Project Resource Management Plan

Information completed below will automatically be reflected on every page header

Beaumont Primary School, Huddersfield

Project No **0NE1520**

Rev No: **01** Dated: **11/10/2016**

Revision Prepared by ……..

Signed – Project Sustainability Manager / Designer

A Smithson

Print Name

Initial RMP Approved by _____

Construction Director or Manager

Date _____

Distribution			
Name	Location	Date	Sections Issued
Construction Manager/Director			All – via EDMS
Project Manager	Site		All – via EDMS
Design Manager			All – via EDMS
Project Sustainability Manager	Site		All – via EDMS
Project Team	Various		All – via EDMS
All Subcontractors	Various		All – via EDMS / E-mail
Site Environmental Notice Board			All – Hard Copy
Environmental Management	Breakspear Park		All – EDMS / BAM SMaRT
Regional Sustainability Advisor			All – EDMS / BAM SMaRT
Client – *Insert Name*			All
Architect – *Insert Name*			All

This plan must be displayed on the Site Environmental Notice Board.
Site waste management plan requirements have been included in this document.

Contents

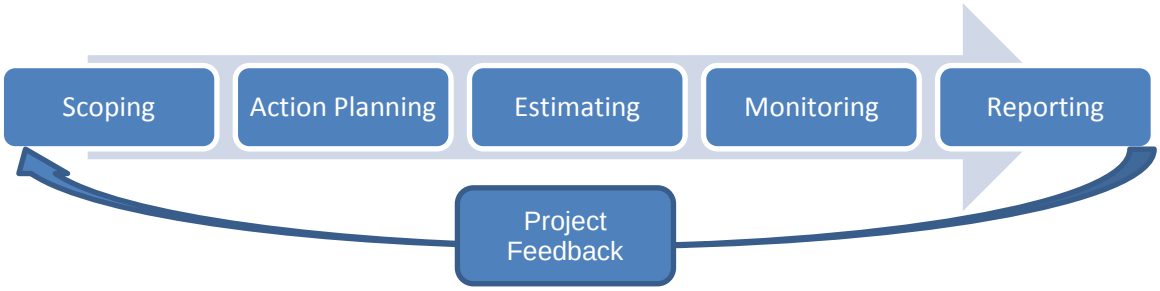
This is a fully indexed document: right-mouse click anywhere in the contents list below – select update field – update entire table – OK, the tables of contents will rebuild based on the styles Heading 1 and 2 within the document. Note: Text in Red is for information only and should be deleted from the final document.

The plan is to be reviewed on a quarterly basis by the Project Sustainability Manager, and updated where necessary to ensure that the work is progressing in accordance with the plan.

Review Record	I confirm that the work is progressing in accordance with this Plan		
Review Date	Revision Details (where applicable)	Rev	Reviewed by

1.0 Introduction

With the removal of the requirement for Site Waste Management Plans in England and the move towards a circular economy, BAM have adopted the principles of resource management planning as developed by WRAP, the Waste and Resources Action Programme. This document records the decisions made throughout the Resource Management Planning Framework. The process is considered to be broken into five stages, together with a feedback loop.



By producing a Resource Management Plan (RMP) we are able to demonstrate how we will meet our targets and our clients' requirements. This means:

- Demonstrating innovation
- Supporting the requirements of environmental assessment methods such as BREEAM
- Going beyond compliance
- Building more efficiently and reducing risk
- Achieving environmental benefits
- Creating savings for all stakeholders

In this document, resource efficiency actions that have been considered will be included, together with an estimate of the resources that will be used.

BAM's Sustainability Measuring and Reporting Tool, BAM SMaRT, will be used throughout the project to monitor and report performance against estimates.

WRAP has identified twelve resource efficiency components. These have been used as a theme throughout this document.

The document also includes content required to make it a legally compliant Site Waste Management Plan where applicable.

The purpose of the document is to detail the planning of resources during the design, construction and life of the building

1.1 Project Particulars and Responsibilities

A full list of the responsibilities of the following and others is contained in Appendix 1.

Principal Contractor: BAM Construction Ltd

Project Manager: *Insert name*
Project Sustainability Manager / Waste Co-ordinator: *Insert name*
Hazardous Waste Premises Code: *Insert where applicable*
Hazardous Waste Premises Code Expiry Date: *Insert where applicable*
Standard Industry Classification (SIC) Code: 41.20/1

Client: *Insert Client's name*

Architect (or other): *Insert Architects or representative's name* ……

Site Address: *Insert site name and address*

Project Description:

Provide an overview of the project. On large projects the overview may reference sustainability appraisals, environmental statements, environmental impact assessments or design reviews. On smaller projects this may simply be a brief description of the project details i.e. what is being built, where, how, and for how much.

1.2 Legal declaration

The Client and Principal Contractor will take all reasonable steps to ensure that all waste from this site is dealt with in accordance with Section 34 of the Environmental Protection Act 1990 (Waste Duty of Care), and the Environmental Protection (Duty of Care) Regulations 1991, and that all materials will be handled efficiently and waste managed appropriately.

This plan is to be reviewed regularly, and updated where necessary to accurately reflect the progress of the project. A review of the project will also be carried out within 3 months of completion to compare the estimated quantities of resources used to actual consumption, and estimate any cost savings.

1.3 Project Action plan and targets

Environmental targets have been set and are detailed in the Project Management Plan, Section three.

In additional to the project targets in the Project Management Plan, this project is subject to a BREEAM assessment, and therefore there are additional waste targets to be met (can be used for non BREEAM projects)

- Construction waste production (excluding demolition and excavation waste) of less than (insert targeted BREEAM waste figure if applicable) $m^3/100m^2$ or (insert targeted BREEAM waste figure if applicable) tonnes/$100m^2$
- At least 70% by volume (80% by tonnage) of non-hazardous construction waste (excludes demolition and excavation waste) generated by the project will be diverted from landfill
- At least 80% by volume (90% by tonnage) of non-hazardous demolition waste generated by the project will be diverted from landfill

2.0 Record of Client and Designer Resource Management Planning Decisions

It is important to assess whether the client and/or designer have included any resource efficiency measures, as these will have an impact on the control measures required by the construction team.

For example, if the client has specified that certain materials must have a percentage of recycled content, then this area will be scoped in, and the designer will need to ensure that they choose materials that can include recycled content, and the contractor will need to ensure that the recycled content materials are specified.

The following resource efficiency measures have been included in the design and/or specification for this project:

Decisions made at the design stage can help reduce BAM costs, through lower material use or more efficient construction methods. The ability to achieve many of the BREEAM Credits is also affected by the decisions that are made by the client and designer.

Using the twelve resource efficiency themes identified by WRAP, record below any decisions taken by the client and design team on the nature of the project, its design, construction method or materials employed in order to maximise the resource efficiency of the project.

Examples of actions that may have been taken are included below for information. Please delete those that do not apply, and add in any others that are not listed. It is also important to challenge / help develop the design where possible to recommend some of these improvements. If no measures have been included by the client or design team, please use the template text to state that the client and designer have not considered the scope area.

Any design changes that are made whilst the building is being constructed which will have an impact on resource efficiency are to be recorded in this document when it is updated on a quarterly basis.

Scope Area	**Scoped in / out**		**Client & Designer Decisions using the WRAP twelve Resource efficiency themes** (provide document reference(s) if applicable, don't duplicate text into this document)
	Client	**Design**	
2.1 Reducing materials consumption	in / out	in / out	Materials from demolition of the building or other phases are being reused in the design • A cut and fill balance has been achieved • The design, form and layout have been simplified *(how?)* or Client and designer have not considered any measures to reduce materials consumption
2.2 Reducing wastage and following the waste hierarchy	in / out	in / out	• Design coordinated to avoid/minimise excess cutting and jointing of materials • Building designed to standard material dimensions • Range of materials required standardised to encourage reuse of off-cuts • Repetition and coordination of the design to reduce the number of variables and allow for operational refinement • Research carried out by the design team and/or use of the WRAP Designing Out Waste Tool / Net Waste Tool to identify where on site waste arises • Construction methods that reduce waste devised through liaison with the contractor and specialist trade contractors • Specialist trade contractors consulted on how to reduce waste in the supply chain • Project specifications select elements/components/materials and construction processes that reduce waste, and allow for the reuse of waste: ○ ? ***Examples:*** *Designing out basements, raising formation levels,*

			soil stabilisation, displacement piling, mini piles in lieu of mass pads, Excavated fill used under suspended GF slabs and to backfill pad foundations, and/or shallow drainage. Sizing and position of window and door openings to suit whole brick / block/ plasterboard dimensions, Room sizes to match plasterboard dimensions, identical grids to allow for formwork reuse or Client and designer have not considered reducing waste
2.3 Reducing energy use during construction	in / out	in / out	• Components designed for manufacture off site? • Designed as a process of assembly rather than construction? • Contract program has wet trades during summer months **Examples:** Precast edge / ground beams, instead of in-situ, Prefabricated toilet / bathroom / kitchen pods, Prefabricated service runs / risers, Pre-packaged plant rooms, etc. or Client and designer have not considered energy required to construct the building
2.4 Reducing water use during construction	in / out	in / out	• Components designed for manufacture off site? • Designed as a process of assembly rather than construction? **Examples:** Precast edge / ground beams, instead of in-situ, Prefabricated toilet / bathroom / kitchen pods, Prefabricated service runs / risers, Pre-packaged plant rooms, etc. or Client and designer have not considered water required to construct the building
2.5 Increasing reuse and recycled content	in / out	in / out	• Pre-Demolition Audit Carried out (see below) • Materials from demolition of the building or other phases being reused in the design? ○ ? ***Examples:*** *Bricks to existing walls (laid in lime mortar) are to be cleaned and reused in boundary wall, Tiles from existing roof to be salvaged and reused on new structure, Waste glass to be crushed and use as bedding to paving materials, Remaining hardcore from demolition to crushed and used as fill to excavations, Existing frame to be used for storage shed* • Reclaimed products or components been specified? • Recycled content target set? • Materials known to contain a high recycled content specified? • Data has been obtained from supply chain regarding specific recycled content of materials? or • Client and designer have not considered including materials that can be specified with a recycled content
2.6 Matching the durability and lifespan of assets to service life	in / out	in / out	• Floor coverings not over specified for maintenance and replacement regimen? • Wall finishes are durable enough for their application? or Client and designer have not considered durability and lifespan of

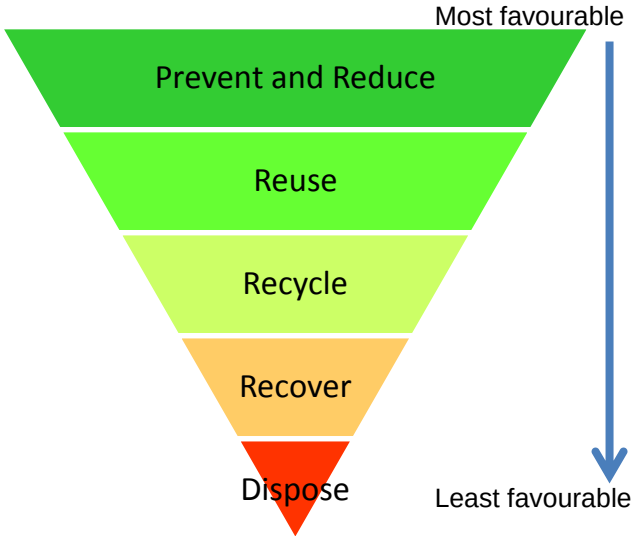
			assets
2.7 Using resources with no scarcity and source security issues	in / out	in / out	• Rapidly renewable materials have been specified (e.g. Cork, bamboo, linoleum)? • Locally sourced materials are specified? • An assessment about security of supply has been undertaken? or Client and designer have not taken scarcity and security of resources into account
2.8 Using products with lower embodied carbon	in / out	in / out	• Environmental Product Declarations have been obtained and used to compare various material options? or Client and designer have not considered embodied carbon
2.9 Using products with lower embodied water	in / out	in / out	• Environmental Product Declarations have been obtained and used to compare various material options? or Client and designer have not considered embodied water
2.10 Enabling water efficiency in use	in / out	in / out	• Low flow rate fittings specified • Rain / Grey / black harvesting or Client and designer have not taken water efficiency into account
2.11 Enabling energy efficiency in use	in / out	in / out	• Low energy light fittings specified • Low / zero carbon technologies specified • High specification thermal insulation • Thermal modelling undertaken • Effective ventilation systems used to reduce energy loss • User control is carefully considered to ensure a healthy environment as well as allowing efficient energy use or Client and designer have not taken energy efficiency into account
2.12 Enabling reuse and recyclability at end of life	in / out	in / out	• Design adaptable for a variety of purposes during its life span? • Building elements and components can be maintained, upgraded or replaced without creating waste? • Design incorporates reusable/recyclable components and materials? • Building elements/components/materials easily disassembled? • Building Information Modelling (BIM) system or building handbook used to record which and how elements/components/materials have been designed for disassembly? ***Examples:*** *Demountable partitions used to divide internal spaces, Demountable cladding systems* or Client and designer have not taken reuse and recyclability at end of life into account
Add additional scope areas as necessary	in / out	in / out	

3.0 Contractor Resource Management Planning

3.1 Materials Resource Management

The management of materials on this site should ensure that materials consumption is reduced and the production of waste material during the construction phase is avoided wherever possible. This will be possible by following the Prevent, Reduce, Reuse measures outlined below. Only where these routes have been exhausted should waste be sent for disposal.

Note: To comply with the requirements of any Site Waste Management Plan (SWMP) Legislation, you will need to include details of how you intend to deal / have dealt with each material stream. Include details of waste Prevention, Reduction, and Reuse measures on the site in this section, and include Recycling and Recovery methods employed or to be employed in section 4.0. Also complete the waste estimate in Section 4.



The following measures will be employed to reduce waste production on this site:

*Items in Green below are examples that you may wish to use on your site. Confirm or delete, and/or insert new, site specific measures to be employed against each material. You must include an estimate of the quantity of material you intend to **reuse** wherever possible, and confirm this quantity once the works are complete. E.g. Excavated material used to backfill excavations or to create landscaping, or crushed material from demolition used for fill. Subcontractors should be encouraged to provide recommendations of resource efficiency measures that they are taking against the resource efficiency themes.*

General	

Waste Prevention and Reduction Measures:	• Subcontractors to be involved as early as possible (specific measures identified in relevant sections)
	• Plan work to ensure it can be completed correctly the first time so there is no re-work required
	• Accurate measurement, and minimal wastage will be allowed when ordering materials
	• Materials delivery measures
	  ○ Just in time for the work package
	  ○ Materials handling and storage to avoid damage
	• Materials stored where they are not vulnerable to damage by site traffic
	• Materials are to be kept off the ground by the use of pallets or timber bites
	• Check materials delivered are compliant with the specifications
	• Materials unloaded with maximum care so as to avoid damage and handled as few times as possible
	• Materials unloaded where they are required wherever practical
	• All operatives are to receive training on the agreed reduction measures
	• [Insert details of other waste reduction measures]

Waste Reuse Measures:	• From the pre-demolition audit, the following materials can be reused: ○ Concrete wash out water to be used in wheel wash

	• [Insert details of other waste reuse measures]

Excavated Material (Soil & Stones)	
Waste Prevention and Reduction Measures:	• Pecafil to be used as permanent formwork to pile caps and ground beams to eliminate excavated working space • Trenches to be sheeted rather than battered to reduce excavated material • Crane base to be incorporated into permanent structure • [Insert details of other waste reduction measures]
Waste Reuse Measures:	• Arisings from excavations to be used as follows: ○ [Insert figure]m³ to be used as backfill to excavations ○ [Insert figure]m³ to be used within landscape bunds • All topsoil is to be stored on site for reuse on playing fields • Drainage excavations under the building and within soft landscaping areas can be backfilled with selected excavated material • [Insert details of other waste reuse measures]

Hardcore	
Waste Prevention and Reduction Measures:	• Follow all general measures • Terram to be used under temporary roads to reduce wastage through settlement • Pre-cut specials and half bricks to be purchased • [Insert details of other waste reduction measures]
Waste Reuse Measures:	• [Insert figure]m³ hardcore from demolition is to be crushed and reused as aggregate • Excess concrete from pours is to be used to create temporary paths around the site • Unusable facing bricks to be saved and used as commons within ceiling voids • [Insert details of other waste reuse measures]

Timber	
Waste Prevention and Reduction Measures:	• Follow all general measures • Reusable plastic pallets to be used • System shuttering to be used wherever practicable • Door sets with pre-cut architraves to be used • Reusable hoarding system (e.g. Hoard-It) to be used • [Insert details of other waste reduction measures]
Waste Reuse Measures:	• Softwood and plywood from formwork to be saved and used as noggins in plasterboard walls • Off-cuts of plywood to be saved and used to cover holes, and as protection to fragile materials • Designated area for waste timber to be set up for free reuse by others • [Insert details of other waste reuse measures]

Packaging	
Waste	All materials when delivered shall have their packaging retuned at the time of delivery

Prevention and Reduction Measures:	where possible
	• The following are to be delivered without packaging, or packaging is to be returned with supplier:
	  ○ Air handling units
	• The following are to be delivered in re-usable packaging, which will be sent back to the supplier:
	  ○ All kitchen cupboards
	  ○ Door sets
	• The following are to be delivered in bulk packaging containers, rather than individual boxes:
	  ○ All light fittings
	  ○ All ceiling tiles
	• [Insert details of other waste reduction measures]

Waste Reuse Measures:	• All protection on the following is to be fire-rated to allow for reuse after fixing:
	  ○ Door sets
	  ○ Kitchen cupboards and worktops
	• Where timber pallets are delivered, these are to be reused on site wherever possible
	• After reuse on-site, pallet repatriation schemes (such as Scott Pallets) will be used to take-back used pallets
	• [Insert details of other waste reuse measures]

Gypsum Based Materials (Inc Plasterboard)	
Waste Prevention and Reduction Measures:	• Follow all general measures • Standard details to be used around door and window openings • Plasterboard contractor is to be set a target of 5% waste within their contract conditions, based on final fixed quantities of plasterboard. Anything over this amount will be chargeable • Bespoke plasterboard sheet sizes to be ordered to match storey heights • Standard plasterboard sheet sizes to be matched to storey heights • Negotiate with the architect to allow horizontal joints below the ceiling level, this leads to a staggering of boards and therefore the use of off-cuts • Plasterboard will be cut in one area per floor adjacent to the hoist / lift, to reduce movement of plasterboard and keep off cuts for reuse in one area • Correct quantities of the required materials are to be pre-loaded out in work areas • Same workforce to carry out first and second fix works, and details • [Insert details of other waste reduction measures]
Waste Reuse Measures:	• Off-cuts from plasterboard works will be stored on pallets for use in detail work near completion • Smaller off-cuts to be used for filling in within ceiling voids • Plasterboard in temporary partitions is to be reused as inner skin of permanent walls wherever practicable • [Insert details of other waste reuse measures]

Insulation Materials	
Waste	• Follow all general measures

Prevention and Reduction Measures:	• [Insert details of other waste reduction measures]
Waste Reuse Measures:	• Use a system to grind insulation off-cuts on site and re use as insulation in cavities. • [Insert details of other waste reuse measures]

Metals	
Waste Prevention and Reduction Measures:	• Follow all general measures • Offsite prefabrication • [Insert details of other waste reduction measures]
Waste Reuse Measures:	• Metal sections from demolished frame to be used for temporary works • Place waste reinforcement in stock area to be bent and reused for variations • Off-cuts from long pipework runs are to be stored for reuse in small runs • [Insert details of other waste reuse measures]

Plastic	
Waste Prevention and Reduction Measures:	• Follow all general measures • [Insert details of other waste reduction measures]
Waste Reuse Measures:	• Safety signage saved in the induction room for reuse • Monoflex will be reused as temporary protection for relevant tasks where it is no long required • [Insert details of other waste reuse measures]

Glass	
Waste Prevention and Reduction Measures:	• Follow all general measures • Low level glass panels to be protected with salvaged plywood off-cuts • Warning signage is posted on glass stillages to avoid others touching or storing materials on them • [Insert details of other waste reduction measures]
Waste Reuse Measures:	• [Insert details of other waste reuse measures]

3.2 Reducing energy use during construction

Category	Resource Efficiency Measure
General	• Appoint an individual with responsibility for energy management on site • Ensure remote / intelligent metering (e.g. AMR metering) is installed to the main energy supplies on site (including both electricity and natural gas where used). • Sub meter bigger sites to identify where energy is used, e.g. offices, subcontractor accommodation, construction site, building etc… • Use monthly reports and the online energy monitoring system to analyse energy use on a regular basis to identify potential savings, e.g. through reducing night time / out of hours energy use

	• *(Insert additional site specific controls as here)*
Accommodation	• Use energy efficient site accommodation with high levels of insulation and appropriate controls for lighting, heating and cooling. For best practice see Central Energy Management Guidance Documents. • Drying rooms should be fitted with dehumidifiers. • Request an EPC for accommodation units from the supplier and opt for higher rated cabins (i.e. A – C rated). • Ensure timers are fitted to heater circuits in cabins, and set them to come on during work hours only. • Fit thermostats to offices or heaters. • Turning thermostats down by 1ºC could save up to 10% on heating bills. • Use photocells to turn lights off when daylight is sufficient. • Consider alternative heating sources, such as air source heat pumps and gas driven heating. • Where subcontractors are providing their own accommodation, promote best practices as outlined above. • *(Insert additional site specific controls as here)*
Temporary electrics	• Sub Distribution panels supplying the main construction area are to be timed to enable the lighting and transformers to be controlled locally. Non timed output(s) will also be available for safety lighting etc. • Accommodation should be supplied by timed MDA panel(s) to allow for the total electrical isolation of non-essential cabins during 'Non-Working Hours' whilst maintaining an electrical supply to critical units, e.g. those that house IT (server's) or refrigeration. • Charging points for large battery powered equipment (e.g. MEWP's and Pop up's) should be controlled by time clock to enable the charging period to be controlled. • Use of efficient accommodation will minimise cabling requirements and reduce costs. • *(Insert additional site specific controls as here)*
Plant and Equipment	• Request details of plant efficiency from suppliers (e.g. BAM Plant) to enable selection of the most efficient option available. • Ensure that plant selected for a task is appropriate in terms of its capacity. Avoid over and under capacity, this applies to all plant. Attention to plant capacity is needed for generators, excavators, telehandlers, pumps and cranes. • Use inverter driven 'Soft Start' cranes and hoists which reduce maximum demand. These can save significant amounts of energy and money, especially if electricity is provided by generators (you may be able to reduce the size of generator required, saving further cost on hire rates). • Ensure plant is well maintained to ensure it remains efficient. • Switch off plant when not in use, do not leave engines running. • Plan effectively to avoid double handling of materials (during levelling, excavation etc.) in order to minimise fuel consumption. • Use electrically powered compressors rather than diesel. • Promote best practices to subcontractors and ensure they are taking measures to reduce fuel use as outlined above. • *(Insert additional site specific controls as here)*
Heating	• Reduce the need for heating in winter (often necessary to dry the wet trades (e.g. vinyl adhesive, screed). • Select alternative activities/materials that avoid or reduce the need for drying • Avoid wet trades in coldest months if possible (this requires early planning) • Only operate heaters when they will be effective (i.e. it makes little sense in very open plan buildings that are not yet enclosed, or where doors stay open all day) • Avoid unnecessary heaters or heating at times when this will be ineffective • Adjust programme, where feasible, to reduce the need to dry as fast as possible • Make use of lower level (wattage) heating, such as radiators, where feasible to avoid use of high energy using electric heating (e.g. 13kW fan heaters)

	• *(Insert additional site specific controls as here)*
Lighting	• Use low energy lighting (e.g. fluorescent) rather than tungsten filament. • Use PIR Detectors for night security. • Ensure timers are fitted to turn off all non-emergency site lighting at night. • Avoid unnecessarily high lighting levels throughout • Ensure emergency lights and back-up power are on separate circuits from other lighting • Have separate circuits for different lighting zones. Each zone to have labelled, easily accessible switches, to enable switch off of circuits independently when lighting of zone is not necessary through inactivity or when sufficient daylight is available. • Install timer switches on appropriate circuits to avoid unnecessary lighting out of hours. • Install photocells on appropriate circuits to avoid unnecessary external lighting during the day. • If room and walking route layouts make it practicable, install power sockets outside side rooms/apartments, and require sub-contractors working in individual rooms to bring their own task lighting which they connect to our system • Ensure task lighting brought by sub-contractors avoids use of tungsten bulbs • Ensure responsibility is assigned to individual(s) to optimise use of manual switches and timer switches (as daylight hours change) to avoid unnecessary consumption. • *(Insert additional site specific controls as here)*
Generators	• Ensure generators are specified to optimum efficiency loadings (75% - 80%). • Consider multiple generators of different sizes to cope with varying loads (e.g. a day and a night generator). • If cranes are generator-dependent (which sometimes happens when grid supply is secured but of insufficient capacity to operate cranes at peak load), ensure generators are appropriately sized, to increase average operating efficiency whilst meeting peak load. • *(Insert additional site specific controls as here)*
Materials Suppliers	• Source materials and labour locally and require subcontractors to use local labour wherever possible. • Utilise BAM's supply chain mapping tool to identify early on, the potential transport impacts of supply chain approach. • For materials and vehicle movements, develop a construction or materials logistics plan (developed by transport for London and WRAP) to reduce the impact of construction related transport. • Work with suppliers and subcontractors to arrange bulk deliveries and 'take back' initiatives, e.g. where by contractors pick up un-used/returnable materials when making deliveries. • Use suppliers, haulers and logistics contractors which have transport management plans or policies in place to reduce emissions (e.g. speed limiters and trackers on vehicles, emissions limits for vehicles and driver training). • *(Insert additional site specific controls as here)*
Greener Transport Modes	• Identify all local and nearby transport nodes and identify suitability for use by site based staff / subcontractors. • Consider park and ride type facilities to reduce individual journey distances. • Consider shuttle bus service between the nearest transport node(s) and the site, where large numbers of workforce will be on site at the same time • Provide showers and cycle storage to encourage cycling. • Provide information on local cycle routes and between transport nodes and site. • Consider offering incentives for those that cycle (BAM offers 'green mileage rate' to its own employees entitled to claim mileage). • Consider having pool bicycles available for those wanting to leave site at lunch without the need to drive. • Consider offering cycle surgeries on site to assist people with bicycle maintenance

	and/or provide safe cycle gear to staff. • Promote car sharing to and from site (link with any existing initiatives that the client may have). • Make use of video conferencing at the site offices to avoid travel to meetings. • Use WebEx and BT Meet Me to hold virtual meetings, provide presentations and enable document editing without the need to travel. • *(Insert additional site specific controls as here)*

3.3 Reducing water use during construction (See WRAP Study)

Category	Resource Efficiency Measure
General	• All toilet facilities to be fitted with push taps and cistermisers. • High pressure hoses with efficient flow patterns will be used in place of open hoses • Trigger guns will be fitted to all hoses • Hose pipes are to be turned off when not in use. • Mortar silos to be used in place of mixers. • Site and welfare consumption will be metered separately • BAM SMaRT performance against target graphs will be discussed at monthly meetings • SUDS to be implemented early in the program and rainwater collected is to be harvested • Where necessary use misting for dust suppression rather than rain guns • For vehicular dust suppression use a spinning disk distribution system rather than splash plate • Hard standing to be supplied to all haul roads to reduce the need to use water suppression • Wheel washing will recirculate wash water • Dry wheel cleaning system will be used • Water efficiency will be promoted (How to save water on construction site poster) • *(Insert additional site specific controls here)*

The following sections should be used to detail any project control measures that are required to ensure that the client, designer or contractor resource efficiency measures can be achieved. For example if the client has a recycled content target, detail how the project will achieve the target, i.e. all aggregates to be procured with xx% recycled content.

3.4 Increasing reuse and recycled content

- ?

Or

- No contractor requirements to ensure a certain reuse / recycled content is achieved

3.5 Matching the durability and lifespan of assets to service life

- ?

Or

- No contractor requirements to ensure that the durability is matched to the lifespan of assets

3.6 Using resources with no scarcity and source security issues

- ?

Or

- No contractor requirements to ensure that resources with no scarcity and source security issues are procured

3.7 Using products with lower embodied carbon

- ?

Or

- No contractor requirements to ensure products with lower embodied carbon are used

3.8 Using products with lower embodied water

- ?

Or

- No contractor requirements to ensure products with lower embodied water are used

3.9 Enabling water efficiency in use

- ?

Or

- No contractor requirements to ensure water efficiency in use targets are met

3.10 Enabling energy efficiency in use

- ?

Or

- No contractor requirements to ensure energy efficiency in use targets are met

3.11 Enabling reuse and recyclability at end of life

- ?

Or

- No contractor requirements to ensure reuse and recyclability at the end of life

3.12 Additional resource efficiency measures

- ?

4.0 Waste Management

4.1 Waste Forecast Types & Quantities of Waste

From historical data, it is estimated that this site will produce the following types and quantities of waste.

Insert Estimated Contract Value in the table on the next page below. The target quantity of Construction Waste, in m³ per £1million, must match the figure included in the targets section of this document. Percentages can be adjusted to suit the project where required. The Construction Waste estimated quantities (without any reduction measures being implemented) and ***target quantities are calculated automatically by highlighting the table and pressing F9****. Estimated and target quantities for Excavation and Demolition Waste will need to be obtained from the bill of quantities, demolition contractor, or other source of information.*

Leave the actual quantity of waste column empty until the project has completed. This section should be completed within 3 months of the contract completion at the same time as completing section 6 of this document.

In the table on the next page

[1] Construction Waste Estimated Quantity figure based on BAM 2006 average of 200m³/£1million contract value.

[2] Information from the pre-demolition audit should be obtained. Guidelines for a pre-demolition audit 5.03.5 are available for download.

Types & Quantities of Waste (cont.)

Estimated Contract Value (in £Millions):			1 £Million		BREEAM Target	0 $m^3/100m^2$	GIFA (m^2)	1000
Source & Type of Waste	**EWC Code**	**Approx %**	**Estimated Quantity of Waste[1] (m^3)**		**Target Quantity of Waste (m^3)**		**Actual Quantity of Waste (m^3)**	
Excavation Waste (From Bill)								
Hazardous Excavated Material	17 05 03*			m^3		m^3		m^3
Non-hazardous Excavated Material	17 05 04			m^3		m^3		m^3
Inert Excavated Material	17 05 04			m^3		m^3		m^3
Bituminous Mixtures (no coal tar)	17 03 02			m^3		m^3		m^3
Mixed Hardcore	17 01 07			m^3		m^3		m^3
Construction (Skip) Waste								
Approx. m^3 Skip Waste / £1million			**200**	**m^3/ £1m**	**112**	**m^3/ £1m**	**???**	**m^3/ £1m**
Mixed Packaging	15 01 06	15%	30	m^3	17	m^3		m^3
Mixed Hardcore	17 01 07	10%	20	m^3	11	m^3		m^3
Timber	17 02 01	20%	40	m^3	22	m^3		m^3
Mixed Metals	17 04 07	10%	20	m^3	11	m^3		m^3
Insulation Materials (Non Haz)	17 06 04	10%	20	m^3	11	m^3		m^3
Gypsum Based Materials	17 08 02	15%	30	m^3	17	m^3		m^3
Mixed Municipal Waste	20 03 01	2%	4	m^3	2	m^3		m^3
Glass	17 02 02	1%	2	m^3	1	m^3		m^3
Plastic	17 02 03	10%	20	m^3	11	m^3		m^3
Other Mixed Construction Waste	17 09 04	6%	12	m^3	7	m^3		m^3
Hazardous Construction Waste	Various	1%	2	m^3	1	m^3		m^3
Demolition Waste[2] (From Demolition Co.)								
Mixed Hardcore	17 01 07			m^3		m^3		m^3
Timber	17 02 01			m^3		m^3		m^3
Glass	17 02 02			m^3		m^3		m^3
Plastic	17 02 03			m^3		m^3		m^3
Mixed Metals	17 04 07			m^3		m^3		m^3
Insulation Materials (Non Haz)	17 06 04			m^3		m^3		m^3
Asbestos (Haz)	17 06 01/05*			m^3		m^3		m^3
Gypsum Based Materials	17 08 02			m^3		m^3		m^3
Other Mixed Demolition Waste	17 09 04			m^3		m^3		m^3
Total Estimated Quantity of Waste			**200**	**m^3**	**111**	**m^3**	**0**	**m^3**

4.2 Recycle/Recover Measures

Confirm or delete, and/or insert new, site specific measure to be employed at this site. Ensure you negotiate a reduced price for segregated skips with the waste contractor. For nationwide material reuse schemes see 5.03 Appendix 3

The following waste streams are to be segregated for recycling/recovery off site, :

- Uncontaminated excavation waste (17 05 04) in excess of the quantities required on site is to be taken off site for reuse at an exempt site / standard permit site.
- Inert waste (17 01 01, 17 01 02, 17 01 03, and 17 01 07) removed off site by the inert waste disposal contractor for onward recycling.
- Mixed packaging waste (15 01 06) is to be deposited in bins with brown signage. The waste management team will then remove these from the floors, segregate it into paper and cardboard, and plastic packaging, and compact it using a small compactor. This waste will then be removed off site for recycling by the packaging waste disposal contractor.
- Wood waste (17 02 01) is to be deposited in bins with green signage. The waste management team will remove these to a central point for reuse by other trades on site. In addition the local Community Wood Recycling scheme will sort into usable and unusable timber. Useable timber will be taken off site to the Community Wood Recycling depot for manufacture into furniture, animal bedding, etc. [Note: This service is not available in all areas] Unusable timber will be placed in skips provided by the wood waste disposal contractor for removal to their recycling facility for further treatment.
- Mixed Metals (17 04 07) are to be deposited in bins with blue signage. The waste management team will then remove these to skips provided by the metal waste disposal contractor for removal to their recycling facility for further treatment.
- Gypsum plasterboard waste (17 08 02) is to be deposited in bins with white signage. The waste management team will then remove these to skips provided by the plasterboard waste disposal contractor for removal to their recycling facility for further treatment.
- Waste insulation material (17 06 04) collected and returned to supplier for recycling (where available)
- [Insert details of other waste to be segregated for recycling/recovery]
- All other waste **(with the exception of hazardous waste)** is to be deposited in the Mixed Waste skips (17 09 04) provided by the mixed waste disposal contractor for removal to their transfer station for further segregation and onward recycling.

4.3 Disposal Responsibilities

Non-hazardous waste from all other subcontractors is to be segregated where required and deposited in the appropriate skip/bin as detailed above. Canteen and office waste, which cannot be segregated into the above, is to be placed in the covered [insert bin type] for disposal off site.

4.4 Management of Hazardous Waste

Hazardous waste produced by BAM is to be placed in the correct Hazardous waste receptacle, as identified by orange signage, for disposal by relevant companies. The Project Sustainability Manager will check each item of waste prior to collection to confirm whether the waste is hazardous, and wherever possible render it non-hazardous for removal in general waste skips.

Hazardous waste produced by subcontractors is to be removed off site by the subcontractor in accordance with the hazardous waste regulations. Their procedure for complying with these regulations, including details of carriers and disposers, is to be submitted to BAM for inclusion within the Resource Management Plan prior to removal.

Project specific hazardous waste management *(add any further actions as appropriate)*

4.5 Waste Carriers and Disposers

A list of the hazardous and non-hazardous Waste Carriers and Disposal sites can be found on the BAM Sustainability Measurement and Reporting Tool (BAM SMaRT) along with copies of licences.

5.0 Records

A record of all waste removed from this site is held on the BAM Sustainability Measurement and Reporting Tool (BAM SMaRT).

All fuel and timber delivery tickets are uploaded on BAM SMaRT

Electricity and gas AMR meter data / invoices are uploaded on BAM SMaRT

Evidence of water meter readings are uploaded on BAM SMaRT

6.0 Post Contract Review

This section of the plan is to be completed prior to the Post Contract Review, and discussed as part of the review meeting.

6.1 Comparison of Estimated and Actual Quantities

Section 4 contains a table which will enable a comparison of estimated quantities of waste against actual.

6.2 Explanation of Any Deviation from the Original Plan

Explain below the reasons for any change from the original plan. This section could be considered to be providing guidance for future project managers. What did you plan to do on this project that worked out well, or not so well? What did you not include in the plan but you will plan to do next time?

6.3 Estimate of Cost Saving

Detail below the estimated cost savings obtained by following the plan, some examples of where cost savings may have been achieved have been listed in green.

Method	Estimated Saving (£)	How
Modular design		
Prefabrication		
Involvement of subcontractors to be involved as early as possible		
Effective planning and management avoiding re-work		
Accurate measurement, and minimal wastage allowed when ordering materials		
Materials delivery measures		
Pre-demolition survey results		
Formation levels, cut-fill balance, soil stabilisation, piling type foundation design, drainage levels altered to minimise waste		
Use, management and reuse of hardcore, timber, packaging		

Appendix 1 – Roles and Responsibilities

The Architect (or other Clients representative) will:

- Appoint a contractor as a Principal Contractor (if applicable)
- Provide the Principal Contractor with a Resource Management Plan, which details all decisions taken during the design stage, on the nature of the project, its design, construction method and/or materials employed in order to increase resource efficiency and minimise the quantity of waste produced.
- Ensure a construction phase Resource Management Plan is produced where it is required
- *Where it applies, comply with the Additional Requirements laid out in Schedule to the SWMP Regulations*

The Project Manager for the Principal Contractor will:

- Ensure the RMP for the construction phase is produced, and distributed to all staff and subcontractors
- Within three months of the project completion
    - confirm that the plan has been monitored on a regular basis
    - provide a comparison of estimated quantities with actual
    - provide an explanation of any deviation from the plan
    - provide an estimate of the cost saving that have been achieved
- Keep a copy of the RMP for a minimum of two years after project completion
- *Where it applies, comply with the Additional Requirements laid out in Schedule to the SWMP Regulations*

The Project Sustainability Manager for the Principal Contractor will:

- Prior to works starting on site, produce the construction phase RMP using the BAM template 5.03.1
- Obtain from the client the resource management plan, detailing all decisions taken during the design stage. Where Site waste management plans are required, this information will be before the site waste management plan was drafted on the nature of the project, its design, construction method or materials employed in order to minimise the quantity of waste produced on site
- Keep a copy of the RMP on site, and display a copy in the site canteen or other suitable location
- Review the plan regularly, and update where necessary to accurately reflect the progress of the project
- Ensure that energy, fuel and timber use is recorded on BAM SMaRT.
- When any waste is removed from the site, ensure the following waste date is recorded within BAM SMaRT:
    - the identity of the person removing the waste
    - a description of the waste, including the 6 figure EWC code
    - the site where the waste is being taken to
    - the quantity of the waste, and whether this was reused on site, taken for reuse at an exempt site or standard permit site, taken to a transfer station for segregation and onward recycling, taken to a dedicated recycling facility, or send to a landfill site

The Regional Environmental Representative for the Principal Contractor will:

- Ensure details of all Waste Carrier Registration numbers, Environmental Permit numbers, and Exemption references, for the carriers and disposal sites used within the region, are checked and recorded on BAM SMaRT
- On a quarterly basis, ensure details of recycling figures for the transfer stations used within the region are obtained and entered onto BAM SMaRT