ZAP

ZERO
AVOIDABLE
PACKAGING
waste
in construction

Report on findings of key products and packaging, waste management routes, barriers and enablers and current best practice

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The project is led by the Alliance for Sustainable Building Products (ASBP)

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The ZAP project has been awarded funding by the Ecosurety Exploration Fund. The fund was first launched in November 2019 with a view to providing a visible funding route for companies, charities, not-for-profits, academic institutions and the public sector working on projects addressing the environmental challenges presented by packaging, batteries or e-waste. Applicants could apply for up to £150k for projects that could be completed over a 12-month period. The fund has now completed and has supported seven projects in total, with some recently reaching fruition including the innovative CellMine and BOSS 2D technologies.

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EXECUTIVE SUMMARY

This report is the first deliverable for the Zero Avoidable Packaging Waste in Construction (ZAP) project, funded by Ecosurety. The aim of the project is to research and help develop scalable solutions to combat the prevalence of avoidable packaging waste in construction, a sector that is the second-highest consumer of plastics, much of which is not recycled.

The project is led by the Alliance for Sustainable Building Products (ASBP) and the project partners are Cullinan Studio, Bankside Open Space Trust, Mace and Morgan Sindall. Working with these partners, the economic, environmental and other costs and benefits of changes in practice will be evaluated with stakeholders from the construction packaging sector. The project runs for a year, finishing December 2022. For more details, see https://www.ecosurety.com/impact/education/zap/; https://asbp.org.uk/project/zap-project

In this report, we present the findings of an initial desktop study and interviews with the supply chain to better understand the key types of plastic packaging arising on construction sites and identify opportunities for reduction and better management of them across the construction lifecycle. The project is focused on plastic packaging, which may be primary, secondary or tertiary in its use. Although data exists at a national level for the amounts of packaging used and its management, it is not demarcated specifically for the construction sector. Data for construction packaging is generally poor, lacking in granularity and is not recent. WRAP estimated in 2017, that the amount of construction plastic packaging placed on the market was 62,000 tonnes; put into context there were around 2.4 million tonnes of plastic packaging placed on the market in 2018.

There is no specific data for what happens to plastic packaging in construction – only overarching figures, which suggest 44% is sent for recycling; 42% for energy recovery and the remainder to landfill.

Some older studies suggest that packaging on construction sites can be between 5% and 50% by volume of a construction project's total waste, with an average of 34% by volume (note the proportion by weight is considerably less).

Polyethene (PE) film is thought to be the most common plastic packaging product and uses include sheeting, bags, stretch and shrink wrap and pallet hoods. In terms of protection, PE sheet wrapping is used almost everywhere to protect material such as insulation from rain and dirt, or often simply to hold materials together. Other types include polypropylene (PP) bags and polystyrene (PS) fill. The type of packaging will vary depending upon the type of product. For example, bulk items such as sand may come in woven PP bags, cement in PE or paper bags, paint in plastic pots and bricks with shrink wrapping, plastic banding and hoods on pallets.

There are opportunities to be more sustainable by following a packaging hierarchy. In preferred order:

1. Elimination by removing packaging altogether (e.g. use of bulk deliveries);
2. Reduction (e.g. use of larger pack sizes), optimisation (e.g. light weighting);
3. Reuse (e.g. reusable crates);
4. Recycling (into new products);
5. Recovery (energy from waste); and finally
6. Disposal to landfill.

Plastic packaging may also be substituted for other materials. Decisions on the type of packaging to be used are based on a number of factors including the necessity to provide adequate protection of the materials to site and movement around site, stability and the

protection from injury, protection from weather conditions, cost, and the need for a product to be compressed to enable better transportation and storage (e.g. for products such as insulation) and for product branding and labelling.

Our desktop study found that there are very few initiatives to reduce packaging in construction sector. Publicly declared commitments appear to be limited, though some companies have targets committing them to increasing recycled content. Based on our interviews with manufacturers and desk-based research, it would appear that that a fair proportion are looking at *eliminating, reducing and optimising* packaging. For example, with the use of water-based, non-toxic adhesive removing the need for stretch wrapping on pallets, alternative pack formats and label redesign. Reuse of packaging is not commonplace, with only a few examples found in relation to reusable, collapsible boxes for mechanical and electrical products and use of returnable bulk containers for liquids. The cost of logistics and the possible need for Environmental Permits were cited as barriers.

Recycled content varies, with some examples of up to 50%, although feedback indicated that it was currently difficult to source plastic packaging with 30% recycled content (and therefore avoid the plastic packaging tax, set at £200/tonne) with manufacturers labelling their packaging more clearly for recycling. A few examples were found of substitution of plastics for other materials (i.e. paper for plastic), although the choice is not always clear cut and one study found there was more damage to products using paper bags than plastic bags. It was also found that there is a lack of substitute materials – specifically for shrink wrap and straps. The use of bioplastics is being investigated by a few manufacturers, although it needs to be able to withstand weather conditions if used for the storage of products outside.

Where products are being supplied by builders' merchants, there are some examples of plastics being segregated on-site and sent for recycling. It can be difficult to influence suppliers, they may be in complex supply chains with some products imported.

On construction sites, common practice is for the plastic packaging to be mixed in a general skip, and then sent for sorting at the waste transfer station. As such, plastic packaging is likely to be dirty and contaminated with other materials making it harder to reprocess. Due to the low volume of plastic packaging in relation to other materials, it takes a long time to generate sufficient quantities to make it worthwhile to collect from sites in a segregated manner. Construction sites are difficult environments to segregate plastic packaging materials. Moreover, plastic packaging does not weigh much relative to other waste materials on-site, therefore there is less incentive to reduce/recycle it. Economically, the costs of collecting and transporting relatively small weights of material from site can be high and with fixed price waste management contracts, there is limited scope for cost savings through segregation on-site and waste reduction. There is, in fact, a disconnect across the supply chain, as many of the suppliers interviewed suggested that packaging is fully recyclable, though when on a construction site the practicalities and economics mean recyclability is reduced.

Most of the activity identified for the reduction of single use plastics on construction sites is limited to welfare and site offices, for example refillable water bottles and reusable cutlery. When packaging does reach the waste transfer station/materials recycling facility, some waste companies will segregate and

grade plastics before being sent on for further reprocessing. Plastic reprocessors may prefer to process the different types of plastics separately, as they can sell the reprocessed plastic granules for more. However, plastics can be mixed on-site and then separated at a reprocessor through different technology (e.g. optical sorting for rigid plastics). However, interviews with waste companies suggested that there are many types of plastics, making sorting difficult. The recycling of different plastic packaging materials from the construction product manufacturing industry and its supply chain can be problematic, as it cannot all be processed together.

Going forward, as part of the project we will assess and evaluate a number of opportunities across the construction lifecycle. Examples include design and procurement, the use of targets and clauses in specifications and tenders/contracts for plastic packaging. For manufacture, a continued reduction of packaging through film thickness, length etc. is important and there is learning to be shared from manufacturers who have already done this. Finding alternatives for single use packaging, largely through reuse would be beneficial. More takeback of packaging from manufacturers/merchants, especially for LDPE should be investigated, including the use of ‘milk round collections’. On construction sites, the main opportunity is to increase segregation, for example, the use of ‘survival bags’ and/or some type of compartment in a skip. For resource (waste) management, better reporting could be undertaken to establish the types and amounts of packaging and its composition. Agreed specifications for plastics to be segregated on-site could also be beneficial.

1. INTRODUCTION

The zero avoidable packaging waste in construction (ZAP) project is funded by Ecosurety to research and develop scalable solutions to help combat the prevalence of avoidable packaging waste in construction, a sector that is the second-highest consumer of plastics, much of which is not recycled.

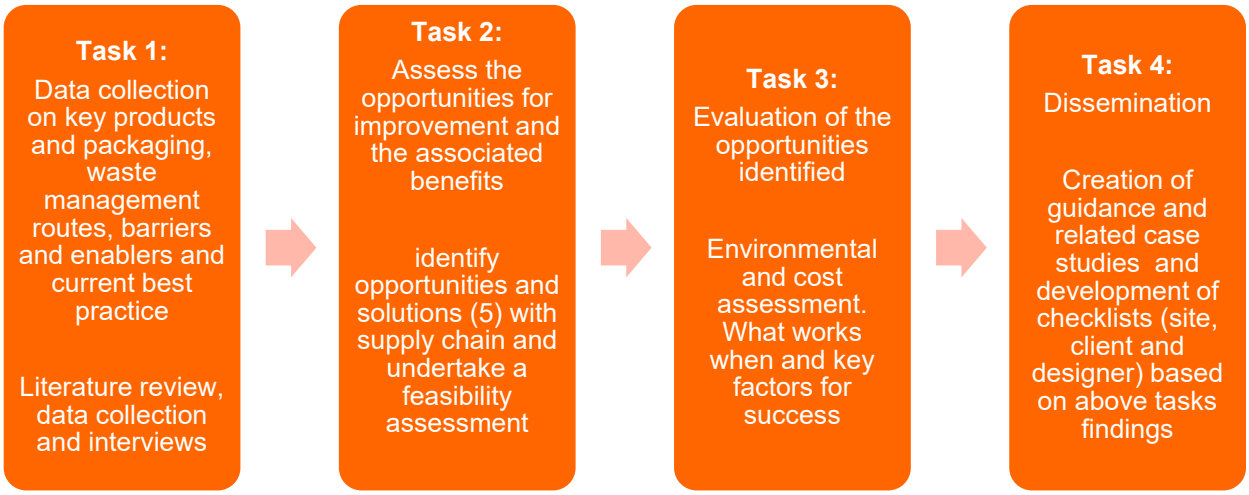
The aim is to understand key types of plastic packaging arising on construction sites and identify opportunities for reduction and better management of them across the construction lifecycle.

The project is led by the Alliance for Sustainable Building Products (ASBP) and project partners are Cullinan Studio, Bankside Open Space Trust, Mace and Morgan Sindall. Working with these partners, the economic, environmental and other costs and benefits of changing practices will be evaluated with stakeholders from the construction packaging supply chain. At least five major forms of construction packaging interventions will be prioritized and business as usual versus alternatives robustly assessed.

The project will link up with real-world construction projects to build case studies and offer future training and guidance that will demonstrate the positive actions the whole supply chain and sector can take, helping many organisations reach zero 'avoidable' waste by 2050 and eliminating all 'avoidable' plastic waste by 2042, commitments within Defra's Resource and Waste Strategy[1]. For more details of the project: https://www.ecosurety.com/impact/education/zap/; https://asbp.org.uk/project/zap-project

The project runs for a year finishing December 2022, and has four major tasks, as shown in Figure 1.

Figure 1: Project Tasks.



[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/765914/resources-waste-strategy-dec-2018.pdf

This report represents the findings for Task 1, which is to identify the current state of play for construction plastic packaging, identifying types, quantities, how it is managed, current and best practice, barriers and enablers to the better management of it. This covers all types of plastic packaging.

Packaging can be defined as 'all products made of any materials of any nature to be used for the containment, protection, handling, delivery and presentation of goods[2]'. Packaging can be categorised into three different types:

Primary or sales packaging whose job is to primarily contain, protect and identify the product. It is the last piece of packaging between a product and the end user. An example of this is the use of paper/plastic bags for cement or plastic bags that may be used to package ironmongery into separate items for sale (e.g. packs of 5, 10, 50 or 500 nails).

Secondary packaging is the packaging that holds together the individual units of a product. It is designed not so much to hold the product (that is the job of the primary packaging) so much as a means to deliver mass quantities of the product to the point of sale or end user. It may also be used to display products in-store.

Tertiary or transit packaging that protects and supports specifically during transit of the product (this includes storage and handling). This may involve the use of banding and/or shrink wrap and could also involve material used for gap filling to minimise movement when being moved. Strapping heavy materials to pallets is an example, or to hold board products together through polyethene wrapping.

This can be summarised as: materials/products are often contained/identified by primary packaging, are contained or displayed with secondary packaging and wrapped in or placed on tertiary packaging.

[2] Packaging (Essential Requirements) Regulations 2015

2. TASK 1 METHOD

To obtain information on the status of plastic packaging in construction in the UK, a number of avenues have been investigated:

- A literature review for reports published on packaging, with information that relates to the construction industry and/or plastic packaging. This has provided top-down data.
- A desk-based search for company case studies that concern packaging related to the construction sector.
- A review of any existing databases and other sources which may contain information on plastic packaging utilised in the construction sector. This includes the:
    - Environment Agency Waste Data Interrogator[3] (a system that records waste returns from permitted waste facilities).
    - The National Packaging Waste Database[4], managed by the Environment Agency which details obligated companies and national requirements for packaging reprocessing.
    - A review of Building Research Establishment's (BRE) SmartWaste[5] system, an online system used by construction companies to monitor waste arisings and subsequent management of the waste.
    - A review of Environmental Product Declarations (EPDs) belonging to the ASBP members and the information within on packaging.
    - A review of any relevant company data.
- Interviews of 20 suppliers, covering a range of construction products.
- Interviews of 5 waste management companies.
- Dialogue with a number of wider stakeholder organisations (e.g. Resource Management Association, University of Cambridge, OPRL, UCL).

[3] https://data.gov.uk/dataset/d409b2ba-796c-4436-82c7-eb1831a9ef25/2019-waste-data-interrogator
[4] https://npwd.environment-agency.gov.uk/
[5] https://www.bresmartsite.com/products/smartwaste/

3. KEY FINDINGS

3.1 Overall packaging flows and waste management

There are various sources of data available on packaging types and amounts and how it is subsequently managed. However, most of this data lacks granularity and data for the construction industry is old and/or variable. Table 1 provides a summary of the data available. These are discussed further in turn.

Coverage	Findings	Age and Source
European – overall demand for plastic; packaging data not split by sector type	• 49.1 million tonnes demand for plastic of which 19.9 million tonnes is packaging • 29.1 million tonnes collected at end of life: 42% sent for energy recovery; 34.6% recycling and 23.4% landfill	2020; Plastics Europe[6]
UK – overall end of life routes for plastic and packaging; not split by sector type	• 4 million tonnes of post-consumer plastic waste collected at end of life • 2.3 million tonnes is post-consumer plastic packaging waste • 44.2% sent for recycling; 41.9% energy recovery and 13.9% landfilled	2018; Plastic Europe[7]
UK -packaging placed on the market; broken down by sector type including construction	• 2.361 million tonnes of plastic packaging placed on the market (+/- 6%) • 1.026 million tonnes to 1.111 million tonnes recycled	2017; WRAP[8]
UK – plastic flows including packaging; not broken down by sector	• A demand of 5.2 million tonnes of plastics, 1.6 million tonnes manufactured in the UK and 3.6 million tonnes imported • 2.2 million tonnes went into packaging and 0.9 million tonnes into construction	2017: University of Cambridge[9]

Table 1: Summary of data available for packaging in the UK and Europe

[6] https://plasticseurope.org/knowledge-hub/plastics-the-facts-2021/
[7] https://plasticseurope.org/wp-content/uploads/2021/09/Plastics_the_facts-WEB-2020_versionJun21_final.pdf
[8] https://wrap.org.uk/resources/report/plasticflow-2025-plastic-packaging-flow-data-report#download-file
[9] https://www.refficiency.org/wp-content/uploads/2020/09/ThePWord.pdf

European Packaging Figures

According to Plastics Europe[10], there is a demand for 50.7 million tonnes of plastics and nearly 40% is used for packaging (including for construction products) and 20% for building and construction. PE, PE and PET are the most common used plastic types for packaging along with, to a smaller extent, PVC and polystyrene. No figures are available on how much packaging is used in the construction sector from Plastics Europe. Of the 29.1 million tonnes of plastic collected at end of life; 42% is sent for energy recovery; 34.6% recycling and the remainder landfilled. Of this, around 18.8 million tonnes is plastic packaging, with more being sent to energy recovery than landfill, when compared with all plastics; the recycling rate is constant.

UK Packaging Information

There is some information available for the UK, but again not split out for sectors. For instance, of the 2.3 million tonnes of plastic packaging collected around 44% in 2018, () went for recycling, 42% energy recovery and the remainder to landfill. Since 2006, the amount sent to recycling has doubled, the amount landfilled has decreased by 77% and the amount sent to landfill has increased by a multiple of 6. Using plastic recyclate in new construction products accounts for 46% of end markets and into packaging 24%[11].

WRAP also had data in relation to packaging in the UK, in a report called PlasticFlow2025[12]. This estimates that there were 2.3 million tonnes of plastic packaging placed on the UK market in 2017. On recycling, WRAP estimates the quantity of UK plastic packaging recycled by accredited reprocessors (as registered as part of the Packaging Regulations)in 2017 to have been between 1.026 million tonnes and 1.111 million tonnes. For non-consumer plastic packaging, this is estimated to be 565,000 to 586,000 tonnes.

The University of Cambridge[13] has also investigated plastic flows in the UK for 2017 and estimated a demand of 5.2 million tonnes of plastics: 1.6 million tonnes manufactured in the UK and 3.6 million tonnes imported. Of this, 2.2 million tonnes went into packaging and 0.9 million tonnes into construction. This report does not distinguish packaging that is derived from construction.

[10] https://plasticseurope.org/knowledge-hub/plastics-the-facts-2021/
[11] https://plasticseurope.org/wp-content/uploads/2021/09/Plastics_the_facts-WEB-2020_versionJun21_final.pdf
[12] https://wrap.org.uk/resources/report/plasticflow-2025-plastic-packaging-flow-data-report
[13] https://www.refficiency.org/wp-content/uploads/2020/09/ThePWord.pdf

Construction Packaging Information

Table 2 presents an overview of the data available for construction packaging data.

Coverage	Findings	Age and Source
UK - packaging placed on the market; broken down by sector type including construction	• Construction packaging is 62,000 tonnes. However, this estimate is +/- 21% (i.e. it could range from 48,890 tonnes to 75,020 tonnes) • PE film is 86% (54,000 tonnes) of construction plastic packaging arisings; PP (pots) is 10% (6,000 tonnes) and HDPE (pots and bags) 4% (2,000 tonnes). • Around 20,000 tonnes (32%) of construction plastic packaging waste is recycled	2017; WRAP[14]
Companies obligated by the Packaging Regulations	• 466,515 tonnes of packaging obligated with SIC codes in construction (704 companies). • The greatest recovery obligation was for general recycling (this is any packaging material) at 123,911 tonnes, followed by glass recycling at 111,342 tonnes and then paper recycling at 105,508 tonnes. • The total obligation for plastic was 29,447 tonnes	2009; unpublished
BRE – based on construction site data	• Between 5% and 50% by volume of a construction project's total waste, with an average of 34% by volume.	2002
WRAP – based on construction site data	• Packaging accounted for an average of 26% by volume of waste from a construction project. These figures are for all packaging waste; by tonnage, timber accounted for 59%; paper and cardboard (25%) and plastics (16%)	2005
BRE - based on construction site data	• Packaging materials accounted for 2% by tonnage of all waste produced (though it should be noted that mixed C&D waste accounted for 22% by tonnage (in 2017) and that a proportion of the mixed C&D waste is likely to be packaging). • Waste coded as plastic (which could include packaging) accounted for 0.1% of tonnage.	2017; BRE SmartWaste data[15]

Table 2: Summary of data available for packaging in the construction sector

[14] https://wrap.org.uk/resources/report/plasticflow-2025-plastic-packaging-flow-data-report#download-file
[15] https://www.bresmartsite.com/products/smartwaste/

An estimate for construction packaging from WRAP[16] in 2017 was 62,000 tonnes. However this estimate is +/- 21% (i.e. it could range from 48,890 tonnes to 75,020 tonnes). It may also be that some of the manufacturing packaging - some 409,000 tonnes (at +/- 21%) - could also be used for construction products. It is acknowledged in the report that this data is based on secondary research sources, such as the Green Construction Board and BRE which are considerably dated. WRAP also suggests that: PE film is 86% (54,000 tonnes) of construction plastic packaging arisings; PP (pots) is 10% (6,000 tonnes) and HDPE (pots and bags) 4% (2,000 tonnes). For construction, it has been estimated that 20,000 tonnes of plastic packaging was recycled – around 32%.

A study (unpublished) looked at the total obligated recovery under the Packaging Regulations for selected construction SIC codes in 2009 and estimated there was 466,515 tonnes of packaging. This is based on 704 companies. For 2009, the total UK recovery obligation for businesses was 6.8 million tonnes. Therefore, packaging from the construction sector represents approximately 6% of the overall obligation. The greatest recovery obligation was for general recycling (this is any packaging material) at 123,911 tonnes, followed by glass recycling at 111,342 tonnes and then paper recycling at 105,508 tonnes. These three categories equated to 73% of the overall recovery obligation. For the plastics recycling obligation, 26% of the obligation was from agents involved in the sale of timber and building materials and a further 26% from the manufacture of other plastic products. The total obligation for plastic was 29,447 tonnes.

16 https://wrap.org.uk/resources/report/plasticflow-2025-plastic-packaging-flow-data-report#download-file

Construction site data

There is some data available from previously published reports, though rather old now. A study by BRE in 2002, found that packaging wastes accounted for between 5% and 50% by volume of a construction project's total waste, with an average of 34% by volume. The volume of packaging increased as the project progressed, with the most packaging be produced at 70-100% completion (this is when a lot of the fit out and interior work is happening). A further study by WRAP in 2005 found that packaging accounts for an average of 26% by volume of waste from a construction project. These figures are for all packaging waste; by tonnage, timber accounted for 59%; paper and cardboard (25%) and plastics (16%).

More recent data can be found in BRE's SmartWaste system[17] which produces benchmarks for waste arisings on construction sites and recovery routes. This is based on European Waste Catalogue Codes (EWCs), which have a classification for packaging (for all types) and plastic. This shows that packaging materials accounted for 2% by tonnage of all waste produced (though it should be noted that mixed C&D waste accounted for 22% by tonnage (in 2017) and that a proportion of the mixed C&D waste is likely to be packaging). Waste coded as plastic (which could include packaging) accounted for 0.1% of tonnage. This shows one of the challenges in addressing packaging on construction sites – it is relatively low tonnage when compared with other heavier materials.

An example from a major contractor shows that for their projects, all packaging materials are 11% by volume; 7% by tonnage; with 94% 'recovered'; plastic (could include packaging) is 20% by volume and 6% by tonnage; with 94% 'recovered'. Mixed C&D waste is 6% by volume and 22% by tonnage. Recovery includes energy recovery.

Lastly, the Waste Data Interrogator has been reviewed – this aggregates waste return data from permitted waste facilities. For plastic waste (EWC 17 02 03), 80,000 tonnes were received at all waste facilities (this does not include plastics that may be recorded as a mixed waste); some of this could be plastic packaging; only 583 tonnes went to landfill; however, more plastic waste may have gone to landfill after treatment. The plastics packaging (EWC code 15 01 02) is for packaging from all sectors and, as such, has not been looked at.

17 https://www.bresmartsite.com/products/smartwaste/

3.2 Types of packaging used

The BRE study from 2009 found that the main material used in construction plastics packaging was found to be Polyethylene (PE) sheet, and then plastic containers, polystyrene fill and bubble wrap, Polypropylene (PP) bags and others (e.g. sealant tubes and sand bags). Where supplied, the data in selected Environmental Product Declarations (EPDs) on packaging shows that the plastic packaging was largely PE:

- Use of plastic film for acoustic panel
- Two thin plastic (PE) straps per pack of boards to secure them together for transport
- Shrink wrapping for panels on a pallet
- Paper bags with PE lining (composite product) used for grout
- PE foils used for application of grout
- PE straps and PE stretch foil for insulation
- PE straps for temporary protection
- PE foil sacks for insulation
- PE straps for steel coils

In terms of protection, polythene sheet wrapping is used almost everywhere to protect material such as insulation from the rain and dirt or often simply to hold materials together. Bubble wrap is maybe used to protect more fragile material such as furniture and electrical equipment.

Construction products	**Plastic packaging used**
Plasterboard	hoods pulled over the plasterboard sheets
Insulation (rolls, slabs)	shrink wrapped over product; straps
Bricks & blocks	shrink wrapped over the products; banding; hoods
Sand	woven polypropylene bags
Cement	bags
Roof tiles	shrink wrap over product
Paint	buckets
Sealants/grout	tubes / cans /foil
Pipes	banding holding the pipes together
Nails and screws	boxes
Internal fittings	Varies can include composite packaging – cardboard fused together with plastic film
Windows and doors	edge / corner protection, spray film

Table 3 shows some of the common construction products and their main types of plastic packaging, which varies depending on the nature of the product e.g. loose, boards, palletised.

Table 4 shows the different types of plastic used for these plastic packaging types which can vary.

	Plastic packaging					
Plastic types	Buckets	Bags	Bandings	Stretch Wrap	Shrink Wrap	Hoods
LDPE (low density polyethylene)		X	X	X	X	X
PP (Polypropylene)	X		X			
PET (Polyester)			X			
Other (Woven Polypropylene)		X				

Table 4: Common types of plastic packaging for construction and their polymer type

The plastic packaging types are now described.

Buckets

Plastic buckets made from Polypropylene (PP) are used for storing paints and products containing liquids. Before plastic buckets can be sent for recycling they need to be cleaned of any residues. As a result it is more difficult to process and divert this plastic packaging type from energy from waste and landfill.

Bags

LDPE bags are used as packaging for sand and plaster products. Loose ironmongery items such as screws and nails are put in LDPE bags. Since the type of plastic used for this packaging format is LDPE, it can be segregated with the other film packaging materials.

Woven polypropylene bags

These bags are commonly used to transport sand to construction sites. These bags are for one-use only and are non-returnable for reuse by the manufacturer for health and safety reasons. Since the bag is used to lift and move heavy materials these bags can be only used once i.e. getting the product from the manufacturer or builders merchant to a point of use. This packaging type is recyclable. One of the main UK builders' merchants offered the back haul collection of woven PP bags from their customers' site. The bags are stored at their premises, where they are baled and sent to a plastic reprocessor.

Shrink and stretch wrap

The main purpose of using shrink and stretch wrap on construction products is to keep the products together on a pallet, during transportation, onsite transit and storage. It is also used to provide onsite protection to the products, especially if the products are stored outside. To shrink wrap construction products, heat is applied to LDPE film and as a result the film shrinks tightly over the construction product. To stretch wrap construction products, a highly stretchable plastic film is wrapped around construction products by a machine or hand. Both shrink and stretch wrap are pre-dominantly used as secondary and tertiary packaging by construction product manufacturers.

The plastic type is LDPE and it can be used for example on bricks, boilers, insulation, ironmongery, pipes, and plasterboard. Shrink wrap stays on the product until it is delivered and used on construction sites. If the product is being supplied to a builder's merchant, the shrink wrap will be removed and is usually segregated onsite. This is due to the merchants breaking up bulk products to assemble for customer orders. The segregated plastic is then sent to plastic reprocessors for recycling. The quality and the colour of the plastics will determine what products they will be made into: coloured plastics are mostly used to make refuse sacks and bags; clear plastics are used in higher grade applications like clear packaging.

Stretch wrap is also left on products until installation. Sometimes builder's merchants will remove it when splitting up the products. In most cases this material is sent for recycling in a similar fashion to shrink wrap. Builders' merchants may also apply stretch wrap to products for onward transportation.

Clearly identified by WRAP and others is the issue of flexible plastic packaging (LDPE) which represents nearly a quarter of all UK consumer plastic packaging; with only 6% recycled. This issue is thought to be some extent similar in the construction sector, whereby plastic film type materials may not be recycled. A key issue is the economics and lack of infrastructure for this

Banding

Plastic bands are used to strap construction products onto pallets and are single use; they may also be described as single use slings. They can either by LDPE, PP or Polyester (PES). If they are LDPE, they can be segregated together with shrink and stretch wrap and sent for recycling.

Hoods

Plastic hoods are made of LDPE and used as a protective cover rather than holding the products onto a pallet for the purpose of transportation. The hoods sit on top of products such as bricks.

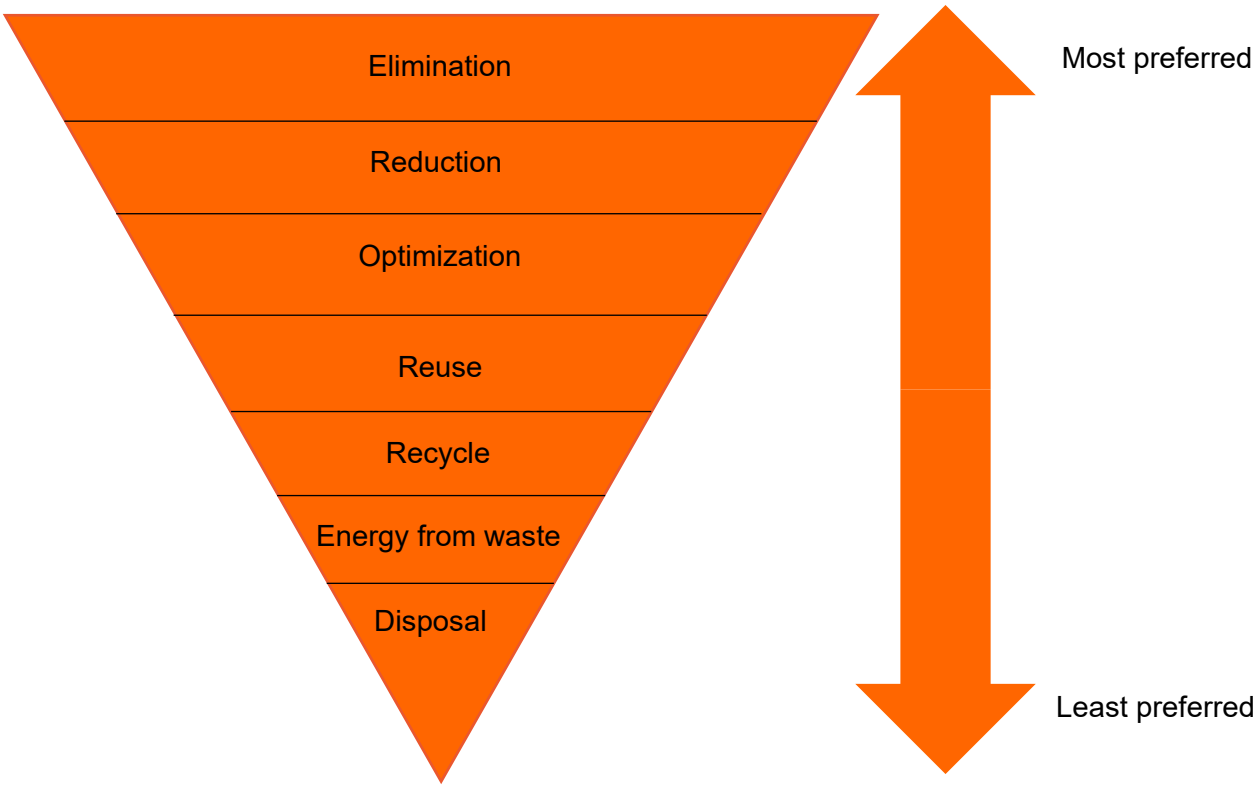
Other

Other types of plastic packaging include composite packaging which can be, for example, cardboard fused together with a plastic film (LDPE). This may be used on ironmongery (display purposes), doors and windows. This type of packaging is non-recyclable. Foam packaging (LDPE) may also be used for corner and edge protection and polystyrene can also be used for protection. Clamshells can also be used in merchants for displaying items and these are usually made from PET.

3.3 Practices for managing packaging

Like the waste hierarchy, there is a packaging hierarchy, which shows the most desired to least desired options. This is shown in Figure 1 and described below.

Figure 1: The packaging hierarchy



- Elimination: by removing packaging altogether; reducing unnecessary layers; eliminating the use of adhesives and tapes; limiting the use of labels. For construction products, examples include the delivery of bulk items (e.g. sand and aggregates) instead of using 1m^3 polypropylene bags (bulk bags) which are not commonly reused for the same material; though they can be recycled[18]. The use of silos for cement onsite rather than delivery in 20kg bags; use of edge protection rather than full protection e.g. kitchen units.
- Reduction: by using larger pack sizes and reducing the amount of packaging per unit of product (if compliant with manual handling requirements); reduction of void spaces, fillers and padding, use of air as the packaging medium for certain components or removal of air from sealed packages.
- Optimization: light weighting and downsizing by eliminating one or more packaging layers; replacing blister packs with smaller cardboard packs, use of thin-walled packaging, strengthening of materials used; reducing the thickness; using spot weld blobs of adhesives rather than a continuous strip; minimise label size; shaping the pack to be transported efficiently; choose distribution pack sizes that maximise pallet use.
- Reuse: Structural packaging such as pallets, crates and sturdy plastic or cardboard boxes can be re-used. Reuse of bulk bags for storing re-usable materials; use of original packaging to contain product/ material off-cuts.
- Recycle: plastics (if clean) can be recycled into new products. Segregation (from other materials and possibly by plastic type, depending on the plastic reprocessors) is the key to successful recycling, either onsite or at a waste facility.
- Energy from waste: plastic packaging waste sent for energy recovery (incineration)
- Disposal: plastic packaging waste disposed of in a landfill site.

There may also be material substitution, i.e. using carboard instead of plastic, of use of paper bags instead of plastic bags.

18 https://www.smartliftbulkpackaging.co.uk/products/smartcycle/

Key considerations

There are key considerations when choosing the most appropriate packaging system which may differ depending upon the requirements of the construction product. These include:

Health and Safety

Apart from protecting the product, secondary and transit packaging is designed to enable the product to get safely to its destination. Construction goods travel through various supply chains and moving products around requires the use of heavy machinery and manual handling. The packaging needs to be durable enough to withstand the goods being moved around in a safe manner. There is potential for injury, for example from products that are not secured appropriately e.g. through slips, trips and falls or being struck by moving objects. Therefore, health and safety considerations are a prime factor in designing packaging systems.

Transportation and storage

Transportation of products is inter-twined with health and safety considerations. The packaging needs to be strong enough to withstand moving the products through the supply chain. The level of packaging is also important during onsite storage of the materials. Some products might be stored in an outdoor environment whereby, over time, the sun might degrade the plastic packaging, which would result in damage to the product during transportation (if the packaging is not sturdy enough). Products with adequate protection are likely to have lower wastage rates which has an economic and environmental impact.

Cost

Cost is one of the main considerations when designing packaging systems. Packaging systems that use stronger and thicker films cost more than thinner plastic films. With the recent introduction of the plastic packaging tax (April 2022), packaging will cost more (£200/ tonne) if the recycled content is less than 30%.

Compression of product

Packaging systems can be used to wrap the products in such a way as to reduce the air voids within a pack. Reducing the bulkiness is especially relevant to products such as rolls of insulation since this product can be compressed onto the pallet by the shrink wrap packaging system. This means that a pallet of the product takes up less space during transportation and site storage, improving transport efficiency and reducing lorry movements. Plastic films that have certain strength can withstand pressure applied to them during the packaging process.

Product branding

Most product packaging incorporates the brand name and will differentiate the product from its competitors. The product's primary packaging is mostly used for branding but in many cases secondary and transport packaging can also be used for this purpose. Optimising the level of secondary packaging might reduce the opportunity for a company to advertise its products while moving them along the supply chain.

Packaging labels may have a number of important functions as well as identifying the product and labels can be pre-printed or adhesive. Labels may provide instructions for use, certifications, health and safety requirements and handling information. Plastic packaging may also be printed with a symbol indicating the plastic type.

3.4 Packaging Initiatives and commitments

Initiatives

There has been much action to reduce the amount of single use plastic packaging companies utilise, mostly focused on the food and consumer sectors, such as the Plastic Pact[19]. However, there seems to be little (published) evidence of these actions translating to the construction sector. The Plastic Pact signs up organisations to four targets covering recyclability and recycling levels as well as recycled content and the elimination of problematic or unnecessary single-use packaging. This is clearly targeted for those with products in the consumer sector, though initial conversations with WRAP suggest that they may be looking to broaden the scope to include sectors such as construction.

A key initiative is the new plastics packaging tax which provides an incentive for manufacturers to use packaging with a higher proportion of recycled content and for suppliers to supply it; some of the construction product manufacturers have commitments to meet this target (minimum 30% recycled content). For example, Knauf[20] and Travis Perkins has required its suppliers to have a minimum 30% recycled content in their packaging[21].

Initiatives such as environmental building assessment schemes, which promote sustainable buildings (e.g. BREEAM[22], LEED[23], Well[24] and Ska[25] have requirements for waste, material efficiency and materials environmental performance, though there is nothing specific on plastic and/or packaging. The ecolabel natureplus[26] recommends that only polyolefins should be used to manufacture plastic packaging for building products. Packaging made from PVC is generally not permitted and biocides must not be used.

The Considerate Contractors Scheme (CCS) has a Spotlight on Plastics and Packaging campaign[27] with links to case studies and best practice. Linked to this was a survey they undertook of nearly 900 construction industry professionals to gauge their attitudes on plastics in construction. The survey found that:

- 98% said the over-consumption of plastics and packaging is a global issue.
- 95% said the construction industry needs to reduce its consumption of plastics and packaging.
- 81% said the construction industry is not doing enough to reduce its consumption of plastics and packaging.
- 51% said they have little understanding of the regulations surrounding plastics and packaging.
- 44% said the workforce knows how to recycle different plastics and packaging materials.
- 31% said they frequently use plastics and packaging that cannot be reused or recycled.

[19] https://wrap.org.uk/taking-action/plastic-packaging/initiatives/the-uk-plastics-pact
[20] https://www.knauf.co.uk/about-us/news/2021/10/24/17/05/knauf-continue-to-improve-sustainability-credentials-with-recycled-plastic-packaging
[21] https://www.travisperkinsplc.co.uk/sustainability/environment/waste-management/
[22] https://www.breeam.com/discover/why-choose-breeam/
[23] https://www.usgbc.org/leed
[24] https://www.wellcertified.com/
[25] https://www.rics.org/uk/about-rics/responsible-business/ska-rating/
[26] https://www.natureplus.org/
[27] https://www.ccscheme.org.uk/the-scheme-launches-spotlight-on-plastics-and-packaging-to-tackle-the-issue-of-plastic-pollution-in-the-construction-industry/

The Supply Chain Sustainability School has been working with Zero Waste Scotland, Valpak and three housebuilders (Barratt, Bellway and Taylor Wimpey) to understand better the packaging waste that is produced and how it can be better managed

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Commitments in the construction sector

Publicly declared commitments appear to be limited, though, as already mentioned, some companies have targets committing them to increasing recycled content. Those that do have commitments or are actively reducing plastics include:

- Brick manufacturer, Wienerberger, has a commitment of 30% less packaging by 2023, compared to 2019 levels (180 tonnes avoided).
- Saint Gobain (manufacturer and distributor), 100% recyclable packaging by 2030[28].
- Forterra (bricks and blocks manufacturer), to reduce their total volume of plastic packaging by at least 50% by 2025 (targeted saving of 976 tonnes of plastic per year).
- ERA (a manufacturer and supplier of manufacture of decorative and security hardware and smartware) has committed to achieving 100% sustainable packaging by 2026 as part of the Ryman Group 2030 Sustainability Excellence Roadmap.
- Mace (contractor) is looking at reducing plastic onsite and corporately, with their Time to Act[29] campaign.
- Multiplex (contractor) is looking at a number of schemes such as the closed loop recycling of temporary protection.
- Willmott Dixon (contractor)[30] has a target to reduce overall waste intensity (including plastic) by sixty per cent, by 2020.
- Barratt Developments (housebuilder) - to reduce waste relative to build area by 20% by 2025 from 2015 levels and maintain diversion from landfill at 95%[31].
- Taylor Wimpey (housebuilder) - to cut their waste intensity by 15% by 2025 and use more recycled materials. By 2022, publish a ‘towards zero waste’ strategy for their sites[32].
- Canary Wharf Group (developer) has a Breaking the Plastic Habit programme[33].

[28] https://www.crystals.saint-gobain.com/sustainability#
[29] https://ccsbestpractice.org.uk/wp-content/uploads/2019/02/Case-Study-Mace.pdf
[30] https://www.willmottdixoninteriors.co.uk/plastic-waste-fuss/
[31] https://www.barrattdevelopments.co.uk/building-sustainably/taking-action/case-studies/reducing-construction-waste
[32] https://www.taylorwimpey.co.uk/corporate/sustainability/environment-strategy
[33] https://breakingtheplastichabit.co.uk/

3.5 What is happening at the manufacturing and supply stages?

Based on our interviews with manufacturers and desk based research, it would appear that that a fair proportion are looking at *eliminating, reducing and optimising* packaging. Examples include:

- The use of water-based, non-toxic adhesive which has a great shear strength and is biodegradable. Its use stabilises the load on a pallet without the need for stretch wrapping.
- General reduction of thickness, weight, length of foil, removal of branding and label redesign
- Standard specification for UV protection to prevent packaging from breaking down in the sun.
- Alternative pack formats including a 'bay band' that reduces packaging by around 65%.
- 'Foil sausages' or 'chubs' can be used on sealant applications and can reduce waste by up to 95%; foil waste is 24 times smaller than the plastic waste
- Spray on window protection which has reduced material usage and waste generation
- Reduced single-use plastic bag usage by more than 20 million bags/year for mechanical and electrical (MEP) products

There are a few examples of the *reuse* of packaging, but this does not appear to be commonplace:

- Reusable, collapsible boxes for MEP, which can be flatpacked for return
- Reuse of plastic covers on outgoing finished products, prevented purchasing more than 1,500 pallet covers and avoided 1.5 tonnes of plastic.
- Use of returnable 1000 litre bulk containers, rather than 10kg and 30kg single use buckets (saving 4,000 buckets)

For *recycled content*, this can vary with some up to 50%, such as cement bags and shrink hoods (e.g. TriLoop[34]. Manufacturers are labelling their packaging more clearly for recycling; for example, once cement manufacturer labels include 'empty, rinse, recycle' and 'dispose of the packaging responsibly'.

On *material substitution*, a study was commissioned by a cement manufacturer to find out if, instead of using plastic bags, paper bags would have a reduced overall environmental impact. The study found that 11% of the product delivered to site in a paper bag got damaged between delivery to merchant and use onsite. Using plastic bags increases the product shelf life as the plastic packaging is waterproof and can be stored onsite. The company still uses paper bags for some of its cement but introducing the use of plastic packaging, enabled its customers to have a choice between which type of packaging is used. This highlights the fact that plastic packaging of construction products can extend the products' lifetime and reduce wastage.

[34] https://www.trioworld.com/en/products-solutions/en-products-solutions-stretch-hood-loop/

The use of bioplastics is being investigated by a few manufacturers; although it needs to be able to withstand weather conditions if used for the storage of products outside; there are also end of life treatment issues, with limited capacity in the UK and the cost is currently prohibitive. Treetop Biopak is an example of a compostable bio-based shrink wrap product which won the Judges Vote at ASBP's Innovation Pitch Event on Packaging[35]. Another alternative is mycelium packaging which can be used instead of polystyrene; for example, the Magical Mushroom Company[36]; though this is not thought to be used as yet in the construction industry

Construction products are not always directly transported from manufacturing plants to construction sites, - products can be delivered to a builders' merchant first and the merchants may supply direct to site or customers could collect the products themselves. In the case where the products are delivered to the merchants, there might be some instances where some of the plastic packaging is removed by the merchants. As a result, plastic packaging waste is generated in the builder's merchant's yard. There are some examples of this material being recycled, with plastic reprocessors directly taking back plastic from builders' merchants. The plastic films are washed, shredded and after re-melting, the polymer pellet is turned into different products.

There is an example of a quality protocol agreement with a chain of building centres whereby the reprocessors educate the centre's employees on how to segregate the plastic packaging materials. If the reprocessor receives plastic materials that do not reach the desired quality standard, then they try to re-negotiate the price of the contaminated load. The reprocessor has a partnership agreement with the building centres and, on receiving plastic material, they provide feedback to the building centre on how they are performing segregating plastics to the desired quality standard.

One building merchant collects used woven PP bags from their customer's sites on returning vehicles on an ad hoc basis. Once the bags are collected, they are reused at their building centres for collection and storage of light weight packaging waste (stretch wrap/cardboard etc). This practice does not cause health and safety issues as it is for internal reuse only and is tightly controlled. Once used, they are baled and sent for recycling. The building merchant has a waste exemption in place for bringing back materials to their depots for reuse.

[35] https://asbp.org.uk/asbp-news/treetop-biopak-wins-the-dragons-vote-in-dragons-ecoden-2

[36] https://www.magicalmushroom.com/

3.6 What is happening to the packaging waste onsite

Most of the activity identified for the reduction of single use plastics on construction sites is limited to the welfare and site offices, for example refillable water bottles and reusable cutlery. There has been less activity identified for construction related plastic packaging. Examples from construction projects include:

- Bond Street Station (part of Crossrail) emphasised that use of primary, secondary, and tertiary packaging, must be minimised and made from sustainable materials that can be either reused, recycled, or recovered. An example is that timber crates were used for deliveries instead of plastic containers to avoid the use of plastic packaging, and any excess packaging must be taken back for subsequent reuse or recycling. Site inductions included an environmental briefing, and one in three toolbox talks covered environmental issues such as air pollution, carbon footprint, and plastic pollution.
- Crossrail, 'Designing Out Waste' workshops were required to identify opportunities for reducing plastics and packaging on the design process and contractors were required to consider measures to minimise plastic consumption onsite and how waste will be diverted from landfill before construction commences. During World Environment Week in June 2018, all Crossrail Ltd projects were encouraged to focus on reducing single-use plastics and were provided with practical advice on how to avoid consuming single-use plastics.
- On a Balfour Beatty project, plastic was segregated in an eight-yard skip and sent for recycling; plastic audits were also undertaken.
- One brickwork contractor has swapped all timber pallets for reusable recycled, robust plastic ones.
- One company has used g rock-climbing chalk bags on work belts, to put offcuts from stripping small sections of uPVC coating off lighting protection tapes into as they work so they are sent for recycling
- Mace asked suppliers what they could do to actively reduce their plastic waste which resulted in some suppliers rationalising the amount they used. They also ask suppliers to avoid single-use plastics "at all costs" and to carry out as much upfront work as possible to avoid them coming to site. Where single-use plastics are specified, contractors must fill out a justification form stating the name of the product, why it's needed and the reason it can't be swapped for an alternative.
- On Willmott Dixon's Kings Dock car park project in Liverpool, Maple Sunscreening, a provider of architectural facades, was going to use 5,000m^2 of polystyrene to transport cladding to site. Instead, the polystyrene was reused: the first load of packaging was taken back when the second delivery arrived and used to package load three – resulting in only two rather than 20 loads of waste packaging[37].
- Barratt Developments, in 2020, undertook a survey of 72 suppliers to investigate the extent and types of single use plastic packaging onsite. Their graduate cohort followed this with an audit to assess the plastic waste created on two different sites across a number of sample plots, resulting in the identification of particular issue areas and recommendations for better practice[38]

[37] https://www.building.co.uk/focus/plastic-waste-in-construction-is-the-sector-doing-enough/5098139.article

https://www.barrattdevelopments.co.uk/building-sustainably/taking-action/case-studies/reducing-construction-waste

There is little information available in terms of how packaging on construction sites should be managed. A guide from Envirowise in 2005, did highlight some of the requirements for better management including the need to train the workforce, engagement of a champion, use of technology such as balers if space is limited. Information reviewed suggests that there is limited segregation of plastics onsite – waste may be collected in skips or 660 litre bins, for internal works.

Due to the low volume of plastic packaging, it takes a long time to generate sufficient quantities to make it worthwhile to collect from site in a segregated manner. Construction sites are difficult environments to segregate plastic packaging materials. Due to the lack of space, contamination of plastic packaging and the presence of different types of plastic packaging on most construction sites, it is easier to employ a waste management contractor to collect the general waste (including plastic packaging) from site and sort it at a Material Recovery Facility (MRF). If the MRF segregates the plastics from the general waste stream, the quality might not be as high than source segregation, however it is still possible to send the mixed plastic materials to be recycled.

3.7 What is happening to the packaging waste off site

Some waste companies will segregate and grade plastics before being sent on for further reprocessing. Plastic reprocessors may prefer to process the different types of plastics separately as they can sell the reprocessed plastic granules for more. However, plastics can be mixed onsite and then separated at a reprocessor through different technology (e.g. optical sorting for rigid plastics). The stages of plastic reprocessing are as follows: 1) depending on the cleanliness – packaging may be washed; 2) plastic materials are put though a shredder; 3) shredded plastic is re-melted into new product. These activities are likely to occur at the plastics reprocessing plant and end user.

The recycling of different plastic packaging materials from the construction product manufacturing industry and its supply chain can be problematic as it cannot all be processed together. LDPE shrink and stretch wrap can be reprocessed together because they are the same polymer type. Since LDPE shrink and stretch wrap comes in different colours, the general tendency by reprocessors is to segregate the clear LDPE films from the coloured films as clear plastic has a higher value than coloured plastics due to having wider applications once reprocessed. On the other hand, coloured plastics can only be used to produce lower grade recyclate that is only suitable to manufacture coloured plastics such as black bin liners. Woven polypropylene can also be recycled along with the LDPE, though this depends on the ratio of each polymer. Woven polypropylene, if segregated and reprocessed separately, has a higher value than when mixed together with other types of plastics. Reprocessors do not process PVC and LDPE together because of the chloride content in PVC.

The plastic packaging sent to reprocessors needs to be fairly clean. The contaminants most often found in construction plastic packaging are residues: oils, liquids, paints, mud, cement dust, concrete. The end product of plastic reprocessing will depend on how contaminated the feedstock is. For example, the ink used on plastic packaging may affect the recyclability of plastics. If the film has black ink on it, then it is mostly used to make black or coloured products such as black refuse sacks.

Sticky labels on plastic packaging may be an issue for some reprocessors and is generally regarded as a contaminant. For smaller packaging the label can weigh more than the plastic.

3.8 What are the barriers for making advances?

There are a number of barriers that have been identified through the interviews and desk-based research. These include:

Packaging materials

- Lack of substitute materials - this is largely in relation to replacing plastic when it is used for shrink wrap and straps or the use of single use packaging where no alternative exists.
- Difficulty in obtaining plastic with 30% recycled content, though this will change if more plastics are recycled.
- Suppliers can be in a complex supply chain; making it difficult to influence those that add packaging to products; some products may also be from abroad.

Reuse/take back

- Little take back of packaging by manufacturers and most builders merchants or distribution centres do not collect woven PP bags from site.
- The logistics of collecting/returning plastic packaging for reuse/recycling to manufacturers/builders' merchants;
- There may also be requirements for waste regulations.

Waste management

- The waste management contractors interviewed all suggested that there are too many types of plastics, making sorting of the plastics difficult at the MRF.
- Contamination of plastics onsite and the mixing of different plastic types; space restrictions are often given as a reason not to adopt waste segregation onsite.
- Segregation - the main reasons and difficulties for segregation in general are no time, no space, weak market, not cost effective, insufficient expertise and contamination.
- Quantity - plastic packaging does not weigh much relative to other waste materials onsite; there is therefore less incentive to reduce/recycle it. The viability of recycling of plastic packaging materials from construction sites largely depends on the type and quantity of packaging material being generated on a particular site and geographical distances to markets. The costs of collecting and transporting relatively small weights of the material from site can be high.
- Waste management contract structure – with a fixed price waste management contract, there is limited scope for cost savings through segregation onsite and waste reduction.
- Traditional construction and demolition (C&D) waste management companies are not equipped to deal with materials that are of lighter weight.
- There is a disconnect as many of the suppliers interviewed suggested that packaging is fully recyclable; though when on a construction site the practicalities and economics mean recyclability is somewhat reduced.
- General lack of granularity of data on the types of packaging used and amounts. For example, it is unclear if the rise in the amount of prefabrication (offsite construction) results in a decrease in packaging (less individual elements coming to site) or an increase (more valuable items requiring more protection.

3.9 What are the opportunities?

There are various opportunities that have been identified across the project life cycle to manage packaging better, which will address some of the barriers; these are shown in Figure 2.

Design and procurement

- Use of packaging reduction, reuse and recycling targets and clauses in procurement and specifications
- Assessing the opportunities for increasing recycled content in plastic-based construction products (using recyclate from construction plastic packaging)

Manufacture

- Continued reduction of packaging through film thickness, length etc
- Increasing the recycled content, especially in LDPE products
- More take back of packaging from manufacturers/merchants (learning from other take back schemes)
- Use of bulking to reduce packaging use for approximate materials
- Consistent and appropriate labelling

Construction

- Increasing segregation of plastics on construction sites
- Looking at how plastic packaging could also be treated with other plastics from construction sites (increasing the volume)
- Use of balers on site at appropriate points in the construction programme

Resource management

- How plastic packaging could also be treated with other plastics from construction sites
- Bulking up of plastics
- Specification for recycling
- Agree reporting

For design and procurement, there are opportunities to place targets and clauses in specifications and tenders/contracts for plastic packaging. This could cover a number of issues such as better reporting, segregation, targets for reduction and targets for recycled content. This could be within the project brief and also within subcontractors. More work could also be done in looking at the potential opportunities of using recyclate from construction plastic packaging in construction plastic products. For example, the use in waterproof membranes, plastic roads and kerbs etc.

For manufacture, a continued reduction of packaging through film thickness, length etc is important and there is learning to be shared from manufacturers who have already done this. Finding alternatives for single use packaging, largely through reuse would be beneficial such as reusable shrink hoods; this has been identified in a number of the case studies e.g reusable crates. A current focus for manufacturers is to increase amount of recycled content (in order to avoid the plastics packaging tax). More take back of packaging from manufacturers/merchants, especially for LDPE should be investigated and the use of 'milk round collections'. There are already take back schemes for certain materials in construction e.g. plasterboard, carpet tiles, ceiling tiles, temporary protection and pallets. Learning how these work and the related logistics would be beneficial; together with the opportunity to add packaging materials as part of the take back scheme. Consistent and appropriate labelling in terms of the recyclability and the actual label used could be quick win.

On construction sites, the main opportunity is to increase segregation of plastics on construction sites, for example the use of 'survival bags' and/or some type of compartment in a skip; this needs a better understanding of how plastics can be sorted at MRFs. Use of balers onsite at appropriate points in the construction programme could be beneficial, as well as potentially segregating plastic packaging waste together with offcuts of construction based plastic products.

For resource (waste) management, better reporting could be undertaken to establish the types and amounts of packaging and its composition; agreed specifications for plastics to be segregated onsite could also be beneficial. The relationship between reprocessors, the construction sites and MRFs could also be explored (could segregated plastics be sent directly to reprocessors from construction sites?).

2 NEXT STEPS

The next stage of the ZAP project is to focus on at least 5 interventions for plastic packaging, working with the project partners and to assess their feasibility and undertake environmental and economic assessments.

Working with BOST and Cullinan Studios, we will develop procurement and specification guidance and test this out on a real-life project. There are a number of opportunities to work with a range of manufacturers (e.g. flooring, windows, insulation, plasterboard) to assess and implement some of the opportunities identified. Onsite actions will be taken forward with Mace and Morgan Sindall looking at segregation onsite and baling for recycling. For waste management, we intend to hold workshops with organisations such as UROC (United Resource Operators Consortium) and RMAS (Resource Management Association Scotland) to better understand the opportunities. As a result of assessing these interventions, a range of guidance material will be produced.