Local Government Association (LGA) report in May 2015 Meeting the EU Recycling Targets
[14] Total for waste and recycling collection and disposal 2013/14
[15] Further information about the availability of funding is provided in section 12.

These changes, to capture and quality rates of materials, will be exceptionally difficult under current circumstances and approaches, and without more enforcement style interventions.

The model also identifies that there will be a requirement for high capture rates for miscellaneous combustibles and non-combustibles. These materials, as suggested by their names, are wide ranging in nature, but include bulky wastes such as wood, furniture, carpets and mattresses, as well as smaller wastes such as nappies. Some of these bulky materials are collected for reuse or recycling by some authorities, however collection is more likely through household waste recycling centres (HWRCs) than kerbside collections. Maintaining quality of these items is of utmost importance if they are to be reused, and in the case of carpets and mattresses, also important for them to be able to be recycled. It is often difficult for authorities to strike the balance between cost effective collections and meeting the requirements of the end markets.

As well as financial implications, increasing the range of materials accepted through local authority recycling schemes has a number of inherent operational difficulties. Many materials that could be added to current local authority collection schemes may be low value (in terms of the existence of end markets and the value achieved in the secondary market), and difficult to collect and process. For example, the modelling also showed that the fines (materials less than 10mm in diameter), would need to be captured. These fines are composed of a variety of material types, and sorting infrastructure is not currently designed or optimised to allow this size of material to be recovered. Current collection and sorting systems are based on managing materials that are reasonably homogeneous in size and arise with reasonably regular frequently in the service users' waste streams. While collecting additional materials for recycling, such as hard plastics, carpet and other large and infrequently produced items, will be required to meet the targets these may also generate operational challenges (e.g. in forecasting load volumes and round efficiencies, and impacting collection infrastructure and vehicle fleets). Without greater capacity large items could also displace other recyclable materials within the collection container, resulting in loss of higher value and/or more standard packaging items from the collection stream (i.e. causing householders to place these materials in the residual waste stream). This method of collection of these items is also unlikely to maintain their quality in a way that facilitates them to be reused and/or recycled. Similarly, some of the other additional streams, such as nappies and sanitary waste (which could be included in future collections if viable commercial end markets become available) are likely to generate inefficiencies in collection associated with the disparate nature of the service users, geographically, and the need for specialist vehicles to manage collections.

In addition, the implementation of recycling for some material streams could be counter intuitive; for example, to meet the requirements of the waste hierarchy, many authorities have encouraged householders to compost at home, e.g. by subsidising home composters. By collecting more green waste from householders to fulfil recycling targets, the authorities could move green waste down the waste hierarchy. This would be in conflict with the overall objectives of the Package and would result in an increase in local authority collected waste with the associated financial impacts of handling and processing additional material.

5 Challenges for urban and rural authorities

Urban authorities, in particular, may face difficulties in increasing the materials captured through challenges including:

- The provision of recycling facilities to residents living in flats and densely populated areas
- Lower overall recycling volumes from residents in flats, and difficulties engaging with an often transient population (i.e. those who rent)
- Large proportions of communities who may not speak English as a first language.

In many instances, vehicles undertaking collections in urban areas deliver material directly to facilities. As volumes increase to achieve new targets, this may result in increased vehicle movements and impact on

collection round efficiencies. HWRCs are often limited in number and size in densely populated areas, and, in less affluent areas, residents may not have access to vehicles to allow them to use facilities to deposit items for reuse or recycling.

Some of the quick wins which may exist for rural authorities are not necessarily available at the same scale in urban authorities, either. For example, garden waste can contribute significantly to overall recycling rates in areas with properties with gardens: in 2014/15 South Oxfordshire District Council had the highest household waste recycling rate in England with over 47 per cent of their 67 per cent recycling rate comprising of green/organic waste[16]). For urban authorities, however, with fewer garden properties, the opportunity to increase recycling rates through the collection of garden waste may be significantly lower.

6 Service user behaviour

Assuming end markets exist for all materials collected for recycling, the ability for service users to participate fully in recycling schemes is fundamental to achieving higher recycling targets. Recycling schemes will continue to require increased engagement to improve awareness on how and what to recycle, and to drive appropriate behaviour change.

It is unlikely that local authority budgets will be able to cover the level of public engagement needed to encourage the required increase in material quality and volume. This is predicted due to the significant funding cuts forecast, and also evidence that investment and approaches to consumer engagement to date has not had the required impact.

To support authorities with reducing communications resources, while still needing to increase capture rates, a nationally co-ordinated campaign, and standardised use of bins and iconography (such as that available through Recycle Now), will be required. Alongside this, additional approaches and actions by others across the supply chain may be needed to support engagement initiatives.

Scenario planning has been used to assess how standardising material streams and recycling containers can help improve the quantity and quality of recycling, and householder participation. This work has been done by the Government's Harmonisation and Consistency Working Group, and has identified a small number of approaches to recycling collections that will increase yields and quality, improve services, comply with regulations, and also reduce costs. The output, which will be presented to Defra ministers and will also be made available for local authorities to consider, is a menu of options to enhance harmonisation which authorities can adopt as appropriate, based on their local circumstances. It is believed that this harmonisation could be an essential part of driving behavioural change and operational practices to achieve recycling increases. Such change implementation will undoubtedly require financial investment by authorities.

The Package advocates the use of legislative financial incentives to properly implement the waste hierarchy, though it will be the responsibility of the Government to determine how these will be implemented in national law. The 'pay as you throw' policies for residual waste, already adopted across many European countries to incentivise higher levels of recycling by householders, could also be a powerful tool for pushing up recycling rates in the UK. For instance, in Landkreis Schweinfurt, Germany, a 43% reduction in residual waste arising followed the introduction of a 'pay as you throw' scheme for residual waste, with recycling increasing from 64% to 76% (based on German recycling definitions). However, the correlation between residual bin charges and increases in recycling is not clear cut, and other factors are often required to operate in tandem to drive change. 'Pay as you throw' is not an approach favoured by the current UK Government, which is more likely to favour positive rewards for recycling.

English authorities also have other options available to them such as compulsory recycling, stronger enforcement of fly-tipping, and strongly-imposed restrictions on collections of side waste outside of

[16] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/481771/Stats_Notice_Nov_2015.pdf

containers. Such options may be the only way to ensure the wider participation required to achieve the target. However, residents may only be fined if there is a detrimental impact on amenity, and that burden of proof is currently difficult to obtain, therefore, compulsory recycling is not currently a practical and affordable option and to play a future role further changes in approach would be required.

7 Competition for materials

The Package makes provision for Extended Producer Responsibility, and specifically sets a target for 75% recycling of packaging waste. Although there is an expectation in the Package that this target will support the municipal waste recycling target of 65%, the mechanisms by which this will be delivered are currently unclear. As a result, there are grounds for concern about competition for good quality materials, which could see producers, brands, manufacturers and retailers obligated under the Packaging Waste Regulations directly offering take back and recycling schemes which appear to compete with those provided by local authorities. If packaging materials (which currently make up a significant proportion of the local authority collected municipal waste) were instead collected by obligated producers (e.g. through customer take back programmes), the overall local authority collected municipal waste stream could look significantly different from today. These packaging materials are among the most recyclable materials in the waste stream, and if they were to be collected by other stakeholders, a significant proportion of what is currently recycled by local authorities today could be removed. This may make it harder for local authorities to achieve the proposed targets, and also create challenges associated with the onward management of lower value materials.

The competition for recyclable materials has the potential to extend to other material streams beyond packaging, if producers obligated under the other Directives and those who are not yet the subject of Responsibility Obligations also enhance their involvement in recycling material collections. For example, the WEEE Regulations require retailers to take back items from customers and recycle a proportion of the materials collected, potentially leading to a movement from local authority to retailer/manufacture-led take back programmes. In addition, leasing ICT equipment to consumers and incentivising its return for recycling is becoming more common place and will have further impacts on the material arising in local authority collections.

Similarly, some clothing retailers have also introduced take back schemes (e.g. H&M and Marks & Spencer), and with the rise of Ebay and other reuse channels, the range and volumes of recyclable materials that reach the local authority collections may undergo significant changes as other stakeholders in the supply chain compete for the material.

To avoid conflict between the public sector and those responsible for supporting recycling under the Producer Responsibility legislation, there is a role for a number of organisations. These include trade and professional bodies representing the public sector, waste management companies and manufacturers, as well as leading organisations such as WRAP and individual industry leaders to establish a forum for joint working across the supply chain. Partnership working between individual authorities and national/global producers is difficult to achieve, although there are some examples of good practice, such as the Kent Resource Partnership authorities and their working relationship with Marks & Spencer.

In a Circular Economy, more joined-up material supply chain management will be essential, to ensure that all targets set in the Package, aimed at the different supply chain stakeholders, can be achieved without unintended conflicts and consequences. There are good examples of manufacturing businesses that have invested in the recycling industry to enhance recyclability, such as Nestle's commitment to the Enval recycling facility for aluminium-containing flexible packaging. Some innovative trials have been delivered with local authorities to understand the operational and financial implications of collection.

8 Commercial and industrial waste collections by local authorities

Material collected from local businesses and other commercial/industrial (C&I) waste producers by local authorities, can be counted towards the targets. There are potential efficiencies around the use of the domestic vehicle fleets for collection rounds, though evidence to date indicates that most local authority collections have significant numbers of small and medium-sized enterprise (SMEs) customers. SME collections can cause significant challenges: volumes are typically low and collection frequencies high to address difficulties associated with storage space within participating premises. In addition, the commercial collections market is highly competitive, and historically, many local authorities have found it difficult to compete with private businesses offering collections to commercial customers.

9 Financial and operational impacts of materials treatment for local authorities

If the Circular Economy Package becomes law, it is expected that further investment in waste processing infrastructure will be required to ensure the appropriate processing infrastructure is available in the UK (and in Europe). This will include funding for facility closures, investment in refurbishments and technology changes to existing infrastructure, as well as investment for new waste processing infrastructure to provide further capacity for source segregated waste streams or further processing steps to move materials up the hierarchy and reduce environmental impacts.

Whilst the current Circular Economy Package does not include any specific processing requirements, it is expected that the European or Member State governments might have to provide additional processing requirements, in order to meet the proposed recycling and landfill targets i.e. restrictions on materials being sent for incineration by requiring higher minimum CVs for EfW could support recycling targets, or a reduction of biological active waste to landfill could support organic recycling targets and landfill reduction etc.

It is expected that most materials and residual waste will have to go through one or more waste processing steps before reaching their final re-use, recycling, recovery and disposal destination. For example, low quality glass currently going to aggregate, might have to be sifted by size, colour separated and washed to be able to meet recycling market specifications (requiring more infrastructure capacity, in this instance MRF plus specialist secondary glass processor) and incurring costs. Similarly, further pre-processing will be required on residual waste to extract maximum material volumes to meet the recycling target and the landfill reduction target. For example, residual waste might need to be screened for recyclables to increase recycling rates before being converted into a refuse derived fuel (RDF) (requiring infrastructure for material separation and RDF production), also incurring additional costs.

It is also expected that the landfill reduction target of 10% could specify specific material types, e.g. high impact materials such as biowastes. This will require waste to be stabilised to reduce waste volume and biogas potential before being landfilled (requiring infrastructure for MBT and landfill).

Over recent years the JWDAs have committed hundreds of millions of pounds to underpin the delivery of waste treatment and recovery infrastructure to reduce reliance on the use of landfill for disposal, to meet the current EU targets. The requirements of the Package are expected to significantly influence the type of processing facilities used and/or operated by local authorities in the future, as well as the overall waste processing and infrastructure landscape in the UK. In most cases, the capacity required by JWDAs at treatment and processing facilities is contracted and there will be contract clauses for required tonnage which, if it drops below the minimum levels will trigger compensation and penalty clauses which will increase costs.

Increased source segregation of the dry mixed recyclables (DMR), and biodegradable fraction and of mixed recyclables will increase the demand for biological treatment and MRF sorting or separation capacity. For instance, increased source segregation of biological wastes will increase demand for in vessel composting (IVC) or AD based biological treatment which is likely to push up gate fees of existing facilities in the short term as there will be some capacity gaps across the UK as well as regional shortages.

New capacity can be established within 2 - 5 years lead in time, but considerably reduced renewable energy subsidies for newly-developed facilities will also increase gate fees significantly for energy recovery developments.

For DMR separating and segregation capacity, there is more flexibility to boost throughput, for instance, increasing the number of shifts for existing facilities. However this is likely to increase gate fees in the short term through increased demand until new capacity is developed. Alternative and/or additional material upgrading facilities might be required to enable low quality materials to be made fit for purpose before entering the re-use and manufacturing market.

The key variable is the financing of new infrastructure, with reduced public funding and banks/more traditional funders becoming more risk adverse and reluctant to get involved in the infrastructure sector with inherently different revenue and income models and markets.

If separate collection of biowaste is required to achieve the new targets, and authorities cannot prove it is not technically, environmentally and economically practicable to collect it, considerable further investment will be needed in additional organic waste processing facilities. This will particularly apply to those authorities that do not currently have a food or mixed organic waste collection system in place. While there is some capacity available and in planning to treat increased amounts of organic waste, it is expected that some regions will experience considerable organic waste processing capacity gaps. These will require investment in new infrastructure. In particular, in contrast to residual waste, the capacity shortage will not be easily covered in the short or medium term by alternative spare capacity available in continental Europe.

The elimination of organic material from residual waste streams, in combination with increased recovery targets to meet the 10% landfill target, is expected to have significant implications for MBT and EfW capacity utilisation as well as facility efficiencies. For MBT this could lead to lower throughputs per annum, expansions or additional infrastructure at increased gate fees. However, conversely, the decrease in the organic fraction brought about by the requirement for segregated collection might lead to a slight increase in energy value and better efficiencies at EfW facilities and potentially reduced gate fees. The level of financial burden for infrastructure for local authorities will depend on the actual UK implementation of the 10% landfill target (incineration taxes, composition requirements etc.) as well as the current treatment infrastructure, in particular the individual MBT/EfW technology concept and facility operation and the contract mechanisms for residual waste treatment (i.e. minimum tonnage and residual waste composition requirements).

A binding target to reduce material sent to landfill to maximum of 10% of all waste by 2030 will result in significantly reduced demand and lower incomes for operators of landfill. As a result the viability of many landfill operations may be adversely impacted, with the likelihood that gate fees will reduce short term as operators fight for volume. A significant reduction in landfill profitability may also have the potential to create significant liabilities for local authorities to remediate abandoned landfills which are directly owned.

The experience in Europe[17] has shown that increased recycling rates (of up to 70%) are unlikely to change the composition of the residual waste stream so significantly that it will fall outside the operational envelopes of treatment facilities[18]. Austria, Belgium and Germany have achieved 64% – 73% recycling rates in 2013, reporting calorific value (CV) of 9.4 – 10 MJ/kg for residual waste.

Therefore the existing EfW facilities should still be fit for purpose, however they might experience some more subtle changes to the CV influencing energy production. Depending on the individual measures the JWDAs might apply, this may even have a positive impact by bringing the overall CV closer to the design point of the respective facility, by producing more homogenous and potentially higher CV residual waste streams. This

[17] http://www.waste2go.eu/download/1/D2.2_Waste%20profiling.pdf

[18] Meaning a limited range of parameters in which operations will result in safe and acceptable equipment performance. E.g. the CV acceptance range for incinerators, i.e. the range of waste CVs they can accept into their plant to achieve safe and acceptable plant performance.

actual impact will need to be evaluated in more detail on a case by case basis to establish financial implications in terms of gate fees, risk sharing and other relevant contractual performance and payment mechanisms.

10 The recyclates markets

The achievement of the recycling target, and the financial viability of local authority recycling schemes (depending on contractual terms), is very closely linked to the availability and specification requirements of the end markets for each material stream, and the local authorities' ability to meet them. Values of recyclates are affected by demand for recycled content product development, and by the commodity markets for both virgin and secondary raw materials; both of which have been volatile in recent years and are forecast to continue to demonstrate changing trends in the future as demand grows globally. The UK market has witnessed some high profile contract failures in recent years and the closure of several major plastics and paper reprocessing plants. As a result, it is becoming increasingly difficult to set long-term contract prices which accurately capture the expected revenues for the life of an authority's contract, and in poor market conditions plants will choose to accept only the highest quality material.

In expanding the range of material collected to meet recycling targets, local authorities also risk accepting materials (such as hard plastics) which have a low or negligible value and for which there are limited outlets (end markets). This will mean costs of collection will not be offset by material sales, potentially leading to the risk of needing to store or dispose of materials should the facilities not be able to accept them, thereby not meeting the reprocessing and recycling end goal. Furthermore, there is a disconnect between product and packaging innovation and the recycling end markets which represents a challenge for local authorities. Material arisings (types and volumes of specific material streams) are beyond the control of the authorities as decisions about product and packaging manufacture are made by the private sector stakeholders. Authorities are therefore left to forecast impacts of future changes in materials which they may be required to collect.

It is difficult to predict with any certainty what the material changes and recycling market responses will be but indications are that waste paper volumes will continue to decrease (due to increased use of digital devices and smaller format newspapers[19)] and cardboard will continue to rise due to increased online shopping and home deliveries[20]). This may reduce the amounts of higher grade 'news and pams' and increase 'mixed paper' and 'cardboard' for which lower prices tend to be achieved. Similarly, flexible plastic and laminated packaging will increase as the ready meal and convenience food market continues to grow and as food portion sizes continue to be individualised. There are extremely limited markets for these materials-limiting revenue sources and increased costs to the local authorities of collection and processing or disposing as residual waste.

Black plastic food trays will continue to increase as the ready meal and convenience food market continues to grow. This material often ends up in the residual waste stream at Material Recycling Facilities (MRFs) due to optical sorters not recognising the material type. Composite materials containing paper, e.g. foil and plastic mixes will continue to increase with packaging innovation and light-weighting. These are traditionally more difficult to recycle than the main forms of packaging (aluminium, paper, glass, etc) and have limited markets.

Currently there are no structures in place to incentivise or require the technical and commercial development of secure end markets for materials at the design and production stage. Although the Package supports design for recycling and changes to associated Directives it is unclear currently how the recycling market will be in a position to respond and what impact it will have on capacity development, prices and availability of contracts for local authorities in the future.

[19] Based on experience and data from previous Anthesis project(s) with local authorities

Anthesis has forecast the future strengths and weaknesses of key material markets based on current internal knowledge and results of published information and made the following predictions for the period to 2030 and the recycling target deadline:

- Strong markets for paper throughout the period to 2030 with some fluctuations caused by normal economic circumstances in intervening years; as domestic markets grow overseas (specifically in China) material prices for export from the UK can be expected to reduce.
- Strong markets for glass.
- The future market for metals will be predominantly in export as UK steel production continues to decline. Prices will largely reflect global steel market prices.
- WEEE and household batteries markets will be supported by the producer responsibility requirements into the future.
- The market for textiles and shoes will continue to be subject to price volatility and that the increase in poor quality clothing items will reduce prices as more textiles are forced into the recycling rather than reuse sector, but that overall the market will remain strong.
- Low levels of reuse will be sustained by the carpet and mattress market but that significant growth is unlikely.
- There will be slow growth in the combustibles market due to decreasing renewable energy subsidies and the uncertainty in the energy recovery market. However there is a potential that there will be increased investment in sorting, separation and preparation of dry recyclables, the organics waste recycling sector and the residual waste pre-processing infrastructure, driven by the producer responsibility and municipal waste recycling targets.
- The domestic plastic market will be weak in the future and that export markets will continue to be essential for all plastic materials. As domestic markets grow overseas (specifically in China) material prices for export from the UK can be expected to reduce. Significant investment will be required to ensure Circular Economy and upcycling options are available.
- Liquid cartons will experience a growth in the global reprocessing and recycling markets will be required to meet the recycling target and, that although this may be driven by targets themselves investment will be required early in order to achieve the full potential for recycling from this waste steam.
- Wood waste recycling market will continue to be weak for the long term future.
- Limited capacity may become available within Europe for the treatment of absorbent hygiene waste within the timeframe to the target recycling rate but that nappies and sanitary waste will not play a significant role in the achievement of the target due to technical challenges associated with the reprocessing, as well as the need for new collection infrastructure.

It is currently unclear how the Package will do anything to revive investment confidence in recyclate processing. Without sufficient demand for recyclates as raw materials, and the ability for secondary commodities to compete cost effectively with virgin materials, the required reprocessing infrastructure will not be developed and local authorities will be collecting materials to meet targets which may not be viable to recycle. This actual impact will need to be evaluated in more detail on a case by case basis to establish financial implications in terms of material value, risk sharing and other relevant contractual and payment mechanisms.

11 Implications on future planning decisions

The revised waste collection, processing and infrastructure requirements will need to be taken forward in revised core waste and mineral strategies and local development plans. They may lead to an increased or at least changed need for local and regional sites designated for commercial or waste developments. These sites

can then be taken forward by private and public developers to apply for planning approval for new waste and materials processing infrastructure.

12 Funding change

The EC has committed funding of over €650 million under Horizon 2020 and €5.5 billion under the structural funds to support the implementation of the Circular Economy; however how local authorities might access this funding is as yet unclear.

Additional financial investment in circular materials management may result from the UK review of the Producer Responsibility Obligations which was the subject of a DEFRA consultation in 2015. The role of the system's financial instrument (the Producer Responsibility Note (PRN) may change in the future. However the PRN system undoubtedly has an impact on the markets in the final quarter of 2015. In mid-November 2015 plastic and aluminium PRNs reached values in excess of £50 per tonne and paper, wood, steel and recovery PRN prices all also increased. While plastic and aluminium PRN values have therefore helped to support the value of the physical materials in recent weeks, this benefit has not yet been realised in relation to the price of paper, wood, steel and recovery PRNs. Local authorities have traditionally questioned the value that they realise at the collection point of the materials supply chain from the PRN revenue, but recent anecdotal evidence has demonstrated that there is value from metals PRNs filtering through to some authorities. If the Producer Obligations increase to meet the target of 75%, there will be further impacts on the price of PRNs for specific materials where markets and materials recycling are scarce, and supply and demand economics will drive up the level of investment along the future recycling supply chain.

Recoup, in its response to DEFRA's packaging waste consultation response[21], has advocated a number of supporting mechanisms and processes which would help to ensure that future PRN prices deliver the financial value into the recycling supply chain that is required to deliver increased recycling, for example approaches to mitigate artificial short term PRN price volatility, including a floor price for plastic PRNs.

As local authorities respond to budget reductions and the potential requirement to increase recycling rates it is likely that a growing number will reduce the frequency of residual waste collection to drive recycling behaviour.

13 Summary

The announcement of the Circular Economy Package in December 2015 was the first step in the implementation of a long series of changes. The process of ratification by the European Parliament and the review by the Council of Ministers is likely to take up to two years, and be subject to a number of oppositions, before being passed to each of the Member States for adoption. During this period there will be far greater visibility on the impacts of the package on local authorities than is currently available and the opportunity for MEPs to raise objections and influence the outcomes on grounds of both technical and cost implications.

Only after this process will the UK Government respond and transpose the necessary changes into UK law. There will undoubtedly be a role for professional and trade bodies such as CIWM and LARAC, amongst others who represent the circular economy in UK, to influence a favourable outcome for their representatives and members through lobbying on policy and engagement in working groups and forums, and to help ensure that the way in which the UK transpose the necessary changes results in supportive measures across the supply chain, with actions for different stakeholders.

As can be seen from the analysis set out in the sections of this report, the current Circular Economy Package proposals will have a significant impact on local authorities involved in waste management.

[21] http://www.recoup.org/p/242/defra-packaging-waste-consultation-response

14 Views on the impacts of the Package from the JWDAs and key areas of focus for local authorities

The six Joint Waste Disposal Authorities (JWDAs), that commissioned this work with CIWM, want to work with central Government to identify the best solutions for meeting the challenges of implementing a circular economy, to ensure that the UK meets its obligations and additional cost burdens are minimised. At a meeting in January 2016, the JWDAs identified that the following points are critical to ensuring the circular economy proposals are shaped and developed into Directives that achieve the right environmental outcomes without placing additional cost burdens onto local authorities:

1. Planning and leadership – strong leadership is required from Government to give long term certainty that will enable effective planning to take place to deliver the right investment in infrastructure and market development.

2. Cost of change – compliance with the Circular Economy Package proposals will cost more and clarity is required on where the associated cost will fall. Local authorities are taking greater responsibility for budgets and spending at a local level, however compliance with the Package will require clear, long term national policy. The JWDAs believe that policy in relation to the package will need to move cost burdens further up the commodity chain towards the primary stages of resource extraction and processing rather than imposing additional cost at the local authority end of the chain of utility.

3. Format of targets – the JWDAs believe that weight based targets do not encourage the best environmental or economic outcome. They want to work with Government to develop alternate metrics that more accurately measure the environmental benefit to determine material specific targets. The JWDAs' view is that these targets should reflect what industry can realistically achieve and that these proposals should be promoted with the European Commission to seek to gain agreement to their use as part of the final Circular Economy proposals.

4. Waste composition consideration – under the current weight based reporting and target approach, the ability of local authorities to achieve high recycling rates is largely determined by the availability of garden waste, which is linked to property type. Therefore, to help ensure parity in any (weight based) targets set by Government, the JWDAs believe that differential recycling targets should be considered (i.e. to set a higher recycling target for local authorities in predominantly rural/leafy areas in relation to targets set of urban authorities). Any targets set should also aim to avoid incentivising materials to move down the waste hierarchy (e.g. via encouraging authorities to collect garden waste that is currently being composted at home by householders).

5. The definition of municipal waste – the proposal for a common definition of municipal waste is welcomed by the JWDAs, however, the six JWDAs want to seek clarity on whether IBA will be included in UK statistics given the impact this can have on performance. The JWDAs also believe that clarity is needed regarding how commercial waste, captured under the wider definition, will be monitored and tracked. The JWDAs' suggestion is for electronic duty of care recording to be mandatory for all waste streams and for this to be used as the data source.

6. Timescales for transformation – the time that will be required for contract variations, infrastructure development, market development and behavioural change is significant, emphasising the need for long term policy and leadership.

7. The duty to recycle – in addition to market development, critical to achievement of the targets will be engagement of residents to capture significantly greater quantities of higher quality material for recycling. The JWDAs believe that there needs to be the ability for local authorities to continue to incentivise good behaviour but for this to be supported by a duty to recycle and powers of enforcement where residents fail to comply.

8. Harmonisation of systems - the programme to harmonise collection systems is broadly welcomed by the JWDAs, however, this work should recognise that the range of materials collected needs to be determined by markets, which will need to be able to absorb the volume of materials that will result from a common system and address the different sorting and infrastructure capacity currently available in different geographies to meet their existing needs. Cost pressures will also drive local authorities towards similar collection systems as they seek to realise savings through joint procurement and service delivery. The programme, therefore, needs to work with what the markets for collection, sorting and re-processing of materials will allow.

9. Market development – the analysis shows current markets cannot support the achievement of the 65% target either from capacity or the range of materials accepted. If the markets are not sustainable, the ability for local authorities to collect and recycle the material will be significantly negatively impacted. Long term certainty is needed to ensure that the reprocessing capacity and market demand is developed in time for additional materials and new types of materials to be presented for reprocessing.

These points are intended to signpost where the JWDAs believe action is required to ensure that the Circular Economy proposals are developed to get the best outcome for the UK as a whole from an economic and environmental perspective, and that costs are applied to the most appropriate element of the chain of utility in accordance with the Circular Economy principles.

Appendix 1 Modelling Results

The following table has been developed by Anthesis using a municipal waste composition study from North London Waste Authority (NLWA) from 2010/11. It has been used for the purposes of this report to help to profile the necessary operational, behavioural and capture rate changes which will be required to meet the 65% target. It should be noted that this information is based on a JWDA which is largely high density and urban and while the information has been useful to provide an indication of the scale of the challenges and opportunities that the 65% recycling target represents for different material streams it is not considered a representative sample for the whole of the UK.

	Scenario 1	Seneario 2	Scenario 1b	Scenario 2b	65% recycling
	Current Markets	Future Markets	Current Markets	Future Markets	Example capture rates
Paper & Card	44%	44%	49%	49%	85%
Plastics	15%	15%	25%	25%	41%
Textiles & shoes	10%	10%	20%	20%	50%
Glass	63%	63%	70%	70%	85%
Misc Combustibles	13%	16%	19%	19%	50%
Misc. Non-Combustibles	65%	65%	69%	69%	85%
Metals	31%	31%	41%	41%	85%
WEEE	16%	16%	24%	24%	50%
HHW	15%	15%	25%	25%	50%
Garden waste	63%	63%	72%	72%	85%
Other organic	85%	85%	86%	86%	85%
Food waste	13%	13%	23%	23%	60%
Material less than 10 mm	7%	19%	14%	14%	30%
Overall MSW Recycling Rate	32.4%	34.4%	39.0%	41.1%	65.0%
Description	Current situation i.e. capture rates and recyclability	For future recyclate markets, increase in capture from HH kerbside, HWRCs and commercial waste collections for materials with new markets	10% increase in capture of materials (from HH kerbside, HWRCs and commercial waste), given current recyclate markets	10% increase in capture of materials (from HH kerbside, HWRCs and commercial waste), future recyclate markets	Example capture rates required to achieve 65%

Source: Anthesis, based on NLWA data and Waste Data Flow