

**Site Waste Management Plan**

**For the construction of the new**

**North Kensington Library**

**For the Royal Borough of**

**Kensington and Chelsea**

## Site Waste Management Plan

### Introduction

This document has been developed with reference to the requirements of BREEAM credit Wst 01 and the former Site Waste Management Plan Regulations 2008 (revoked in December 2013).

This document has been prepared by Mace, on behalf of RBKC, and is based on processes and procedures applicable to the management of Mace projects in accordance with our ISO14001 certified Environmental Management System.

Waste management procedures and processes are aimed at ensuring legal compliance, adoption of the waste hierarchy (reduce, reuse, recycle), and best practice measures to eliminate and control waste production on site.

All Mace projects are required to complete a Site Waste Management Plan (SWMP). We have adopted a customised version of the BRE SMARTWaste, called 'Optimise' as our approach to compliance. This features a nine step process to developing a SWMP, and includes identification of legal requirements including 'Duty of Care'.

As part of this process, Mace confirms that companies removing waste and/or receiving waste are legally entitled to do so and provide us with copies of the relevant waste management licences, certificates of registration or permits. Construction projects producing hazardous waste are required to register with the Environment Agency as a hazardous waste producer.

To confirm compliance, facilities receiving waste from Mace construction sites are audited by our sustainability managers to confirm compliance with S34 Environmental Protection Act 1990, Duty of Care, and associated waste management regulations. Waste monitoring processes require trade contractors to provide legally-compliant copies of waste transfer notes and other associated documentation. This is kept on file for at least two years.

To ensure waste data is captured accurately, all trade contractors are required to provide completed monthly environmental report returns, with backup documentation such as waste transfer notes. This requirement is built into trade contractor tender documentation and forms part of the contract requirements between Como and the trade contractors onsite.

Aside from waste management planning, we engage with trade contractors to encourage them to avoid waste production on site. This includes detailing requirements through the induction process and regular on-going toolbox talks which aim to identify why waste occurs. The format for toolbox talks include directive/instructional briefings and problem solving / engagement initiatives based on 'lean manufacturing' principles and lessons learned from the car industry.

## Project Details

Project name	North Kensington Library
Project address	128a Lancaster road, North Kensington. W10 1QS
Project use classes	Library, Youth Centre and Education Space
Proposed start date	July 2017
Proposed End date	March 2019
Project cost (estimated)	£14,000,000
Client	RBKC
Project Manager	Nicholas Thurtle
Principal Contractor	Mace

## Floor Area

Building Type	GIA (m2)
<b>Total</b>	<b>41,000</b>

## Responsibilities

	Name	Company	Company Type	Contact details
Who is responsible for drafting the SWMP?	Nicholas Thurtle	Mace	Principal contractor	Nick.thurtle@macegroup.com
Who is responsible for implementing the SWMP?	Nicholas Thurtle	Mace	Principal contractor	Nick.thurtle@macegroup.com
Who is the waste champion / project environmental manager?	TBC	Mace	Principal contractor	TBC
Who is the person in charge of the project?	Nicholas Thurtle	Mace	Principal contractor	Nick.thurtle@macegroup.com
Where will this SWMP will be kept? (a copy should be kept onsite)				
1) Electronic document		Contractor's online waste management software		
2) Paper based document		Site Office		

**Declaration statement:** The Client and Principal contractor will take reasonable steps to ensure waste duty of care is complied with, materials are handled efficiently and waste is managed appropriately

<b>Client signature:</b>	<b>Print name:</b>	<b>Date:</b>
<b>Contractor signature:</b>	<b>Print name:</b>	<b>Date:</b>

## Waste Minimisation Decisions

Type	Waste minimisation decision taken	By whom	Intended results
Construction methods	Prefabrication of M&E systems	Designer / Principal Contractor/ Trade Contractor	Reduce requirement for on-site fabrication and therefore offcuts of material. Reduced requirement to store materials on site, therefore reduced risk of damage and wastage.
Construction methods	General Prefabrication	Designer / Principal Contractor/ Trade Contractor	As well as M&E other Prefabrication techniques are being considered e.g. brick composite lintols
Construction methods	Within the confines of the client brief we have altered levels to reduce muck away m3	Designer / Principal Contractor/ Trade Contractor	Less spoil removed
Construction methods	Re use wherever possible demolition spoil for hardcore piling mat	Principal Contractor/ Trade Contractor	Import less crushed concrete and remove less demolition material
Packaging	Instruction given to sub-contractors to minimise packaging wherever possible and the use of returnable packaging	/ Principal Contractor/ Trade Contractor	Reduce packaging waste on site
Programming	Just-in-time deliveries	Principal Contractor	Reduce storage time for materials on site, and therefore risk of damage and wastage. Reduction in laydown area required, therefore allowing more generous access routes reducing risk of accidental damage.
Procurement	Sub contractor Material policy considered during procurement	Principal Contractor	The selection of subcontractors with a positive wastage policy

**Note.** Examples shown above. Details and information will be added to the above list as the design and construction programme progresses.

Previous Waste Minimisation Initiatives taken by Mace.

All actions will be considered as part of our Pre construction activities given the space limitations of the North Kensington Library

Project	Summary	Waste minimisation actions	Contact for further info
7-10 Hanover Square	Washout restricted onsite	Concrete washout of skips was not allowed on site (had to be done off-site by waste carrier). Resulted in the reduction of waste away (due to not having to pay for concrete wash out waste), saved c. 46 skips to date = £9200	Caroline Cochrane
Various	Material reuse station	Set up an area on site to allow the storage of spare, off cuts and unwanted materials. Allow for us by other trades to reduce the need for new materials. Reduces waste of perfectly good materials.	Mace Sustainability
Hampshire Police	Donated materials to others	Area of the site where unwanted / additional materials are stored and site operatives can take what they want for personal use or DIY.	Caroline Cochrane
Sky	Donated materials to charitable organisations	Engagement with local charities and programmes enabled us to donate timber and excess materials allowing them to in this case build timber workbenches and growth benches for their plants enabling the teaching of youth interested in horticulture.	Ben Kingsnorth
Sky Building 2 & H&F	Plastic Pallets	Plastic Pallets were used in place of timber, brick and block were delivered without a pallet and then placed on the plastic ones for distribution around site. Avoided 52m <sup>3</sup> of timber from going to waste	Ben Kingsnorth/Stephanie Taylor
Sky Building 2 & H&F	Excess Brick & Blocks	All excess Brick and Block work was returned to supplier provided they were at least 1/2 a pallet of saleable condition blocks	Ben Kingsnorth
Sky Building 2	Returnable Customised Pallets	Returnable customised pallets for façade deliveries saving 300m <sup>3</sup> of pallet waste. + large volumes of British Gypsum returnable pallets as well but no sight of number/volume	Ben Kingsnorth/Stephanie Taylor
Sky Building 2	Pile cap adjustments avoiding soil disposal	Raised the building level 400mm avoiding the need for removal of 5,040m <sup>3</sup> of soil saving 147 tonnes CO <sub>2</sub> and £136,390 in disposal costs	Stephanie Taylor

Sky Building 2	Felled tree Re-use	25 tonnes of felled trees to be integrated into new Building 2 landscape (original plans) and will be integrated into Sky's new scheme in some shape of form in the form of benches and bug hotels, estimated savings of £2,500	Ben Kingsnorth/Stephanie Taylor
Sky Health & Fitness Centre	CLT/Glulam Framed buildings	Clearly dependent upon design but during H&F construction of the CLT frame there was no waste removed from site for nearly 2 months.	Ben Kingsnorth/Stephanie Taylor
Sky Health & Fitness Centre	Just in Time delivery	Should be standard but effort was made to minimise the amount of stored materials preventing damage (particularly insulation/drylining)	Ben Kingsnorth/Stephanie Taylor
Sky - All Projects	Lean Design/procurement	Particularly relevant with Drylining - Working with the dry-lining contractors to purchase the correct height and width boards to minimise offcuts. Not possible to provide accurate savings figures but reduced wastage rate % by roughly 15% monthly on Building 2	Ben Kingsnorth
Sky - All Projects	MEP Pre-Fab	This again is standard on the Mace Way now but avoided a large amount of insulation waste by insulating pipework prior to arrival in a controlled environment.	
Sky - All Projects	Trades pay for their own waste	By making at least the early trades pay for their own waste it really forced them to think about how they operated and to re-use materials	Ben Kingsnorth/Stephanie Taylor
Sky - All Projects	Communication to Trades	Communication with trade directors at a monthly SLT has proved useful in bringing it to their attention, especially when if they are paying for waste as it engages them with mainly the cost of materials. Although it is not possible to put a figure on savings if driven from the top of their organisation seems to carry significantly more weight	Ben Kingsnorth/Stephanie Taylor
Sky Project Otis	Take-back scheme for raised access floor panels	All waste from the raised flooring package handled by the RAF contractor. Off-cuts were palleted up for reuse or return to Kingspans factory for reprocessing.	Dave Wakelin
New Stadium Development (THFC)	Soil Washing/Reuse of aggregate	Excavated soils were washed in order to extract aggregate for Concrete batching. Reduction in the amount of excavation waste to be quantified. CLA:IRE Protocol must be followed!	Ross Wood
Non Mace Project	Donation of Hoarding	Hoarding panels were donated to a local allotments at the end of the project.	Ross Wood
Various Projects	Reuse of Demo/Inert Crush in piling mat	Crushing and reuse of inert material rather than importing crush for the piling mat	Ross Wood

Various Projects	Use of Community Wood Recycling Project	Utilise this social enterprise in order to divert timber waste and encourage reuse off site	Ross Wood
Various Projects	Reuse of excess concrete	Form boxes in order to collect excess concrete in, these could be used to form temporary kerb stones, etc.	Ross Wood
Various Projects	Materials Management Plan/Materials Logistics Plan	Create a Materials Logistics Plan at an early stage in order to identify how materials will be delivered/handled/stored with the aim of minimising unnecessary wastage. Early engagement with subcontractors is a key element of this	Ross Wood
10 Grosvenor Street	External façade stone work repairs.	Level 1 stone beam was removed from façade to allow for new canopy to be installed. Stone which was removed was cut down into suitable shape and reused for indents on levels above as shown in pictures.	Will McDonagh
10 Grosvenor Street	Re-use of stone for concrete infill base layer	Using crushed up aggregate from demolition works to add to a concrete infill as a base layer, therefore reusing existing materials and using less new material.	Will McDonagh
University Centre Farnborough	Re-use of timber for local college/schools	Timbers from the transport of CLT and Timber cassette panels advertised and donated to local schools and construction college for use rather than disposal.	Andrius Jureviscius
University Centre Farnborough	Re-use of otherwise wasted timber	Section of existing fence due to be skipped used as a temporary barrier to segregate site compound and walkways.	Andrius Jureviscius
Invesco (Henley-on-Thames)	Use of reclaimed Hoard-fast	The site offices and site canteen areas have used reclaimed Hoard fast, which was due to go into a skip to create meeting rooms within the Como offices and contractor offices on site. This will be retained for future projects.	Darren Peck
Invesco (Henley-on-Thames)	Re-use of Office Set up equipment	The entire office set up for the contractors and Como alike have been re used from other Come project such as EY, this includes desks, screens, fridge, drawing racks, printed signage, chairs, filing cabinets, files, Hoovers, Ply wood, Timber. A low estimate would be in the region of a £7 - 10k saving on new equipment and materials.	Darren Peck
Invesco (Henley-on-Thames)	Re-use of glass from office partitions	Glass taken from doors/windows in office partitions is being re-used off site to be incorporated in to a new office space.	Darren Peck
Invesco (Henley-on-Thames)	Re-use of external 'Canopy' area materials	All reclaimable materials from an external tented canopy area will be sent for refurbishment and will then be used on another project.	Darren Peck



Invesco (Henley-on-Thames)	Re-use of carpet floor and ceiling tiles	All carpet tiles in a good state of repair are being re-used for the final fit out. Similarly, ceiling tiles of a satisfactory standard will also be re-used.	Darren Peck
Vauxhall Sky Gardens	Plasterboard take-back	All unused plasterboard on site is collected by Knauf and taken back to be re-incorporated in to new products.	Darren Peck
LSE	Possible contra charge /wastage rate for each trade	As yet to be confirmed but this will be a system that's put in place which allows each trade a wastage rate. If they go over this wastage rate then they are required to either pay for the removal of the waste or are financially charged as part of their contractual agreement.	Lee Fletcher

## Estimated Waste Quantities and Disposal Options

Wastage rates on materials have been applied based on Mace's experience on a broad range of construction projects. In addition, quantities based on building area and construction methodology have been generated using BRE's waste benchmark calculator. Consolidated quantities and wastage rates are presented in Appendix A. Table 1 below gives a summary of the anticipated volumes of waste.

It is recommended that the Principal Contractor undertakes an updated review of waste forecasts once appointed. It is suggested that obtaining more detailed forecasts from the subcontractors, based on their experiences on similar projects, will give a more accurate forecast of waste production and therefore allow more accurate planning of site logistics.

**Table1. Forecast waste volumes generated by the Construction works and waste management route (%)**

Waste Type	%	Indicative Forecast (tonnes)	Indicative Forecast (m <sup>3</sup> )
Bricks (17 01 02)	15%	70.3	136.0
Tiles and Ceramics (17 01 03)	1%	4.7	9.1
Concrete (17 01 01)	12%	56.2	108.8
Inert (17 01 07)	0%	0.0	0.0
Insulation materials (non-hazardous) (17 06 04)	5%	23.4	45.3
Metals (17 04 07)	10%	46.8	90.7
Packaging materials (15 01 06)	8%	37.5	72.5
Plasterboard / Gypsum (17 08 02)	12%	56.2	108.8
Binders (17 01 01)	1%	4.7	9.1
Plastic (excluding packaging waste) (17 02 03)	4%	18.7	36.3
Timber (17 02 01) *	10%	46.8	90.7
Floor coverings (soft) (20 01 11)	2%	9.4	18.1
Electrical and electronic equipment (non-hazardous) (20 01 36 or 16 02 14)	1%	4.7	9.1
Furniture ( 20 03 07)	0%	0.0	0.0
Canteen/Office/Adhoc waste (20 03 01)	3%	14.1	27.2
Liquids (16 10 02)	1%	4.7	9.1
Oils (13 01 13)	0%	0.0	0.0
Bituminous mixtures (non-hazardous e.g. asphalt) (17 03 02)	2%	9.4	18.1
Hazardous waste (17 09 03)	1%	4.7	9.1
Mixed construction and/or demolition waste (17 09 04)	12%	56.2	108.8
	<b>100.0%</b>	<b>468</b>	<b>907</b>

Waste Management Route (%)					
DoW	Reuse	Recycle	Recover	Landfill	Total
20%	10%	70%	0%	0%	100%
0%	0%	1500%	0%	0%	100%
0%	0%	100%	0%	0%	100%
0%	20%	20%	55%	5%	100%
0%	0%	80%	0%	20%	100%
30%	0%	70%	0%	0%	100%
10%	10%	70%	10%	0%	100%
0%	20%	80%	0%	0%	100%
0%	0%	40%	55%	5%	100%
0%	0%	95%	0%	5%	100%
15%	20%	65%	0%	0%	100%
0%	0%	90%	0%	10%	100%
0%	0%	100%	0%	0%	100%
0%	0%	100%	0%	0%	100%
0%	0%	95%	0%	5%	100%
0%	0%	0%	95%	5%	100%
0%	0%	0%	95%	5%	100%
0%	0%	0%	95%	5%	100%
0%	0%	0%	95%	5%	100%
0%	0%	98%	0%	2%	100%

**Table 2. Forecast waste volumes generated by the Construction works and waste management route (Tonnes)**

Waste Type	%	Indicative Forecast (tonnes)	Indicative Forecast (m <sup>3</sup> )	Waste Forecast by Type (tonnes)					
				DoW	Reuse	Recycle	Recover	Landfill	
Bricks (17 01 02)	15%	70.3	136.0	14	7	49	0	0	
Tiles and Ceramics (17 01 03)	1%	4.7	9.1	0	0	5	0	0	
Concrete (17 01 01)	12%	56.2	108.8	0	0	56	0	0	
Inert (17 01 07)	0%	0.0	0.0	0	0	0	0	0	
Insulation materials (non-hazardous) (17 06 04)	5%	23.4	45.3	0	0	19	0	5	
Metals (17 04 07)	10%	46.8	90.7	14	0	33	0	0	
Packaging materials (15 01 06)	8%	37.5	72.5	4	4	26	4	0	
Plasterboard / Gypsum (17 08 02)	12%	56.2	108.8	0	11	45	0	0	
Binders (17 01 01)	1%	4.7	9.1	0	0	2	3	0	
Plastic (excluding packaging waste) (17 02 03)	4%	18.7	36.3	0	0	18	0	1	
Timber (17 02 01) *	10%	46.8	90.7	7	9	30	0	0	
Floor coverings (soft) (20 01 11)	2%	9.4	18.1	0	0	8	0	1	
Electrical and electronic equipment (non-hazardous) (20 01 36 or 16 02 14)	1%	4.7	9.1	0	0	5	0	0	
Furniture ( 20 03 07)	0%	0.0	0.0	0	0	0	0	0	
Canteen/Office/Adhoc waste (20 03 01)	3%	14.1	27.2	0	0	13	0	1	
Liquids (16 10 02)	1%	4.7	9.1	0	0	0	4	0	
Oils (13 01 13)	0%	0.0	0.0	0	0	0	0	0	
Bituminous mixtures (non-hazardous e.g. asphalt) (17 03 02)	2%	9.4	18.1	0	0	0	9	0	
Hazardous waste (17 09 03)	1%	4.7	9.1	0	0	0	4	0	
Mixed construction and/or demolition waste (17 09 04)	12%	56.2	108.8	0	0	55	0	1	
	<b>100 %</b>	<b>468</b>	<b>907</b>	<b>39</b>	<b>31</b>	<b>364</b>	<b>24</b>	<b>9</b>	
				<b>8%</b>	<b>7%</b>	<b>78%</b>	<b>5%</b>	<b>2%</b>	<b>100%</b>

## Key Performance Indicators

Key Performance Indicators should be established for the project in order to promote best practice by the Principal Contractor and to ensure delivery against established UK industry KPIs. Suggested KPIs are given below:

**Table 3. Suggested Site Waste KPIs**

<b>Non-Hazardous Construction &amp; Demolition Waste Diversion from Landfill</b>	98% by volume (BREEAM requirement is >70% for construction waste and >80% for demolition waste)
<b>Non-Hazardous Construction Waste</b>	<6.5 tonnes of waste per 100m <sup>2</sup> of gross floor area

Monitoring of waste performance against these KPIs should be undertaken by the Principal Contractor and reported monthly.

## Duty of Care

Selection of waste management contractors will be the responsibility of the appointed Principal Contractor, however Como has provided details below of local waste management companies who can meet the diversion from landfill targets set above and hold current appropriate waste management licences and permits.

**Table 4. Waste Contractor Duty of Care information.**

<b>Waste Management Contractor Name</b>	<b>Waste carrier license / Environmental Permit number</b>	<b>Issue date</b>	<b>Expiry date</b>
TBC			

As a precaution, and in compliance with the Waste regulations 2011, we will register this site as a producer of hazardous waste with the Environment Agency. However, it is unlikely that hazardous waste will be >500kg.

This should be undertaken by the Principal Contractor just prior to commencement on site. Details will be recorded below when known:

<b>Hazardous waste registration number:</b>	TBC
<b>Date of issue:</b>	<b>Date of expiry:</b>

## Training / Communication

The Principal Contractor should ensure that all parties working on site are adequately trained in management of the waste they produce and dispose of. Primary training of subcontractors should be undertaken by the Principal Contractor, with subsequent training of all subcontractor staff undertaken by the subcontractors themselves. Everyone on site should receive relevant training which should include:

- The SWMP
- Roles and responsibilities
- Waste procedures on site
- Hazardous waste
- Duty of care / responsibilities
- Materials storage.

The following types of training are being recommended, depending on the roles and responsibilities of those receiving training:

- Induction
- Tool box talks
- Workshops

The Principal Contractor should maintain a training log of all those receiving training in relation to this SWMP. A copy of the training log should be retained on site, and preferably also within the SWMP document / tool. A sample training log is given below.

**Table 5. Staff training records**

Name	Company	Date	Who trained by	Type of training	Date next training due

## Communication

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The SWMP is an active management tool that should be implemented by all employees working on site. It is therefore very important that the requirements of the SWMP, and the responsibilities of all parties to meet the SWMP requirements are communicated adequately to all site staff. Possible means of communicating the SWMP plan requirements include:

- Inductions
- Meetings
- Posters
- Feedback from staff

## Waste Data

Live waste data will be collated during the construction programme to allow monitoring against this plan, and to revise forecasts of waste production if necessary. Information should be obtained from both Waste Transfer Notes to be retained on site during construction, and from reports received from the appointed waste management contractors.

## Detailed Information

Detailed information on the waste produced and disposal route should be maintained by the Principal Contractor. An example reporting format is given below.

**Table 7. Detailed construction waste records**

	Actual waste (m <sup>3</sup> )	Tonnage	Mixed (%)	Segregated (%)	Waste management routes (%)				m <sup>3</sup> /100m <sup>2</sup>	m <sup>3</sup> /£100K
					Reuse	Recycle	Recover	Disposal		
Asphalt and tar (17 03 02)										
Binders (17 01 01)										
Bricks (17 01 02)										
Canteen/office/Adhoc waste (20 03 01)										
Concrete (17 01 01)										
Electrical and electronic equipment (20 01 36)										
Floor coverings (soft) (20 01 11)										
Furniture ( 20 03 07)										
Glass (20 01 02)										
Gypsum (17 08 02)										
Hazardous (17 09 03*)										
Inert (17 01 07)										
Insulation (17 06 04)										
Liquids (16 10 02)										
Metals (17 04 07)										



	Actual waste (m <sup>3</sup> )	Tonnage	Mixed (%)	Segregated (%)	Waste management routes (%)				m <sup>3</sup> /100m <sup>2</sup>	m <sup>3</sup> /£100K
					Reuse	Recycle	Recover	Disposal		
Mixed (17 09 04)										
Other (20 03 01)										
Packaging (15 01 06)										
Plastics (17 02 03)										
Soils (17 05 04)										
Tiles and Ceramics (17 01 03)										
Timber (17 02 01)										
Waste paint & varnish (non-hazardous) (08 01 12)										

### On-going Review of Implementation

The Principal Contractor should undertake periodic reviews of the Site Waste Management Plan during its operation. This table logs any changes that may have been made to the SWMP. It is recommended that the SWMP is reviewed at least once every 6 months and ideally every 3 months.

**Table 8. SWMP review records.**

Date	Name	Summary/ Actions carried out

## Completion Review

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Site Waste Management Plans are intended to provide both better clarity on construction waste management, and to identify lessons learned that can be applied to future projects by the client or contractor. Therefore it is important to undertake a completion review to:

- Review how successful you believe the implementation of the SWMP was;
- Provide a comparison of the estimated quantities of each waste type against the actual quantities;
- Explain any deviation from the original plan.;
- Estimate of cost savings achieved;
- Action planned for next project.

This section should be completed by the Principal Contractor within 3 months of the work being completed on this project (i.e. project finish). The completed SWMP should be retained by the Principal Contractor for 2 years following completion of the project.

All associated documents, including Waste Transfer Notes and Hazardous Waste Consignment Notes should be retained.

We confirm that the plan has been monitored on a regular basis to ensure that work was progressing to the plan and the plan was updated.

Signed:

Position:

Date: