

# A2 Dominion and A3Eco

## Bicester Eco-town Exemplar Site

### Site Waste Management Plan

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# Abbreviations

ASL	Approved Supply List
BRE	Building Research Establishment
BREEAM	Building Research Establishment Environmental Assessment Method
C, D & E	Construction, Demolition and Excavation
CDM	Construction Design and Management
CLAIRE	Contaminated Land Applications in Real Environments
Defra	Department of Environment, Food and Rural Affairs
DoC	Duty of Care
EWG	European Waste Catalogue 2002
HWCN	Hazardous Waste Consignment Notes
HWR	Hazardous Waste Regulations
KPI	Key Performance Indicators
LA	Local Authority
LoW	List of Waste code
LoWR	List of Wastes (England) Regulations 2005
MSDS	Material Safety Data Sheets
PPC	Pollution Prevention and Control
PPS 1	Planning Policy Statement 1
PPS10	Planning Policy Statement 10
PSWMP	Phase Specific Waste Management Plan
SWMP	Site Waste Management Plan
WCN	Waste Consignment Note (for hazardous waste)
WCR	Waste Carrier Registration
WEEE	Waste Electrical and Electronic Equipment
WRAP	Waste & Resources Action Programme
WTN	Waste Transfer Note



# 1 Introduction

The Site Waste Management Plan (SWMP) is used to plan, implement, monitor and review waste minimisation and management on construction sites. In April 2008 the SWMP Regulations 2008 came into force in England for construction projects costing more than £300,000 excluding VAT.

The Bicester Eco development development will be brought forward in several phases. The first phase is the Exemplar site and incorporates some 393 residential units, energy centre, retail, commercial, a primary school site and public space. The progression of subsequent phase is not yet defined, for each of these phases there will need to be and phase specific SWMP used to:

- record the details of that phase of the project; and
- record the forecast of waste and the actual waste data

This report comprises of the SWMP Guidance and SWMP Template (Appendix A) for the first phase of Bicester Eco development development, the Exemplar Site. These have been prepared on behalf of A2Dominion and P3Eco in order to support the requirements of the planning application

The Exemplar SWMP Template will need to be updated prior to the commencement of the development, after planning has been approved and regularly during the course of the development. It will then be used to directly inform the waste management audit process and it will allow A2Dominion and P3Eco and contractors working for them to demonstrate how they comply with the SWMP Regulations 2008.

Preparing the SWMP Template encourages the review of current waste reduction and recovery practice levels, highlighting areas where Good and Best Practice in waste minimisation and management can be achieved. The SWMP Template also facilitates the identification and implementation of waste minimisation at the design stage and reuse and recycling opportunities during on site operations, reducing the quantities of construction waste sent to landfill. The Exemplar SWMP Template is presented in a series of 6 Stages that cover the construction project process from policy and setup to project completion and use:

- 1 **policy and setup:** the Project Pre-construction Team records the administration details and set targets;
- 2 **preparation and concept design:** the Project Pre-construction Team prepare the initial concept and take design decisions to reduce waste;
- 3 **detailed design:** the Project Pre-construction Team forecast the waste and record the waste reduction actions;
- 4 **pre-construction:** the Project Pre-construction Team record the waste carriers, waste destinations and waste management and recovery actions;
- 5 **construction:** the Project Team record the actual waste movements, and;
- 6 **post completion and use:** the Project Team review KPIs, report, compare actual quantities with estimates and sign the declaration.

The Exemplar SWMP Template can be used in conjunction with existing waste management tools and systems, such as the Waste & Resources Action Programme (WRAP) Net Waste Tool, WRAP Waste to Landfill Reporting Portal, SmartWaste Plus or the WRAP Site-specific Waste Analysis Tool (SSWAT).



The Exemplar SWMP Template provides options for planning and processing waste during the eventual construction activities on the site, whether for the existing client or the eventual developers. It also demonstrates that A2Dominion and P3Eco are a considerate clients who are interested in maximising opportunities for reuse and recycling that are cost neutral (or cost negative) and diverting waste from landfill.

The SWMP Guidance and the Exemplar SWMP Template have been designed to enable the project team to use the Exemplar SWMP Template to go beyond legislative compliance.

*Note: the Exemplar SWMP Template and Guidance that constitute the SWMP Resources have been prepared at the concept design stage for A2Dominion and P3Eco. However, the SWMP Template will need to be adopted and updated as required during the detailed design, pre-construction and construction phases of the project, whether by A2Dominion and P3Eco or any Contractor. A2Dominion and P3Eco have legal requirements under the SWMP Regulations which need to be maintained throughout the life of the project from concept to completion. This note needs to be taken into account when reviewing and updating the SWMP Template.*

## 2 Background

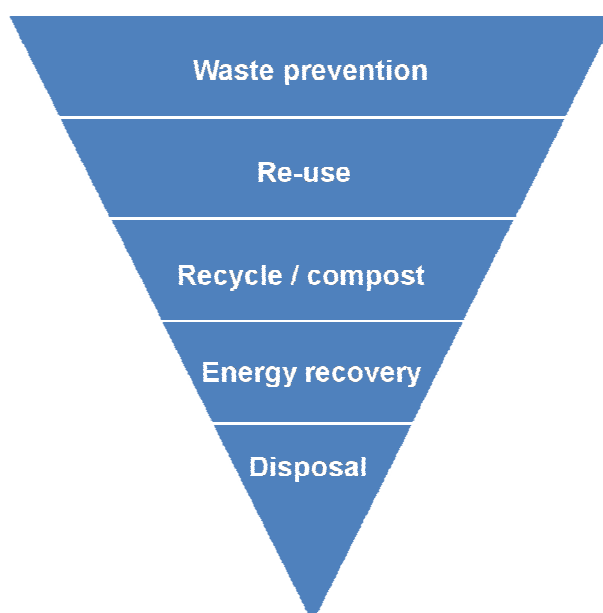
The SWMP relates to the development of the proposed first phase of the Bicester Eco development, the Exemplar Site. This lies in the north-eastern area of the area identified for the Eco development. The Exemplar Site development proposals include provision for the following:

- 393 residential units;
- a primary school site;
- B1(a) office accommodation;
- retail units (class A1 – A5);
- social and community facilities within class D with associated means of access;
- car parking;
- landscape;
- amenity space; and
- service infrastructure, including an energy centre.

Surplus or waste materials can arise from materials imported to the Exemplar Site or from those generated on site. Imported materials are those which are brought to the site for inclusion into the permanent works. Generated materials are those which exist on the site such as topsoil, sub-soil and trees. However, there are other considerations to waste management such as waste reduction; segregation of waste; disposal of waste; the financial impacts of waste disposal and the processes of recording, monitoring, training and reviewing the Exemplar SWMP Template.

The Exemplar SWMP Template outlines the procedures that shall be implemented at the project and demonstrates its benefit to the environment; how we can measure their effects and how these procedures and practices are sustainable. The management of waste shall follow the Waste Hierarchy shown in Figure 1 below:

**Figure 1 Waste Hierarchy**



All methods of eliminating or reducing waste shall be considered first, in order to minimise the surplus waste that has to be dealt with on site.

### **Waste prevention**

Designers can greatly influence the waste produced on site and must be encouraged to consider the issue of waste in their design. For example, this can be achieved by:

- designing to suit component sizes;
- reducing the need for false work/temporary work;
- setting the level of the building to reduce excavations; and
- reusing spoil to form landscaping features.

If waste is not produced on site, it will not need to be dealt with. This can be assisted by:

- ordering the correct materials as specified;
- ordering the correct quantity of materials from accurate take-offs; and
- storing & handling materials correctly.

If there are any surplus materials from the project, it may be possible to use these on other packages and / or projects, either through contact with the buyer, or by advertising them on the company / project intranet. Materials could also be donated to local community projects or charities. There is also a website where surplus materials can be advertised for sale: [www.WhatDoIDoWithThis.com](http://www.WhatDoIDoWithThis.com). All of these options will avoid the cost of disposing of these surplus materials as waste.

Waste that cannot be eliminated or reduced falls into the following four categories for management:

### **Reused waste**

If surplus materials can be used in the permanent works, they are classified as materials which have been reused on site. If they are surplus to requirements and need to be removed from site, but can still be used in their present form, they are classified as materials which can be reused off site.

### **Recycled waste**

If surplus materials cannot be reused in their present form, but could be used on site in a different form they are classified as recycled on site. If the material cannot be reused on site in any form, it may be classified as recycled off site, e.g. non-returnable pallets sent to make chipboard.

### **Waste recovery**

If surplus materials cannot be reused in their present form or used on site in a different form but could be diverted from landfill they are classified as materials which have been recovered. Recovery mainly refers to energy recovery (e.g. reuse a fuel) or biological recovery (e.g. composting).

### **Disposal to Landfill**

If any of the above cannot be satisfied, then the only option left is to send the surplus materials to landfill.

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### 3 Regulatory Framework

This section describes the main areas of European and national legislation impacting on waste management in the UK. It does not however address other international and European initiatives which either directly impact on waste or set the context within which waste policies are developed, such as: global commitments (Kyoto Protocol on Climate Change) and European commitments.

Waste Legislation originally focused on the disposal of waste, but since the introduction of the EC Framework Directive on waste, control has extended to include the storage, treatment, recycling and transport of waste. It is important to note that new legislation and amendments to existing legislation are introduced relatively frequently and the information provided here is as of November 2010.

#### Definition of Waste

“Waste” is defined by the Council Directive on Waste (75/442/EEC) as “any substance or object... which the producer or person in possession of discards, intends to discard or is required to discard”.

“Hazardous Waste” is waste with one or more properties hazardous to health or the environment as defined by the Hazardous Waste (England and Wales) Regulations 2005 (HWR). Hazardous properties are listed H1 to H14 in Schedule 3 of the HWR.

“Inert Waste” is waste that does not undergo any significant physical, chemical or biological transformations. Inert waste will not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact, in a way likely to give rise to environmental pollution or harm to human health. The total leachability and pollutant content of the waste and the ecotoxicity of the leachate must be insignificant, and in particular not endanger the quality of surface water and/or groundwater.

“Non-hazardous waste” is waste which does not feature on the list of hazardous waste in the European Waste Catalogue (EWC) 2002.

#### Identification and Classification of Waste

Waste materials will be classified by reference to a six-digit code and associated description as required by the List of Wastes (England) Regulations 2005 (LoWR). Waste can be solid, liquid or sludge. Entries in the LoWR that are not marked with an asterisk (\*) are “non hazardous” waste.

Entries in the LoWR that are marked with an asterisk could be classified as “hazardous” waste e.g. 17 06 05\* construction materials containing asbestos. Hazardous waste can be listed as either an “absolute entry” or a “mirror entry”. An “absolute entry” is automatically considered to be hazardous waste. These entries are marked by an asterisk in the LoWR, but do not include a reference to “dangerous substances” in the description. A “mirror entry” may be hazardous depending on the concentration of “dangerous substances” present in the waste. In this case the hazardous properties of the waste must be assessed in accordance with the Environment Agency Technical Guidance Note WM2, “Hazardous waste: Interpretation of the definition and classification of hazardous waste”.

This assessment may require reference to chemical analysis, manufacturer's Material Safety Data Sheets (MSDS) or the Approved Supply List (ASL). An assessment of waste types, quantities, classification, storage and disposal options have been carried out and will be updated at each review of the SWMP. Waste produced during the project will be listed under the SWMP Template Stage 6.

## Definition of Waste: Development Industry Code of Practice

In September 2008, Contaminated Land: Applications in Real Environments (CL:AIRE) published the Definition of Waste: Development Industry Code of Practice, which sets out good practice in dealing with excavated materials and their reuse. This Code of Practice signals a move from prescriptive waste management regulations to a risk-based approach. Developers can self regulate when reusing surplus soil, speeding up site preparation and reducing the amount of soils sent to landfill.

The following are outside the scope of the Code of Practice:

- Excavated infrastructure material such as pipework and storage tanks;
- Waste classification;
- Pre-treatment prior to landfill;
- Testing strategies;
- Remediation and construction methods;
- Waste Management Licensing and exemptions;
- Environmental Permitting (England and Wales) Regulations 2007 and consequent Amendment No.2 2009; and
- The status of unexcavated wastes subject to in-situ treatment.

This Code requires a significant degree of self regulation and relies upon the professional integrity of those involved. This Code of Practice introduced the principle of a Qualified Person to sign off a Declaration. This will be used by the Environment Agency officers in their decision-making relating to the applicability of waste legislation such as the need to obtain an Environmental Permit or Exemption.

This document may also be of assistance in preparing SWMP's for construction projects.

## Waste Framework Directive

The revised EU Waste Framework Directive was adopted and published in the Official Journal of the European Union in November 2008 (L312/3) as Directive 2008/98/EC.

The Directive has established a framework for the management of waste across the EU and aims to encourage reuse and recycling of waste, as well as simplifying current legislation. It also defines certain terms, such as 'waste', 'recovery' and 'disposal', to ensure that a uniform approach is taken across the EU. Furthermore, it is an instrument for driving waste up the hierarchy through waste minimisation and increased levels of recycling and recovery. Sets out a number of procedures and criteria for construction, excavation and operational waste acceptance at landfills, including targets for the progressive reduction of biodegradable municipal waste (BMW) being sent for disposal in landfill.

The principles set up for the acceptance of hazardous and non-hazardous waste at relevant landfills include ensuring that the waste will not endanger human health and the

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environment and satisfies the Waste Acceptance Criteria (WAC). They also set strict requirements for the acceptance of certain stable, non-reactive hazardous waste into non-hazardous waste landfills.

The Directive ensures that a uniform approach is taken across the EU. It requires Member States to:

- Give priority to waste prevention and encourage reuse and recovery of waste;
- Ensure that waste is recovered or disposed of without endangering human health and without using processes which could harm the environment;
- Prohibit the uncontrolled disposal of waste, ensure that waste management activities are permitted (unless specifically exempt);
- Establish an integrated and adequate network of disposal installations;
- Prepare waste management plans;
- Ensure that the cost of disposal is borne by the waste holder in accordance with the polluter pays principle; and
- Ensure that waste carriers are registered.

## The Site Waste Management Plans Regulations 2008

The SWMPs Regulations came into force on 6th April 2008. These Regulations do not apply in relation to projects planned prior to this date, but must be enforced where the construction began before 1st July 2008.

The Regulations require any client who intends to carry out a construction project with an estimated cost greater than £300,000 (excluding VAT), must prepare a SWMP conforming to these Regulations before construction work begins. There are additional requirements imposed on projects greater than £500,000 in value in relation to updating the SWMP.

If such a project is started without a SWMP, the client and the principal contractor are both guilty of an offence and will subsequently be penalised.

A SWMP records the type of waste produced on a construction site and how it will be reused, recycled or disposed of. The Regulations aim to:

- Increase the amount of construction waste that is recovered, reused and recycled to improve materials resource efficiency; and
- Prevent illegal waste activity by requiring that waste is disposed of appropriately, in accordance with the Waste Duty of Care provisions.

### Fines

The Environment Agency and local government or council enforcement officers will enforce the SWMP Regulations.

A person found guilty of an offence is liable on summary conviction to a fine not exceeding £50k or on indictment to an unlimited fine. Where a corporate body is guilty of an offence, individual liability also applies to directors, managers and other persons acting in a similar capacity.

The enforcement body may also issue a £300 fixed penalty notice if any person fails to produce a SWMP or any other record when required to do so by an Enforcement Officer. A fixed penalty notice will mostly be issued to the site representative, e.g. Site Manager.

## Duty of Care

The Duty of Care is set out in section 34 (1) of the Environmental Protection Act 1990 and imposes a duty on any person who is the holder of controlled waste. Any persons who import, produce, carry, keep, treat or dispose of controlled waste, or as a broker has control of such waste, is subject to a Duty of Care whereby they must take all reasonable applicable measures:

- To prevent another person illegally treating, keeping, depositing or otherwise disposing of the waste;
- To prevent the escape of waste; and
- To ensure that transfer of the waste only occurs to an “authorised person” and that the transfer is accompanied by a written description of the waste.

“*Waste Management, the Duty of Care, A Code of Practice*” DEFRA gives guidance on the measures that need to be taken to ensure that legal requirements are met. Specific guidance is given on the identification of waste, safe storage, transfer to the right person and requirements for checking up.

These Regulations impose requirements under section 34 (5) of the 1990 Act on any person who is subject to the Duty of Care as respect to the making and retention of documents and copies of them. Breach of these Regulations is a criminal offence. The Duty of Care and these Regulations do not apply to an occupier of domestic property.

The Regulations have been amended by the Environmental Permitting (England and Wales) Regulations 2007 and 2010 to introduce the new environmental permitting terminology. DEFRA is working on amendments to the Duty of Care regime, with new Regulations expected for late 2010.

## Waste Transfer Note (WTN)

The Environmental Protection (Duty of Care) Regulations 1991 require a Waste Transfer Note (WTN) to be provided on the transfer of waste between parties. The WTN will contain enough information about the waste to enable anyone coming into contact with it to handle it safely and either dispose of it or allow it to be recovered whilst maintaining compliance with law. Copies of WTNs must be retained for 2 years minimum and be available for inspection by the environmental regulator following the transfer of waste. The Regulations give specific requirements for the content of a WTN, which must:

- Contain a written description of the waste and the corresponding 6 digit EWC / LOW reference code;
  - State the quantity of waste;
  - State whether the waste is loose or in a container, and if in a container, the type of container used;
  - State the time and place of the transfer;
  - State the name and address of the transferor and transferee;
  - State whether the transferor is the producer of the waste;
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- State to which category of person the waste is transferred to e.g. a registered waste carrier, or a holder of a waste management licence; and
- Provide details of any waste carrier's registration or any waste management licence, where used.

WTN will help prove that your Duty of Care has been properly discharged if a periodic audit is undertaken. This will help ensure that wastes are being handled correctly.

## Waste Carrier's Registration (WCR)

The Control of Pollution (Amendment) Act 1989 establishes the requirement for carriers of controlled waste to register with the Environment Agency. There are a number of exceptions to these requirements, including charities, waste collection authorities and emergency situations.

Waste will only be removed from site using a subcontractor or supplier holding a valid WCR. The Environmental Manager will verify the details on the WCR with the Environment Agency Public Register.

## Environmental Permitting

The Environmental Permitting (EP) (England and Wales) Regulations 2010 extend the permitting regime introduced in 2008 (which provided a unified system for permitting waste operations, mining waste operations, mobile plant and installations) to include water discharge consents, groundwater permits and radioactive substances regulations. The new Regulations also introduce the new waste exemptions regime which was consulted upon in 2008 and 2009.

The Environmental Permitting regime aims to protect the environment while simplifying the regulatory system and minimising the administrative burden on the regulators and the operators of the facilities regulated under the regime. The Regulations transpose the provisions of 18 European Directives regulating emissions to air, water and soil; waste management and management of specific substances.

The EP Regulations set out:

- which facilities need an environmental permit ("regulated facilities") or need to be registered as exempt;
- how to apply for, change, extend and surrender a permit and register an exemption;
- how the environmental protection requirements set out by European Directives and national policy are implemented within the conditions of the permits;
- a streamlined permitting system which uses standard rules;
- powers and functions of the regulators, the Secretary of State and the Welsh Assembly Government;
- transition to the new regime; and
- provisions for appeals against permitting decisions.

The 2010 EP Regulations change slightly the definition of regulated facility, i.e. a facility which is required to operate under the authority of a permit. The definition is quite complex and there is guidance available from the Environment Agency (Regulatory Guidance Note RGN EPR 2) to help operators understand:



- whether their activity/operation is a regulated facility;
- which type it is (e.g. an installation, a waste operation, a mining waste operation, a mobile plant etc.);
- how it is defined (i.e. which activities are part of the regulated facility) etc.

The most important change introduced by the 2010 EP Regulations is that regulated facilities can overlap. Hence, even if a waste operation is part of a regulated facility such as an installation, it will be itself a regulated facility. In other words, the waste operation will still require a permit whether stand alone or part of another regulated facility. The only exception to that is if the waste operation is exempt or excluded. However, the Regulators can adopt a common sense approach and, under certain conditions, group together regulated facilities under a single permit.

The Environmental Permitting (England and Wales) Regulations 2010 also introduce the new exemption regime. This regime, which had been consulted upon in 2008 and 2009, rationalises how waste operations are regulated on the basis of their risk. Many changes have been introduced, with the result that many more activities previously exempt are now regulated through a permit, and that many activities regulated under the Agency's Low Risk Waste regulatory approach are now exempt or require a permit. Provisions are in place to facilitate the transition to the new regime. The Waste Management Regulations (WMR) Stage by Stage Tool provides details of the new permitting and exemption system while highlighting the changes for each operation.

The Waste Champion is responsible for identifying activities and ensuring notification to the Environment Agency. The Environmental Manager will verify that permits are valid using the Environment Agency Public Register.

## Hazardous Waste Regulations

The Hazardous Waste (England and Wales) Regulations 2005 (HWR 2005) were amended on 6 April 2009. This principally widened the scope of the exemption from hazardous waste producer registration with the Environment Agency.

These changes currently only affect England. The Welsh Assembly Government is consulting on changes to the Hazardous Waste (Wales) Regulations 2005 which can be found on the Welsh Assembly Government website. This new exemption criterion will be applied to customers in Wales pending the outcome of the consultation.

Under the Hazardous Waste Regulations 2005, *"it is an offence to produce hazardous waste at premises, or remove that waste from premises, unless those premises are either registered with the Environment Agency or are exempt."*

Where subcontractors produce hazardous waste, it will be removed under the Hazardous Waste Premises Registration for that site.

## Hazardous Waste Consignment Notes (HWCN)

The Hazardous Waste (England and Wales) Regulations 2005 require a Hazardous Waste Consignment Note (HWCN) to be produced for each consignment of hazardous waste removed from site. This may take the form of either:

- A "Standard Procedure" (single movement) HWCN, where waste is moved from one premises to a Consignee in a single journey; or
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- A “Multiple Collection” HWCN, where waste is collected from a number of premises and taken to the same Consignee.

HWCNs may be obtained from the Environment Agency or produced by the Consignor (subcontractor) or Consignee (waste disposal contractor); however they must contain all of the information required by the HWR.

Detailed guidance on the requirements for completion of HWCNs is available in “A Guide to the Hazardous Waste Regulation: Consignment Notes” HWR03 Version 2.0, Environment Agency, June 2006.

The HWR require details of consignments of hazardous waste to be maintained in a register. “A Guide to the Hazardous Waste Regulations: Record Keeping” HWR05 Version 2.0, June 2006 indicates that this duty will be met by keeping copies of HWCNs and Consignee Returns. Copies of HWCNs will be retained for 3 years.

## Waste Electrical and Electronic Equipment (WEEE)

The Waste Electrical and Electronic Equipment (WEEE) Regulations 2006 apply to anyone who manufactures, imports, re-brands, distributes or sells WEEE and anyone who stores, treats, dismantles, recycles, disposes of, uses, repairs or refurbishes WEEE.

The Regulations apply to 10 categories of WEEE listed below, with a voltage of up to 1000 volts for alternating current, or up to 1500 volts for direct current.

- Large household appliances.
- Small household appliances.
- IT and telecommunications equipment.
- Consumer equipment.
- Lighting equipment.
- Electrical and electronic tools.
- Toys, leisure and sports equipment.
- Medical devices.
- Monitoring and control equipment.
- Automatic dispensers.

WEEE will be sent for recovery, recycling and/or treatment to either an Approved Authorised Treatment Facility (AATF) listed on the Environment Agency Public Register or a Producer take back / compliance scheme.

## The Directive on the Landfill of Waste (Landfill Directive)

The Landfill Directive aims to improve standards of set waste to landfill across Europe, by setting specific requirements for the design, operation and aftercare of landfills, and for the types of waste that can be accepted at landfill sites.

It aims to reduce the pollution potential from landfilled waste that can impact on surface water, groundwater, soil, air and also contribute to climate change. In England and Wales the directive is applied under the Landfill (England and Wales) Regulations 2002 and must be fully implemented by July 2009.

This directive bans the landfilling of:

- a** Waste which is corrosive, oxidising, highly flammable, flammable or explosive;
- b** Liquid hazardous waste, infectious hospital and other chemical wastes;
- c** Whole used tyres (from 2003); and
- d** Shredded tyres (from 2006).

The Directive classifies landfills as hazardous, non-hazardous, or inert waste and prevents the co-disposal of hazardous and non-hazardous waste after July 2004. It also requires that waste must be pre-treated before being landfilled and that landfill gas must be collected, treated and used to produce energy. This means that if the gas cannot be used, it must be flared.

## Planning Policy Statement 1 (PPS1): Delivering Sustainable Development (2005)

Whereas much of the guidance offered by PPS1 is of general or background relevance to the current proposals, the following specific points are noteworthy:

- Paragraph 3 of PPS1 identifies sustainable development as ‘the core principle underpinning planning’;
- Paragraph 20 highlights that development plan policies should take account of environmental issues, such as the mitigation of the effects of and the adaptation to climate change, the protection of the wider countryside, the potential impact of the environment on proposed developments and the management of waste in ways that protect the environment and human health, including producing less waste and using it as a resource wherever possible; and
- Paragraph 27 (x) addresses the impacts of climate change, the management of pollution, and natural hazards, the safeguarding of natural resources and the minimisation of impacts from the management and use of resources.

## Planning Policy Statement: Eco towns; a supplement to PPS1 (2009)

Identifies specific criteria that a proposed Eco development must respond to; namely:

- ET19 (d) which states “developers will ensure that no construction, demolition and excavation waste is sent to landfill, except those types of waste where landfill is the least environmentally damaging option”

## Plan Policy Statement 10 (PPS10): Planning for Sustainable Waste Management (July 2005)

The publication of Planning Policy Statement 10; Planning for Sustainable Waste Management (PPS10) established decision making principles to which regional planning bodies and all planning authorities should adhere when preparing planning strategies.

Paragraph 34 suggests that proposed new development should be supported by SWMPs to identify the volume and type of material to be demolished and/or excavated, opportunities for the reuse and recovery of materials and to demonstrate how off site disposal of waste will be minimised and managed.

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## 4 SWMP Roles and Responsibilities

A2Dominion and P3Eco shall be responsible for adopting, implementing and updating the Site SWMP Template once this development obtains approval for the following key reasons:

- **Environmental Protection:** SWMPs help to manage and reduce the amount of waste produced, and therefore going to landfill. There are many other environmental benefits including: less harm to the local environment, avoiding fly tipping, reduced energy consumption and greater opportunities for reused and recycled materials.
- **Cost Saving:** Managing our material supply more efficiently will immediately cut costs. Better storage and handling of materials will reduce waste and enable better recovery. Reusing and recycling cuts disposal costs.
- **Legal Requirement:** SWMPs are a legal requirement for all projects over £300k in value in England. The SWMP Regulations 2008 is a Statutory Instrument of section 54 of the Clean Neighbourhoods and Environment Act 2005.

The SWMP Template includes a section on 'Actions' to inform all employees and subcontractors of their responsibility to support the SWMP both on and off site wherever they are required. This will ensure that A2Dominion and P3Eco meet their Duty of Care requirements and comply with the appropriate legislation and regulation. More importantly, it will encourage A2Dominion and P3Eco, including the eventual contractors to become more efficient in the use of resources, embed waste minimisation into the design and gain additional credits for BREEAM and/or Code for Sustainable Homes.

The Construction Design and Management (CDM) 2007 Regulations identify the legal duties, responsibilities and obligations of all the team members and are designed to improve health and safety and effectively plan for and manage risk on site.

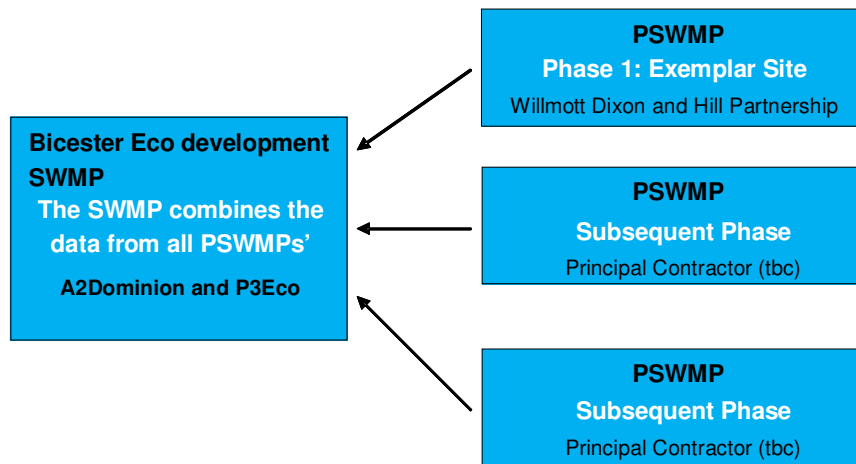
### Individual Responsibilities

The key roles and associated responsibilities are summarised below:

#### Clients: A2Dominion and P3Eco

- appointing a principal contractor for the purposes of the SWMP Regulations;
- ensuring that the SWMPs is being implemented effectively;
- giving necessary direction to contractors e.g. setting contractual obligations;
- reviewing, revising and refining SWMPs where necessary in conjunction with the principal contractor; and
- compiling the information from the SWMPs from each phase (Exemplar Site, Energy Centre and Bicester Eco development) into the Bicester Eco development SWMP. Figure 2 demonstrates the inter-relationship between the Bicester Exo-town SWMP and the Phase Specific Waste Management Plans (PSWMP):

Figure 2 Waste Hierarchy



This combination shall provide a simple but effective system for specifying waste management, waste auditing and waste monitoring across the project and between contractors and sub-contractors. The SWMP and PSWMPs provide a consistent formula for waste management, reuse, recycling and disposal.

**Principal Contractors: Willmott Dixon and Hill Partnership (on behalf of the Client)**

- updating and delivering the PSWMP on behalf of the client;
  - ensuring all procedures in the PSWMP are followed;
  - ensuring all contractors are suitably qualified and experienced in dealing with the PSWMP and environmental issues and that the PSWMP tasks are contained within the terms of contracts to ensure understanding and accountability;
  - ensuring that all legal and contractual requirements relating to the PSWMP and environment are met by ensuring adequate plans/procedures, licences and certificates are in place, and that they can be achieved;
  - supporting Bicester Eco-town corporate commitment and targets and ensuring subcontractors are required to:
    - assist with the development of the project PSWMP, providing forecasts of waste to be produced through their activities when requested
    - measure and report progress for waste and waste to landfill, measured in tonnes per £100k construction value;
    - report performance for construction, demolition and excavation waste streams separately, measured in tonnes;
  - as a requirement of the SWMP Regulations the principal contractors shall regularly (not less than every six months) review the PSWMP to ensure that it accurately reflects the progress of the project and update where necessary;
  - within three months of work being completed, the principal contractors must confirm that the PSWMP has been monitored (and updated) on a regular basis throughout the project; compare the actual waste quantities against the forecasted quantities of each waste type; and provide an explanation of any deviation from the plan;
-

- record in the PSWMP any cost savings realised through the implementation of the actions detailed in the PSWMP;
- establish procedures for the regular review and recording of the quality of the works as part of its Quality Management System; and
- maintain records relevant to the SWMP.

#### **Contractors / Subcontractors**

- will be responsible for carrying out the waste management tasks detailed in the PSMWP.
- assisting with the development of the project PSWMP, providing forecasts of waste to be produced through their activities when requested
- measuring and reporting progress for waste and waste to landfill, measured in tonnes per £100k construction value; and
- reporting performance for construction, demolition and excavation waste streams separately, measured in tonnes.

#### **Designers / Consultants (and Subcontractors with Design responsibilities)**

- applying the Designing out Waste process (Designers should refer to the WRAP Designing out Waste guidance<sup>1</sup>) to help them identify, prioritise and implement ways of meeting project targets for waste.
- and specifically through the development of a commercially and technically viable design by:
  - identifying methods to reduce waste and waste to landfill;
  - identifying opportunities to increase reused and recycled content (where there is no impact on cost or performance); and
  - reporting monthly to Willmott Dixon and Hill Partnership on the opportunities identified and the financial and practical implications of implementing the recommended actions.
- working with the project team to ensure that design actions to reduce construction waste and increase reused / recycled content are implemented;
- supporting the development of the PSWMP from an early design stage, including waste forecasts and data on reduction targets and actions; and
- providing the Principal Contractor with a full Design Decision Record for inclusion into the PSWMP.

#### **General Subcontractors and material supplier requirements**

- working with the Principal Contractor to identify methods to eliminate, reuse, recycle and recover high volume wastes or those difficult to divert from landfill (including packaging waste), providing additional costs or savings achieved by these methods
- supporting the development of the PSWMP and working in full compliance with the methods detailed within the PSWMP – in particular complying with all actions to reduce and reuse waste and increase levels of recovery;

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<sup>1</sup> Designing out Waste guidance for buildings and infrastructure are available at [www.wrap.org.uk/designingoutwaste](http://www.wrap.org.uk/designingoutwaste).

- providing an accurate forecast of the types and tonnes of waste that will be produced by your contract (inclusive of packaging waste);
- identifying the wastage rate applied to each material, explaining the need for this level of wastage allowance;
- participating in site briefings for operatives on materials handling and waste disposal;
- informing the Principal Contractor (in advance) of deviations from the PSWMP with justifying reasons;
- identifying additional ways to reduce and reuse waste and/or increase recovery and informing the Principal Contractor;
- complying with the site waste segregation strategy, including the avoidance of cross-contamination of segregated (non-mixed) skips;
- ensuring that materials and waste are stored in a safe and tidy manner and that waste is disposed of (in appropriate skip or other agreed receptacle) at the earliest opportunity;
- contributing to a project review to identify what could be improved and what worked well;
- ensuring all necessary data are provided to the Principal Contractor;
- providing written evidence of the recycled content level of specified materials in the form of invoice / delivery notes along with datasheets for the materials;
- following the WRAP Quality Protocol if demolition materials are to be crushed on site for reuse and providing the documentation provided to the Principal Contractor;
- Keeping to a minimum packaging of materials and, where practicable pallets are to be returnable; and
- where the Subcontractor has responsibility for removal of construction waste, they must comply with the specific requirements for waste management companies (see below).

#### Waste Management Companies

- providing a copy of their Waste Carrier's Registration to the Principal Contractor before starting work;
  - as necessary, providing permit or exemption notification authorising the use of mobile plant, i.e. crushing / screening plant, Waste Carriers Certificate(s), Environmental Permit(s) (formerly covered by Waste Management Licence(s) and Landfill Permit(s)), Notification of Waste Exemption(s), copies of all waste transfer notes (for inert and non-hazardous waste); and copies of all waste consignment notes (for hazardous waste).
  - identifying ways to increase the recovery rate of materials by finding end destinations with high recovery rates;
  - advising on most appropriate waste management actions;
  - providing details of the end-destination of all movements of waste, including the following information: name and address of destination, type of facility, waste management licence and recovery rate for that material;
  - reporting on the different types of waste managed, and the split of each different type of waste according to the waste management method (reuse, recycling, recovery,
-

landfill and other) and, in the case of reuse, recycling and recovery, whether this has taken place on or off site;

- monitoring and reporting monthly (within 2 weeks of the end of the reporting period) in line with agreed industry methods for waste measurement and reporting (available from WRAP<sup>2</sup>), the quantities in tonnes and percentage recovery rates for construction, demolition and excavation waste streams separately<sup>3</sup>;
- submitting quarterly relevant data in the form of an Environment Agency Return from the waste transfer station to the Principal Contractor; and
- using a systematic process to record and check waste, recovery and recycling data which is available for inspection on request.

## 5 SWMP Distribution

The Project Pre-construction Team should prepare the PSWMP before the project starts, with attention drawn to any suggested actions for waste prevention. When the project starts, the PSWMP should be passed to the Project Team as part of the Project Handover Procedure. The Project Team is to ensure that copies of the developed PSWMP are distributed to the client, client's agent and CDM Coordinator. This shall be undertaken every time the plan is reviewed and updated. The PSWMP should also be included in all Subcontractor enquiries that are sent out by the Bicester Eco development Quantity Surveyor.

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<sup>2</sup> Details are available to download at [www.wrap.org.uk/reportingportal](http://www.wrap.org.uk/reportingportal).

<sup>3</sup> It is recognised that many waste loads leaving site may be a combination of construction, demolition and excavation waste streams. It is not necessary to report these combined wastes separately, but to report them as the predominant waste type in the load.





## 6 SWMP Implementation

### 6.1 Preparation and Concept Design Stage

At preparation and concept design, the Project Pre-construction Team shall be responsible for preparing the PSWMP including the completion of Stages 1 and 2 inclusive. The waste minimisation options included in Stage 2 shall help facilitate the proposed actions for the identified quantities of potential wastes recorded in Stage 3.

### 6.2 Detailed Design Stage and Pre-construction Stage

At detailed design stage, the Project Pre-construction Team shall be responsible for updating the PSWMP including Stages 1, 3 and 5. The Project Pre-construction Team shall also be responsible for the completion of Stages 4 and 6. The waste minimisation options included in Stage 5 shall help facilitate the proposed actions for the identified quantities of potential wastes recorded in Stage 6. The Project Pre-construction Team will include one or some of the following:

- Estimator;
- Design Coordinator; and
- Quantity Surveyor.

At pre-construction stage, the Project Pre-construction Team shall be responsible for updating the PSWMP including Stage 4.

### 6.3 Construction Stage

After the award of a contract, the PSWMP is to be fully developed, implemented, monitored and reviewed by the Project Team as follows:

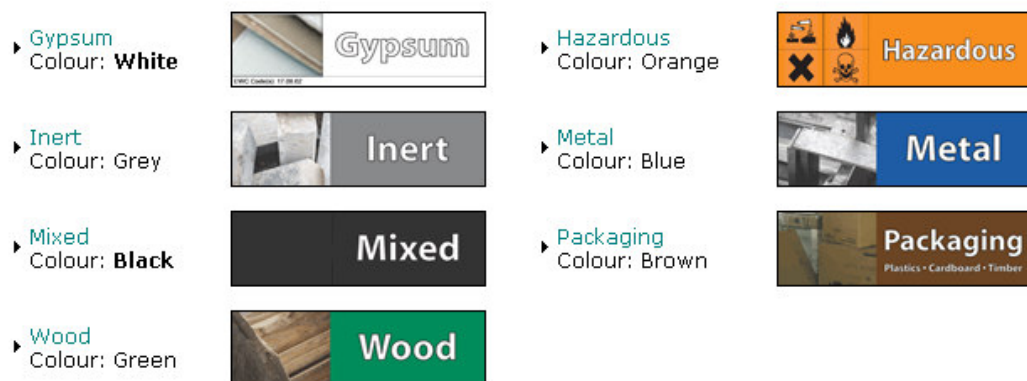
- review the PSWMP;
- identify further waste prevention actions;
- complete details of any further waste types which occur and actual waste prevention actions;
- make the PSWMP accessible to all relevant contractors and subcontractors;
- complete details of waste segregation arrangements during the project;
- provide instruction & training as necessary;
- carry out regular reviews of the PSWMP and record findings;
- carry out a final review and describe lessons learnt from any differences between the PSWMP and actual PSWMP performance within 1 month of the project completion;
- a comparison of the forecasted and actual quantities for each waste type within the PSWMP;
- an estimate of the cost saving achieved for the PSWMP; and
- confirm that the plan has been monitored on a regular basis to ensure that work is progressing according to the plan and that the plan was updated in accordance with the SWMP Regulations (2008).

## Waste Segregation

Contractors shall introduce appropriate systems for the collection, sorting and processing of waste materials on site including metal, timber, aggregates and a range of hard and inert materials that are to be won for beneficial reuse on site. Systems shall be emplaced to manage hazardous materials including contaminated materials, hazardous materials and any remediation concentrates. This shall include an audit of all wastes and resources that leave the site or are beneficially reused on site using a common auditing tool. These activities shall be fully compliant with current legislation and regulation.

Where space permits, a specific area will be laid out and labelled to facilitate the separation of materials for potential recycling, reuse and return. Recycling and waste bins are to be kept clean and clearly marked in order to avoid contamination of materials. The labelling systems for Waste Management & Recycling shall follow the Waste Awareness Colour Coding Scheme.

**Figure 3 Waste Awareness Colour Coding Scheme**



If the skips are clearly identified, the bulk of the workforce will deposit the correct materials into the correct skip. Skips for segregation of waste currently include:

- Hazardous waste;
- Inert Waste;
- Wood waste;
- Gypsum waste;
- Metal waste;
- Paper waste;
- Plastic waste;
- General waste;
- Insulation waste; and
- Canteen / Office waste.

As works progress and other trades come to site, the skips should be placed to enable the original waste types to be removed from site with ease.

## Instruction and Training

A2Dominion and P3Eco, or the Principal Contractor on their behalf, will provide onsite instruction of the appropriate separation, handling, recycling, reuse and return methods to be used by all parties, at all stages of the project. The SWMP shall also be outlined in the site induction process and individual responsible person (Waste Champion) shall be chosen to champion the auditing and monitoring.

CIRIA C650 Toolbox talks shall be carried out in the site induction classes to inform contractors and sub-contractors in how they should be involved with the waste, reuse and recycling requirements of the project. These toolbox talks and other workshops shall be prepared to empower responsible persons and subcontractors to promote and encourage the buy-in of waste minimisation, waste segregation and appropriate waste management across the Bicester Eco development.

## Data Collection

The Waste Champion shall support the contractors and subcontractors to collect and enter data into their PSWMP and act as the point of contact for all enquiries. Instruction shall be given on how to assess waste volumes or tonnage and how to upload data to the SWMP. A paper-based system for recording data can also be used, but needs to be uploaded to the PSWMPs on a regular basis – preferably every week. Responsible persons shall also be asked to adopt a standardised coding system for their individual waste entries and the associated waste transfer notes (WTN) codes. All WTN shall be kept as a hard-copy on site.

## PSWMP Monitoring

All waste collected from site by A2Dominion, P3Eco and / or Principal Contractor employed waste carrier(s) must be recorded and monitored on the Waste Destination Sheet. The waste carrier(s) will provide Waste Transfer Notes on collection of the waste, and in due course, provide records of the quantities of waste recycled or sent to landfill. This procedure will apply whether the waste has been 'pre-treated' (sorted into separate waste streams); or sent 'untreated' as general mixed waste. The preference should always be to pre-treat waste, as this is generally a cheaper alternative to sending away untreated waste.

However, if 'untreated' general mixed waste is sent for separation into the different waste streams at the waste transfer station, the waste management contractor carrying out this operation must be required to provide records of the quantities of each waste stream to allow tracking on the PSWMP Waste Destination Sheet.

The legal requirements for waste monitoring and auditing include the need for appropriate use of waste transfer notes, waste consignment notes and waste acceptance criteria. These are all defined in the Landfill Directive and briefly referenced in the Environment Agency Regulatory Guidance Note 14. However the system is not automated, can include a variety of formats and will be difficult to relate to targets, performance and continual improvement. The system does not account for materials that are reclaimed or recovered for reuse and recycling, and do not include indicators e.g. KPIs and EPIs. A more versatile system is required to compliment the legal requirements of the waste transfer notes, waste consignment notes and waste acceptance criteria. The Waste Champion shall identify a waste auditing tool to assist the delivery of the PSWMP.

Skips shall be monitored to ensure that there is no contamination of the separate waste streams. The waste segregation arrangements must be clearly identified on each container and regularly reinforced to personnel through tool-box talks. The type of surplus materials being produced must be regularly reviewed so that the site set-up can be changed to maximise reuse or recycling of waste. Subcontractors producing waste from their works should fill in the Actual

Waste Movements Sheet detailing any waste materials removed from site by their own waste management contractor(s). These waste management contractor(s) must also provide Waste Transfer Notes on collection of the waste and provide records of the quantities of waste recycled or sent to landfill.

The beneficial use of recycled aggregates and won materials from on site and off site , including on site crushing of stone, tile, brick mortar and concrete, shall be monitored. The WRAP Quality Protocol shall be used by contractors and subcontractors to verify the suitability of the recycled aggregates for use on site or off site. This is a standard protocol being adopted on numerous projects across UK with a proven level of success. The Quality Protocol shall also act as a benchmark to gauge the utilisation of the materials into higher grade applications on site. For example, the use of crushed concrete and crushed bricks and stone into foundations, concrete slabs and structural concrete as well as sub-base layers and piling mats.

The Actual Waste Movements Sheet should also be used to record a running total of the waste removed from the relevant phase of the Project. The PSWMP will be reviewed during the monthly meetings with subcontractors and will be included in the Monthly Progress Reports to A2Dominion and P3Eco.

Office/Welfare waste shall be sorted into a separate container, typically an 1100L Eurobin. Sites may also be able to take advantage of the Local Authority's recycling scheme by obtaining separate bins for recyclable waste for regular collection by the LA.

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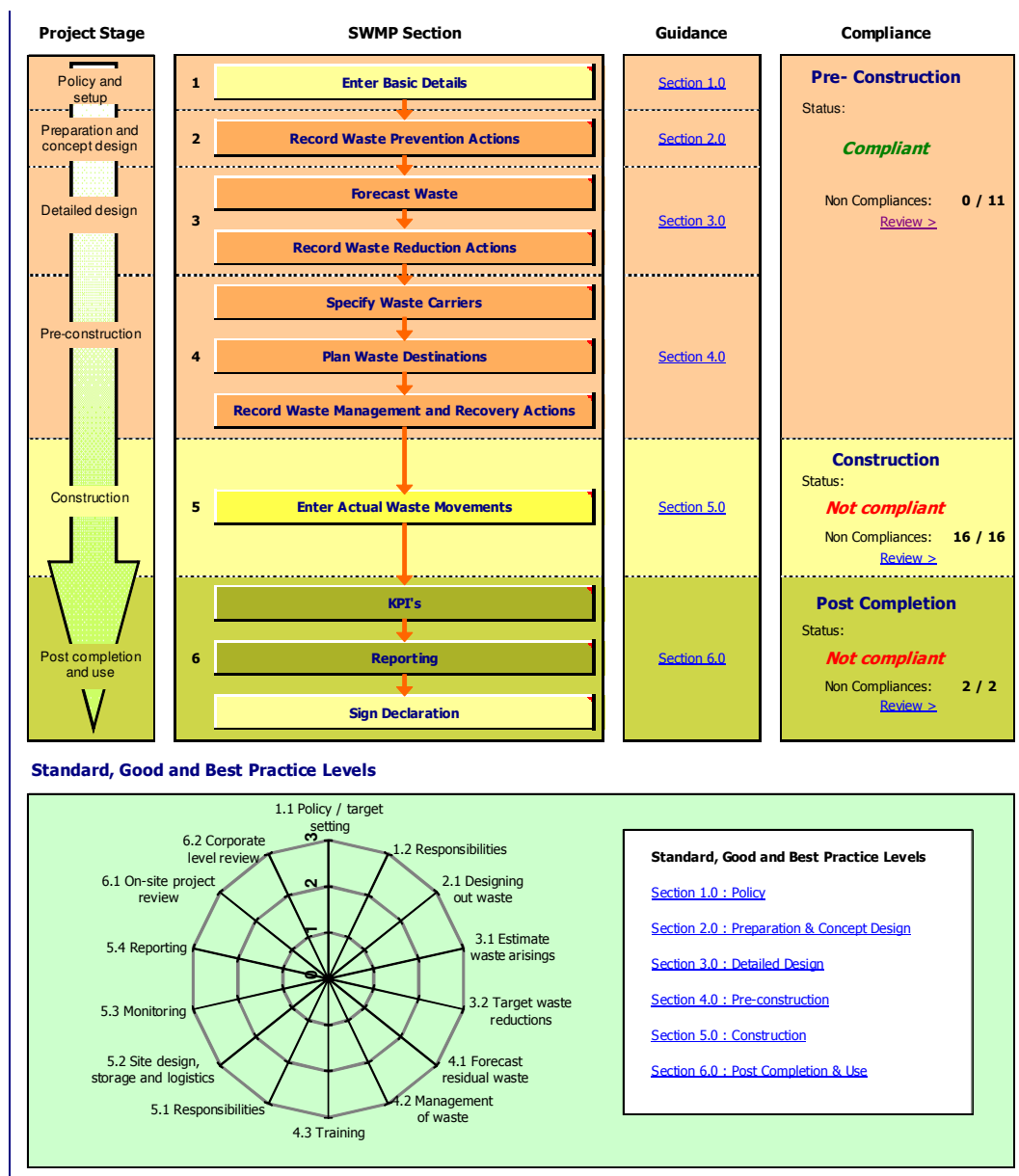
# 7 PSMWP Template for Bicester Eco development Exemplar Site

The Bicester Eco development Exemplar PSWMP Template (Appendix A) is an excel based SWMP Template that provides a focal point to collect waste data from construction-related activities on site. It also demonstrates that A2Dominion, P3Eco are committed to continuous improvement of waste management practices, to reduce the amount of waste going to landfill and to increase the extent of reuse and recycling.

## 7.1 PSWMP Template: Homepage

The SWMP Template Homepage (Figure 4) functions as the main navigation page and has three main interactive areas: SWMP Section, guidance (Standard Good and Best Practice Matrix); and compliance.

Figure 4 Bicester Eco development Exemplar SWMP Homepage Flowchart



### 7.1.1 Homepage: PSWMP Template Section

The flowchart shown in Figure 4 links the Bicester Eco development Exemplar PSWMP Template Sections and allows the Project Pre-start Team and the Project Team to navigate to all worksheets in the PSWMP Template. The buttons link to the respective areas in the PSWMP Template. A list of the PSWMP Template Sections is given in Table 1.

**Table 1 Bicester Eco development Exemplar SWMP Template Sections**

Stage	Section
	PSWMP Template Homepage, SGBP Levels, Compliance and Help
1	PSWMP Template Basic Project / Package Details
2	PSWMP Template Waste Prevention Actions
3	PSWMP Template Waste Reduction Actions
3	PSWMP Template Waste Forecast
4	PSWMP Template Waste Carriers
	PSWMP Template Waste Destinations and Waste Management and Recovery
5	PSWMP Template Actual Waste Movements
	PSWMP Template KPIs
	PSWMP Template Reporting

The project stage identifies the suggested stage in the Bicester Eco development Exemplar Site when the PSWMP Template Section should be completed. A2Dominion, P3Eco must, from a very early stage, look at how the waste produced can be minimised and thereby reduce the amount of waste that has to be removed from the project. The Project Teams, including the Project Pre-construction Team, Design Team, Construction Team, Suppliers and Subcontractors shall be encouraged to look at ways to minimise the amount of waste produced at the work face.

The project stages for defining and implementing the PSWMP Template are as follows:



- 1 Complete and update where necessary the PSWMP Template Basic Package Details Sheet (Stage 1);
  - 7 Complete and update where necessary the PSWMP Template Waste Prevention Actions Sheet (Stage 2);
  - 8 Complete and update where necessary the PSWMP Template Waste Reduction Actions and Waste Forecast Sheets (Stage 3);
  - 9 Complete and update where necessary the PSWMP Template Waste Carriers, Waste Destinations and Waste Management and Recovery Sheets (Stage 4);
  - 10 Complete and update where necessary the PSWMP Template Actual Waste Movements Sheet (Stage 5); and
-

- 11 Review the PSWMP Template KPIs and Reporting Sheets and sign the declaration at the end of your project (Stage 6).

## Sheet Colour Key

The following colour codes are used to distinguish between the separate worksheets used in the Bicester Eco development Exemplar PSWMP Template; those that are to be used for general information, and those that are to be used for data entry.

**Table 2 Sheet Colour Key**

	PSWMP Template Informative Sheets
	PSWMP Template Data Entry Sheets (policy, setup stages and post completion stages)
	PSWMP Template Data Entry Sheets (preparation, concept and detailed design and pre-construction stages)
	PSWMP Template Data Entry Sheets (construction stage)
	PSWMP Template Data Entry Sheets (post completion and use stages)

The following colour codes are used to distinguish between the cells used in the Bicester Eco development Exemplar SWMP Template; those that are to be used for data entry, and those that are reference cells and will be populated automatically.

	PSWMP Template Data Entry Cells
	PSWMP Template Reference Cells

## 7.1.2 Homepage: Guidance Standard, Good and Best Practice

There are two Standard, Good and Best Practice areas on the homepage:

- **Guidance:** Links to the relevant section of the Standard Good and Best Practice Guidance Sheet. This sheet advises on what Standard, Good and Best Practice opportunities are available at each project stage. The Project Pre-construction Team has selected the performance level for each of the items listed.
- **Standard Good and Best Practice Levels:** This section shows Standard, Good and Best Practice performance based on the selections made in the Guidance sheet. The spider diagram represents the practice level where 0 is none, 1 is Standard Practice, 2 is Good Practice and 3 is Best Practice. The Bicester Eco development Exemplar Site Project Pre-construction Team has selected the Best Practice level.

## 7.1.3 Homepage: Compliance

This section of the homepage summarises the Bicester Eco development Exemplar PSWMP performance against the SWMP Regulations (2008) based on the information that the Project Pre-construction Team and Project Team have entered into the PSWMP Template. Figure 5 below shows the Bicester Eco development Exemplar Site compliance at concept stage.



**Figure 5 Bicester Eco development Exemplar Site Compliance at Concept Stage**

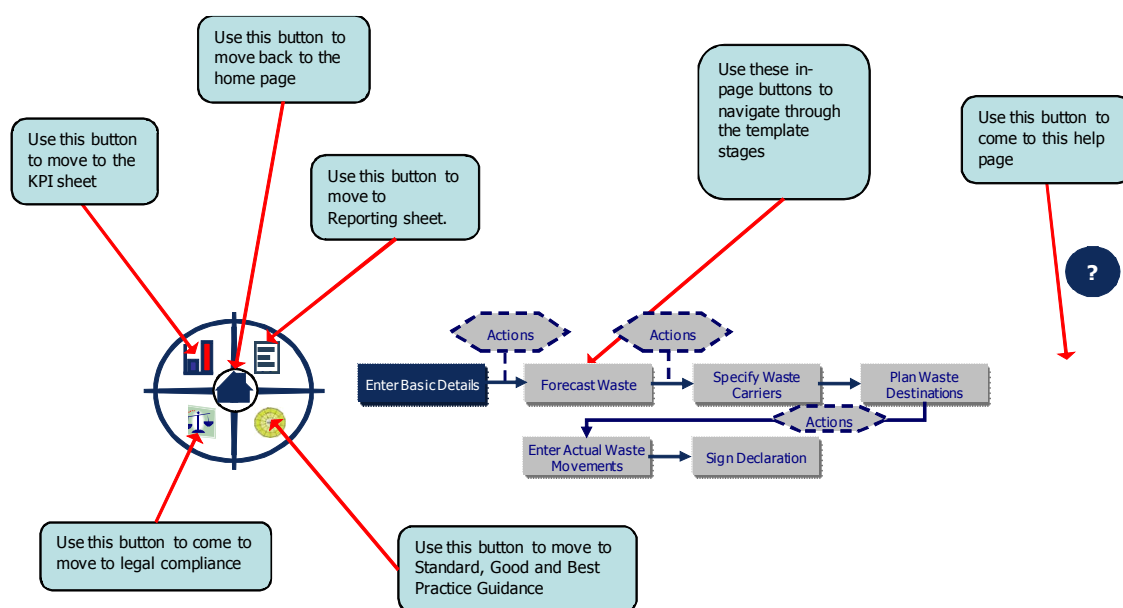
<b>Pre-Construction</b>	<b>Compliance</b>	
	Client identified	Yes
	Principal contractor identified	Yes
	Draftee identified	Yes
	<b>Compliance</b>	
	Location of site defined	Yes
	Cost of project estimated	Yes
	<b>Compliance</b>	
	Decisions taken before SWMP completed have been recorded	Yes
	<b>Compliance</b>	
	All waste types identified and quanties estimated	Yes
		Yes
	Waste management actions identified	Yes
	<b>Compliance</b>	
	All waste from site is dealt with in accordance with relevant guidelines	Yes
	Materials handling identified	Yes

Regulatory compliance is shown against project stages – as there are different requirements depending on the stage of the project. If the Project Pre-start Team or the Project Team have not satisfied any part of the regulatory requirements, follow the links from the Homepage to the Template ‘Compliance’ sheet. The Compliance sheet allows the review of the regulations in England and the Bicester Eco development Exemplar Site performance against them.

## 7.1.4 Homepage: Help

The help sheet provides information on how to navigate and complete the PSWMP Template. This includes information such as how to use the navigation bar as shown in Figure 6.

**Figure 6 Explanation of the navigation bar found in the help sheet**



## 7.2 PSWMP Template: Project Basic Details Sheet

The Basic Project Details has been completed by the Project Pre-construction Team in order that all the key project information, including any targets and metrics for measurement and KPIs have been included.

Figure 7 Bicester Eco development Exemplar Site Basic Details Sheet

Basic Details		
Client name :	A2 Dominion, P3Eco	
Principal contractor :	Willmott Dixon and Hill Partnership	
Owner of document :	Hyder Consulting	
Project title :	Bicester Eco-town Exemplar Site	
Project Reference :	Exemplar Site	
Project location :	Bicester	
Project postcode :	OX27 8TG	
Construction value :	£65,000,000.00	
Type of construction :	Mixed use developments	
Activity :	New construction	

Metrics		
Please select metrics applicable to your project. These metrics are then used in the KPI sheet to track your progress.		
Metric	Amount	Unit
Footprint (m2) of site	211,245	m2
Gross Internal Floor Area	1,280	m2

Project targets		
Please select project targets applicable to your project		
Target	Amount	Unit
Waste to landfill	0	t
Recycled content	20	%

Schedule		
Start date :	31/09/2011	dd/mm/yy
Completion date :		dd/mm/yy

## 7.3 PSWMP Template: Waste Actions Sheet

The Waste Prevention, Reduction and Management and Recovery Actions are to be identified and recorded at a different stages through-out the project. The Project Pre-construction Team has recorded the following decisions that were taken before the PSWMP was drafted to satisfy the SWMP Regulations (2008):

- complete a WRAP Designing out Waste Workshop;
  - investigate options for recovering site won materials for reuse onsite;
  - incorporate prefabricated elements where cost neutral/negative;
  - use off-site fabrication of steel structure modules wherever possible;
  - standardise flooring, glazing, cladding and roof material options;
  - ensure that floor to ceiling heights are consistent to encourage off-site fabrication;
  - use pre-cast concrete solutions for the stairs / stair wells;
  - maximise prefabrication of steel reinforcement to cast in situ concrete elements;
  - minimise the number of 'bespoke' design solutions and maximise the number of standardised units and design details;
  - embed all of the design options to be pursued into project briefings and procurement;
  - use an on-site baler to compact paper, card and plastic packaging to take up less space ready for recycling;
  - setup area for segregated skips and use the national colour -coding scheme for waste containers to ensure waste is separated efficiently;
  - order materials in bulk where appropriate with minimal / reusable packaging where possible;
  - when incorporating requirements for waste reduction in procurement documents, refer to WRAP guidance on model wording;
  - maximise reuse of reclaimable materials on site. Avoid disposal of reusable materials and building elements, i.e. York brick and retained lintels;
  - put in place pod units for all bathrooms and toilets within main development;
  - use recycle aggregates (either onsite or off site ) in concrete mix, as fill, etc.;
  - retain top soil, treat it onsite with compost (or other remediation) and use for soft landscaping, etc.;
  - use existing soft landscape that can't be retained (trees, shrubs) as compost and soft landscape top mulch;
  - reuse packaging by returning to supplier/manufacturer or using it for other purposes (e.g. Timber packaging pallets can be chipped and used for landscaping top mulch);
  - put in place Materials Logistic Plan looking at supply routes, handling, storage and security for main construction phase of the project;
  - Supplier take back schemes to be set up with all pre-fabricated pods; and
  - setup an off cut area for plasterboard, all plasterboard to be sent to specific plasterboard recycling centre.
-

**Figure 8 Screenshot of the Bicester Eco development Exemplar Site Waste Actions Sheet**

Number	Type of Waste Action	Action Taken	Action owner	Reference to project document /	Waste stream	Material type
1	Waste Reduction Action	Complete a WRAP Designing out Waste Workshop	Design Consultant		Mixed C&D waste (17 09 04)	mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03
2	Waste Management and Recovery Action	Investigate options for recovering site won materials for reuse on site	Design Consultant		Inert - Soil & stones	soil and stones other than those mentioned in 17 05 03
3	Waste Prevention Action	Incorporate prefabricated elements where cost neutral/negative	Design Consultant		Mixed C&D waste (17 09 04)	mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03
4	Waste Prevention Action	Use off-site fabrication of steel structure modules wherever possible	Design Consultant		Metals	iron and steel
5	Waste Reduction Action	Standardise flooring, glazing, cladding and roof material options	Design Consultant		Mixed C&D waste (17 09 04)	mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03
6	Waste Prevention Action	Ensure that floor to ceiling heights are consistent to encourage off-site fabrication	Design Consultant		Mixed Hazardous - C&D waste (17 09 03*)	other construction and demolition wastes containing dangerous substances
7	Waste Prevention Action	Use pre-cast concrete solutions for the stairs / stair wells	Design Consultant		Inert - mixture of concrete, bricks, tiles etc.	concrete
8	Waste Prevention Action	Maximise prefabrication of steel reinforcement to cast in situ concrete elements	Design Consultant		Metals	iron and steel
9	Waste Prevention Action	Minimise the number of 'bespoke' design solutions and maximise the number of standardised units and design details	Design Consultant		Mixed C&D waste (17 09 04)	mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03
10	Waste Reduction Action	Retain top soil, treat it onsite with compost (or other remediation) and use for soft landscaping, etc.	Willmott Dixon and Hill Partnership		Inert - Soil & stones	soil and stones other than those mentioned in 17 05 03
11	Waste Reduction Action	Use existing soft landscape that can't be retained (trees, shrubs) as compost and soft landscape top mulch	Willmott Dixon and Hill Partnership		Wood	wood
12	Waste Prevention Action	Use recycle aggregates (either onsite or off site ) in concrete mix, as fill, etc.	Willmott Dixon and Hill Partnership		Inert - mixture of concrete, bricks, tiles etc.	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06

The Project Pre-construction Team shall also record any actions taken during the detailed design or pre-construction stages. The action type is colour coded so they can be easily identified and relate to the project stage. A sort function is available at the top of each column to create tailor action list by type, owner, date for completion, etc. To complete the Waste Actions Sheet the Project Pre-construction Team shall follow the steps outlined in Table 4.

**Table 4 How to complete Waste Actions Sheet**

<b>Column</b>	<b>What the Project Pre-construction Team and Project Team need to record</b>
Number	Use for reference only
Waste action	Select 'Waste Prevention Action, 'Waste Reduction Action' or 'Waste Management and Recovery Action' from the drop down list.
Action taken	Type in a description of the action identified.
Action owner	Type in name of person responsible for this action.
Reference to document drawing	Type in reference for use as an audit trail.
Waste stream	Select using drop down menu.
Materials type	Select using drop down menu.
Estimated cost saving	Type in any cost saving resulting from this action.
Waste reduced (tonnes)	Type in the reduction in waste that this measure will have.
Date of completion	Type in date in dd/mm/yyyy format. If the date has passed then the action will turn red.
Status	Select complete or incomplete from the drop down menu.

The Project Team shall record any decisions taken during the construction stage in order to eliminate certain wastes and reduce waste to landfill. To complete the Waste Actions Sheet the Project Team shall also follow the steps outlined in Table 4. Decisions that shall be recorded are on the nature of:

- project construction method and materials employed in order to minimise the quantity of waste produced on site;
  - waste reduction actions included in the waste forecast; and
  - decisions that the Project Team plan to take that relate to onsite waste management and recovery of waste e.g. establishing a plasterboard take back scheme with the Bicester Eco development suppliers.
-

## 7.4 PSWMP Template: Forecast Waste Sheet

The PSWMP Template Forecast Waste Sheet has been used by the Project Pre-construction Team before the project started to forecast the waste arisings from the Bicester Eco development Exemplar Site.

**Table 5 Forecasted waste by material type in tonnes**

Construction Type	Gypsum (17 08 02)	Metals	Wood	Packaging	Inert - mixture of concrete, bricks, tiles etc.	Mixed Hazardous - C&D waste (17 09 03*)	Mixed C&D waste (17 09 04)	Segregated Haz Waste	Other C&D segregated waste				
									Canteen/ Office/ ad-hoc	Electrical Equipment	Furniture	Insulation	Plastics
Residential Units	233	93	229	216	1676	19	591	17	591	50	28	359	349
Primary School	3	3	7	3	12	0	20	0	20	2	0	4	4
Eco-Pub	1	3	3	1	10	1	5	0	5	1	0	2	2
Eco-Business Centre	5	5	11	6	11	0	16	0	16	2	1	9	5
Energy Centre	4	2	3	2	6	0	4	0	4	0	0	3	2
Multi faith centre - Community Centre	11	3	1	2	0	0	0	0	0	2	1	6	1
Convenience Store	2	4	4	2	15	1	7	0	7	1	0	2	3
Hairdresser	0	1	1	0	2	0	1	0	1	0	0	0	0
Visitor Centre / Tea-room	1	2	2	1	6	0	3	0	3	0	0	1	1
Nursery	1	1	2	1	4	0	6	0	6	1	0	1	1
Office	1	1	3	2	3	0	4	0	4	1	0	2	1
<b>TOTAL</b>	<b>263</b>	<b>117</b>	<b>266</b>	<b>236</b>	<b>1745</b>	<b>22</b>	<b>658</b>	<b>17</b>	<b>658</b>	<b>59</b>	<b>31</b>	<b>390</b>	<b>370</b>

**Table 6 Forecasted waste by construction type**

Construction Type	Average waste (m <sup>3</sup> /100m <sup>2</sup> )	Development size (m <sup>2</sup> )	Forecasted waste arising (m <sup>3</sup> )	Forecasted waste arising (tonnes)*
Residential Units	15.28	38,369	5,862	8,794
Primary School	13.30	757	101	151
Eco-Pub	15.32	350	54	80
Eco-Business Centre	20.14	930	187	281
Energy Centre	20.06	400	80	120
Multi faith centre - Community Centre	13.76	455	63	94
Convenience Store	15.32	510	78	117
Hairdresser	15.32	77	12	18
Visitor Centre / Tea-room	15.32	220	34	51
Nursery	13.30	240	32	48
Office	20.14	250	50	76

\* Based on 1.5 tonnes per cubic metre

**Figure 9 Screenshot of the Bicester Eco development Exemplar Site Forecast Waste Sheet**

Forecast Waste						Forecast Quantities		Calculated Quantities (Converting between m <sup>3</sup> and t)		Forecast provided by
C, D or E Activity	Waste Stream	Material Type	Further description of waste - optional	Suggested LOW Code	Waste or Re-Use	(m <sup>3</sup> )	(tonnes)	(m <sup>3</sup> )	(tonnes)	
Construction	Gypsum (17 08 02)			17 08 02	On-site re-use		263.31	297.91	263.31	Hyder Consulting
Construction	Metals			17 04 07	Off-site segregated		116.96	278.48	116.96	Hyder Consulting
Construction	Wood			17 02 01	Off-site segregated		265.76	281.65	265.76	Hyder Consulting
Construction	Packaging			15 01 06	Off-site segregated		235.77	1122.71	235.77	Hyder Consulting
Construction	Inert - mixture of concrete, bricks, tiles etc.			17 01 07	On-site recycled		1745.14	1407.37	1745.14	Hyder Consulting
Construction	Mixed Hazardous - C&D waste (17 09 03*)			17 09 03*	Off-site mixed		22.25	25.57	22.25	Hyder Consulting
Construction	Mixed C&D waste (17 09 04)			17 09 04	Off-site segregated		657.59	755.85	657.59	Hyder Consulting
Construction	Segregated Haz Waste	aqueous liquid wastes containing dangerous substances		16 10 01*	Off-site segregated		17.37	19.30	17.37	Hyder Consulting
Construction	Other C&D segregated waste	mixed municipal waste		20 03 01	Off-site segregated		158.73	755.86	158.73	Hyder Consulting
Construction	Other C&D segregated waste	discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35		20 01 36	Off-site segregated		16.96	67.84	16.96	Hyder Consulting
Construction	Other C&D segregated waste	Furniture and bulky items		20 03 07	Off-site segregated		6.45	35.83	6.45	Hyder Consulting
Construction	Other C&D segregated waste	Insulation materials other than those mentioned in 17 06 01 and 17 06 03		17 06 04	Off-site segregated		112.01	448.04	112.01	Hyder Consulting
Construction	Other C&D segregated waste	plastic		17 02 03	Off-site segregated		97.73	424.91	97.73	Hyder Consulting
Excavation	Inert - Soil & stones			17 05 04	On-site re-use		483.99	387.19	483.99	Hyder Consulting
								0.00	0.00	
								0.00	0.00	
								0.00	0.00	
								0.00	0.00	

The Project Pre-construction Team shall update the Forecast Waste Sheet at detailed design stage as set out in Table 5.

**Table 7 How to complete Forecast Waste Sheet**

Section	What the Project Pre-construction Team need to record
Construction, Demolition and Excavation Activity	Select whether the waste arising comes from construction, demolition or excavation activity. The information entered here is pulled through to 'Plan Waste Destination'.
Waste Stream	Select a waste stream from the pre defined list <sup>4</sup> of wastes. The selection that the Project Pre-construction Team makes here narrows down the material type options in the next column 'Material Type'.
Material Type	Select a material type after you have selected a waste stream. The list is specific to the waste stream selected.
Suggested LOW <sup>5</sup> Code	Based on your selections in the waste stream and material type columns, the Template suggests which LOW code applies to your selection.
Waste or Re-Use	Select an option from the drop down menu. This selection must be made to meet regulatory requirements. This allows you to select whether the waste forecasted will remain on site (reused, recycled or recovered) or go off-site (segregated or mixed). Data entered here pulls through to the 'Plan Waste Destinations Sheet'.
Section	What the Project Pre-construction Team need to record
Forecast Quantities	Enter mass (tonnes) for your forecast. The SWMP Template then uses industry agreed conversion factors to convert your number from from tonnes → m <sup>3</sup> . This number should take into account any waste reduction actions identified and should be the estimated amount of material that will be produced on site.
Calculated Quantities	This column reports your total waste forecast. Data is shown in both volume (m <sup>3</sup> ) or mass (tonnes) using industry agreed conversion factors for each material type.
Forecast Provided by	Free text entry to record which project team member provided the forecast.

<sup>4</sup> The list has been developed with the BRE and their SMARTWaste list of wastes – providing common reporting metrics.

<sup>5</sup> LOW stands for List of Waste code. List of Waste (LOW) Codes are the same as European Waste Catalogue (EWC). The Environment Agency refers to EWC codes as LOW codes.



## 7.5 PSWMP Template: Waste Carriers Sheet

The PSWMP Regulations 2008 require that all waste removed from site is undertaken by a company that is authorised to do so. The PSWMP must include details of all those companies who remove waste from site. This must include the identity of the name of the waste carriers and / or waste management facilities removing the waste, all registration numbers and a copy of (or reference to) the written description of the waste. It also must identify the sites that the waste is being taken to and whether the operators of those sites hold a permit under the Environmental Permitting (England and Wales) Regulations 2007 or are registered under those Regulations as a waste operation exempt from the need for such permit.

The PSWMP Template Waste Carriers Sheet shall be used at detailed design by the Project Pre-construction Team to identify waste management companies that may provide services to the Bicester Eco development Exemplar Site project.

**Table 8 List of Waste Carriers and waste management facilities in the area**

Name of company	Location	Type of facility	Type of process	Type of waste (as described by the Waste Directory)
Dial-A-Skip Waste Management Ltd	NN13 5QY	MRF	Refuse, Recycles and disposal	Building waste, Glass, Green Waste, Hazardous Waste, Non-packaging Waste, Packaging
K J Millard Ltd	OX7 5PY	MRF	Refuse, Recycles and disposal	Building waste
Cawleys	MK12 5NL	MRF	Refuse, Recycles and disposal	Building waste, Glass, Green Waste, Hazardous Waste
Farthinghoe Recycling and reuse centre	NN13 6AT	MRF	Refuse, Recycles and disposal	Building waste, Glass, Green Waste, Hazardous Waste
Grundon Waste Management Ltd	OX10 6PJ	MRF and Landfill site	Refuse, Recycles and disposal	Building waste, Glass, Green Waste, Hazardous Waste, Non-packaging Waste, Packaging
D & P Cairns Ltd	HP23 4QR	MRF	Refuse, Recycles and disposal	Building waste, Glass, Green Waste, Hazardous Waste, Non-packaging Waste, Packaging
A Day Recycling Group	NN12 8AA	MRF	Refuse, Recycles and disposal	Building waste
A G Evans Ltd	HP23 6JG	Scrap Metal Merchants	Refuse, Recycles and disposal	Building waste

Name of company	Location	Type of facility	Type of process	Type of waste (as described by the Waste Directory)
Warren's Scrap Metal and Waste Disposal	NN4 8HQ	Scrap Metal Merchants	Refuse, Recycles and disposal	Building waste
Bucks Recycling Ltd	HP18 9UN	WTS	Refuse, Recycles and disposal	Glass, Green Waste, Hazardous Waste
Camiers Waste Management Ltd	HP23 4QR	WMF	Refuse, Recycles and disposal	Glass, Green Waste, Hazardous Waste, Non-packaging Waste, Packaging
G Moore Haulage Ltd	MK43 9NT	WTS	Refuse, Recycles and disposal	Glass, Green Waste, Hazardous Waste, Non-packaging Waste
Phenix Security	RG5 4SL	MRF	Refuse, Recycles and disposal	Glass, Green Waste, Hazardous Waste, Non-packaging Waste, Packaging
Alan Hadley Ltd	RG7 4AJ	Landfill site, WTS, MRF	Refuse, Recycles and disposal	Glass, Green Waste, Hazardous Waste, Non-packaging Waste, Packaging
Biffa Waste Services Ltd	OX11 7RP	Landfill site	Waste managment and Landfill sites	Building waste, Glass, Green Waste, Hazardous Waste, Non-packaging Waste, Packaging
Waste Recycling Group Ltd	OX29 5BB	Landfill site & Energy Recovery Facility, MRF	Waste managment and Landfill sites	Building waste, Glass, Green Waste, Hazardous Waste, Non-packaging Waste, Packaging
Hackett Oxford Ltd	OX29 7PL	Landfill site	Waste managment and Landfill sites	Building waste, Glass, Green Waste, Hazardous Waste, Non-packaging Waste, Packaging
Energy Solutions	OX11 OQJ	Landfill site	Waste managment and Landfill sites	Building waste, Glass, Green Waste, Hazardous Waste, Non-packaging Waste, Packaging

The Project Team shall update it as and when other waste carriers and / or waste management facilities are commissioned to remove waste from the Bicester Eco development Exemplar Site. The Waste Carriers Sheet shall be updated as set up in Table 8.

**Table 9 How to complete the Waste Carriers Sheet**

Section	What the Project Team need to record
Answering the four questions	<p>There are four questions at the top of the page that must be answered using drop down menus to select yes / no answers.</p> <p>These questions link to the Compliance page that summarises your performance against the SWMP (2008) Regulations.</p>
Waste carrier	<p>Use free text entry in this section to record the name, licence number, expiry date and date checked with the Environment Agency for every waste carrier you intend to use.</p> <p>Information entered here is pulled through into drop down menus in Template Sheet 5 'Actual Waste Movements'. This allows you to quickly match a waste carrier to a waste stream, avoiding the need for repetitive data entry.</p>
Waste management facility	<p>Use free text entry and drop down menus to record the name, type of facility, reuse/recycling/recovery rates achieved at that destination and waste licensing information for that facility.</p> <p>If you know the individual reuse/recycling/recovery rates for a facility then enter them in columns J, K and L respectively. If you only know the recovery rate for the facility as a whole, enter this percentage in column M. If you do not know recovery rates for your intended facility, leave columns J, K, L and M blank and the Template will assume a recovery rate<sup>6</sup> for the facility entered in column H. Only complete columns R and S if a facility takes more than one waste stream with a different recovery rate or there are two facilities used for the same waste stream.</p> <p>By completing the previous fields the construction, demolition or excavation activity and the waste stream will appear in a bracket next to the facility title in the list of destinations pulled forward to the 'Waste Destinations' and 'Actual Waste Movement' sheets.</p> <p>The red boxes must be completed so that an amount, cost and recovery rate can be calculated for the waste stream. Enter the percentage of the waste stream expected to be sent to each facility in column T and the £/t in columns U and V respectively.</p>

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<sup>6</sup> These assumed rates have been developed with the UK Contractors Group

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## 7.6 PSWMP Template: Waste Destinations Sheet

The SWMP Template Waste Destinations Sheet shall be used by the Project Pre-construction Team to match up the forecasted waste streams (entered in 'Forecast Waste') with the expected waste management facilities (entered in 'Waste Carriers') as shown in Figure 10.

**Figure 10 Screenshot of the Bicester Eco development Exemplar Site Waste Destinations Sheet**

Construction								
Waste sent offsite	Forecast		Proposed Destination	% Diverted from landfill	Cost of waste disposal			Comments
	Estimated Volume (m³)	Estimated (t)			£/m³	£/t	Cost Forecast	
Metals	278.48	116.96		0%			FALSE	
Wood	781.65	265.76		0%			FALSE	
Packaging	1122.71	235.77		0%			FALSE	
Mixed Hazardous - C&D waste	25.57	22.25		0%			FALSE	
Mixed C&D waste	755.85	657.59		0%			FALSE	
Segregated Haz Waste	19.30	17.37		0%			FALSE	
Other C&D segregated waste	1732.48	391.88		0%			FALSE	
	4716.05	1707.58					£0.00	

The tables in the 'Waste Destinations Sheet' are ordered by construction, demolition and excavation phase. Each table shows the materials that have been identified in the forecaster and whether the waste is being sent off-site or is being reused onsite. The Project Pre-construction Team has also selected a waste management facility from the 'Waste Carriers Sheet' for each waste stream and estimated the cost of waste disposal in £/tonne to calculate the cost of waste disposal for Bicester Eco development Exemplar Site Project.

If Bicester Eco development Exemplar Site Project has more than one facility for a particular waste stream then the Project Pre-construction Team shall follow the steps outlined in Table 10 'How to complete the Waste Carrier Sheet'. After this the Project Pre-construction Team shall select multiple destinations in the Proposed Destinations column in 'Waste Destinations Sheet' and this will automatically calculate the recovery rate and cost of the waste stream using the values entered in the 'Waste Carriers Sheet'.

The Project Team shall update it as and when other waste carriers and / or waste management facilities are commissioned to remove waste from the Bicester Eco development Exemplar Site. The Waste Carriers Sheet shall be updated as set up in Table 10.

**Table 10 How to complete the Waste Destinations Sheet**

<b>Section</b>	<b>What the Project Team need to record</b>
Expected facility and cost of disposal	Use the drop down menu in proposed destinations to select a waste management facility. The waste management facilities listed are taken from the data entered in 'Specify Waste Carriers'. This speeds up the specification of which waste streams will be going to which waste management facility, avoiding the need to repetitively type in the same information. The cost of waste disposal is entered for either £/m <sup>3</sup> or £/tonnes in the free entry boxes. The Template will calculate the cost of waste disposal for your project based on the amount of waste forecasted and the cost entered in this sheet.
Multiple destinations	If the project has more than one facility for a particular waste stream then firstly following the steps outlined in section 8.0 'How to use the Template – 4 Specify Waste Carriers' for selecting multiple destinations. After this select multiple destinations in the Proposed Destinations column in 'Plan Waste Destinations'. This will automatically calculate the recovery rate and cost of the waste stream using the values entered in 'Specify waste carriers'.
Answering the three questions	There are three questions at the top of the page that must be answered using drop down menus to select yes / no answers. These questions link to the Compliance page which summarises whether the required

## 7.7 PSWMP Template: Actual Waste Movements Sheet

The SWMP Template Actual Waste Movements Sheet shall be used by the Project Team to record the Bicester Eco development Exemplar Site actual waste movements once the project team has mobilised to site. Each waste movement should be recorded as a line in the 'Actual Waste Movements Sheet' as outlined in Table 11 below:

**Table 11 How to use the Actual Waste Movements Sheet**

Section	What the Project Team need to record
Movement number	This is a reference for tracking the number of movements
CDE Activity	Select whether the waste arising comes from construction, excavation or demolition activity. This information must be entered because forecasting along these lines ties in with industry agreed methods.
Waste Stream	Select a waste stream from the pre defined list of wastes. The list you select from has been developed with the BRE and their SMARTWaste list of wastes – meaning many users will recognise the classifications used. The selection you make here narrows down the material type options you can make in the next column 'specify further segregation'.
Material Type - optional	Entering information here is optional. Select a material type after you have selected a waste stream. The list you select from has been developed with the BRE and their SMARTWaste list of wastes to provide a common classification. If you only wish to select a waste stream (and not select the more detailed material type), press the 'delete' key on your keyboard when the material type cell has been clicked on. The Template will then record your forecast at the waste stream, and not at the material type level.
Further description of waste – optional	Entering information here is optional. Use this free text entry cell to record a further description of the waste to include a more detailed explanation. This information can be used as part of the audit trail for your project if you wish.
LOW Code used	Based on your selections in the waste stream and material type columns, the Template suggests which LOW code applies to your selection. The LOW code can be overwritten by pressing the 'delete' key on your keyboard when the LOW Code cell has been clicked on. You can then enter an alternative LOW code if you wish.
On or Off-site destination	Select an onsite or off-site destination for your waste arising. If you select an onsite option, the Template records this and displays this information in the Waste Totals table and in 'Reporting'. If you select an off-site option, the Template allows you to complete the following two columns (off-site carrier and off-site destination).
Off-site carrier	You can make a selection here only if an off-site destination is selected in the 'on or off-site destination' column. Make a waste carrier selection using the drop down menu. The options displayed are based on the information you entered in 'Specify Waste Carriers'.
Off-site destination	You can make a selection here only if an off-site destination is selected in the 'on or off-site destination' column. Make a waste management facility selection using the drop down menu. The options displayed are based on the information you entered in 'Specify Waste Carriers' (waste management facility table).

Section	What the Project Team need to record
Override facility recovery rate for individual skip	This column can be used to override the information recorded in 'Specify Waste Carriers' for the recovery rate of the waste management facility (See below). This may be required if the facility provides a rate for each lift on their transfer note.
Overall diversion from landfill / recovery	This data is displayed based on the information you entered in 'Specify Waste Carriers' (waste management facility table).
Date of movement	Use the drop down menu to select the month and year of the waste movement.
Waste totals (volume, tonnes, actual cost)	<p>Enter either the volume (m<sup>3</sup>) or mass (tonnes) waste totals for each waste movement. This data should be the total waste arising (e.g. before recovery rates are taken into account). Totals after recovery are shown in the table directly above 'Waste Totals'.</p> <p>In the actual cost column enter the total cost for the waste movement. A basic calculation is then made for the £/m<sup>3</sup> or £/t.</p>

## Summary Data: Waste totals

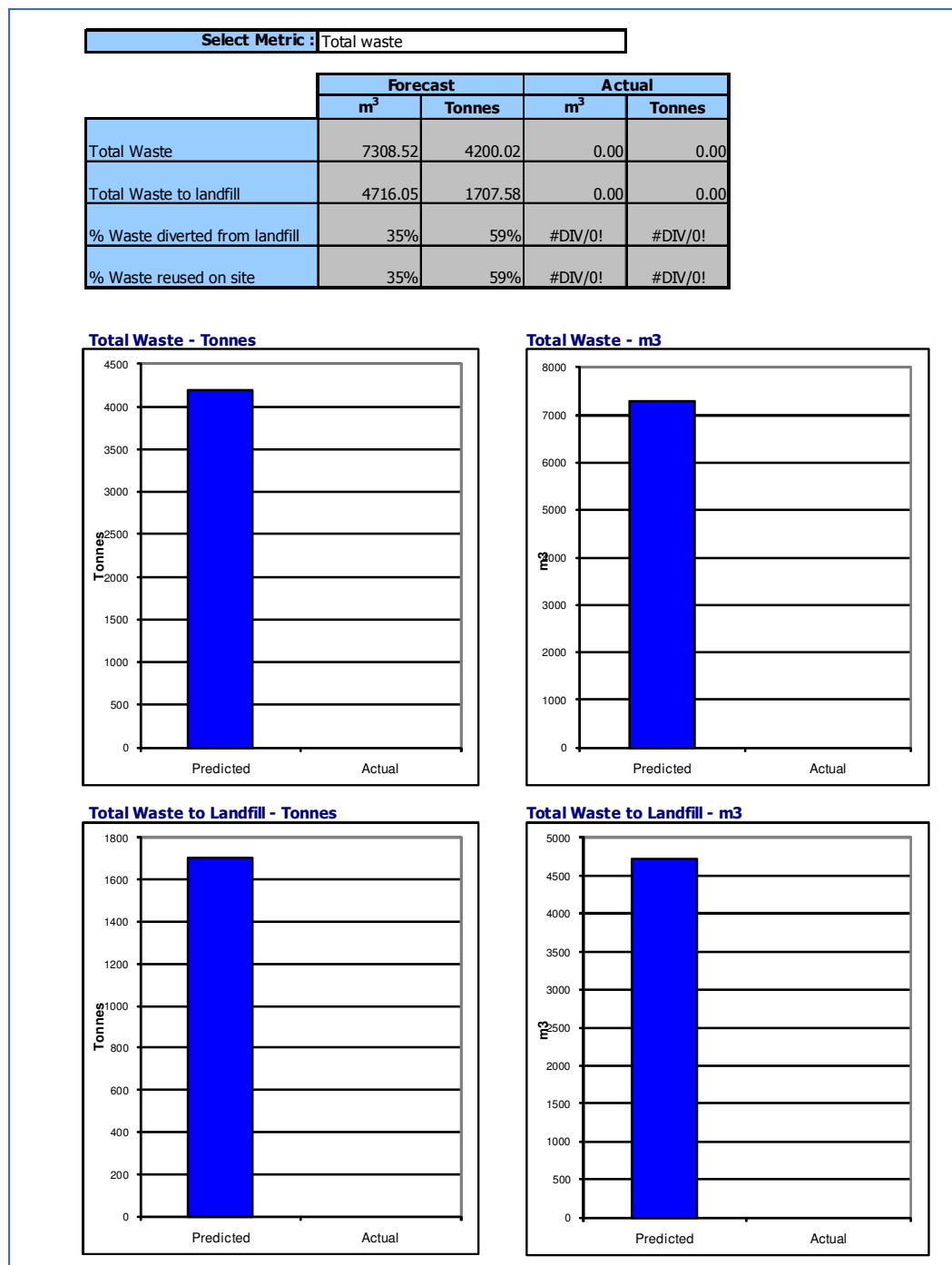
Once data has been entered into the 'Actual Waste Movements Sheet', this section displays a summary in tonnes. Use the drop down menu in cell B9 to toggle the display between tonnes and m<sup>3</sup>.

*Note: a full breakdown of all data entered into the Bicester Eco development Exemplar PSWMP Template, including a comparison of forecast versus actuals data, is shown in the 'Reporting Sheet'.*

## 7.8 PSWMP Template: Key Performance Indicators Sheet

The SWMP Template 'Key Performance Indicators (KPIs) Sheet' shall be used by the Project Team to review the results for the Bicester Eco development Exemplar SWMP Template. The graphs show total waste to landfill and total waste arisings, against the metrics selected (footprint (m<sup>2</sup>) of site and gross internal floor area).

Figure 11 Bicester Eco development Exemplar Site KPIs





The Bicester Eco development Exemplar PSWMP Template will also allow the Project Team to choose from the following two items:

- **Total waste:** showing total waste arisings for Bicester Eco development Exemplar Site project
- **Per £100k of construction value:** dividing waste totals by the construction value (entered in the 'Basic Details Sheet'). This gives the Project Team a relative value that can be compared across packages, irrespective of their size.

## 7.9 PSWMP Template: Reporting Sheet

The PSWMP Template 'Reporting Sheet' shall be used by the Project Team to compare the Bicester Eco development Exemplar Site forecast and actual waste measurements at regular intervals (at least once every 6 months) during the project and within 3 months of project completion. Figure 12 shows a screenshot of the combined construction and excavation report. There are four tables in total on this worksheet:

- totals for construction, demolition and excavation (forecast versus actuals);
- construction related waste arisings (forecast versus actuals);
- demolition related waste arisings (forecast versus actuals); and
- excavation related waste arisings (forecast versus actuals).

**Figure 12 Screenshot of Bicester Eco development Exemplar Site Reporting Sheet**

View data in: tonnes		Forecast		Actual	
		m <sup>3</sup>	Tonnes	m <sup>3</sup>	Tonnes
<b>Reporting</b> <a href="#">Combined stages C,D and E</a> <a href="#">Construction</a> <a href="#">Demolition</a> <a href="#">Excavation</a>	Total Waste	7308.52	4200.02	0.00	0.00
	Total Waste to landfill	1177.64	545.47	0.00	0.00
	% Waste diverted from landfill	84%	87%	#DIV/0!	#DIV/0!
	% Waste reused on site	35%	59%	#DIV/0!	#DIV/0!

Hyperlinks have been included on the left of the summary table for ease of navigation to each of the tables. The figures in these tables can be used to populate information in the Waste to Landfill Reporting portal: [www.wrap.org.uk/reportingportal](http://www.wrap.org.uk/reportingportal).

Cell C8 allows you to toggle the data shown between mass (tonnes) and volume (m<sup>3</sup>).

The page is printer friendly, although you may wish to print on A3 pages to view the data more easily.

## 7.10 PSWMP Template: Declaration

The PSWMP Template 'Declaration' shall be completed by a member of the Project Team at the end of the construction stage. The free entry cells shall be completed to confirm the plan has been monitored.

Figure 13 Screenshot of Bicester Eco development Exemplar Declaration Sheet

<b>Confirmation that the plan has been monitored on a regular basis to ensure that work is progressing according to the plan and that the plan was updated in accordance with the SWMP Regulations (2008). Required for all projects</b>	
Signed by:	
Organisation:	
Position:	
Date:	
Signed by:	
Organisation:	
Position:	
Date:	

The following information also needs to be provided:

- reasons for the differences between the forecast and actual waste volumes;
  - explanation of any non-compliance(s) of the PSWMP and corrected actions; and
  - key lessons learned.
-

## 7.11 References

A Guide to the Hazardous Waste Regulation: Consignment Notes HWR03 Ver 2.0, Environment Agency, (June 2006).

A Guide to the Hazardous Waste Regulations: Record Keeping HWR05 Ver 2.0, (June 2006).

The Construction (Design and Management) Regulations (2007 No.230)

CLAIRE “The Definition of Waste: Industry Code of Practice”, Sept 2008.

Council Directive 1999/31/EC, Office Journal of the European Communities (April 1999)

Designing out Waste Tool, WRAP

Environmental Protection Act (1990)

Environmental Protection (Duty of Care) Regulations (1991)

EU Waste Framework Directive (November 2008)

European Waste Catalogue (ENWDC), Environmental Protection Agency (January 2002)

Hyder Consulting SWMP Template 2007

Hyder Consulting SWMP Guidance Document 2008

Hyder Consulting Hazards and Risk Assessment, Conceptual Design Advice 2007

Landfill (England and Wales) Regulations (2002)

List of Wastes (England) Regulations 2005 (LoWR)

Site Waste Management Template and User Guide, WRAP

Site Waste Management Plan Regulations (2008).

The Control of Pollution (Amendment) Act (1989)

The Definition of Waste, Developing Greenfield and Brownfield Sites, Environment Agency, (April 2006).

The Environmental Permitting (England and Wales) Regulations (2007)

The Hazardous Waste (England and Wales) Regulations (HWR 2005)

The Waste Electrical and Electronic Equipment Regulations (2006)

Waste Management, the Duty of Care, A Code of Practice, DEFRA



## Appendix A

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# Bicester Eco development Exemplar SWMP Template