

Tayside Draft Area Waste Plan

SEPA REQUIREMENT

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Foreword by Tayside Waste Strategy Area Group Chairman

I am very pleased to present the first ever draft Tayside Area Waste Plan for consultation. The Tayside Waste Strategy Area Group has been working hard since early 2000 to prepare a long-term, integrated plan for the management of waste in the Tayside area. This process has been carried out in consultation with a range of stakeholders and I would like to thank everyone involved for such constructive comments.

The draft plan proposes a step change in the way we think about and handle our waste. First and foremost, we must find ways of reducing the amount of waste we produce. We must then consider the waste that we do produce as a potentially valuable resource. This means that we must re-use and recycle as much of this resource as possible. We must then get as much benefit as possible from the remaining waste before we finally resort to landfilling. These are the challenges, which face us all.

This draft plan proposes a way forward for the next 20 years. However for this to work, and work it must, we have to ensure that the strategic direction we are proposing is sensible and workable. I would therefore urge you all to have your say at this very important consultation stage in the process.

Colin Anderson
Chair, Tayside Waste Strategy Area Group

Foreword by SEPA Chairman

I welcome the publication of this draft Area Waste Plan for the Tayside Waste Strategy Area and look forward to receiving constructive feedback from this public consultation programme.

This draft Plan is one of eleven area plans being prepared across Scotland and represents the output from months of hard work by each of the members of the Tayside Waste Strategy Area Group. I commend all of the participants for their contribution to this important process.

Publication of the final Area Waste Plan is expected by Spring 2002 and will take account of the feedback received during the consultation programme.

Scotland's statutory obligations under the EU's Waste Framework Directive will be discharged through the development and successful implementation of Area Waste Plans for each of Scotland's eleven Waste Strategy Areas. These plans will also deliver the vision of more sustainable waste management in Scotland - as set out by SEPA in the National Waste Strategy: Scotland, published in 1999.

There is no doubt that waste is everyone's responsibility. Our behaviour must undergo rapid and fundamental change over the next five to ten years if we are to meet the challenges of Scotland's National Waste Strategy and the requirements of EU and UK policy and legislation. Waste must increasingly be managed as part of an integrated process that shifts from the current culture of waste disposal, to one of resource and materials management that will make a significant contribution towards more sustainable development and a modern infrastructure and economy in Scotland.

Central to the delivery of this fundamental shift in waste management practice is the forging of robust long-term working partnerships between the key members of each local Waste Strategy Area Group. These will ensure the ongoing, meaningful contribution by all stakeholders into the development and implementation of the local Area Waste Plans in Scotland. These essential contributions, in conjunction with a range of ongoing development, research and promotional activities, will ensure the successful delivery of the vision as set out in the National Waste Strategy: Scotland.

Ken Collins
SEPA Chairman

Executive Summary

Society generally is becoming more aware of the importance of global environmental issues and their linkage with and impact on every day life. As part of the Governments' drive for *sustainable development* and in support of the wider environment, waste management is a major area facing a period of change. The need to reduce the continued growth in waste arisings and also deal more effectively with the waste produced is therefore a major challenge.

In support of the National Waste Strategy: Scotland, a series of waste strategy areas has been established in Scotland and Area Waste Plans are being produced to guide waste management strategy and practice in the period to 2020. Successful implementation of these area waste plans will enable Scotland to meet the EU Landfill Directive targets agreed by the Government. A schematic of the Tayside Area Waste Planning Process is attached overleaf.

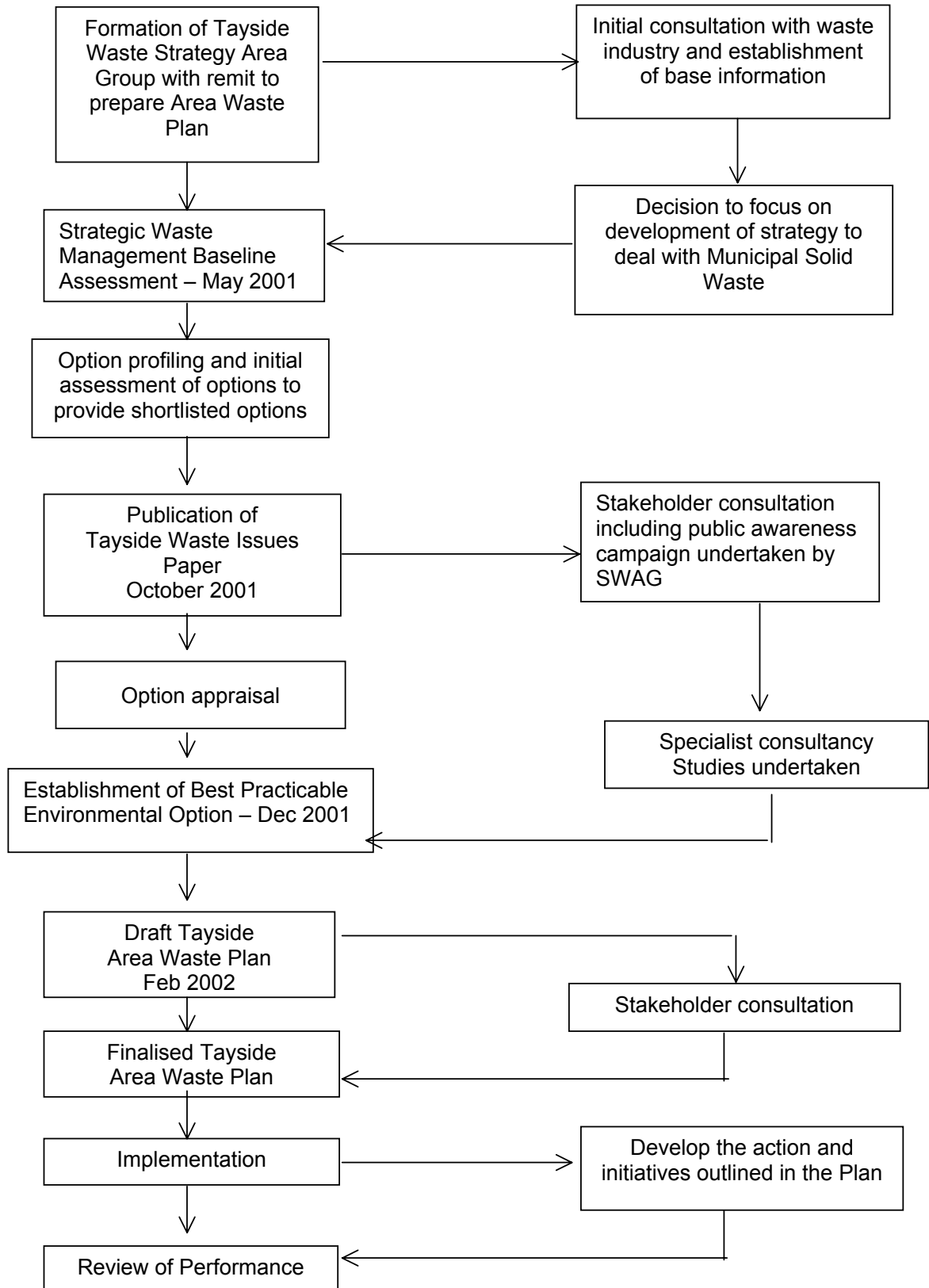
This document, the first Tayside Draft Area Waste Plan, looks at integrated waste management for Tayside. Having considered initially municipal waste management the document sets out the Best Practicable Environmental Option for managing this waste stream in Tayside. This has taken into account a range of environmental, technological, economic and social factors and sets out what is considered to be the most sustainable way of dealing with this type of waste in the Tayside area. The Draft Area Waste Plan also sets out a broad framework to roll forward the process for dealing with other waste streams, including commercial and industrial wastes, and a range of special wastes. The Tayside Area Waste Plan will also be important in the development of other initiatives and strategies such as Community Plans, Environmental Strategies, Local Agenda 21, Structure and Local Plans.

The Best Practicable Environmental Option (BPEO) for the management of the municipal solid waste in Tayside seeks to build on the existing range of waste management infrastructure and significantly increases the amounts of waste, which will be composted, recycled and reused. The existing DERL energy from waste facility is an important element of the strategy. However, further investment in improving waste collection and handling methods will be required and this will increase the number of options available for the reuse and recycling of waste. The plan sets out initial targets for composting and recycling, together with an action plan designed to implement the BPEO and meet those targets.

Taking forward the Tayside Area Waste Plan will require partnership working at a range of levels and with a number of stakeholders. Consequently it will be essential that commitment is given by all sectors of the community, to both the principles behind the plan and the range of actions promoted. Education and awareness raising will be a vital aspect in securing the drive for change in waste management practice, particularly in trying to encourage the reduction in the amount of waste produced and further the reuse and recycling of waste. While it is recognised that substantial change will not happen overnight, incremental change is better than no change at all. This Draft Area Waste Plan is now presented for consultation.

Your contribution can make a difference.

AREA WASTE PLAN PROCESS



Jargon Buster

Terms and abbreviations most frequently used.

Tayside
WSAG Tayside Waste Strategy Area Group

A key component of the National Waste Strategy: Scotland was the establishment of 11 Area Waste Groups across Scotland. The groups are charged with making the national strategy a reality at a local level, developing local solutions in response to local needs. The Tayside Waste Strategy Area Group consists of the following partners:

- Angus Council
- Dundee City Council
- Perth and Kinross Council
- Scottish Environment Protection Agency

AWP Area Waste Plan

The National Waste Strategy: Scotland established Waste Strategy Area Groups. Each Group would produce an Area Waste Plan for that area. This plan would give the strategic plan for the waste arising in that area based on National Waste Strategy: Scotland principles.

SWMBA Strategic Waste Management Baseline Assessment

A comprehensive assessment and description of the existing waste management in an area. Examines waste arisings, waste management facilities and capacities, imports and exports of waste, existing contract arrangements and demographics such as population and household numbers.

MSW Municipal Solid Waste

Includes household waste and any other wastes collected by the local authority, or its agents, such as municipal parks and garden waste, beach cleansing waste, commercial or industrial waste, and waste resulting from the clearance of fly-tipped materials.

BMW	Biodegradable Municipal Waste
	Waste collected by Local Authorities that is capable of undergoing anaerobic or aerobic decomposition, such as food or garden waste and paper and cardboard i.e. waste that rots. This is assumed to be 60% of MSW.
BPEO	Best Practicable Environmental Option
	Is the outcome of a systematic and consultative decision-making procedure, which emphasises the protection, and conservation of the environment across land, air and water. The BPEO procedure establishes, for a given set of objectives, the option that provides the most benefits or the least damage to the environment as a whole, at acceptable cost, in the long term as well as in the short term.
EfW	Energy from Waste
	Includes a number of established and emerging technologies, though most energy recovery is through incineration and can be used for generating electricity.
SWAG	Scottish Waste Awareness Group
	This group has been tasked with planning and delivering public awareness campaigns on domestic waste management throughout Scotland.

A full glossary of terms is presented in Annex 1.

1. INTRODUCTION

Background

Waste management in Scotland is facing a period of rapid and radical change. Driven by European legislation, the need for improved environmental protection and public expectation, we must find ways of reducing our current dependence on landfill and moving towards more sustainable methods of managing waste. We must also seek to reduce the growth in waste arisings, minimise resource use, reduce the hazardous content of waste and find waste management solutions that do not compromise the future. This in line with the principle of sustainable development. This will require a fundamental change in our current attitude to waste and an acceptance that each of us has a responsibility to reduce waste and not simply to pass the responsibility to others.

In order to tackle these issues the National Waste Strategy: Scotland described a process of Area Waste Planning and the formation of Waste Strategy Area Groups (WSAG). The Tayside WSAG was formed in April 2000 and is a partnership of the following organisations:

- Angus Council
- Dundee City Council
- Perth and Kinross Council
- Scottish Environment Protection Agency

In addition, Tayside Recyclers have assisted in the development of the plan and articulated the views of a not for profit organisation.

This is the first Draft Area Waste Plan to be prepared for Tayside. Dealing primarily at this stage with the management of Municipal Solid Waste (MSW), the plan sets out a strategy that will meet the Landfill Directive Diversion Targets. While other waste streams are dealt with in less detail, principally because of a lack of quantitative and qualitative information, the Area Waste Plan (AWP) establishes a number of actions to enable detailed plans to be formulated.

Area Description

The Tayside waste area comprises the administrative areas of Angus, Dundee City and Perth and Kinross. This is an extensive geographical area extending to some 7,560 sq km (approx. 756,057 ha) and comprises an attractive and diverse area of coastline, lowland and remote upland character with a population of 386,402 approx. (2001 estimate). Just under half of the population live in Dundee City and Perth City, while the remaining population live in a network of towns, villages and smaller settlements. In the period to 2016, the population of the Tayside area is forecast to decline to 373,200 although in contrast the population of Perth and Kinross is expected to increase. While population trends are an important indicator, perhaps a more useful indicator of waste arisings is that of household projections. There are currently some 171,500 households (2001 estimate) in the Tayside waste area and this is expected to increase to some 184,200 in the period to 2016 (see table 1.1). While Dundee City will remain steady, both Angus and Perth and Kinross are expected to increase substantially. These forecasts will have implications for both the strategy and management of waste in the Tayside area.

Future plans for the management of waste must be set within the context of the existing waste management situation in Tayside, which is presented by the Strategic Waste Management Baseline Assessment, (SWMBA) (see page X). This assessment provides a detailed description and data on current waste management practices, flows and sites and demonstrates that Tayside has a relatively contained system for the management of household, commercial, and industrial wastes. However certain specific wastes are either imported or exported for specialist treatment or disposal. Examples of this include clinical waste, organic waste for application to agricultural land and special wastes.

In common with the rest of Scotland, Tayside has traditionally relied on landfill as the primary method of waste disposal. Currently there are two strategically important landfill sites; Restenneth, Forfar, (Angus) and Binn Farm, Glenfarg, (Perth & Kinross). Both sites are expected to continue to accept waste until around 2013. Dundee City also has the DERL (Dundee Energy Recycling Limited) energy from waste plant able to combust up to 120,000 tonnes of wastes annually.

Angus, Dundee City and Perth & Kinross Councils have a history of being to the forefront of the recycling league table in Scotland, all achieving a recycling rate (including composting) greater than 10% in 1999 which is twice the national rate. All three Councils compost green wastes in open windrows and collect paper, metal and glass for reprocessing. In addition there are a number of organisations involved in recycling and reprocessing of waste in the Tayside Area. There is however little waste minimisation activity in the area currently.

Suggest use of skeletal map to show area

Table 1.1 : Population and Household Projections

Population Projections	2001	2011	2016	Change 2001-2016	%
Angus	109794	108711	107932	-1862	-2%
Dundee City	142532	129842	123720	-18812	-13%
Perth & Kinross	134076	138904	141558	+7482	+5.6
Tayside Waste Area	386402	377457	373210	-13192	-3.4
Household Projections	2001	2011	2016	Change 2001-2016	%
Angus	47300	50300	51800	+4500	+10%
Dundee City	66600	66500	66400	-200	0%
Perth & Kinross	57900	62600	66000	+8100	+14%
Tayside Waste Area	171800	179400	184200	12400	+7%

Sources: General Register Office (Scotland) and Scottish Executive Development Department

Area Waste Plan: Key Aims and Objectives

The key aim of the area waste plan is to:

‘Contribute to the sustainable development of the Tayside area by developing waste management systems that will control waste generation, reduce the environmental impacts of waste production, improve resource efficiency, stimulate investment and maximise the economic opportunities arising from waste’.

This aim is supported by the following objectives:

- Set out in detail the existing waste management infrastructure and arrangements, develop the principles and plan for progress in waste management in the medium and long terms to meet current and future legislative requirements and the objectives of the National Waste Strategy: Scotland.
- Ensure that the waste management system developed is in accordance with the principles of sustainable development and integrated waste management, and makes the maximum possible contribution to reducing society’s environmental impact at an acceptable cost.
- Provide a clear framework for stakeholders to judge the future development of waste management services in the Tayside area, and to guide both local authority Integrated Waste Management Plans and private investment decisions.
- To ensure that Development Planning policy in Tayside is consistent with, and contributes to, the overall aims of the National Waste Strategy and the Tayside Area Waste Plan.
- To maximise the opportunities for Tayside businesses arising from sustainable waste management, including the not-for-profit sector.
- To enable all key stakeholders the opportunity to input to the Area Waste Planning Process.
- Ensure that the Area Waste Planning process offers a clear, transparent and informative approach that is demonstrable to local stakeholders.

2. STRATEGIC FRAMEWORK AND POLICY LINKAGES

The purpose of this section is to summarise a number of key drivers and influences which set the context for the Area Waste Plan and which will impact on the future waste planning and management in Tayside.

The EC Landfill Directive

The EC Landfill Directive is one of the key drivers behind the National Waste Strategy: Scotland. The Directive imposes environmental and engineering standards for landfills across Europe and will ban the landfilling of many substances that are disposed of in this way at present. The Directive also requires a progressive reduction in the landfilling of Biodegradable Municipal Waste (BMW) and the pre-treatment of wastes before landfilling, to both reduce waste volume and minimise the environmental impact of disposal. This will assist in the reduction of landfill gases, such as methane, which are significant contributors to global warming.

The Directive establishes national targets and timescales for the reduction of BMW to landfill. Where member states are particularly dependent on landfill they will be allowed to defer the implementation of the target dates by up to four years. It is expected that the UK will take advantage of this derogation. The UK has to report to the European Commission by July 2003 giving details of how the targets will be met and a decision on whether to extend the target dates will be taken then.

From a baseline of 1995, the amount of BMW allowed to landfill will be (depending on whether the four year delay is used) as follows:

- 75% of 1995 levels by 2006 or 2010;
- 50% of 1995 levels by 2009 or 2013
- 35% of 1995 levels by 2016 or 2020

What will this mean for the Tayside Area?

Using the 1995 baseline figures for the Tayside Area and assuming two projection rates (nil growth and 2% annual growth) for waste arisings projected from 1999, the following tables show the BMW diversion from landfill that will be required for each of the target years. The figures have been calculated on the basis that the UK will take advantage of the four-year derogation.

Table 2.1: BMW Diversion required with 0% growth

Area	Estimated MSW ¹ Arisings 1995 ²	BMW ³ Permitted To Landfill 2010	BMW Diversion Required 2010	BMW Permitted To Landfill 2013	BMW Diversion Required 2013	BMW Permitted To Landfill 2020	BMW Diversion Required 2020
Angus	62210	27995	17101	18663	26433	13064	32031
Dundee	87894	39552	16699	26368	29883	18458	37794
Perth & Kinross	71398	32129	23696	21419	34405	14994	40831
Tayside	221502	99676	57496	66451	90721	46515	110656

Table 2.2: BMW Diversion required with 2% growth

Area	Estimated MSW ¹ Arisings 1995 ²	BMW ³ Permitted To Landfill 2010	BMW Diversion Required 2010	BMW Permitted To Landfill 2013	BMW Diversion Required 2013	BMW Permitted To Landfill 2020	BMW Diversion Required 2020
Angus	62210	27995	26977	18663	39673	13064	53946
Dundee	87894	39552	30389	26368	47854	18458	66801
Perth & Kinross	71398	32129	35921	21419	50796	14994	67959
Tayside	221502	99676	93287	66451	138323	46515	188706

1. Municipal Solid Waste - see jargon buster.
2. Estimated by splitting 2.8 millions for Scotland proportionally amongst the Local Authorities using Waste Arisings 1998 as to allocate each authorities proportion. Scottish Exec still to advise on method of calculation, which could significantly alter amount of waste to be diverted.
3. Biodegradable municipal waste - see jargon buster

The Landfill Directive also has a number of other requirements, which will impact on the ability of landfill sites to accept certain waste types, the cost of landfill and could potentially shorten the life of some sites. Until a full assessment of the Tayside landfill sites against the Landfill Directive criteria has been made, the full impact of the Directive will not be fully understood. The main requirements of the Directive are as follows:

- Classification of sites such that sites have to be of a certain standard to enable acceptance of certain waste types. This could result in no landfill site in Tayside being able to accept hazardous wastes.
- Specific wastes banned from landfill, this includes liquids and tyres.
- Increased technical and engineering standards.
- Waste requires to be treated prior to acceptance into landfill in order to reduce its volume or hazardous nature, facilitate its handling or enhance recovery.

Landfill Permits

The amount of Biodegradable Municipal Waste (BMW) each local authority will be allowed to landfill in future will be controlled through a system of Landfill Permits. While the exact mechanism for this is still under discussion by government, permits are expected to be 'tradable'. This would allow Local Authorities in areas where the additional costs of BMW diversion from landfill are disproportionately high or where landfilling is the agreed Best Practicable Environmental Option (BPEO) to 'buy permits' from other Local Authorities who are exceeding their individual BMW landfill diversion target. It should be noted, as interpreted by the UK government, that only Commercial Waste collected by the Local Authority comes within the scope of this aspect of the directive. It is the responsibility of each Local Authority within the Waste Strategy Area Group to determine how to use the permits allocated to them by the Scottish Executive.

Until the working detail of the 'tradable permit system' is known and the 1995 baseline figures allocated to each Local Authority, the impact on Tayside cannot be determined.

Developing an Integrated Plan

The Area Waste Plan seeks to adopt an integrated approach which:

- Ensures that all waste streams are considered together and the solutions chosen for individual waste streams are considered in the light of how they impact on the management of others;
- Considers waste minimisation, re-use, recycling, energy recovery, disposal, promotion and education and local market development in a coherent and planned way; and
- Ensures consistency with adjoining areas and national integration of the plan within the National Waste Strategy: Scotland.

The Tayside WSAG has primarily considered the management of household and commercial waste. At this stage it has not been possible to take the fully integrated approach as suggested in SEPA's Best Practicable Environmental Option (BPEO) Decision Making Guidance, because of issues associated with data availability on the quantity, sources, and content of industrial and construction and demolition wastes. This will require ongoing consultation with the Tayside waste industry to develop a fully integrated plan for non MSW waste streams and a number of action points to take this forward are set out by the Area Waste Plan. It is recognised that there is a need for an integrated approach to collecting and managing data to meet the many demands for waste management data. Data is required for European reporting requirements, policy planning, reviewing performance, assessing the impacts of new legislation, regulating effectively, aiding academic research and communicating with stakeholders.

As part of this process, regular annual surveys of MSW and waste management licensed sites are being brought forward by SEPA. In addition work is ongoing to improve the quality of data on special waste, priority waste streams and general industrial wastes. Significant improvement will need to be made to the quality of data on waste arisings if the shift to an effective resource management culture in Scotland is to be achieved.

Action 1

SEPA will continue to develop a Best Practicable Environmental Option (BPEO) methodology to enable a strategy for dealing with the management and disposal of non MSW wastes. This methodology will be available for use by October 2002.

Action 2

SEPA will continue to develop an improved data collection and handling system for dealing with non-MSW waste streams. Initial work on a methodology will be undertaken by March 2003.

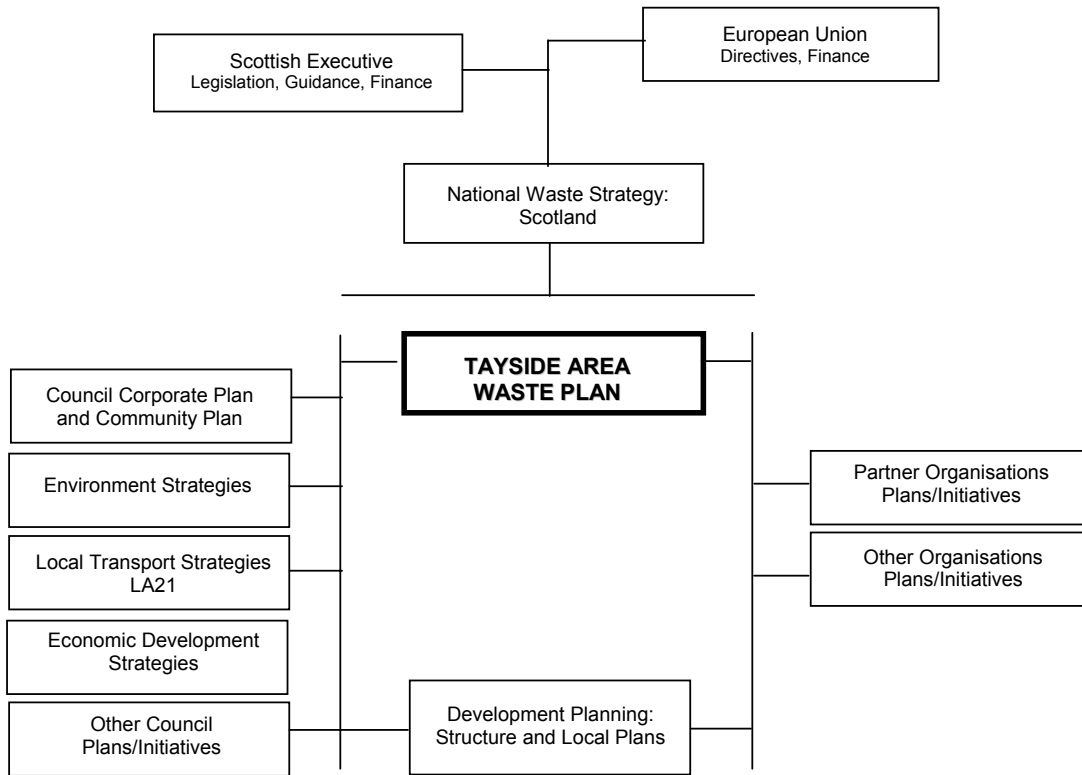
Action 3

The Tayside WSAG will continue to progress towards the establishment of a fully integrated Area Waste Plan for Tayside, dealing with all waste streams, by April 2007.

The 11 Area Waste Plans when completed and integrated across Scotland will require to collectively meet national legislative requirements. In order to achieve consistency of approach across the waste plan areas a broad methodology and guidance was established through the following key documents: “Supporting Guidance for Area Waste Plans” and “Best Practicable Environmental Option (BPEO) Decision Making Guidance”. An important element has been to seek the involvement of all key stakeholders (viz. waste industry, local authorities and the general public) at various stages of the process. Consistency between adjoining areas is also important. For Tayside this means integration with the North East Area, Fife, Highland and Forth Valley Waste Plan Areas and continuing dialogue between the Area Waste Groups.

The Area Waste Plan establishes a broad approach to waste management in the Tayside area. However, Area Waste Plans must not be seen in isolation, but part of the wider drive of moving to environmental and community awareness and sustainability objectives. The AWP will therefore influence and in turn be influenced by a raft of other policy documents and initiatives and has a key role in integrating the investment programmes and other plans, strategies and initiatives developed by central and local government, partner agencies and the waste industry generally. A list of potential linked documents is outline and summarised in Appendix 2. The key links are illustrated in figure 2.1.

Figure 2.1: Tayside Area Waste Plan links with other plans, strategies and initiatives



Landfill Tax

Landfill Tax was introduced in 1996 as a fiscal measure to encourage the diversion of waste from landfill by making landfill a less economically attractive option. The current level of tax is £12 per tonne for active wastes and £2 per tonne for inert wastes. The tax will increase by £1 per tonne for active waste until 2004. There is no intention to raise the level of tax on inert waste. Changes in the levels of tax will have an impact on future waste management and the position will continue to be monitored by the TWSAG. A Parliamentary Sub Group has recommended, that it be raised by £5 per annum, until it reaches £35 per tonne. This would lead to parity between landfill and other waste treatment techniques, which would encourage more recycling and recovery of wastes.

The implementation of Landfill Tax has considerably reduced the quantities of inert waste being disposed of to landfill sites. Much of this inert waste (e.g. soils, concrete, stone) is now being recovered and reused. As landfill taxation for active wastes increases this will encourage consideration of recovery and reuse as waste management options and support the movement of waste up the waste hierarchy.

As an integral part of Landfill Taxation a Landfill Tax Credit Scheme returns some of the revenue from Landfill Tax to the community to establish environmental projects. At present 20% of the tax collected by Landfill Operators is available for these projects. There is an emphasis on directing the majority of this funding to projects which will stimulate recycling, known as Category C Projects. Any increase in Landfill Tax would provide additional funding. The level of tax and the quantities of waste being disposed of to landfill will affect the value of Landfill Tax Credits. It should be noted that the scheme is currently under review.

Action 4

The Tayside WSAG will consider opportunities for the use of Landfill Tax Credits to stimulate recycling initiatives in Tayside.

National Waste Strategy Principles

The National Waste Strategy: Scotland (NWSS) establishes a number of key principles, which need to be taken into account in establishing a sustainable future for waste management. A number of these have influenced the development of the Tayside Area Waste Plan. These are:

- The proximity principle and self sufficiency
- Best Practicable Environmental Option
- The waste hierarchy

How these principles will affect the development of waste management systems and methods in Tayside is described below.

The Proximity Principle and Self Sufficiency

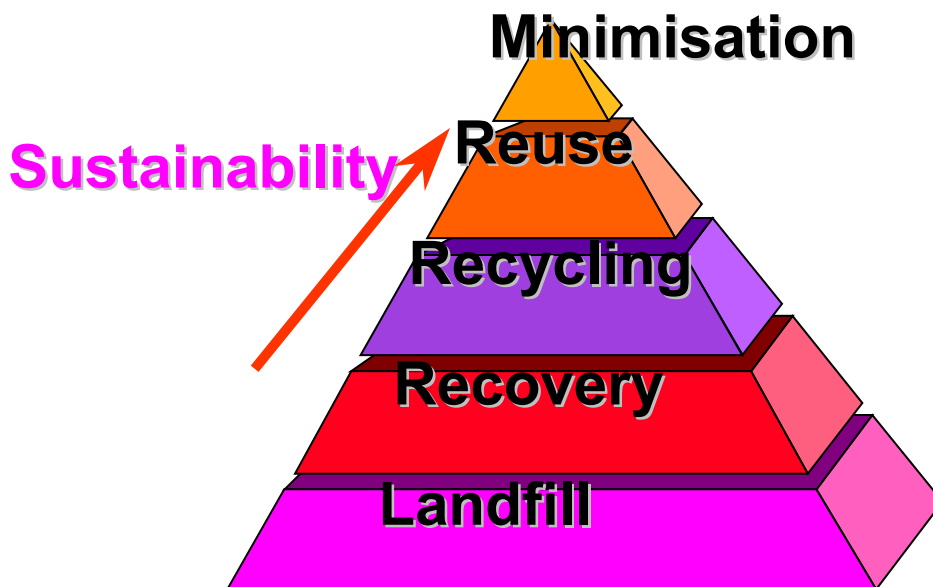
This means waste should be disposed of as near as possible to the point of where it arises. The majority of waste currently originating in Tayside is managed within the area. The exception being wastes requiring specialist treatment, such as hazardous wastes, and wastes being sent for recycling e.g. paper. These waste are often transported as far as the South of England. Although this is likely to continue to be the case, as greater quantities of material for recycling is collected then opportunities will exist for the development of local markets and reprocessing facilities in Tayside and the Central Belt of Scotland.

Best Practicable Environmental Option

Is the outcome of a systematic and consultative decision-making procedure, which emphasises the protection, and conservation of the environment across land, air and water. The BPEO procedure establishes, for a given set of objectives, the option that provides the most benefits or the least damage to the environment as a whole, at acceptable cost, in the long term as well as in the short term.

The Waste Hierarchy

The waste hierarchy provides a framework within which the most desirable waste management options are set out. Within Tayside, in common with the majority of Scotland existing waste management practices are towards the bottom of the hierarchy. The objective of sustainable waste management is firstly to minimise the amount of waste being produced at source and thereafter increase the percentage of waste that can be recovered, recycled and reused. Ultimately the percentage of waste being disposed of to landfill should continue to reduce.



What this means for Tayside is described below.

Waste Minimisation

The need to prevent and reduce the amount of waste being produced has never been greater. Waste minimisation therefore forms a key element of the National Waste Strategy: Scotland. Waste minimisation can be achieved through consideration at a number of stages including pre-product design stage, changes to management and production processes and the development of clean or 'wasteless' technologies.

Waste minimisation initiatives must address two distinct waste streams:

- household waste; and
- commercial and industrial waste

Household waste is by far the greatest proportion of Municipal Solid Waste (MSW). By minimising the growth of household waste, the diversion required to meet the landfill directive targets can be significantly reduced. For example in Tayside the rate of waste growth to 2020 has been assumed to be 2% (based on past growth rates and future household growth). If this growth rate were reduced to say 1% then some 42,000 tonnes of Biodegradable Municipal Waste (BMW) would not require to be diverted from landfill. Minimisation of household waste will also be assisted by other initiatives (e.g. producer responsibility legislation, education and awareness initiatives, and action by householders in the form of home composting and reuse of waste materials).

In the case of Commercial and Industrial Wastes there is a great deal of evidence, which demonstrates that waste can be significantly minimised at various stages of manufacturing processes providing both a financial benefit to the company as well as reducing the environmental impact of waste.

The public sector (central and local government, health etc) is one of the largest employers in the area, and through its diverse range of activities generates large quantities of waste. A range of actions, from procurement activities through proper separation of wastes to promoting waste minimisation in staff training can make a contribution. The Tayside WSAG has yet to tackle these wide ranging issues, but members of the Tayside WSAG have agreed to take a lead in examining their own activities through preparation and implementation of Environmental Strategies and consideration of Environmental Management Systems.

Waste Exchange is a system where the waste of one individual can be considered the resource of another. While there are examples of Waste Exchanges operating in the UK, there are none currently in the Tayside Area. It may be possible to establish a local service or link into a nationally developed service.

Action 5

The Tayside WSAG will investigate and establish current best practice on delivering household waste minimisation, which will inform the development of a strategy for the Tayside area. The strategy will be produced by March 2003 and is likely to require pilot initiatives to be established and monitored..

Action 6

The Tayside WSAG partners will consider the best means of initiating and delivering waste minimisation support to companies in the area. This will include consideration of the need for full time project officers. An initial report on how to take this forward, including the identification of funding sources will be produced by October 2002.

Action 7

Tayside WSAG members will continue to investigate the promotion of waste minimisation within their organisations. This will include:-

- Introducing staff training and awareness raising on waste management practice.
- Local Councils considering means of minimising wastes generated by their in house Direct Service and Direct Labour Operations, including building maintenance, street sweeping and roads maintenance.
- Examining procurement activities with a view to promoting waste minimisation, re use and the purchase of recycled materials

Action 8

The Tayside WSAG will investigate and report by March 2003 on the opportunity for the establishment of a waste exchange within the Tayside waste strategy area.

Re-use and Refurbishment

In recent years there has been a decline in the reuse and refurbishment of consumer durables as the cost of replacing them has fallen in relation to the cost of repair. However as well as removing items from the waste stream, re-use and refurbishment are linked to job creation and economic improvement. There are already reuse and refurbishment schemes in operation in Tayside ranging from the reuse of old clothing through to the refurbishment of furniture and computers. It is considered that there remains potential for future expansion and opportunity for stimulating activity in Tayside.

The stakeholder consultation process highlighted opportunities for increasing reuse and refurbishment. This was seen as having many social benefits including the opportunity for employment to those who have difficulty in obtaining employment, and enabling those on low incomes to afford goods they previously could not.

Action 9

The three Tayside Local Authorities in partnership with other stakeholders will investigate and report on the feasibility of reuse and refurbishment of MSW. This will include looking at further separation of civic amenity and bulky household wastes. Initial reports will be produced by November 2002 and include a review of existing management and operational practices and ways in which these can be developed.

Recycling and Composting

Recycling is the separation of a material for processing, followed by preparation and sale onto a market to replace an existing virgin material. The most commonly recycled materials include newspaper, cardboard and glass. As such there are often numerous environmental benefits, such as reduced air emissions, reduced impacts of extraction, energy savings, lower disposal impacts and more efficient use of raw materials. There are often other benefits such as encouraging producers to take responsibility for their wastes and economic benefits such as improved competitiveness or greater employment opportunities.

Composting is the aerobic decomposition of organic material to produce a stable material containing organic matter and plant nutrients. There are often benefits in applying this material to land, including nutrient addition, improved soil structure and improved water retention.

Angus, Dundee City and Perth and Kinross Councils have amongst the best records of all local authorities in Scotland for recycling and composting. The following materials are recycled:

- Paper & card

- Glass
- Metals including metal packaging
- Plastics
- Textiles

The three Tayside local authorities have all used open windrow composting methods to compost green wastes with some success.

Energy Recovery

Energy recovery involves recovering part of the energy value from waste, either by burning or thermally treating the waste directly (e.g. incineration) or by burning a fuel produced by the waste (e.g. Refuse Derived Fuel or landfill gas). The energy conversion efficiency of the plant will depend on the specific design e.g. recovery of energy through combined heat and power (CHP).

The DERL (Dundee Energy Recycling Limited) energy from waste (EfW) plant is operational in Dundee. It has a capacity of 120,000 tonnes, which is currently taken up with 105,000 tonnes of MSW and 15,000 tonnes of commercial and industrial wastes including some clinical waste. Energy in the form of electricity is produced by the plant, which is sold into the National Grid. This plant utilises bubbling fluidised bed technology. There are wastes in the municipal waste stream, which are not suitable for combustion in the DERL plant and for some wastes greater value can be recovered through recycling or reuse. The plant has a life expectancy of 20 years.

The future of energy from waste may lie with emerging technologies such as pyrolysis or gasification. These have been proven in a range of applications such as coal gasification and tyre processing or biofuels, but are not proven in the UK for the treatment of a mixed household and commercial waste stream. Such technologies may also require careful waste pre-treatment. Developments in EfW will continue to be monitored by the Tayside WSAG and where appropriate considered in taking forward a review of the AWP.

Action 10

The Tayside WSAG will seek to establish joint working arrangements with DERL to ensure that the feedstock wastes for the DERL energy from waste plant (EfW) are the most appropriate for combustion.

Waste Collection & Disposal

The manner by which waste is collected will influence the methods open to treat or dispose of the waste. Collecting and storing waste materials separately allows a greater number of options to subsequently manage the waste. Main benefits of this approach include: differing materials do not have to be sorted; there is less contamination of materials; a critical mass of any one material is easier to accumulate; results in waste management solutions further up the waste hierarchy. Throughout Tayside, there already exist some kerbside collection of waste (mainly paper) and also a network of recycling centres and civic amenity sites. This provides a basis for future development.

From the stakeholder consultation exercise there is a strong opinion that kerbside collection will realise maximum participation in any separate collection scheme and achieve maximum capture of waste materials. As part of the BPEO for Tayside, separate collection of waste materials from the kerbside will be phased in over the next 20 years. It is important that alternative facilities are made available to those where it is impractical or not economic to offer separate collection. For this reason an increased

network of mini recycling centres and civic amenity sites will be phased in over the next twenty years. This will also capture separated waste materials.

Action 11

The Tayside WSAG in partnership with other stakeholders including SWAG and SET will encourage the separation of waste materials at source.

Recycling Market Development

It is clear that if Scotland is to make better progress in recycling, significant effort must be made to develop both national and local markets using recycled materials. Progress can also be made in improving the logistics of supply to markets outside Scotland. Two major initiatives have been established to promote sustainable waste management through the creation of stable markets for recycled materials and products and by removing barriers to waste minimisation, re-use and recycling.

The ReMaDe Scotland (Recycling Market Development) programme was established in 1999 to identify potential markets and uses for recovered materials in Scotland and is the key focal point for recycling market development in Scotland. The programme is in its second year and is focussing on glass, paper and board, wood and composting. One objective of the programme is to provide targeted support for local market development within each of the 11 Waste Strategy Areas.

The Waste Resources Action Plan (WRAP) was established during 2001 to provide a national UK programme to change attitudes to waste minimisation and recycling through creating market confidence and demand for recyclates, improving the economics of recycling and delivery of high quality feedstock to recyclers. WRAP will also seek to reduce the national barriers to recycling, such as specifications and standards for the use of recycled materials. The Tayside WSAG will continue to monitor market development.

Action 12

The Tayside WSAG in partnership with ReMaDe will identify and develop opportunities for local market development.

Education and Awareness Raising

The National Waste Strategy: Scotland makes it clear that there needs to be a fundamental shift in attitudes and behaviour of all waste producers in Scotland. The Scottish Waste Awareness Group (SWAG) has been tasked with planning and delivering public awareness campaigns on domestic waste management throughout Scotland. In Tayside a baseline survey (late autumn 2001) was undertaken by SWAG with 1000 householders interviewed on their opinions of waste and its management. The results of the stakeholder consultation are summarised in Section 3. Surveys of this kind will be essential in the development of education and awareness campaigns and in the planning of services. This will also ensure that both householders and businesses have an opportunity to contribute to the development of future waste management initiatives.

Action 13

A Tayside education and awareness group will be established by March 2003 to promote the aims of the AWP with an initial focus on household waste. Members of the group will include SWAG, the three Tayside Local Authorities and SEPA.

Action 14

A directory of waste management services will be maintained by the three Tayside Local Authorities. This will allow all residents of Tayside to identify what services are available to deal with differing waste materials in their locality. The Directory will also be available through each of the Local Authorities web sites by October 2002.

Action 15

The Tayside WSAG in partnership with SWAG and WAMI will produce a household waste minimisation guide to assist householders and other stakeholders. This guide will be produced by October 2003.

Community Involvement

Community sector involvement in methods and solutions for moving MSW up the waste hierarchy will be important. There is already a long history of community based and run projects in Tayside. Locally operated and managed community projects bring social benefits through creation of employment and social inclusion.

Action 16

The Tayside WSAG will provide assistance wherever possible to facilitate the establishment and development of community based and operated waste management initiatives. This may include passing on skills, experience, and assistance with the identification and application for funding sources.

Other Waste Streams

It is important that best practice is disseminated to all waste producers. This will enable the movement of waste up the waste hierarchy.

Action 17

SEPA will establish a commercial and industrial waste producers forum for Tayside by October 2002 with a remit to develop strategies for the promotion and dissemination of good waste management practice.

Development Planning

Development planning - structure and local plans - have an important role to play in the delivery of the Tayside Area Waste Plan and in moving toward a more sustainable form of development. It will ensure that an integrated network of waste management facilities can be identified and provided in Tayside. The planning system will also ensure that protection is given to the natural, built and historic environment.

The waste plan area is currently covered by the Tayside Structure Plan 1993 (approved March 1997) although it will subsequently be replaced by Structure Plans for the Dundee and Angus area and Perth & Kinross area. These will be published early in 2002. The Tayside Structure Plan provides the framework for the adopted area wide Local Plans covering Dundee City (1997) and Angus (2000), together with 6 covering Perth & Kinross. Local plan reviews are now underway in Angus, Dundee and Perth & Kinross and these new plans will incorporate the guidance contained in the 'new' Structure Plans in due course and the Tayside Area Waste Plan.

In terms of waste management, National Planning Policy Guidance is available through NPPG 10 'Planning and waste management'. This will be complemented by a new Planning Advice Note 'waste management planning' to be published in early 2002. This PAN will provide advice on best practice and encourage a more proactive approach to waste management policy in development plans. This new guidance will assist consistency and clarity when formulating development plan policies and considering development schemes related to waste management proposals in Scotland. Area Waste Plans will become a material consideration for the planning system.

In addition to updating best practice guidance on waste management, the Scottish Executive are also reviewing the current strategic planning system in Scotland. Consultation on significant proposals to improve the effectiveness and implementation of strategic development planning across Scotland has been undertaken and a decision from the Scottish Executive on the future structure and shape of strategic planning and waste planning in Scotland is expected early in 2002. In the meantime, however, the existing round of Structure Plans will play an important role in directing development for some time to come. The review also looks at the possibility of a network of Waste Subject Plans aligned along the same geographical boundaries as Scotland's 11 Waste Plan Areas. While future change looks likely, what is important to note is that development planning will continue to have a significant role in shaping Scotland's future and ensuring that waste treatment and management facilities are developed to meet Scotland's and each Waste Plan Area's needs.

Action 18

The objectives, targets and facilities required to implement the AWP will be taken fully into account in the development of Structure and Local Plan policy and will be a material consideration in assessing planning applications.

Action 19

Development Plans will ensure that a 10 year forward supply of landfill will be available in the Tayside area for inert and non hazardous wastes arising in Tayside.

Managing Non-MSW Waste Streams

It is clear that the present scarcity of quantitative and qualitative data on waste arisings from non-MSW waste streams is a significant obstacle to developing BPEO decisions on the future management of these wastes. Area Waste Plans, however, have to ensure that general provision is made for their management whilst setting out ways in which improved data will be obtained to assist future decision making for a wide range of wastes produced in Scotland. Section 4 sets out the specific provision required at this stage for the safe disposal of such wastes, the approach to be taken to provide better data and support to producers of these wastes to encourage better waste and resource management practices.

3. MANAGING TAYSIDE MUNICIPAL SOLID WASTE

The key stages in the area waste planning process are illustrated in the schematic attached to the Executive Summary and described in more detail in the following sections. In developing the Tayside Area Waste Plan, the WSAG were concerned to ensure an open and transparent process and one which would encourage stakeholder involvement. The draft Tayside Area Waste Plan has therefore been developed through the partnership working of SEPA, Angus, Dundee City and Perth and Kinross Councils, the voluntary sector, the waste industry and waste producers. It also took into consideration the findings from the public consultation programme undertaken at the Options stage by Scottish Waste Advisory Group (SWAG) in late 2001.

Strategic Waste Management Baseline Assessment

The starting point for the Area Waste Plan is the SWMBA, which establishes the baseline data on waste arisings and disposals and wastes entering or leaving the Tayside area. It also assesses the types of waste that arise, how they are currently managed and the existing waste management infrastructure and services in the Tayside area. The SWMBA report for Tayside is available from SEPA as a separate background paper. However the Tayside WSAG acknowledge that there is a current lack of qualitative and quantitative data on non-Municipal Solid Wastes (MSW) (commercial, industrial, including demolition waste and special waste) and that as a result, the first Tayside Area Waste Plan focuses on the MSW component of the local waste arisings. A future approach to the management of non-MSW commercial and industrial wastes is set out in Section 4 of this document.

Table 3.1 illustrates the existing and predicted future waste arisings for household and municipal waste streams for the combined waste area. In projecting to 2020, a future growth rate of 2% was chosen for Tayside in order to reflect a worst case scenario in all three Tayside Local Authorities. This also takes account of recent trends and projected household change in the period to 2020.

The SWMBA also set out to define the future statutory restrictions on the disposal of BMW to landfill (as a proportion of the 1995 baseline, as defined in the Landfill Directive) and hence predict the likely quantities of MSW that have to be diverted away from landfill in the future.

Table 3.1 Predicted future Tayside MSW arisings.

Waste Type (tonnes)	2000	Future Growth Rate ¹	2010	2013	2020
Municipal Solid Waste (MSW)	263,830	2%	321,607	341,292	392,037

Note:

¹ Growth rate of 2% set as worst-case scenario for Tayside based on recent trends and future population and household predictions.

This initial background work provided the basis for predicting the tonnage of BMW and MSW arisings that will have to be diverted away from landfill disposal to enable the Tayside Area Waste Plan to meet the statutory diversion targets set out in the Landfill Directive. These targets are set out in Table 3.2. These forecasts do not however take account of the opportunity for waste minimisation, which could have a significant impact on the level of waste arisings.

It should also be noted that whilst the total quantities of MSW are well understood, further work will be required to establish a greater understanding of the constituents of this waste stream.

Table 3.2 Likely Future Diversion of BMW and MSW from Landfill Tayside

Waste Tonnages	2010	2013	2020
MSW arisings ¹	321,607	341,292	392,037
BMW arisings ²	192,964	204,775	235,222
Maximum BMW to landfill disposal ³	99,676	66,451	46,515
BMW diversion	93,287	138,323	188,706

Notes:

1 Based on assumed MSW annual growth rate of 2% (refer Table 2.2)

2 Assumes that BMW = 60% MSW.

3 Calculated as 75%, 50% and 35% of the agreed 1995 baseline (based on Scottish Executive total MSW arisings for Scotland of 2.8 million tonnes, pro-rated on basis of waste arisings 1998)

Action 20

The Tayside Local Authorities will seek to improve understanding of household and MSW arisings using waste analysis. The first analysis will be undertaken by October 2002 and undertaken on an annual basis.

Options Profiling and Initial Assessment.

The options profiling stage identified a range of potential solutions for the management of MSW arising in the Tayside area and how they could be merged with existing facilities, services and, where appropriate, local authority contracts. These options focus on the key technologies appropriate for the future management of wastes. The Tayside Waste Strategy Area Group initially profiled the following options inclusive of a control.

- Option 1- High Recycling Bring System**
As much recyclable waste as possible is brought by the general public to mini recycling centres, packaged and sent for reprocessing. The level of composting would be increased.
- Option 2 - Dirty Materials Recycling Facility**
All mixed waste collected from kerbside is taken to a 'dirty' materials recycling facility where it is sorted; as much recyclable material as possible extracted and the residue composted prior to landfill.
- Option 3 - High Recycling Kerbside Collection**
As much pre-sorted, recyclable waste as possible collected from separate kerbside collections; taken to a 'clean' recycling facility; sorted; packaged and sent for reprocessing. The level of composting would be increased.
- Option 4 - Control**
Existing waste management system with tonnages projected at 2% per annum.
- Option 5 - High Energy from Waste Bring System**
Another energy from waste plant is built to incinerate more waste; some recyclable waste is brought by the general public to mini recycling centres, packaged and sent for reprocessing.
- Option 6 - High Energy from Waste Kerbside Collection**
Another energy from waste plant is built to incinerate more waste; some recyclable waste collected from separate kerbside collections packaged and sent for reprocessing.
- Option 7 - Export to Another Waste Strategy Area**
Waste is transported to another waste strategy area for treatment and disposal.
- Option 8 - Anaerobic Digestion**
As much of the biodegradable waste as possible is collected from the kerbside and broken down in an anaerobic digester. Some waste is collected at separate kerbside collections, packaged and sent for reprocessing.

All the options included existing landfills and the DERL energy from waste plant. Within the options considered, most of the currently available technologies and methods were included. Each option contained a range of technologies and collection systems. The options do not represent single technology solutions (i.e. all waste put through an energy from waste plant), rather they each have a range of technologies in each option with the proportion of waste going to the differing technologies varying between the options.

An initial appraisal of these options was undertaken using the Decision Criteria outlined in the Best Practicable Environmental Option (BPEO) Decision Making Guidance, the WISARD life cycle software, costings, expert opinion from the WSA Group members, the waste industry and waste producers of Tayside. The options which performed best on balance across all the decision criteria (options 3,6 and 8) were taken forward for more detailed appraisal. Table 3.3 shows those options which were not taken forward, and the principal reasons behind this decision.

From this initial work, a Tayside Waste Issues Paper was prepared and published in October 2001 for consultation purposes. This paper set out the background to the Area Waste Plan and outlined the three short listed options:

- Option 3 – High recycling kerbside collection
- Option 6 –High energy from waste kerbside collection
- Option 8 – Anaerobic digestion kerbside collection

Table 3.3 Options not taken forward.

Option 1 – High recycling bring system

Required several hundred mini recycling centres across Tayside

Unlikely to get the land for the number of mini recycling centres required.

Mini recycling centres will potentially cause amenity problems.

Unlikely to get the participation and capture of materials required to meet the targets

Option 2 – Dirty Materials Recycling Facility

Only able to get around 20% good quality recyclable material

The reject from the dirty MRF still requires to be treated. If this is composted, unlikely to find a market.

Dirty MRF's are poor environments in which to work.

Option 5 – High energy from waste bring system

Same reasons as option 1 as hundreds of mini recycling centres required.

Option 7 – Export to another Waste Strategy Area

No detailed proposal came forward from another waste strategy area. It was therefore decided that this option could not be appraised in any detail. The principle of export would be tested in the consultation exercise.

Stakeholder Consultation

From the outset of the project the Tayside WSAG sought to involve the waste industry and general public in the area waste planning and decision-making process. The availability of the Tayside Waste Issues Paper was notified through public advertisements and made available at local libraries. In addition copies of the Issues Paper were forwarded to a range of waste industry stakeholders, Members of Parliament, local councillors, community councils and other national and local organisations. Comments and representations on the 3 short listed options were encouraged.

In addition meetings were held with both the waste industry, and commercial and industrial waste producers in Tayside. A major component of the consultation programme was the public, door-to-door survey, undertaken by the Scottish Waste Awareness Group (SWAG) on behalf of the Tayside WSAG. Both qualitative (3 focus groups) and quantitative (1000 door to door surveys) research was undertaken across Tayside to establish baseline data and assess public attitudes, behaviour and needs to waste reduction, re-use and recovery. The programme also sought views on various collection, treatment and disposal methods. Consultation mechanisms used are summarised in table 3.4. The information generated from this consultation exercise was used to assist the Tayside WSAG in coming to a BPEO decision. The results of the SWAG work will be further used to develop promotional material and help direct any subsequent campaign strategies at both the Tayside and National level. It will also allow the monitoring of progress towards more sustainable waste management behaviour, and to develop models of good practice for changing public attitudes to reduction, re-use and recycling.

This consultation process adopted by Tayside WSAG ensured that all key stakeholders including the public were asked for their views on the available options and how they would like to see their waste managed. This enabled a wider discussion on the options shortlisted and formed a key part of the final appraisal stage. A summary of the feedback from the consultation is presented in table 3.5.

Table 3.4 below lists the mechanisms used in the consultation process, the stakeholders targeted and the results of the consultation process.

Consultation Mechanism	Stakeholder Groups Targeted
Waste Industry Forum	Waste Industry in Tayside
Waste Producers Forum	Commercial and industrial waste producers in Tayside
Waste Issues paper – consulted on a shortlisted set of 3 options.	MP's, MSP's, MEP's, Community groups, Local members, Community councils, local council officials, members of the public, pressure groups
Door to door survey – survey of 1000 residents randomly sampled in Tayside	Members of the public
Local focus groups – focus group in each local authority area	Members of the public

Table 3.5 below summarises the main points of feedback from the consultation process

Consultation Mechanism	Summary of feedback
<p>Waste Industry Forum – Two meetings of around 40 representatives of the waste industry operating in Tayside.</p>	<ul style="list-style-type: none"> • Can provide whatever solutions required but require commitment and direction. • Major concern that planning system will limit and delay options available • Concern about markets for materials collected for recycling.
<p>Waste Producers Forum – One meeting of around 30 commercial and industrial waste producers in Tayside.</p>	<ul style="list-style-type: none"> • Would welcome solutions for MSW which would be able to manage other industrial & commercial wastes. • Will recycle if the facilities are in place even if it costs a bit more.
<p>Waste Issues Paper – 1500 papers sent out to the following groups:</p> <ul style="list-style-type: none"> • Community groups • Local members • MP's, MEP's, MSP's • Waste industry and producers • Pressure groups 	<ul style="list-style-type: none"> • Ranked options as follows: <ul style="list-style-type: none"> option 3 – 1st option 6 – 2nd option 8 – 3rd • When determining the BPEO the decision criteria which are most important are – environment and practicability
<p>Door to Door surveys – 1000 members of the public across a range of house types</p>	<ul style="list-style-type: none"> • Preferred choice – energy from waste (Option 6) • Least preferred choice – landfill • 81% would be willing to separate waste for recycling • Kerbside collection preferred method of collecting materials for recycling.
<p>Focus Groups – of up to 12 members of the public and recruited from the door to door surveys.</p>	<ul style="list-style-type: none"> • Preferred choice – option 3 • Preferred method of waste management was recycling however there was a realisation that energy from waste (EfW) may be required to meet 2020 landfill directive targets.

Option Appraisal

The option appraisal leading to the determination of the Best Practicable Environmental Option forms the basis of this draft Area Waste Plan, together with a range of actions and proposals for non-municipal waste streams. This was the key decision making stage and comprised a detailed appraisal of Options 3,6 and 8 identified from earlier work. Each of the options was re-appraised using a set of nationally agreed objectives known as 'decision criteria'. This included key outcomes such as environmental protection and evaluating the broader social, economic and practicability factors such as number of jobs created, the robustness of the technologies involved and the ability to achieve key objectives of the National Waste Strategy. The feedback from the stakeholder consultation was also a material consideration in this process.

To assist in the environmental assessment of each option, the life cycle assessment tool, WISARD was used.

Price Waterhouse Coopers constructed the WISARD model and the interpretation and comparison of the results undertaken by Envirospirin Consultants. ERM Consultants also undertook detailed costing of the three options. The background information from these consultants studies was incorporated into an assessment and detailed comparison of each option undertaken by Envirospirin. Each option was given a score A to E (A indicating best performance, E indicating worst performance) against each of the national decision criteria and the outcome was tabulated. This is illustrated in Table 3.6

Table 3.6: Comparison of options 3, 6 and 8

	Option 3	Option 6	Option 8
ENVIRONMENT			
Air, Land & Aquatic Environment	C	A	D
Global Climate Change	C	A	D
Local Amenity	B	A	C
Natural Heritage	C	C	C
Cultural Heritage	C	C	C
Non-renewable resource use	B	B	C
Risk of Accidents	C	B	C
ECONOMIC			
Cost	C	C	C
Financiability/Affordability	B	D	C
Impact on Local Economy	A	D	A
Employment	A	D	A
SOCIAL			
Making Producers Responsible	A	E	A
Public Acceptability	A	B	C
Skills Base	C	B	C
Social Implications	A	C	A
PRACTICABILITY			
Flexibility	A	E	A
Making best use of Existing Facilities and Expertise	A	E	C
Practical Deliverability	B	C	B
Technical Feasibility	B	D	D
Compliance with other policies	A	C	A

An analysis of the three options indicates that **Option 3** performed best over the range of decision criteria. This option produced a better than average return against the environmental criteria and it performed particularly well across the economic, social and practicability criteria. Strong support for Option 3 also emerged from the public consultation

Option 6 performed well in the environmental criteria, but generally poorly in terms of the economic, social and practicability factors.

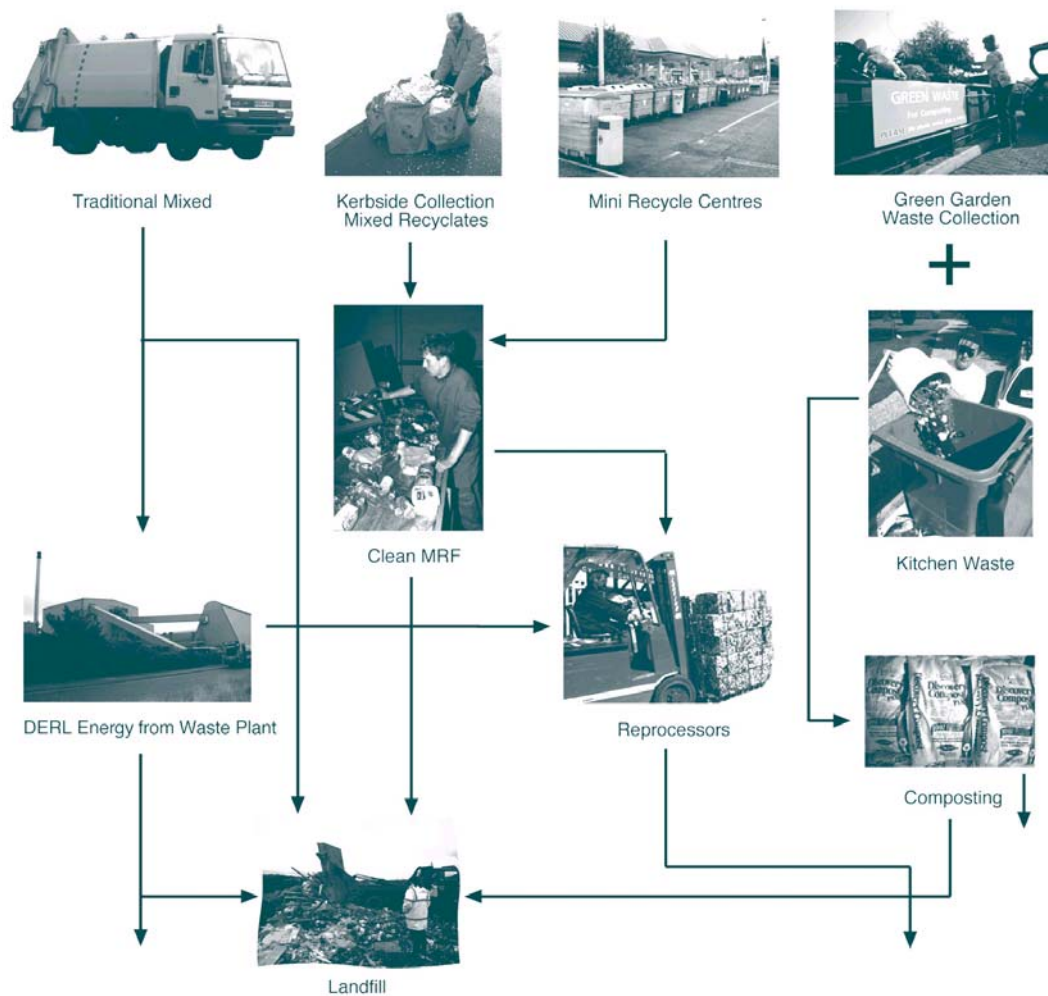
Option 8 was average in relation to environmental considerations and while there were positive outcomes related to economic and social criteria, the technical feasibility of this option reduced its overall capability. This option was also the least favoured by the public.

Best Practicable Environmental Option (BPEO) Decision for Municipal Solid Waste (MSW)

The Best Practical Environmental Option (BPEO) for the management of municipal solid waste in Tayside is option 3. This is the high recycling option and the key elements of this option are set out in figure 3.1. The BPEO sets out what is considered by Tayside WSAG to be the most appropriate option for dealing with MSW in Tayside and will meet the Landfill Directive diversion targets.

The BPEO requires improved collection systems and increased levels of recycling, recovery and composting of waste.

Figure 3.1 Tayside MSW BPEO



See designer to this graphic add at top

- Waste minimisation
- Home composting
- Reuse and refurbishment
- End of arrows
- Add this 3 times 2010, 2013, 2020 with tonnages in each year based on 2% growth.

- Also add rounded tonnages to show flows of waste

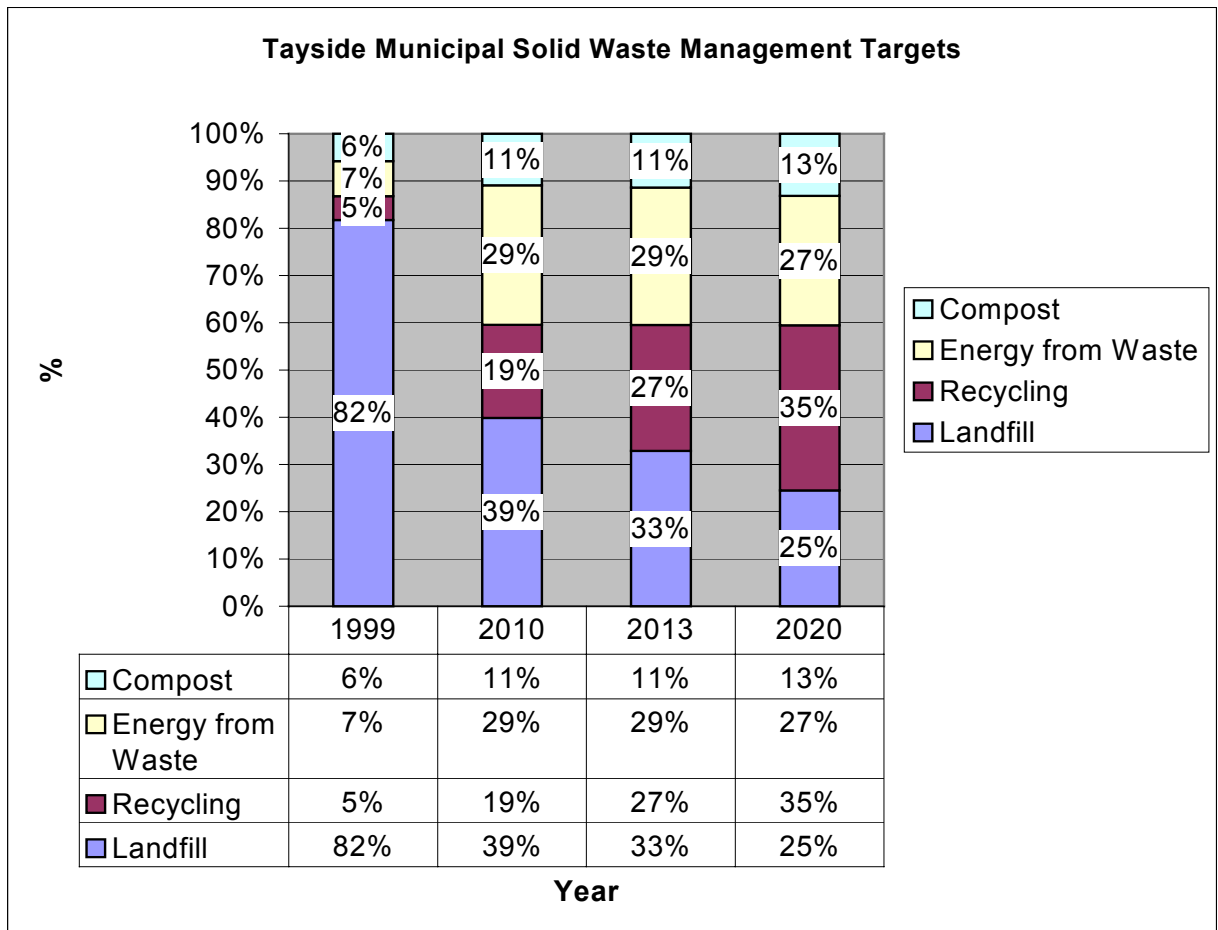
Tayside Municipal Solid Waste Targets

The BPEO for Tayside will require Municipal Solid Waste (MSW) to be collected and then managed in one of four ways, as follows:

- Composting of putrescible wastes, eg. garden and kitchen waste;
- Energy from waste (EfW) recovered by combusting waste in a special plant;
- Recycling of paper, card, glass, plastic, metal etc.; and
- Landfilling of residues.

Table 3.7 shows the target proportions of MSW arising in Tayside, which requires to be composted, combusted in an energy from waste plant, recycled and landfilled in order that the chosen BPEO is achieved. Figures are given for each of the Landfill Directive target years (2010, 2013 and 2020) with the base year of 1999 shown to illustrate the change required from current waste management practices over the 20 year period. These targets require to be met collectively by the partnership working of the three Tayside Local Authorities.

Table 3.7 below shows overall targets for Tayside.



The Landfill Directive requirement to divert biodegradable municipal waste (BMW) from landfill must be met. This requirement is implicit in the BPEO for Tayside illustrated in figure 3.1. In order to achieve the BPEO and the overall targets set out in table 3.7 each of the three Tayside Local Authorities will require to meet, as a minimum, the specific targets in table 3.8 below. These targets will be reviewed on a five-year cycle.

Table 3.8 - Local Authority Specific Targets

Recycling Rate	2006	-	10%
	2010	-	17%
	2013	-	22%
	2020	-	30%
Composting Rate	2006	-	7%
	2010	-	10%
	2013	-	10%
	2020	-	12%

These targets along with the targets arising from the BPEO decisions in the ten other Area Waste Plans will inform the development of national targets for Scotland which are expected to be published early 2003.

BPEO Implementation

Taking forward the implementation of the BPEO will require a partnership approach between the Tayside local authorities and stakeholders to achieve the targets set out above. There is already infrastructure and investment in place, which deals effectively with various elements of waste management in Tayside and the rolling out of the Tayside Area Waste Plan will seek to achieve best value from this existing investment. The importance of an effective DERL energy from waste plant (EfW) to achieving the BPEO cannot be overstated. The immediate next steps will for the Tayside local authorities to work up more detailed implementation plans, which will flesh out the necessary actions, costings and timescale. It is also recognised that in taking forward this BPEO that there will be significant linkage with the land use planning system to secure approval for sites and projects. A number of 'pilot projects' are also likely to be introduced particularly related to waste collection methods. This will allow evaluation of a number of options before firming up on those methods and technologies, which would represent Best Value for Angus, Dundee City and Perth and Kinross Councils. The following table sets out an indication at this stage of the key facilities required to meet the BPEO which will have to be planned for, funded and implemented.

Table 3.8: Implementation of BPEO

Requirements	Timescale	Notes
Kerbside Collection Systems of dry recyclate	Phased from 2002 to 2020	Tayside LA's already do some separate kerbside collection of dry recyclate. Pilot schemes to start late 2002 early 2003.
Expansion of mini recycling centres	Phased from 2002 to 2020	Draw up strategy & identify sites. Start expansion 2003 onwards.
Kerbside collection of green and putrescible wastes.	Some already exists. Following establishment and commissioning of composting technology collections will expand.	
Modification to transfer stations	2002	Likely to require modification and additional equipment to deal with increased quantities of recyclate. Will depend on MRF provision
Clean Materials Recycling Facility (MRF)	2006 onwards	Likely to require 1 or 2. Likely 1 may make more economic sense. Will be required to separate and package increasing quantities of collected recyclate.
Composting facilities	Modular system phased from 2004 onwards	Will require in-vessel system which will require to be able to deal with increasing quantities of waste up to 2020
Landfill capable of taking non hazardous waste	2013	Likely new landfill capacity will be required from 2013 onwards.

The following actions are considered necessary to implement the BPEO:

Action 21

The Tayside WSAG and the three Tayside Local Authorities will continue to work in partnership to achieve the waste management targets established for Tayside.

Action 22

The Tayside WSAG will work in partnership with the three Tayside Local Authorities to develop a strategy for the implementation of separate kerbside collection systems over the next 10 years. An initial report will be produced by October 2002. This will allow a bid to the Strategic Waste Fund for funding to establish pilot kerbside collection schemes for the collection of dry recyclate in all three Local Authority Areas by March 2003. An evaluation of the pilot schemes will take place following completion of the pilot.

Action 23

The Tayside WSAG will identify markets for any compost, which will be produced. Particular focus will be on securing sustainable markets in the Tayside area and the specification of product required by the customer. An initial report on this subject will be produced by August 2002.

Action 24

The Tayside WSAG will develop a compost strategy for the area which will determine the number of facilities required, the type of technology to be employed, the types of waste able to be composted and using the report in action 23 above, detail how the product will match market needs. The group will report by March 2003.

Next Steps

This Draft Tayside Area Waste Plan is being presented to stakeholders for consideration and comment. At the conclusion of the public consultation period, all representations will be assessed as part of the process of finalising the Tayside Area Waste Plan.

4. MANAGING OTHER WASTE STREAMS

To date the Tayside Area Waste Plan has focused on the development of a strategy to deal with municipal solid waste. However it is important that in line with the objective of both the national and area waste plans an integrated approach to the management of all waste streams is developed as soon as practicable.

The following sections describe non-MSW commercial and industrial wastes, each of SEPA's priority waste streams and selected other significant waste streams. However it is acknowledged that this is not intended to be a comprehensive list of significant waste streams. In particular it does not include waste streams that may be locally significant within a Waste Strategy Area as a result of the local industry profile (e.g. food processing wastes, distillery and brewing wastes and petro-chemical industry wastes).

The Tayside Waste Strategy Area Co-ordinator will track future changes in waste policy and legislation (including changes in the legislative regime with respect to specific waste types) and respond to such changes by making appropriate revisions to the Tayside Area Waste Plan.

Commercial and Industrial Wastes

The Tayside Area Waste Plan must include provision for non-MSW commercial and industrial (C&I) wastes. However the lack of comprehensive and reliable waste arisings data (i.e. waste types and quantities), a situation not unique to the Tayside area, has restricted the planning process for these wastes at this stage of developing the first Tayside Area Waste Plan. Legislation requiring private industry to keep detailed records of its waste arisings may be required in the future. The recent introduction by SEPA's waste data team of quarterly surveys of licensed waste management facilities will, in time, deliver an improved non-MSW commercial and industrial database for Scotland. However in the interim, there is likely to be a continuing lack of robust data, both locally and nationally.

The Tayside WSAG will establish a programme to fill this data gap locally, to ensure provision of sufficient forward capacity for the management of non-MSW waste arisings. This will include appropriate consultations and surveys with key local industry groupings over a period of time to measure the current arisings of non-MSW in the area. A review of the capacity and type of existing facilities can then be carried out and the forward capacity required to maintain an adequate network of facilities will be identified on the basis of the current management systems for these wastes. It is expected that this ongoing consultation process will also help to identify and establish local markets for recycled materials.

Action 25

SEPA will facilitate the formation of a stakeholder group by October 2002 to develop strategies for moving the management of industrial and commercial wastes up the waste hierarchy.

Action 26

SEPA will work with the waste industry and commercial and industrial waste producers to improve the understanding of both the quantities and composition of industrial and commercial wastes arising in the Tayside area.

Special Wastes

The consignment of hazardous wastes in the UK is controlled by the Special Waste Regulations 1996 (which implement the Hazardous Waste Directive 91/689/EEC) and which are administered in Scotland by SEPA. These Regulations define special wastes on the basis of a range of prescribed hazardous properties and implement controls on their movement, treatment and disposal using the consignment note system. Scotland currently produces around 200,000 tonnes of special waste each year (from approximately 40,000 consignment notes). A significant proportion of this waste is exported outside Scotland for treatment and disposal.

SEPA's policy on special waste is to encourage producers of this waste to:

- minimise special waste production,
- undertake pre-treatment prior to disposal,
- make arrangements to ensure that Scotland becomes more self-sufficient in special waste treatment and disposal.

Specific Waste Streams

A description of specific waste streams follows, grouped under Priority Waste Streams and Other Wastes.

Priority Waste Streams

The European Commission has identified 11 priority waste streams, which pose a potential threat to the environment. In many cases they are, or soon will be, subject to specific legislation and separate reporting requirements. The National Waste Strategy: Scotland identified 13 separate priority waste streams that will be subject to research study at a national level across Scotland because of their volume, hazardous nature, potential for recycling or their potential to create economic benefit. The list of priority waste streams includes special waste (see previous section). Each of the other priority waste streams is described in the following sections.

Construction and Demolition (C&D) Waste

C&D waste is recognised as the largest single source of waste arisings in Scotland, likely to be well in excess of the reported disposal figure of 5.1 million tonnes for 1998. Together with MSW and commercial and industrial waste, C&D waste is one of the three main components of controlled waste arisings. Most C&D waste is bulky, inert and not suitable for incineration or biological treatment, e.g. concrete, brick, tiles, glass, insulating materials, gypsum, plastic, metals and subsoil. However smaller quantities of biodegradable materials such as topsoils, tarmac and wood are also typically present.

Traditionally the bulk of C&D waste in Scotland has been disposed of to landfill. However changes in the waste management licensing regulations and the introduction of the landfill tax on inert waste disposal in 1996 resulted in a significant reduction in the reported quantities of this waste stream. An increasing proportion of C&D waste has been disposed of at sites exempt from licensing or is being treated in screening and crushing plants prior to re-use as a replacement for bulk or engineering fill. The recently announced introduction of a Primary Aggregates Tax to commence at £1.60 per tonne from April 2002 is likely to enhance this trend.

Other European countries report C&D waste recycling rates of up to 90% and this indicates that there is considerable potential in Scotland to significantly increase the level of C&D waste re-use and recycling. A range of useful guidance notes on C&D waste minimisation, re-use, recycling, design and site operations are published by CIRIA. Current constraints on the wider use of recycled C&D materials include the need to develop specifications for the use of secondary materials and wider acceptance of these by the engineering community.

This priority waste stream project has now reported and it is expected that the findings from this project will be included in the finalised Tayside Area Waste Plan.

Packaging and Packaging Waste

The results of a packaging waste survey conducted by the Environment Agency estimated the total packaging waste arisings in the UK to be approximately 9.3 million tonnes a year, of which 55% is estimated to be generated from municipal waste. Proportionally, it is likely that just under 1 million tonnes of this arises in Scotland. Packaging and packaging waste is commonly composed of paper, fibreboard, plastic, glass, steel, aluminium, wood and composites such as 'tetrapak' - a combination of paper, polyethylene and aluminium.

The production and disposal of packaging wastes are controlled by the Packaging and Packaging Waste Directive (94/62/EC). The UK has implemented this Directive by introducing the Producer Responsibility Obligations (Packaging Waste) Regulations 1997 and the Packaging (Essential Requirements) Regulations 1998. The Packaging (Essential Requirements) Regulations are designed to ensure that packaging is minimised and is capable of being recycled or recovered. The Producer Responsibility Obligations (Packaging Waste) Regulations are designed to ensure that the packaging is recycled and recovered.

The Producer Responsibility Obligations (Packaging Waste) Regulations came into force in the UK in March 1997. These require that by 30 June 2001 50 to 65% of all packaging materials are recovered and within this target that 25% to 45% of these materials are recycled (to comprise a minimum of 15% of each individual packaging type). The obligations are discharged under a shared producer responsibility arrangement in which the targets are shared among all businesses involved in the packaging chain and which have an annual turnover in excess of £2 million and handle more than 50 tonnes of packaging a year. These targets will increase, following revisions to the Directive this year.

Obligated companies can discharge their obligations through:

- registering with SEPA or the Environment Agency (EA) and meeting their own recovery and recycling targets, or
- off-setting their liability by joining one of the UK compliance schemes which ensure that the aggregate obligation which the members bring to the scheme are met.

The system of Packaging Waste Recovery Notes (PRNs), issued by accredited re-processors, allows compliance schemes and obligated companies to meet their recovery and recycling obligations through purchase of PRNs at the market value. However because companies often include both Scottish and non-Scottish subsidiaries and may register with either SEPA or the EA, it is not possible to disaggregate Scottish performance data from the UK total.

Earlier in 2001 the Scottish Executive carried out a study to identify packaging waste sources and re-processors. The results of this study will help to inform SEPA's planned priority waste stream project on packaging and packaging waste in Scotland.

Table 4.1 gives estimates of tonnages of packaging materials, which will be recycled or recovered through the implementation of the BPEO for Municipal Solid Wastes in Tayside. The figures are given for 2013.

Table 4.1

Packaging Material ¹	Percentage (of household waste) ²	Total ³ (tonnes)	Packaging Waste Recovery (tonnes) ⁴		
			Recycling	Energy	Composting
Paper/Card	17.32%	59112	46658	3612	Nil
Plastic (dense)	5.90%	20136	7089	5840	Nil
Plastic (film)	5.30%	18088	N/A	5246	Nil
Ferrous metal	5.70%	19453	15268	Nil	Nil
Non-Ferrous metal	1.60%	5461	1575	Nil	Nil
Glass	9.30%	31740	16000	Nil	Nil

Notes:

1. Based on results from National Household Waste Analysis Programme (1993); note that percentages are based on household waste and not MSW.
2. Calculated from 0.52 x 33.2% (refer NHWAP 1993);
3. Estimate calculated from known total household waste tonnes for WSA - using NHWAP survey percentages;
4. Calculated estimates of packaging waste recovery - for each packaging type.
5. Note that this table will provide an estimate of the total quantity of packaging waste recovered – for household waste only. Packaging waste recovery from collected commercial waste has not been included.

Waste Electrical and Electronic Equipment (WEEE)

It is estimated that between 0.65 to 1 million tonnes of waste electrical and electronic equipment are discarded by householders and commercial groups each year in the UK. WEEE is composed of a complex array of product types and the materials they contain also vary enormously, for example an average TV contains 6% metal and 50% glass whereas a cooker is 89% metal and only 6% glass. Other raw materials used in the manufacture of electronic equipment include ferrous metal, non-ferrous metals, such as zinc, lead, cadmium, and mercury, plastics, ceramics, precious metals, PCBs and a wide range of other substances such as arsenic, phosphorous and bromine.

The main categories of equipment that comprise WEEE are:

- Large household appliances (including white goods)
- IT and telecommunication equipment
- Consumer equipment such as radio, TV, cameras and audio
- Small household appliances such as vacuum cleaners, irons, toasters

- Electronic and electrical tools such as drills, saws, sewing machines and garden equipment
- Lighting equipment, including fluorescent and gas discharge lamps
- Four other categories - Toys, leisure and sports equipment; Medical devices; Monitoring and control instruments; Automatic dispensers.

The traditional disposal route for used electronic appliances is to landfill or incineration. This is thought to be unsatisfactory since it results in the total loss of the considerable resources used in manufacture, there is an environmental cost of producing the raw materials and potential environmental damage resulting from disposal or incineration of these potentially toxic materials.

The major proposed European Directives affecting WEEE are:

1. Directive on waste electrical and electronic equipment (WEEE Directive);
2. Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directive); and
3. Directive on the impact on the environment of electrical and electronic equipment (EEE Directive).

The fourth draft of the WEEE Directive has recently been adopted and the first part should be transposed into UK law during 2003. The main aspects of this Directive are:

- *Waste Prevention*: for example through use of recycled plastics and minimal use of dangerous substances;
- *Collection and Treatment*: removal of all fluids and establishment of collections and producer sponsored 'take back' systems;
- *Recovery*: establishing systems and targets for component, material and substance re-use and recycling, ranging from 70 to 90% recovery.

Fluorescent tubes are part of the WEEE lighting equipment category and annually the UK disposes of 80 million of these each year. Fluorescent lighting and high pressure sodium lamps contain small amounts of a range of potentially harmful substances such as mercury, cadmium and lead. The RoHS Directive will drive ongoing technical improvements to reduce the amount of these metals used.

In future, producers of electrical and electronic equipment may have to provide take-back facilities for customers, either through in-store initiatives or through existing municipal waste collection systems.

End of Life Vehicles (ELVs)

The recovery of motor vehicles to re-use parts or reclaim materials for re-use or recycling is not a new industry and in the UK almost all vehicles are collected at the end of their lives for some form of recovery. In 1997 and 1998 an average of 75% by weight of materials from ELVs was recovered through re-use of spare parts and metals recovery, with over 95% of the metal content typically being recycled. The recovery process typically involves removal of re-usable parts, followed by shredding to recover both ferrous and non-ferrous metals. The remaining materials, fragmentiser waste or shredder residues, generally comprise plastics, rubber, glass, textiles and foam and are normally disposed of to landfill.

The Automotive Consortium on Recycling and Disposal (ACORD) Annual Report 1999, estimated that 1,900,000 vehicles were scrapped in the UK in 1997 and 1,800,000 in 1998. The weight of an average vehicle is estimated as 1.06 tonnes, including engine and gearbox. On the basis of the ACORD data, SEPA estimate that there were about 146,500 tonnes of ELVs in Scotland in 1997 and 141,000 tonnes in 1998, excluding vehicles brought directly from abroad. Almost all of the material recycled was exported outside Scotland.

Under the EU's Priority Waste Streams Programme a Directive on ELVs was adopted in October 2001 and is expected to be implemented in the UK during 2002. The Directive will require member states to:

- set up systems to ensure that ELVs can only be scrapped by authorised dismantlers or shredders, which must meet tightened environmental treatment standards, from the outset;
- ensure that economic operators, including producers, dismantlers and shredders, establish adequate systems for the collection of ELVs, from the outset;
- ensure that last owners are able to return their vehicles into these systems free of charge, from January 2007;
- ensure that producers (vehicle manufacturers or importers) meet 'all or a significant part' of the costs of takeback or treatment from January 2007 at the latest;
- achieve progressively higher re-use, recycling and recovery targets of 85% of total weight of all ELVs by January 2006 and 95% by January 2015;
- restrict the use of heavy metals in new vehicle manufacture from July 2003.

Scrap Tyres

Scrap tyre disposal continues to be a major problem across the European Union. Of the 2.5 million tonnes of post consumer tyres which arose within the EU during 1998-1999, 39% were landfilled, 20% re-used for energy recovery, 18% recycled (e.g. through granulation), 12% re-treaded and 11% exported. The Landfill Directive bans the landfilling of whole tyres by 2003 and shredded tyres by 2006. It is estimated that in the UK, between 18 and 26% of scrap tyres are re-treaded.

The Environment Agency's Tyres and Environment Report 1998, estimated that approximately 380,000 tonnes of waste tyres were scrapped in the UK during 1996, from both ELVs and existing vehicle use. There are no separately available figures for the quantity of waste tyres arising in Scotland; however this is estimated to be 28,000 to 29,000 tonnes, assuming that waste tyre arisings are proportional to the number of vehicles on the road. Scrap tyres are being investigated in a Priority Waste Stream Project, linked with ELVs.

Tyres have a higher calorific value than coal and therefore offer considerable energy from waste potential. Scrap tyres can be used as an alternative fuel source in cement kilns, saving large amounts of fossil fuels and shredded scrap tyres are used as a substitute fuel in at least one industrial process in Scotland. Tyres also yield significant quantities of steel, which can be extracted using magnets during granulation or recovered from the residue after incineration.

Granulated tyres can be used as a replacement for virgin rubber in a wide range of applications including brake linings, landscaping mulch, playground and athletics track surfaces, carpet underlay and rubberised asphalt for constructing pathways and quieter, better quality and more durable road surfaces. This latter application has the potential to use a large proportion of the UK's waste tyres. Recent technological advances in de-vulcanisation indicate that it will be possible in future to recycle scrap tyres for re-use in tyre manufacturing.

Batteries

Waste batteries can be split into two main categories:

1. *Lead-acid batteries*: these contain liquid and are most commonly used in vehicles or for emergency standby power;
2. *Dry cell (or paste) batteries*: these are smaller and the most common type for domestic uses; typical types are zinc carbon, alkaline or nickel-cadmium.

Lead-acid batteries are classified as special waste and are typically collected by vehicle dismantlers and sent for reprocessing at specialist recovery facilities, where the sulphuric acid and lead plates are recovered for reprocessing and the plastic cases either recycled or sent to landfill. The estimated UK recycling rate is around 67% by weight.

Facilities in the UK for recycling domestic batteries are almost non-existent and it is estimated that virtually all of the 634 million batteries of all types purchased each year end up in the domestic waste stream and ultimately landfill, where the contents can potentially leach out into the local environment. Dry cell batteries contain heavy metals such as lead, mercury and cadmium, as well as a range of other metals that have significant adverse health and environmental implications. Including batteries in household waste that is to be used for composting greatly reduces the quality of the compost produced.

Batteries are manufactured by a wide range of companies, using many different shapes, colours and inner construction details, so that sorting them for effective collection and recycling presents significant challenges. Also, the technology involved in reprocessing and recycling batteries and in extracting the heavy metals, is still in its infancy. However, it is expected that this technology will improve to allow greater recovery of batteries.

Waste batteries are an EU-wide problem and the EU is currently working on a draft Directive to control waste batteries and accumulators. An official draft has not been completed. However the following proposals are likely:

- an immediate ban on all batteries containing mercury and phasing out cadmium by 2008;
- targets to collect and recycle 75% of consumer batteries and 95% of industrial batteries by 2008;
- target to recycle no less than 55% of the materials recovered from spent batteries.

Waste Oils (including solvents)

Most waste mineral oils and solvents are classified as special waste and waste oils accounted for 29% of the special waste stream in Scotland in 1998. Much of the waste oil collected in the UK is processed by removing excess water and filtering out particulates and used as a fuel in heavy industry and power stations. However tighter air emission limits and fuel quality controls resulting from Integrated Pollution Prevention and Control legislation is likely to reduce the amount of waste oil used in this way.

The preferred option for lubricating oils is re-refining for re-use as a base lubricant, although this does not occur on a large scale in the UK. Waste solvents can also be recovered for secondary uses in this way.

SEPA launched the Oil Care Campaign in 1999 in response to a growing concern over illegal dumping of waste oils. Oil is the cause of more than 35% of water pollution incidents in Scotland and more than half of Scotland's serious water pollution. Oil wastes will be the subject of a Priority Waste Stream Project to investigate arisings, recycling and recovery activity and also to look at the barriers to increasing use through these routes. The Priority Waste Stream Project will also consider non-special waste oils.

Newsprint

It is estimated that approximately 2.8 million tonnes of newsprint for newspapers, magazines, catalogues and pamphlets was used in the UK in 1998. More than half of this was imported, with the remainder being produced at three newsprint mills in England. Around 30% of the UK production is recovered for recycling.

There are no separate figures for Scotland; however it is estimated that around 280,000 tonnes of post-consumer newsprint enters the waste stream each year in Scotland. The volatile markets for post-consumer paper and the distance to the existing newsprint mills are barriers to increasing the present level of newsprint recycling. The UK waste and resources action plan (WRAP) is looking at ways to support additional recycling capacity for post-consumer newsprint.

A voluntary agreement was put in place between the DETR and the newspaper publishers to increase the recycled content of newspapers from its current level of around 52% with the following targets:

- 60% recycled content by end of 2001
- 65% recycled content by end of 2003
- 70% recycled content by end of 2006.

Clinical Waste

Clinical waste is defined in the Controlled Waste Regulations (1994) and includes the following:

- human and animal tissue, including blood and other body fluids;
- waste drugs and other pharmaceuticals;
- syringes, needles and other sharp instruments;
- swabs, dressings and other waste arisings from medical, nursing, dental, veterinary, pharmaceutical or similar practices.

The principal sources of clinical waste include hospitals, health centres, veterinary surgeries, dental surgeries, GP surgeries, blood transfusion centres, public health laboratories and research and teaching establishments. Clinical waste arisings in the UK have been estimated as almost 400,000 tonnes a year, with around 50% of these being produced by NHS Trusts. Clinical waste arisings from NHS Trusts in Scotland for 1997-1998 were estimated at 15,020 tonnes. Some clinical wastes are also classified as special wastes. In Tayside, clinical waste is dealt with at DERL in Dundee and at a purpose built processing plant at Arbroath.

The reduction of clinical waste arisings through re-use of some materials is possible, provided the equipment can be sterilised without difficulty. Clinical waste may also be reduced by pre-treatment to alter the state of the waste so that is no longer defined as clinical waste; this increases the range of final disposal options.

All clinical wastes should be treated and made safe prior to landfill disposal. The treatment options include heat treatment, chemical treatment, irradiation or encapsulation, or a combination of these processes. Modern clinical waste incinerators can deal satisfactorily with a wide range of clinical waste. Suitably designed and run municipal waste incinerators may also be licensed to handle certain types of low-risk non-infectious clinical waste. Anatomical and special waste streams are normally incinerated, with low-risk material and sharps being landfilled after heat treatment and maceration.

Agricultural Waste (including film, pesticides and veterinary medicines)

Much of the waste and by-products arising on farms consists of organic-rich matter such as manure, slurry, silage effluent and crop residues. Around 15 million tonnes per annum of livestock manure and slurry is produced in Scotland, the bulk of this being disposed of by applying to land. Recovering the value from the livestock manures and slurries by introducing valuable nutrients and organic matter to the soil is an economical and environmentally acceptable way of dealing with such wastes, provided they are applied to land in a controlled manner and assist farmers to reduce the amount of inorganic fertiliser applied.

However, farms also produce a wide range of other organic and non-organic wastes, including waste crops, pesticide residues, sheep dip residues, unused veterinary medicines, agricultural plastic film, discarded farm equipment, dead animals, agrochemicals, packaging waste and household waste. At present, agricultural wastes are excluded from the definition of controlled waste, although the UK government has made a commitment to bring the non-natural wastes into the controlled waste management regime.

Disposal of plastic film from farms is a particular problem, since the film is often bulky and contaminated with soil. Consequently farm plastics have either been buried or burned on farm. The UK government has proposed two options for future management:

- a voluntary approach, combined with the forthcoming extension of waste management licensing controls,
- introduction of Producer Responsibility Regulations to place statutory duties on plastic manufacturers to recover farm plastics.

It is estimated that the quantity of non-natural agricultural waste arisings in Scotland in 1998 was slightly less than 100,000 tonnes. Results from a survey by MAFF in March 2000 suggest that about 12 to 15% of agricultural plastics are recycled and that almost all oils arising on farms are recycled or otherwise recovered. Two schemes have been established in Scotland for recycling plastic from farms, with a total membership of around 1,000. Only a very small quantity of scrap metal and machinery is landfilled.

Farmers must have options for the safe disposal of pesticides and veterinary medicines and may need to take these materials directly to the treatment facility, or have them collected by a specialist contractor.

Ozone Depleting Substances (including Chlorofluorocarbons)

Ozone depleting substances (ODS) is the collective name given to over 200 products which have the potential to destroy the ozone layer in the upper atmosphere. These substances are typically used in products for refrigeration, air-conditioning, foam blowing, fire fighting, aerosol sprays and degreasing. The substances can be categorised in a number of groups, such as CFCs, HCFCs, halons, HBFCs and individual products such as carbon tetrachloride and 1,1,1 tri-chloroethane.

ODS are controlled by the Montreal Protocol and the main production of them has been phased out since 1996. EC Regulation 2037/2000, effective from 1 October 2000, requires all ozone depleting substances used in refrigeration and air conditioning equipment, except domestic fridges and freezers, to be recovered during servicing and maintenance of equipment or prior to dismantling or disposal of equipment. After 1 January 2001 recovered CFCs must be destroyed by an environmentally acceptable technology. Recovered HCFCs can either be destroyed or can be re-used until 2015. For domestic refrigerators and freezers, the above requirement comes into effect on 1 January 2002, after which ODS, as both refrigerants and foams, must be recovered and destroyed.

Key elements of good waste ODS management policy and practice include:

- restrictions on the supply and use of all ODS, with an outright ban from 2003;
- mandatory recovery of used controlled substances from non-domestic refrigeration and air-conditioning units, equipment containing solvents and fire protection systems;
- recovery of ODS from other products and equipment, where practicable.

ODS which cannot be recycled must be destroyed at one of the two specialist high temperature incineration plants in the UK. It is estimated that around 280,000 domestic fridges and freezers are discarded in Scotland each year, containing an estimated total of 143 tonnes of ODS.

Household Hazardous Waste

Elements of the household waste stream pose a considerable risk to the environment if they are not handled and disposed of correctly. Although a relatively small percentage of the household waste stream, less than 1%, they do contribute strongly to the environmental impact of household waste, particularly if incinerated or landfilled as part of the general household waste stream. Such materials are known collectively as hazardous household waste and include asbestos, household cleaning products, pesticides, medicines, batteries, fluorescent tubes, waste oils, solvents and thinners, wood preservatives, sharps and needles.

There is little experience of the separate collection and management of such wastes in the UK, although this is much more common in continental Europe. The benefits of such an approach can include reduced water and air pollution, reduced public concern over thermal treatment processes and possibilities for recycling and re-use. The EU is working on a draft Directive on household hazardous waste and this is expected around 2004.

SEPA is considering a series of pilot schemes across Scotland to test best practice for collecting and managing such wastes. For example, collections can be made at civic amenity site drop off points, as door to door kerbside box collections or regular visits to pre-specified locations in the community, similar to mobile library services. Such schemes will assist the clean-up of the MSW stream, enabling cleaner products when waste is processed by recycling or energy treatment.

OTHER WASTE STREAMS

Litter and Fly Tipping

Litter and fly tipping are common problems in parts of Scotland and is highly visible and unsightly. Local authorities in Scotland are the statutory authorities for litter control and they share with SEPA the powers and responsibility for dealing with fly-tipped material. In many cases it is difficult to establish the responsible party and in cases of systematic fly tipping, lengthy site observation is required to identify those responsible.

In view of the diverse nature of the problem, SEPA has not specifically set a target in relation to fly tipping but will work with local authorities to ensure that adequate provisions are available for household and commercial waste.

Asbestos

Asbestos from industrial sources is a special waste and handling and disposal operations are covered by stringent legislation.

Asbestos in the household waste stream is also defined as special waste under the Special Waste Regulations 1996 as amended. There are two landfill sites in Tayside which landfill asbestos. These are:

- Binn Farm Landfill, Glenfarg
- Restenneth Landfill, Forfar

Polychlorinated Biphenyls (PCBs)

PCBs are found in the form of a stable oily liquid, with excellent insulating and heat transfer properties and a high resistance to chemical and biological degradation over time or when exposed to high temperatures. These properties led to their widespread use in the electrical industry, particularly in capacitors and transformers, but also in cable and wire coatings.

Due to their longevity and adverse environmental and human health impacts, the use of PCBs has been progressively restricted since 1972 and the major sources of PCB waste that now remain in the UK are from closed applications. Under EU and UK legislation all equipment containing PCBs were to be phased out by 1999, with the exception of equipment containing PCB oil with less than 500mg per kg, which can remain in service until the end of their useful working life.

The largest quantities of PCBs were found in the electricity industry in large primary and grid transformers and ancillary electrical switching equipment. However most electrical equipment has now been tested for PCBs by the main electricity companies and where necessary they have been removed.

The main waste management methods available in the UK for the destruction of PCBs include:

- high temperature incineration at more than 1,100°C, the most common method;
- chemical dechlorination to remove inorganic chlorine salts and produce dechlorinated oils.

Most modern electrical equipment is designed to avoid the use of liquid dielectrics and therefore PCBs altogether and now use a gas for the same purpose.

The Environmental Protection (Disposal of PCBs and Other Dangerous Substances)(Scotland) Regulations 2000 placed a requirement on holders of PCBs or PCB-contaminated equipment such as transformers to register with SEPA. Holders must also label equipment and premises holding PCBs, and had to dispose of or decontaminate sources of PCBs by end 2000. For certain applications and users the deadline is extended to 2008.

Contaminated Land Spoil

Contaminated spoil from development of brownfield sites has historically been disposed of directly to landfill - as a cost effective and rapid disposal route. Grossly contaminated materials from these operations often require to be disposed of as special waste. The introduction of new contaminated land regulations in Scotland in July 2000 will continue to drive brownfield land reclamation in future and the need for landfill disposal of contaminated spoil is expected to continue for the foreseeable future. However, the expected likely increases in landfill tax over the next few years will increasingly make landfill disposal an uneconomic option compared with alternative technologies for on-site or in-situ soil reclamation, though this must be balanced against continued landfill tax exemptions that may be available. Councils are preparing contaminated land strategies in accordance with Part IIA of the Environmental Protection Act 1990 (as amended).

Fish Farm Waste (and processing)

Waste arisings from fish farm operations and processing include packaging waste (i.e. plastic sheeting, wooden pallets and paper), dead fish and fish processing waste. Common practice in Scotland is to dispose of the general waste and fish processing wastes to landfill. Considerable odour problems can result and most landfill operators seek to control the quantities of fish waste accepted.

Fish mortalities can also be treated by a process of maceration, mixing with formic acid and subsequent heat treatment to recover useable products including lubricating oil, food additives and fertilisers.

Sewage Sludge

Seventy-five percent of sewage sludge was disposed of to sea until the end of 1998 when the practice ceased in response to the requirements of the Urban Wastewater Treatment Directive. However the removal of this route, together with the requirement for improved wastewater treatment has led to a significant increase in the volume of sludge available for recycling.

The responsibility for meeting the requirements of the Directive rests with the Scottish Water Authorities, which predict that by 2005 52% of their sewage sludge will be used on agricultural land, 8% used for land reclamation and 40% for other purposes, including energy recovery and forestry.

Sludge is often spread into or onto agricultural land to provide benefit as a fertiliser or soil conditioner. Recycling sludge to land is regulated by SEPA under the Sludge (Use in Agriculture) Regulations 1989 which set out strict conditions for monitoring the soil and sludge and set application rates based on particular parameters in the sludge.

The UK Code of Practice for the Agricultural Use of Sewage Sludge has been amended to take account of new microbiological standards for treated sludge. Also in the light of this, the European Commission is proposing to revise the Directive and the UK will be introducing new sludge use regulations which will, for the first time, set microbiology and physico-chemical standards for sludge.

Port and Offshore Waste

Port Authorities are required under the Merchant Shipping (Port Waste Reception Facilities) Regulations 1997 to report to government how they plan their port waste reception facilities. Such facilities provide a means of reducing the risk of pollution from shipping to meet the UK's requirements under the International Convention on the Prevention of Pollution from Ships (MARPOL 73/78).

Such plans must:

- assess the amounts and types of waste generated,
- consider the type and capacity of facilities,
- consider the location and ease of use of facilities,
- prepare and submit to government a plan to provide adequate and reasonably priced facilities.

Within Tayside, there are port facilities at Dundee, Montrose & Perth.

Mine and Quarry Waste

Mine and quarry wastes include materials derived from the overburden, rock inter-bedded with mineral and residues from the processing. They are composed mostly of waste rock, sand and fined-grained tailings. In Scotland, mine and quarry waste is produced in particular from the extraction of coal, slate and vein minerals. These materials are mostly non-hazardous and chemically inert. Other waste materials include abandoned machinery and tyres.

Much of the waste is left on-site as surface tips, which can cause environmental problems, particularly with ferruginous discharges and they can take many years to regenerate naturally. Many of these materials do have the potential for greater use as construction fill or sometimes as high quality aggregate.

Control over the recovery and disposal of mineral waste, from a health and safety perspective, is provided under the Town and Country Planning legislation and the Mines and Quarries (Tips) Act, 1969. However the UK Government has made a commitment to bring non-mineral wastes from mines into the controlled waste management regime.

SEPA believes that many of the potential uses for such waste have already been exploited in the past and that efforts should now be directed towards the beneficial restoration of old mineral workings and the associated tips. Future controls should ensure that the short and long term environmental impacts of the lagoons and tips should be subject to strict environmental controls.

5. IMPLEMENTING THE AREA WASTE PLAN

The Tayside Area Waste Plan provides a framework for taking forward waste management in Tayside. However it is recognised that to implement the various short and longer-term actions will involve a partnership with public agencies, the waste industry, private and voluntary organisations, and our communities. The Area Waste Plan will also provide a framework for investment and for other plans and initiatives involving our partner agencies and organisations. Key actions include

- defining the future role of the Waste Strategy Area Group; and
- monitoring the implementation of the Area Waste Plan.
- implementing the range of specific actions from the Area Waste Plan.

Considerable resources, both capital and revenue, by both the public and private sector, will be required to implement the policies and projects arising from the Area Waste Plan to provide an integrated network of waste management facilities in Tayside.

Future Role of Waste Strategy Group

The Waste Strategy Area Groups and local fora will be maintained as the focal point for the development of each Area Waste Plan. In this way we can ensure that the Area Waste Plans make good progress. The partnerships developed in these groups and associated fora provide a long term development resource and a way of embedding expertise on a wide range of issues relating to the development of the National Waste Strategy: Scotland. Waste Strategy Area Co-ordinators will also be maintained by SEPA to provide ongoing facilitation and co-ordination and to ensure that the range of national projects related to the National Waste Strategy are integrated into the Area Waste Plans. Waste Strategy Area Co-ordinators will be responsible for co-ordinating the Waste Strategy Area Group and for reporting on the annual progress of Area Waste Plan development. Other partners also have significant roles to fulfil.

Monitoring Progress and Performance

Monitoring and review of the Area Waste Plan performance will be an important element in measuring the influence and success the plan will have in managing waste in Tayside and in meeting the various targets established by the plan. This will ensure that the plan continues to be effective and deliver the improvement in waste management at both the Tayside and National level. At this stage performance indicators and targets have only been developed for MSW. Future development of the Area Waste Plan will allow development of a full basket of performance indicators and targets for other waste streams.

It is intended that an annual Area Waste Plan progress report will be provided to the Scottish Executive with a summary of the annual forward development plans. This will ensure that the area plan can remain current, highlight progress on implementing the Area Waste Plan and flag up key issues that need to be addressed by a future review of the Plan.

It should also be noted that a National Targets Group, which consists of representatives from several local authorities, CoSLA and SEPA are developing a range of indicators and targets which will be used to measure and drive the implementation of all Area Waste Plans. These could range from indicators of recycling activity and landfill disposals, to waste minimisation activities and public attitudes and behaviour. As this consultation is not complete, national performance indicators and targets do not yet exist. This is in contrast to England and Wales where a statutory approach has been adopted, with Councils being given mandatory performance indicators and performance levels.

As part of the process of reviewing and rolling forward the AWP, the performance of the plan will be monitored and adjustments to targets will be made, where appropriate, to take into account both national changes and local performance.

Action 27

The Tayside WSAG will establish a comprehensive framework for monitoring the development and implementation of the AWP. This will take fully into account progress on National target setting.

Action Plan

The various proposals and recommendations arising from the Area Waste Plan, including an initial indication of time scale are set below.

Action	Lead Organisation	Timescale
<p>Action 1</p> <p>SEPA will continue to develop a Best Practicable Environmental Option (BPEO) methodology to enable a strategy for dealing with the management and disposal of non-MSW wastes. This methodology will be available for use by October 2002.</p>	SEPA	October 2002
<p>Action 2</p> <p>SEPA will continue to develop an improved data collection and handling system for dealing with non MSW waste streams. Initial work on a methodology will be undertaken by March 2003.</p>	SEPA	March 2003
<p>Action 3</p> <p>The Tayside WSAG will continue to progress towards the establishment of a fully integrated Area Waste Plan for Tayside, dealing with all waste streams, by April 2007.</p>	Tayside WSAG	April 2007
<p>Action 4</p> <p>The Tayside WSAG will consider opportunities for the use of Landfill Tax Credits to stimulate recycling initiatives in Tayside.</p>	Tayside WSAG	Ongoing

<p>Action 5</p> <p>The Tayside WSAG will investigate and establish current best practice on delivering household waste minimisation, which will inform the development of a strategy for the Tayside area. The strategy will be produced by March 2003 and it is likely to require pilot initiatives to be established and monitored.</p>	Tayside WSAG	March 2003
<p>Action 6</p> <p>The Tayside WSAG partners will consider the best means of initiating and delivering waste minimisation support to companies in the area. This will include consideration of the need for full time project officers. An initial report on how to take this forward, including the identification of funding sources will be produced by October 2002.</p>	Tayside WSAG	October 2002
<p>Action 7</p> <p>Tayside WSAG members will continue to investigate the promotion of waste minimisation within their organisations. This will include:-</p> <ul style="list-style-type: none"> • Introducing staff training and awareness raising on waste management practice. • Local Councils considering means of minimising wastes generated by their in house Direct Service and Direct Labour Operations, including building maintenance, street sweeping and roads maintenance. • Examining procurement activities with a view to promoting waste minimisation, re use and the purchase of recycled materials 	Tayside WSAG Members	Ongoing
<p>Action 8</p> <p>The Tayside WSAG will investigate and report by March 2003 on the opportunity for the establishment of a waste exchange within the Tayside waste strategy area.</p>	Tayside WSAG	March 2003
<p>Action 9</p> <p>The three Tayside Local Authorities in partnership with other stakeholders will investigate the feasibility of reuse and refurbishment of MSW. This will include looking at further separation of civic amenity and bulky household wastes. Initial reports will be produced by November 2002 and include a review of existing management and operational practices and ways in which these can be developed.</p>	Tayside Local Authorities	November 2002

<p>Action 10</p> <p>The Tayside WSAG will seek to establish joint working arrangements with DERL to ensure that the feedstock wastes for the DERL energy from waste plan (EfW) are the most appropriate for combustion.</p>	Tayside WSAG	Ongoing
<p>Action 11</p> <p>The Tayside WSAG in partnership with other stakeholders including SWAG and SET will encourage the separation of waste materials at source.</p>	Tayside WSAG, SWAG, SET	Ongoing
<p>Action 12</p> <p>The Tayside WSAG in partnership with ReMaDe will identify and develop opportunities for local market development.</p>	Tayside WSAG, ReMaDe	Ongoing
<p>Action 13</p> <p>A Tayside education and awareness group will be established by March 2003 to promote the aims of the AWP with an initial focus on household waste. Members of the group will include SWAG, the three Tayside Local Authorities and SEPA.</p>	SEPA, SWAG, Tayside Local Authorities	March 2003
<p>Action 14</p> <p>A directory of waste management services will be maintained by the three Tayside Local Authorities. This will allow all residents of Tayside to identify what services are available to deal with differing waste materials in their locality. The Directory will also be available through each of the Local Authorities web sites by October 2002.</p>	Tayside Local Authorities	October 2002
<p>Action 15</p> <p>The Tayside WSAG in partnership with SWAG and WAMI will produce a household waste minimisation guide to assist householders and other stakeholders. This guide will be produced by October 2003.</p>	Tayside WSAG, SWAG, WAMI	October 2003
<p>Action 16</p> <p>The Tayside WSAG will provide assistance wherever possible to facilitate the establishment and development of community based and operated waste management initiatives. This may include passing on skills, experience, and assistance with the identification and application for funding sources.</p>	Tayside WSAG	Ongoing

<p>Action 17</p> <p>SEPA will establish a commercial and industrial waste producers forum for Tayside by October 2002 with a remit to develop strategies for the promotion and dissemination of good waste management practice.</p>	SEPA	October 2002
<p>Action 18</p> <p>The objectives, targets and facilities required to implement the AWP will be taken fully into account in the development of Structure and Local Plan policy and will be a material consideration in assessing planning applications.</p>	Tayside Local Authorities	Ongoing
<p>Action 19</p> <p>Development Plans will ensure that a 10 year forward supply of landfill will be available in the Tayside area for inert and non hazardous wastes arising in Tayside.</p>	Tayside Local Authorities	Ongoing
<p>Action 20</p> <p>The Tayside Local Authorities will seek to improve understanding of household and MSW arisings using waste analysis. The first analysis will be undertaken by October 2002 and undertaken on an annual basis.</p>	Tayside Local Authorities	October 2002
<p>Action 21</p> <p>The Tayside WSAG and the three Tayside Local Authorities will continue to work in partnership to achieve the waste management targets established for Tayside.</p>	Tayside WSAG, Tayside Local Authorities	Ongoing
<p>Action 22</p> <p>The Tayside WSAG will work in partnership with the three Tayside Local Authorities to develop a strategy for the implementation of separate kerbside collection systems over the next 10 years. An initial report will be produced by October 2002. This will allow a bid to the Strategic Waste Fund for funding to establish pilot kerbside collection schemes for the collection of dry recyclate in all three Local Authority Areas by March 2003. An evaluation of the pilot schemes will take place following completion of the pilot</p>	Tayside WSAG	October 2002

<p>Action 23</p> <p>The Tayside WSAG will identify markets for any compost, which will be produced. Particular focus will be on securing sustainable markets in the Tayside area and the specification of product required by the customer. An initial report on this subject will be produced by August 2002.</p>	Tayside WSAG	August 2002
<p>Action 24</p> <p>The Tayside WSAG will develop a compost strategy for the area which will determine the number of facilities required, the type of technology to be employed, the types of waste able to be composted and using the report in action 23 above, detail how the product will match market needs. The group will report by March 2003.</p>	Tayside WSAG	March 2003
<p>Action 25</p> <p>SEPA will facilitate the formation of a stakeholder group by October 2002 to develop strategies for moving the management of industrial and commercial wastes up the waste hierarchy</p>	SEPA	October 2002
<p>Action 26</p> <p>SEPA will work with the waste industry and commercial and industrial waste producers to improve the understanding of both the quantities arising and composition of industrial and commercial wastes arising in the Tayside area.</p>	SEPA	Ongoing
<p>Action 27</p> <p>The Tayside WSAG will establish a comprehensive framework for monitoring the development and implementation of the AWP. This will take fully into account progress on National target setting.</p>	Tayside WSAG	Ongoing

ANNEXES

Annex 1 – Glossary

Aerobic A process taking place in the presence of air.

Anaerobic A process taking place in the absence of air.

Anaerobic digestion A process where biodegradable material is placed in an enclosed vessel and encouraged to break down in the absence of oxygen.

Best Practicable Environmental Option (BPEO) is the outcome of a systematic and consultative decision-making procedure which emphasises the protection and conservation of the environment across land, air and water. The BPEO procedure establishes, for a given set of objectives, the option that provides the most benefits or the least damage to the environment as a whole, at acceptable cost, in the long term as well as in the short term.

Best Value Places a duty on local authorities to deliver services (including waste collection and waste disposal management) to clear standards - covering both cost and quality - by the most effective, economic and efficient means available.

Biological treatment A process involving an enclosed and/or containerised biological treatment system similar to in-vessel composting in which mixed garbage would be mechanically aerated to break down the biodegradable components that could cause emissions of methane and/or generation of leachate.

Biodegradable waste Waste that is capable of undergoing anaerobic or aerobic decomposition, such as food or garden waste and paper and cardboard i.e. waste that rots.

Central composting Large-scale schemes which handle kitchen and garden waste from households and which may also accept suitable waste from parks and gardens.

Commercial waste Waste arising from premises which are used wholly or mainly for trade, business, sport, recreation or entertainment, excluding municipal and industrial waste.

Community sector Including charities, campaign organisations and not-for-profit companies.

Composting The controlled biological decomposition and stabilisation of biodegradable materials (such as organic garden and kitchen wastes) under predominantly aerobic (oxygen-rich) conditions to produce a humus rich, sanitised and stabilised product that can be beneficial to soil.

Controlled waste Household, industrial, commercial and clinical waste which require a waste management licence for treatment, transfer or disposal. The main exempted categories are mine, quarry and farm wastes. Radioactive and explosive wastes are controlled by other legislation and procedures.

EC Directive A European Community legal instruction which is binding on all Member States and must be implemented through the legislation of national governments within a prescribed timescale.

Energy from waste (EfW) Includes a number of established and emerging technologies, though most energy recovery is through incineration and can be used for generating electricity.

Gasification Heating carbon based wastes in the presence of air or steam to produce fuel-rich gases.

Home composting Compost can be made at home using a traditional compost heap, a purpose designed container or a wormery.

Household waste This includes waste from household collection rounds, from services such as street sweepings, bulky waste collection, litter collection, hazardous household waste collection and separate garden waste collection, waste from civic amenity sites and wastes separately collected for recycling or composting through bring or drop-off schemes, kerbside schemes and at civic amenity sites.

Incineration The controlled burning of waste either to reduce its volume or its toxicity.

Integrated waste management Involves a number of key elements, including: recognising each step in the waste management process as part of a whole; involving all key players in the decision-making process; and utilising a mixture of waste management options within the locally determined sustainable waste management system.

In-Vessel composting A composting method in which the compost is continuously and mechanically mixed and aerated in either a large, enclosed area or in smaller enclosed containers. The process and its emissions can be controlled and material can generally be composted much faster than in windrow composting.

Kerbside collection Any regular collection of recyclables from premises, including collections from commercial or industrial premises as well as from households. Excludes collection services delivered on demand.

Land use planning The Town and Country Planning system regulates development and use of land in the public interest and has an important role to play in achieving sustainable waste management.

Landfill Directive A key European Directive that was transposed into UK law in July 2001. The Landfill Directive, agreed in April 1999, aims to prevent or reduce as far as possible the negative effects of landfilling on the environment and human health. The main requirements of the directive include treatment of most wastes before landfilling them; banning the co-disposal of hazardous and non-hazardous waste; banning certain wastes from landfill completely; and targets for the reduction of biodegradable municipal waste to landfill.

Landfill sites Areas of land in which waste is deposited.

Mass burn A type of thermal treatment of waste; mass burn includes a range of combustion technologies such as moving grate, fluidised bed, rotating kiln and oscillating kiln.

Materials recovery facility (MRF) A facility to process wastes for the purpose of recovering useful materials.

Municipal solid waste (MSW) Includes household waste and any other wastes collected by a waste collection authority, or its agents, such as municipal parks and garden waste, beach cleansing waste, commercial or industrial waste, and waste resulting from the clearance of fly-tipped materials.

Packaging waste The Packaging and Packaging Waste Directive 1994 sets targets for the reduction, recovery and recycling of waste generated from packaging, and have been transposed into UK law. Producers of such wastes have a legal obligation, an approach known as producer responsibility. A wide range of materials are covered, from cardboard boxes through plastic bottles and film, to steel cans and wrapping, aluminium cans and glass bottles and jars.

Pyrolysis In this treatment, organic waste is heated in the absence of air to produce a mixture of gaseous and liquid fuel and a solid inert residue (mainly carbon). Pyrolysis generally requires a consistent waste stream such as tyres or plastics to produce a usable fuel product. At present, there is only one facility established in the UK, which takes in tyres.

Recovery Generating value from wastes from a wide variety of activities such as energy from waste plants, recycling and composting.

Recycling Involves the reprocessing wastes, either into the same product or a different one. Many non-hazardous industrial wastes such as paper, glass, cardboard, plastics and scrap metals can be recycled. Special wastes such as solvents can also be recycled by specialist companies, or by in-house equipment.

Reduction See Waste Minimisation.

Re-use Can be practised by the commercial sector with products designed to be used a number of times, such as re-usable packaging. Householders can purchase products in refillable containers, or re-use plastic bags. The processes contribute to sustainable development and can save raw materials, energy and transport costs.

Source separated green waste Grass clippings, leaves, prunings, hedge trimmings and sometimes selected kitchen wastes that have been kept separate from other recyclables or trash. This is excellent for large-scale composting because contaminants are very low.

Source separated recyclables Recyclable materials (e.g., paper, cans, glass, textiles, household organics, plastic, steel, etc.) that have been separated at the point of origin. The separation either takes place within the household (or business/institution) through the use of different containers, or parts of containers for individual materials or at street level.

Sustainable development Development which meets the needs of the present without compromising the ability of future generations to meet their own needs. This definition can be expanded to include waste and resources, ie, development that recognises the need to limit the use of resources and production of waste to levels which do not damage the ability of natural ecosystems to remain stable and healthy. This will involve efficient use of resources including the re-use and recycling of wastes and a move from resources whose supply is finite to renewable.

Strategic Waste Management Baseline Assessment (SWMBA) A comprehensive assessment and description of the existing waste management in an area. Examines waste arisings, waste management facilities and capacities, imports and exports of waste, existing contract arrangements and demographics such as population and household numbers.

Strategic Waste Fund A £50 million fund established by the government to allow councils and other partners to begin to implement the Landfill Directive diversion targets. The fund runs for three years from 2001 and requires councils and others to bid for funding for activities in line with the Area Waste Plan.

Thermal treatment See Gasification, Incineration, Pyrolysis.

Treatment Involves the chemical or biological processing of certain types of waste for the purposes of rendering them harmless, reducing volumes before landfilling or recycling certain wastes.

Waste A wide ranging term encompassing most unwanted materials, defined by the Environmental Protection Act 1990. Waste includes any scrap material, effluent or unwanted surplus substance or article which requires to be disposed of because it is broken, worn out, contaminated or otherwise spoiled. Explosives and radioactive wastes are excluded.

Waste arisings The amount of waste generated in a given locality over a given period of time.

Waste hierarchy Seeks to capture the desirability of different waste management options in descending order of preference, from reducing and re-using waste, through recycling and composting, energy recovery and finally disposal. The concept is meant as a guide to thinking rather than a rigid rule book.

Waste minimisation Systematic prevention or reduction of raw material, water and energy consumption and the re-use and recycling of waste on site, according to SEPA's definition.

Waste transfer station A site to which waste is delivered for sorting prior to transfer to another place for recycling, treatment or disposal.

Windrow composting An open-air method of composting in which biodegradable materials are placed in long piles. The term originates from the farming practice of piling hay in rows so that it will dry out in the wind.

Annex 2 - Links to Other Documents, Policies and Initiatives

SEPA recognises that the National Waste Strategy is being developed in an environment where other areas of policy and development have to be recognised. When developing the National Waste Strategy SEPA will, where necessary, try to integrate its activities with the policy areas set out in the following sections.

Corporate Plans (Strategic Plans)

Most Local Councils produce a corporate plan, either for the following year or more likely for three years. These are key documents as they translate the manifestos of the parties into policies and set out commitments on emerging government initiatives. Corporate plans usually have an analysis of the position the Council finds itself in (demographics, economy, social issues, environmental issues, etc) and the key policies and actions it intends to undertake. It may also contain an explanation of the internal processes of the Council intended to implement the corporate plan.

Economic Development Strategies

Most Councils have economic development teams, and will therefore produce strategies and action plans laying out what these teams intend to achieve. This will often be in addition to any Local Enterprise Company (LEC) Economic Development Strategy they have signed up to. Typical issues covered include company support, trade development, company development, training and New Deal programs, physical enhancement, infrastructure improvements, tourism, links to social inclusion work, and sometimes environmental issues.

Local Transport Strategies

Local transport strategies are a recent innovation designed to bring together all the transport issues for the local authority area. They combine the statutory requirements of the Road Traffic Reduction Act and Road Safety Plans with analysis of the existing pattern of transport and traffic. They usually include plans for new roads and road improvements, bus, cycling, walking and rail projects and are a useful source of transport statistics. They may, and should, be linked to local air quality and planning strategies.

Social Work Plans

Social Work departments must produce a wide variety of statutory and non statutory plans. These include Children's Plans, Criminal Justice Plans, Community Care Plans, Joint Mental Health Frameworks (with the Health Board).

Education Departments

Again a wide variety of plans are required in Education Departments, including curriculum development plans and school development plans. A recent innovation is the need to produce Community Learning Strategies and Community Learning plans to support the new Community Plans (see below). Community learning seeks to involve the Community Education function and other key learning institutions in meeting key learning needs arising from other strategies. For example, the economic development strategy might identify a need for greater IT skills, which the Community Learning Strategy might try to address. Some education departments may also have environmental education plans.

Development Plans

The planning system guides the future development and use of land in the long-term public interest. The aim is to ensure that development and changes in land-use occur in suitable locations and are sustainable. The statutory development plan for an area consists of the structure and local plan. The purpose of the development plan is to guide the future development of an area. The structure plan provides a long term vision as part of an overview of an area's development requirements by identifying the overall supply of land to meet the requirements of development, reflect and identify the priorities for the provision of infrastructure. Local plans set out the detailed policies and specific proposals for development and the use of land that guide day to day planning decisions.

Local Air Quality Plans

The Environment Act 1995 requires local authorities to review their area and determine possible breaches that may occur to the National Air Quality strategy objectives for key pollutants. Local authorities that identify areas likely to breach these standards must produce a strategy to return the area to compliance, using mechanisms such as controls on development, low emission zones, traffic restrictions etc.

Local Agenda 21 and Environmental Strategies

Whilst these plans are non-statutory, many local authorities will produce one or both. Local Agenda 21 strategies (LA21) arose out of the 1992 Rio Earth Summit and can be thought of as local plans for sustainable development. The Government challenged all authorities to produce such a statement by December 2000. Many LA21 strategies may now be combined with community plans (see below), as they are very similar in nature. However LA21 plans tend to be longer term, more global-to-local in approach and more radical than community plans. Environmental strategies simply draw together local authority actions on environmental issues, from transport to purchasing, from waste management to environmental education.

Local Biodiversity Action Plans

Another plan to arise from the 1992 Rio Earth Summit, these plans seek to implement at a local level the UK Government's national Biodiversity Action Plans. Typically, a Local Biodiversity Action Plan (LBAP) will follow a defined process: an audit of existing flora, fauna and habitats, a prioritisation of these against key international, national and local criteria, followed by the development of action plans for the key species.

Housing Plans and Housing Management Plans

These are statements by Housing Department of the range and type of housing required for their area over a three or five year period, and the investment required to meet that need. Housing types cover both standard (Council) housing and special needs housing. Housing Management Plans cover the service provided by the local authority: repairs and maintenance, estate management, tenant participation etc. The mix of housing numbers and types may impact on collection systems.

Other Corporate Plans

Local authority Chief Executives or Corporate Services Departments typically produce a wide range of other policies. These cover plans for both urban regeneration, closely linked to social inclusion, and rural regeneration, sometimes called Rural Development. Typically these plans use ring-fenced government money, together with Structural Funds, to promote community social and economic programs such as training, community transport, credit unions, physical enhancements etc.

Public Private Partnership (PPP)

One aim of government policy is to promote constructive working partnerships between the public and private sectors.

Using private capital and expertise in the provision of public infrastructure is not new. Joint working between the public and private sectors, in fields such as housing, economic development and regeneration, transport and municipal enterprises, has achieved a great deal over the years. The government is keen to build on this success, by extending successful approaches to delivering good value for money, and by developing new ones.

DETR (1998) Briefing Note Local Government and the Private Finance Initiative.

PPPs are about establishing arrangements, often using a legally binding contract, that will bring benefits to both sectors. Such arrangements can include contractual relationships, management buy outs, externalisation of operational management and use of the Private Finance Initiative (PFI). The PFI is a mechanism for improving value for money in partnership with the private sector and is often applied to large capital projects such as roads, hospitals, schools and prisons. The PFI has also been applied to a range of waste management facilities.

The costs of the various waste management options for MSW highlighted elsewhere in the plan indicate that there may be a need to explore PPPs to deliver certain aspects of the infrastructure required. It will be for the councils to decide on the form that these arrangements take. The Scottish Executive have made clear that to secure any funding from the Strategic Waste Fund, all projects must accord with the local Area Waste Plan, irrespective of whether they are financed using PPP, PFI or other traditional methods of financing.

Best Value

Best Value is the Government's programme to deliver Best Value in Local Government. In essence it aims to provide services that customers want at an acceptable price. A major aspect is that if employed properly it can create the potential to improve the quality of a wide range of services and or generate significant efficiency savings. A Best Value regime will look at the services provided, ask if they are needed, how well are they performed, how well do others do it, how do we compare to others and can we do it better. Further key components include active consultation with service users and periodic reviews on how services are delivered.

Whilst Best Value is a principle that can be applied widely across public sector services there are specific objectives in its application to waste management. These include aspects of collection, treatment and disposal of waste. The final structure and the necessary legislation for its application in Scotland is awaited. The services developed by local authorities as a result of the Area Waste Plans will be developed and managed as part of the Best Value regime.

Renewables Obligation (Scotland)

The Scottish Executive has set out a policy on renewable energy, which aims to stimulate further the development of the renewable energy industry in Scotland. The Scottish Executive's objective is that by 2010 18% of electricity supplied in Scotland should be renewable energy, in other words generated from a renewable resource. The policy has five key aims:

- To assist the UK to meet national and international targets for the reduction of emissions, including greenhouse gases;
- To help provide secure, diverse, sustainable and competitive energy supplies;

- To stimulate development of new technologies needed for growth of the contribution from renewables in the longer term;
- To assist the UK renewables industry to become competitive in home and export markets and in doing so to provide employment;
- To make a contribution to rural development.

In line with the objective and aims, the Scottish Executive is proposing the Renewables Obligation (Scotland) (ROS). The ROS will oblige all licensed electricity suppliers in Scotland to demonstrate that they have supplied a specified proportion of electricity from renewable sources. This specified proportion will increase each year to help achieve the objective of 18% of electricity supplied from renewable sources by 2010.

The key renewable energy technologies include wind and wave power, solar energy, bio-mass production and energy from waste. The specific approach that the ROS will take to energy from waste as a renewable energy source will not be established until the statutory instrument is in place and will depend on the outcome of the current consultation exercise.

Waste Management Planning

There are a number of documents containing guidance for use by policy and land use planners when considering applications for waste management facilities. The primary sources of this guidance comprise:

- NPPG, 10 Planning and Waste Management 1996;
- SEPA, National Waste Strategy: Scotland, 1999;
- SEPA, Supporting Guidance for Area Waste Plans, 2000;
- SEPA, Best Practicable Environmental Option, Decision Making Guidance, 2000.

Despite the current guidance, many planning practitioners have expressed concern as to how they should view applications received prior to and after the adoption of an Area Waste Plan. It is essential that guidance is available to allow consistent consideration of development proposals, and to enable the development plan system to assist in delivering an integrated network of waste management facilities. The Scottish Executive is expected to provide guidance by issuing a Planning Advice Note.

It will be necessary to maintain close working links with planning authorities after the publication of the Area Waste Plan as the plan enters its active development stages. The Waste Strategy Area Group and Waste Strategy Area Co-ordinators will be kept intact to ensure that the partnership approach to the preparation of the plan is maintained to support the integrated development of the plan.

Community Planning

This arose from the perception that public sector planning was fragmented and poorly co-ordinated at a local level, leading to duplication, waste and confusion. Hence since 1999, with councils taking a lead, organisations as diverse as Health Boards, LECs, Scottish Homes, SEPA, the police authority and Scottish Natural Heritage have come together to plan the future of the local area. These community plans are being finalised and should contain: a vision for the future of the area, an analysis of the main issues, an audit of current activities, an action plan for change, and a review mechanism. Community plans can cover strategic issues and also be subdivided to tackle very local issues such as traffic, noise, graffiti and green space. As such, community plans offer an important means to have policies endorsed by a very wide range of actors and stakeholders.

Funding

Funding of the necessary investment for new waste management infrastructure and operations may be obtained in a number of different ways, including private finance, through a PPP or PFI arrangement, or traditional direct funding by the local authority. The Scottish Executive has recently established a Strategic Waste Fund that can be used by local authorities to provide the additional funds required to meet the requirements of the Area Waste Plan (refer to SWF Guidance for details). Some additional supplementary funding may also be available in some cases (for non-statutory activities only) from landfill tax credits, EU structural funds and the sale of packaging recovery notes (PRNs). The Scottish Executive is reviewing the longer term financial needs of MSW management in Scotland.

SEPA's Regulatory Policy

SEPA's Regulatory Policy is aimed at meeting Objective 1 of Schedule 12 of the Environment Act 1995 and ensuring that waste is recovered or disposed of without endangering human health and without using processes or methods that could harm the environment. SEPA's Regulatory Policy therefore recognises the importance of ensuring that its regulatory functions are in line with the objectives of the National Waste Strategy process, and equally, that the Area Waste Plans are realistic concerning the contribution that regulation can make. There is also a need to ensure that each plan addresses forthcoming regulatory issues sufficiently. A full statement of SEPA's Regulatory Policies will be prepared for inclusion in the final Area Waste Plan.

Recycling Targets

Recycling targets are an important driver for stimulating recycling activity. It is clear however that they are not sufficient on their own and it is therefore likely that other instruments may need to be brought in to play, if the significant progress that is needed in recycling in Scotland is to be achieved. These may include both statutory and economic instruments. Local Authority Recycling Plans are a statutory requirement of the Environmental Protection Act 1990. The National Waste Strategy requires SEPA to publish guidance on recycling targets for household wastes and to provide advice to Scottish Ministers on recycling targets that may be adopted. It is likely that these targets will be a major challenge to local authorities and household waste producers in Scotland and will need to be taken account of in Local Authority Recycling Plans. A major effort will also be required in stimulating recycling activity at all levels in society. This will be achieved through a range of public campaigns and initiatives aimed at stimulating a more resource aware culture in Scotland. SEPA will also study with local authorities the potential for household charging and incentive schemes to stimulate improved waste producer awareness and activity.

Awareness, Education and Cultural Change Programme

The Waste Aware Scotland Team (WAST) was established by SEPA to create a more positive waste culture in Scotland, using a waste education and awareness programme based on best practice from Scotland and around the world. Its specific aims are to establish a strategic framework for education and awareness initiatives in support of the National Waste Strategy and where appropriate to support, facilitate and assist in the implementation of these education and awareness initiatives. The team is chaired by a representative from SEPA and draws its members from local authorities, commerce and industry, the waste management industry and consumer interests.

The process focus of the team will be on formal education, informal learning, professional education and training, public campaigns and information or advice services. The strategic behavioural and cultural change objectives of WAST will be achieved through a number of initiatives which will address all wastes including household, commercial and industrial. Initiatives already underway include the Scottish Waste Awareness Group (SWAG), which will plan and deliver a series of public awareness campaigns across Scotland as part of their Waste Aware Scotland programme to change public attitudes towards reduction, re-use and recycling .

Working closely with SEPA and WAST, SWAG is a resource for local authorities and the National Waste Strategy to deliver local and national campaigns to the public through the Waste Strategy Area groups. SWAG has cross sector support from SEPA, local authorities, NGOs, recycling groups, consumer interests, private waste industry, Keep Scotland Beautiful, the media and the Scottish Executive.

Initially both qualitative (focus groups) and quantitative (door to door surveying) research are being undertaken across Scotland to collate baseline data to assess public attitudes, behaviour and needs and a public wish list on waste reduction, re-use and recovery. The information generated from this exercise will be used to develop promotional material and help direct any subsequent campaign strategies.

Following on from this initial phase a series of pilot campaigns focussing on specific waste minimisation issues will be run concurrently with the implementation of the Area Waste Plans in selected areas. Each campaign will comprise of three stages:

1. "Before" - survey to assess attitudes and behaviour towards the identified waste minimisation issue prior to the intervention strategy
2. Campaign - intensive localised intervention strategy run initially for six months working in partnership with the Waste Strategy Area Co-ordinator, local authority, local community and voluntary groups, local retailers etc.
3. "After" - survey to assess attitudes and behaviour towards the identified waste minimisation after the intervention strategy, and to appraise the effectiveness of the different campaigning methods employed in changing attitudes and behaviour.

This format will allow the monitoring of progress towards more sustainable waste management behaviour, and to develop models of good practice for changing public attitudes to reduction, re-use and recycling.

SEPA's commercial and industrial Waste Minimisation Initiative (WaMI) is also continuing.

Annex 3 – Associated Reports

The following background publications are available from your Waste Strategy Area Co-ordinator at the address below:

SWMBA
Stakeholder Consultation Report
WISARD & modelling assumptions
Issues paper
Appraisal results & BPEO decision-making

Ian Buchanan
SEPA
Perth Office
7 Whitefriars Crescent
PERTH
PH2 0PA

ANNEX 4 – CONTACT ORGANISATIONS AND LINKS

National Organisations

Scottish Executive

Richard Arnott
Head of Waste Team
Environment Protection Unit
Area 1- J (North) Victoria Quay
Edinburgh
EH6 6QQ
Tel: 0131 244 0200
Fax: 0131 244 0245
www.scotland.gov.uk

WRAP (Waste and Resources Action Programme)

Romney House
43 Marsham Street
London
SW1P 3PY
Tel: 020 7944 8860
Fax: 0207944 8864
www.wrap.org.uk

Scottish Institute of Sustainable Technology Ltd (SiSTech)

Tweed Horizons Centre
Newton
St.Boswells
Melrose
TD6 0SG
Tel: 01835 823 507
Fax: 01835 822 991

Scottish Environment Protection Agency (SEPA)

Erskine Court
Castle Business Park
Stirling
FK9 4TR
Tel: 01786 457700
Fax: 01786 446885
www.sepa.org.uk

ReMaDe Scotland

Caledonian-Shanks Centre for Waste Management
Glasgow Caledonian University
3rd Floor Drummond House
1 Hill Street
Glasgow
G3 6RN
Tel: 0141 404 8890
Fax: 0141 404 8891
www.remade.org.uk

CoSLA

Roseberry House
9 Haymarket Terrace
Edinburgh
EH12 5XZ
Tel: 0131 474 9200
Fax: 0131 474 9292

SEPA Waste Minimisation Project (WaMI)

Clearwater House
Heriot Watt Research Park
Avenue North
Riccarton
Edinburgh
EH14 4AP
Tel: 0131 449 7296
Fax: 0131 449 7277

Scottish Waste Awareness Group (SWAG)

Dr Nicki Souter
Campaign Manager
Keep Scotland Beautiful
Stirling
FK8 2ND
Tel: 01786 471333
(NB aligned with UK National Waste Awareness Initiative (NWAII))

SNIFFER (Scottish and Northern Ireland Forum for Environmental Research)

11/13 Cumberland Street
Edinburgh
EH3 6RT
Tel: 0131 557 2140
Fax: 0131 0652 3615

Recycling Advisory Group Scotland (RAGS)

Mr Iain Gulland
5th Floor, Scott House
10 South Street
Edinburgh
EH2 2AZ
Tel: 0131 524 7049
Fax: 0131 577 3787
admin@rags.org.uk

Annex 5 – Future Developments & Proposals

The BPEO for MSW in Tayside has been chosen with regard to a given set of assumptions and with currently available methods and technologies. It is accepted that changes in legislation, technology or knowledge may mean the chosen BPEO could be superseded. To allow for future developments or proposals not included in the plan, BPEO will be kept under review and may be superseded by valid proposals that can be shown to provide a better (or equivalent) BPEO. The Waste Strategy Area Group will consider evaluating relevant waste management proposals for an improved BPEO as they arise.

The options included in the BPEO evaluation are generic and for the most part, not site-specific. Hence site-specific development proposals that arise both inside and outside the borders of the Waste Strategy Area are valid and may satisfy or improve the agreed BPEO.

Regional or national-scale waste facilities may be proposed by developers at a scale designed to attract waste from outside the Waste Strategy Area in which they are located. As part of the planning application process, the developer may be required to demonstrate that the proposals satisfy or exceed the BPEO of the Waste Strategy Areas from which the waste will be obtained. The results of this BPEO evaluation will be a material consideration in the planning process for such developments.

Where existing or proposed regional or national-scale facilities will result in waste movement between Waste Strategy Areas, then consideration of the proposed waste exports and imports must be included in the BPEO process, as described in the following sections.

Waste Export Where export of waste is proposed as an original or developing option for a Waste Strategy Area, this should be considered as part of the BPEO process and/or any subsequent review of the BPEO decision. Waste export should not be undertaken unless it has been specifically identified as the BPEO for that waste stream by the exporting Waste Strategy Area Group, or can subsequently be identified as being better or equal to the originally identified BPEO, using the BPEO appraisal methodology.

Waste Import Importing waste to a Waste Strategy Area for processing and/or disposal may be already happen or be proposed for the future. Provided that the operations meet the BPEO for the exporting Waste Strategy Area (and that this is confirmed in discussion between the importing and exporting areas), approval of the proposed waste management facilities in the importing area is a matter for consideration by the planning and licensing authorities.