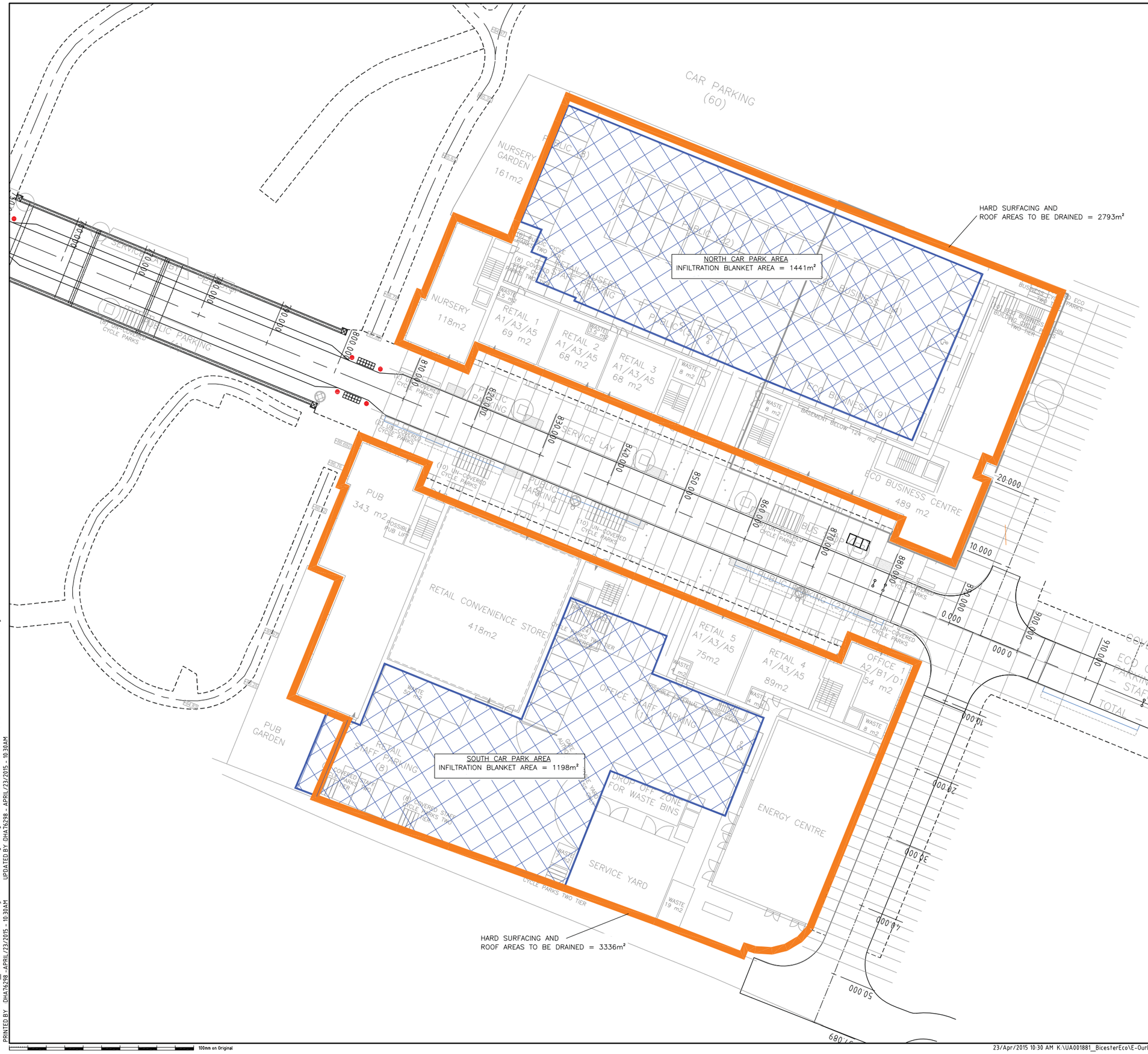
Appendix 3

Proposed Updated Drainage Strategy for the Local Centre



LEGEND:

- INFILTRATION BLANKET
- AREAS OF HARD SURFACING AND ROOFS TO BE DRAINED

NOTES:
1. DO NOT SCALE FROM THIS DRAWING. USE FIGURED DIMENSIONS ONLY.

Issue	Description	Date
A	FIRST ISSUE	20/04/15

Status: PRELIMINARY

Scales	1:250	Author D.HUGHES
Original Size	A1	Checker S.A.DAVIES
Height Datum	O.S.	Approver S.A.DAVIES
Grid	O.S.	© Copyright reserved

Filename: 5200-UA001881-UP21D-01-DRAINAGE STRATEGY COMMERCIAL CENTRE.DWG

Client: a2dominion

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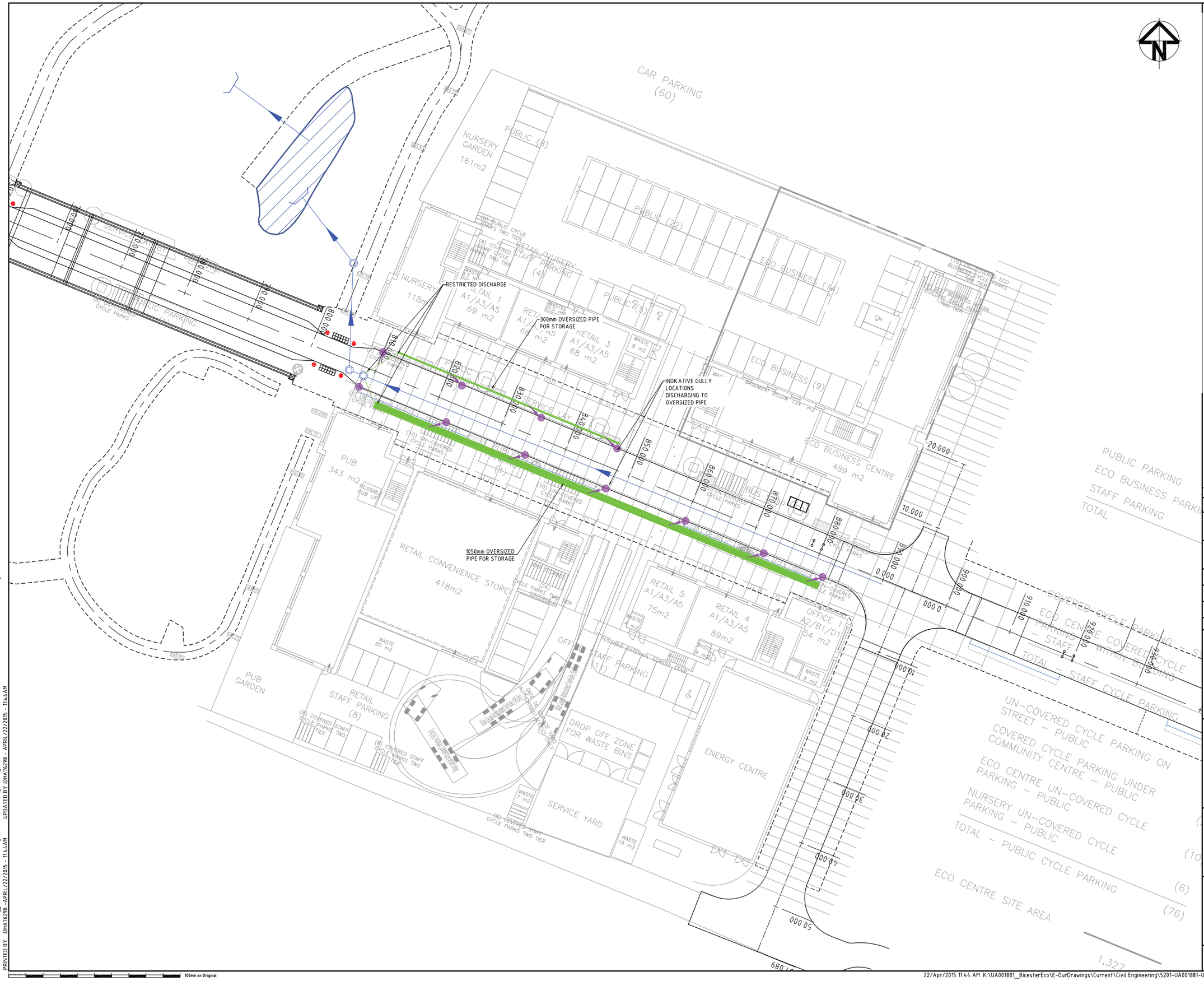
Project: BICESTER ECO DEVELOPMENT EXEMPLAR SITE

Title: COMMERCIAL CENTRE DRAINAGE STRATEGY PRIVATE AREAS

Drawing No.	Project No.	Issue
5200	UA001881	01

CAD FILE : K:\UA001881_BicesterEco\E-OurDrawings\Current\Civil Engineering\5200-UA001881-UP21D-01-DRAINAGE STRATEGY COMMERCIAL CENTRE.dwg
PRINTED BY : DHA16298 - APRIL/23/2015 - 10:30AM UPDATED BY : DHA16298 - APRIL/23/2015 - 10:30AM

100mm on Original



KEY

- SURFACE WATER DRAINAGE
- OVERSIZED STORAGE PIPE
- INDICATIVE GULLY LOCATIONS
- HEADWALL
- SWALE

NOTES:
1. DO NOT SCALE FROM THIS DRAWING. USE FIGURED DIMENSIONS ONLY.

Issue	Description	Date
A	FIRST ISSUE	20/04/15

Status: PRELIMINARY

Scales	1:250	Author D.HUGHES
Original Size	A1	Checker S.A.DAVIES
Height Datum	O.S.	Approver S.A.DAVIES
Grid	O.S.	© Copyright reserved

Filename: 5201-UA001881-UP21D-01-DRAINAGE STRATEGY COMMERCIAL STREET.DWG

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Project: BICESTER ECO DEVELOPMENT EXEMPLAR SITE

Title: COMMERCIAL STREET DRAINAGE STRATEGY

Drawing No.	Project No.	Issue
5201	UA001881	01

CAD FILE : K:\UA001881_BicesterEco\E-OurDrawings\Current\Civil Engineering\5201-UA001881-UP21D-01-DRAINAGE STRATEGY COMMERCIAL STREET.dwg
PRINTED BY : DHA16298 - APRIL/22/2015 - 11:44AM UPDATED BY : DHA16298 - APRIL/22/2015 - 11:44AM

100mm on Original

22/Apr/2015 11:44 AM K:\UA001881_BicesterEco\E-OurDrawings\Current\Civil Engineering\5201-UA001881-UP21D-01-DRAINAGE STRATEGY COMMERCIAL STREET.dwg V1

Hyder Consulting

CALCULATIONS

DOCUMENT No

7022-UA001881-UP21B-02

OFFICE

CARDIFF

PROJECT TITLE

NW Bicester Eco Development

SUBJECT

Commercial centre south - Soakaway Sizing Calculation

SHEET No

1 **OF** **5**

ISSUE	TOTAL SHEETS	AUTHOR	DATE	CHECKED BY	DATE	APPROVED BY	DATE	COMMENTS
1	**5**	**SJ**	**22/07/13**	**PJ**	**22/07/13**	**SAD**	**22/07/13**	
2	**5**	**DH**	**20/04/15**	**PJ**	**20/04/15**	**SAD**	**20/04/15**	
3								
4								
5								

SUPERSEDES DOC No

DATE

DESIGN BASIS STATEMENT (Inc. sources of info/data, assumptions made, standards, etc.)

Introduction

This calculation is intended to establish the size of the soakaway to drain the commercial centre south of the spine road.

The soakaway has been assessed as an infiltration blanket (1198m2 in plan) using WinDES (an industry standard drainge design package produced by Microdrainage).

Assumptions

1) Contributing area from commercial buildings, energy centre and car park (Catchment area of 3336m2)
2) Car Park to have impermeable surface with permeable construction underneath
3) Ground infitlration rates are assumed to be 38mm/hr
4) Design to accommodate events up to and including 100 yr rainfall events with a 30% allowance for climate change
5) Infiltration blanket used, as defined by WinDES (void formed by a blanket filled with gravel or similar porous material - for the purpose of this model porosity assumed as 30%)
6) Infiltration through all sides and base of blanket
7) Factor of Safety of 10 applied to soakage rate
8) Inflow to soakaway is via cark park gullys and rain water downpipes from buildings

Results

- Maximum water depth - 603 mm (960 minute winter storm)
- Half drain time - 1428 minutes

The results indicate that the soakaway can accommodate events up to and including 100yr + 30%CC without any flooding, and the half drain time of the system is less than the maximum recommended 1440 minutes (24 hours). Please refer to drawing 7711-UA001881-UP21D-01

Summary of Results for 100 year Return Period (+30%)

Half Drain Time : 1428 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	86.721	0.221	1.3	79.3	O K
30 min Summer	86.788	0.288	1.3	103.5	O K
60 min Summer	86.856	0.356	1.3	128.0	O K
120 min Summer	86.922	0.422	1.3	151.5	O K
180 min Summer	86.956	0.456	1.3	163.7	O K
240 min Summer	86.976	0.476	1.3	171.1	O K
360 min Summer	87.001	0.501	1.3	179.8	O K
480 min Summer	87.014	0.514	1.3	184.6	O K
600 min Summer	87.020	0.520	1.3	186.9	O K
720 min Summer	87.023	0.523	1.3	187.7	O K
960 min Summer	87.018	0.518	1.3	186.1	O K
1440 min Summer	86.997	0.497	1.3	178.4	O K
2160 min Summer	86.966	0.466	1.3	167.3	O K
2880 min Summer	86.937	0.437	1.3	156.9	O K
4320 min Summer	86.883	0.383	1.3	137.7	O K
5760 min Summer	86.834	0.334	1.3	120.0	O K
7200 min Summer	86.789	0.289	1.3	103.7	O K
8640 min Summer	86.747	0.247	1.3	88.8	O K
10080 min Summer	86.710	0.210	1.3	75.4	O K
15 min Winter	86.748	0.248	1.3	88.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	128.285	0.0	19
30 min Summer	84.226	0.0	34
60 min Summer	52.662	0.0	64
120 min Summer	31.800	0.0	124
180 min Summer	23.353	0.0	184
240 min Summer	18.644	0.0	242
360 min Summer	13.543	0.0	362
480 min Summer	10.792	0.0	482
600 min Summer	9.043	0.0	602
720 min Summer	7.823	0.0	722
960 min Summer	6.219	0.0	960
1440 min Summer	4.493	0.0	1226
2160 min Summer	3.241	0.0	1584
2880 min Summer	2.568	0.0	1988
4320 min Summer	1.847	0.0	2808
5760 min Summer	1.461	0.0	3584
7200 min Summer	1.217	0.0	4392
8640 min Summer	1.048	0.0	5104
10080 min Summer	0.923	0.0	5848
15 min Winter	128.285	0.0	19

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	86.823	0.323	1.3	116.2	O K
60 min Winter	86.900	0.400	1.3	143.8	O K
120 min Winter	86.975	0.475	1.3	170.6	O K
180 min Winter	87.015	0.515	1.3	184.8	O K
240 min Winter	87.039	0.539	1.3	193.5	O K
360 min Winter	87.069	0.569	1.3	204.4	O K
480 min Winter	87.087	0.587	1.3	210.7	O K
600 min Winter	87.097	0.597	1.3	214.3	O K
720 min Winter	87.102	0.602	1.3	216.2	O K
960 min Winter	87.103	0.603	1.3	216.5	O K
1440 min Winter	87.084	0.584	1.3	209.9	O K
2160 min Winter	87.043	0.543	1.3	195.0	O K
2880 min Winter	87.004	0.504	1.3	181.1	O K
4320 min Winter	86.926	0.426	1.3	152.9	O K
5760 min Winter	86.851	0.351	1.3	126.1	O K
7200 min Winter	86.783	0.283	1.3	101.5	O K
8640 min Winter	86.721	0.221	1.3	79.3	O K
10080 min Winter	86.667	0.167	1.3	59.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	84.226	0.0	33
60 min Winter	52.662	0.0	64
120 min Winter	31.800	0.0	122
180 min Winter	23.353	0.0	180
240 min Winter	18.644	0.0	240
360 min Winter	13.543	0.0	356
480 min Winter	10.792	0.0	474
600 min Winter	9.043	0.0	590
720 min Winter	7.823	0.0	704
960 min Winter	6.219	0.0	932
1440 min Winter	4.493	0.0	1368
2160 min Winter	3.241	0.0	1708
2880 min Winter	2.568	0.0	2160
4320 min Winter	1.847	0.0	3064
5760 min Winter	1.461	0.0	3912
7200 min Winter	1.217	0.0	4688
8640 min Winter	1.048	0.0	5448
10080 min Winter	0.923	0.0	6152

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.400	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time Area Diagram

Total Area (ha) 0.334

Time (mins) From:	To:	Area (ha)
0	4	0.334

Model Details

Storage is Online Cover Level (m) 88.500

Infiltration Blanket Structure

Infiltration Coefficient Base (m/hr)	0.03800	Diameter/Width (m)	34.6
Safety Factor	10.0	Length (m)	34.6
Porosity	0.30	Cap Volume Depth (m)	1.000
Invert Level (m)	86.500		

Hyder Consulting

CALCULATIONS

DOCUMENT No

7023-UA001881-UP21B-01

OFFICE

CARDIFF

PROJECT TITLE

NW Bicester Eco Development

SUBJECT

Commercial centre north - Soakaway Sizing Calculation

SHEET No

1 **OF** **5**

ISSUE	TOTAL SHEETS	AUTHOR	DATE	CHECKED BY	DATE	APPROVED BY	DATE	COMMENTS
1	**5**	**DH**	**20/04/15**	**PJ**	**20/04/15**	**SAD**	**20/04/15**	
2								
3								
4								
5								

SUPERSEDES DOC No

DATE

DESIGN BASIS STATEMENT (Inc. sources of info/data, assumptions made, standards, etc.)

Introduction

This calculation is intended to establish the size of the soakaway to drain the commercial centre north of the spine road.

The soakaway has been assessed as an infiltration blanket (1441m2 in plan) using WinDES (an industry standard drainge design package produced by Microdrainage).

Assumptions

1) Contributing area from commercial buildings, energy centre and car park (Catchment area of 2793m2)
2) Car Park to have impermeable surface with permeable construction underneath
3) Ground infitlration rates are assumed to be 38mm/hr
4) Design to accommodate events up to and including 100 yr rainfall events with a 30% allowance for climate change
5) Infiltration blanket used, as defined by WinDES (void formed by a blanket filled with gravel or similar porous material - for the purpose of this model porosity assumed as 30%)
6) Infiltration through all sides and base of blanket
7) Factor of Safety of 10 applied to soakage rate
8) Inflow to soakaway is via cark park gullys and rain water downpipes from buildings

Results

- Maximum water depth - 390 mm (960 minute winter storm)
- Half drain time - 931 minutes

The results indicate that the soakaway can accommodate events up to and including 100yr + 30%CC without any flooding, and the half drain time of the system is less than the maximum recommended 1440 minutes (24 hours). Please refer to drawing 7711-UA001881-UP21D-01

Summary of Results for 100 year Return Period (+30%)

Half Drain Time : 931 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	84.654	0.154	1.5	66.2	O K
30 min Summer	84.700	0.200	1.5	86.2	O K
60 min Summer	84.746	0.246	1.5	106.2	O K
120 min Summer	84.789	0.289	1.5	124.7	O K
180 min Summer	84.811	0.311	1.5	133.8	O K
240 min Summer	84.822	0.322	1.5	138.8	O K
360 min Summer	84.834	0.334	1.5	143.9	O K
480 min Summer	84.838	0.338	1.5	145.6	O K
600 min Summer	84.837	0.337	1.5	145.3	O K
720 min Summer	84.834	0.334	1.5	143.7	O K
960 min Summer	84.825	0.325	1.5	140.0	O K
1440 min Summer	84.807	0.307	1.5	132.4	O K
2160 min Summer	84.781	0.281	1.5	121.0	O K
2880 min Summer	84.755	0.255	1.5	110.0	O K
4320 min Summer	84.709	0.209	1.5	89.9	O K
5760 min Summer	84.668	0.168	1.5	72.4	O K
7200 min Summer	84.634	0.134	1.5	57.6	O K
8640 min Summer	84.605	0.105	1.5	45.4	O K
10080 min Summer	84.583	0.083	1.5	35.8	O K
15 min Winter	84.672	0.172	1.5	74.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	128.285	0.0	19
30 min Summer	84.226	0.0	34
60 min Summer	52.662	0.0	64
120 min Summer	31.800	0.0	122
180 min Summer	23.353	0.0	182
240 min Summer	18.644	0.0	242
360 min Summer	13.543	0.0	362
480 min Summer	10.792	0.0	480
600 min Summer	9.043	0.0	600
720 min Summer	7.823	0.0	702
960 min Summer	6.219	0.0	808
1440 min Summer	4.493	0.0	1050
2160 min Summer	3.241	0.0	1452
2880 min Summer	2.568	0.0	1848
4320 min Summer	1.847	0.0	2640
5760 min Summer	1.461	0.0	3400
7200 min Summer	1.217	0.0	4112
8640 min Summer	1.048	0.0	4832
10080 min Summer	0.923	0.0	5448
15 min Winter	128.285	0.0	19

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	84.725	0.225	1.5	96.8	O K
60 min Winter	84.777	0.277	1.5	119.4	O K
120 min Winter	84.826	0.326	1.5	140.7	O K
180 min Winter	84.851	0.351	1.5	151.4	O K
240 min Winter	84.866	0.366	1.5	157.5	O K
360 min Winter	84.881	0.381	1.5	164.2	O K
480 min Winter	84.888	0.388	1.5	167.2	O K
600 min Winter	84.890	0.390	1.5	168.0	O K
720 min Winter	84.888	0.388	1.5	167.3	O K
960 min Winter	84.879	0.379	1.5	163.5	O K
1440 min Winter	84.855	0.355	1.5	153.1	O K
2160 min Winter	84.819	0.319	1.5	137.3	O K
2880 min Winter	84.781	0.281	1.5	121.1	O K
4320 min Winter	84.711	0.211	1.5	90.7	O K
5760 min Winter	84.650	0.150	1.5	64.6	O K
7200 min Winter	84.601	0.101	1.5	43.5	O K
8640 min Winter	84.566	0.066	1.5	28.4	O K
10080 min Winter	84.549	0.049	1.5	21.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	84.226	0.0	33
60 min Winter	52.662	0.0	62
120 min Winter	31.800	0.0	122
180 min Winter	23.353	0.0	180
240 min Winter	18.644	0.0	238
360 min Winter	13.543	0.0	354
480 min Winter	10.792	0.0	470
600 min Winter	9.043	0.0	582
720 min Winter	7.823	0.0	694
960 min Winter	6.219	0.0	904
1440 min Winter	4.493	0.0	1126
2160 min Winter	3.241	0.0	1580
2880 min Winter	2.568	0.0	2020
4320 min Winter	1.847	0.0	2852
5760 min Winter	1.461	0.0	3584
7200 min Winter	1.217	0.0	4256
8640 min Winter	1.048	0.0	4840
10080 min Winter	0.923	0.0	5240

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.400	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time Area Diagram

Total Area (ha) 0.280

Time (mins) From:	To:	Area (ha)
0	4	0.280

Model Details

Storage is Online Cover Level (m) 86.500

Infiltration Blanket Structure

Infiltration Coefficient Base (m/hr)	0.03800	Diameter/Width (m)	37.9
Safety Factor	10.0	Length (m)	37.9
Porosity	0.30	Cap Volume Depth (m)	1.000
Invert Level (m)	84.500		

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	85.667	1.042	3.9	3.5	O K
30 min Summer	85.817	1.192	4.0	3.7	O K
60 min Summer	85.283	0.658	3.9	3.1	O K
120 min Summer	84.862	0.237	3.8	2.0	O K
180 min Summer	84.793	0.168	3.5	1.2	O K
240 min Summer	84.752	0.127	3.3	0.8	O K
360 min Summer	84.719	0.094	2.6	0.4	O K
480 min Summer	84.703	0.078	2.2	0.3	O K
600 min Summer	84.694	0.069	1.8	0.2	O K
720 min Summer	84.688	0.063	1.6	0.2	O K
960 min Summer	84.679	0.054	1.3	0.2	O K
1440 min Summer	84.670	0.045	0.9	0.1	O K
2160 min Summer	84.662	0.037	0.7	0.1	O K
2880 min Summer	84.658	0.033	0.5	0.1	O K
4320 min Summer	84.653	0.028	0.4	0.0	O K
5760 min Summer	84.650	0.025	0.3	0.0	O K
7200 min Summer	84.647	0.022	0.3	0.0	O K
8640 min Summer	84.646	0.021	0.2	0.0	O K
10080 min Summer	84.644	0.019	0.2	0.0	O K
15 min Winter	86.175	1.550	4.3	4.0	O K
30 min Winter	86.232	1.607	4.4	4.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	128.285	0.0	6.0	14
30 min Summer	84.226	0.0	7.9	22
60 min Summer	52.662	0.0	9.9	40
120 min Summer	31.800	0.0	11.9	70
180 min Summer	23.353	0.0	13.1	100
240 min Summer	18.644	0.0	14.0	128
360 min Summer	13.543	0.0	15.2	186
480 min Summer	10.792	0.0	16.2	246
600 min Summer	9.043	0.0	17.0	306
720 min Summer	7.823	0.0	17.6	366
960 min Summer	6.219	0.0	18.7	484
1440 min Summer	4.493	0.0	20.2	734
2160 min Summer	3.241	0.0	21.9	1100
2880 min Summer	2.568	0.0	23.1	1468
4320 min Summer	1.847	0.0	24.9	2184
5760 min Summer	1.461	0.0	26.3	2888
7200 min Summer	1.217	0.0	27.4	3672
8640 min Summer	1.048	0.0	28.3	4360
10080 min Summer	0.923	0.0	29.1	5056
15 min Winter	128.285	0.0	6.7	14
30 min Winter	84.226	0.0	8.8	23

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	85.480	0.855	3.9	3.3	O K
120 min Winter	84.823	0.198	3.7	1.6	O K
180 min Winter	84.747	0.122	3.2	0.7	O K
240 min Winter	84.720	0.095	2.7	0.5	O K
360 min Winter	84.698	0.073	2.0	0.3	O K
480 min Winter	84.687	0.062	1.6	0.2	O K
600 min Winter	84.681	0.056	1.3	0.2	O K
720 min Winter	84.676	0.051	1.2	0.1	O K
960 min Winter	84.670	0.045	0.9	0.1	O K
1440 min Winter	84.662	0.037	0.7	0.1	O K
2160 min Winter	84.656	0.031	0.5	0.1	O K
2880 min Winter	84.653	0.028	0.4	0.0	O K
4320 min Winter	84.648	0.023	0.3	0.0	O K
5760 min Winter	84.646	0.021	0.2	0.0	O K
7200 min Winter	84.644	0.019	0.2	0.0	O K
8640 min Winter	84.643	0.018	0.2	0.0	O K
10080 min Winter	84.641	0.016	0.1	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	52.662	0.0	11.1	42
120 min Winter	31.800	0.0	13.4	72
180 min Winter	23.353	0.0	14.7	98
240 min Winter	18.644	0.0	15.7	126
360 min Winter	13.543	0.0	17.1	184
480 min Winter	10.792	0.0	18.1	246
600 min Winter	9.043	0.0	19.0	306
720 min Winter	7.823	0.0	19.7	360
960 min Winter	6.219	0.0	20.9	488
1440 min Winter	4.493	0.0	22.6	734
2160 min Winter	3.241	0.0	24.5	1064
2880 min Winter	2.568	0.0	25.9	1432
4320 min Winter	1.847	0.0	27.9	2168
5760 min Winter	1.461	0.0	29.4	2896
7200 min Winter	1.217	0.0	30.7	3600
8640 min Winter	1.048	0.0	31.7	4320
10080 min Winter	0.923	0.0	32.6	4960

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.400	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time Area Diagram

Total Area (ha) 0.025

Time (mins) From:	To:	Area (ha)
0	4	0.025

Model Details

Storage is Online Cover Level (m) 88.060

Pipe Structure

Diameter (m) 0.300 Length (m) 35.000
Slope (1:X) 500.000 Invert Level (m) 84.625

Hydro-Brake Optimum® Outflow Control

Unit Reference	MD-SHE-0090-4000-1300-4000
Design Head (m)	1.300
Design Flow (l/s)	4.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	90
Invert Level (m)	84.625
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.300	4.0
Flush-Flo™	0.390	4.0
Kick-Flo®	0.794	3.2
Mean Flow over Head Range	-	3.5

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake Optimum® as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.8	1.200	3.8	3.000	5.9	7.000	8.8
0.200	3.7	1.400	4.1	3.500	6.3	7.500	9.1
0.300	3.9	1.600	4.4	4.000	6.7	8.000	9.3
0.400	4.0	1.800	4.6	4.500	7.1	8.500	9.6
0.500	3.9	2.000	4.9	5.000	7.5	9.000	9.9
0.600	3.8	2.200	5.1	5.500	7.8	9.500	10.1
0.800	3.2	2.400	5.3	6.000	8.2		
1.000	3.5	2.600	5.5	6.500	8.5		

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	85.205	0.580	1.7	30.8	O K
30 min Summer	85.322	0.697	1.7	39.9	O K
60 min Summer	85.433	0.808	1.7	48.0	O K
120 min Summer	85.516	0.891	1.7	53.6	O K
180 min Summer	85.533	0.908	1.7	54.7	O K
240 min Summer	85.521	0.896	1.7	54.0	O K
360 min Summer	85.482	0.857	1.7	51.4	O K
480 min Summer	85.450	0.825	1.7	49.2	O K
600 min Summer	85.422	0.797	1.7	47.2	O K
720 min Summer	85.397	0.772	1.7	45.4	O K
960 min Summer	85.350	0.725	1.7	41.9	O K
1440 min Summer	85.261	0.636	1.7	35.1	O K
2160 min Summer	85.117	0.492	1.7	24.0	O K
2880 min Summer	84.999	0.374	1.7	15.4	O K
4320 min Summer	84.843	0.218	1.7	5.6	O K
5760 min Summer	84.758	0.133	1.5	1.9	O K
7200 min Summer	84.711	0.086	1.4	0.7	O K
8640 min Summer	84.697	0.072	1.2	0.4	O K
10080 min Summer	84.688	0.063	1.0	0.3	O K
15 min Winter	85.256	0.631	1.7	34.8	O K
30 min Winter	85.392	0.767	1.7	45.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	128.285	0.0	33.0	26
30 min Summer	84.226	0.0	43.3	40
60 min Summer	52.662	0.0	54.1	68
120 min Summer	31.800	0.0	65.3	126
180 min Summer	23.353	0.0	72.0	182
240 min Summer	18.644	0.0	76.6	240
360 min Summer	13.543	0.0	83.5	304
480 min Summer	10.792	0.0	88.7	366
600 min Summer	9.043	0.0	92.9	432
720 min Summer	7.823	0.0	96.5	502
960 min Summer	6.219	0.0	102.2	642
1440 min Summer	4.493	0.0	110.8	916
2160 min Summer	3.241	0.0	119.9	1296
2880 min Summer	2.568	0.0	126.7	1640
4320 min Summer	1.847	0.0	136.7	2296
5760 min Summer	1.461	0.0	144.1	2944
7200 min Summer	1.217	0.0	150.1	3656
8640 min Summer	1.048	0.0	155.0	4400
10080 min Summer	0.923	0.0	159.4	5072
15 min Winter	128.285	0.0	36.9	26
30 min Winter	84.226	0.0	48.5	39

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	85.529	0.904	1.7	54.5	O K
120 min Winter	85.661	1.036	1.8	61.5	O K
180 min Winter	85.719	1.094	1.8	63.4	O K
240 min Winter	85.709	1.084	1.8	63.2	O K
360 min Winter	85.638	1.013	1.8	60.5	O K
480 min Winter	85.582	0.957	1.7	57.6	O K
600 min Winter	85.538	0.913	1.7	55.0	O K
720 min Winter	85.498	0.873	1.7	52.5	O K
960 min Winter	85.424	0.799	1.7	47.4	O K
1440 min Winter	85.287	0.662	1.7	37.2	O K
2160 min Winter	85.064	0.439	1.7	20.1	O K
2880 min Winter	84.900	0.275	1.7	8.9	O K
4320 min Winter	84.735	0.110	1.5	1.2	O K
5760 min Winter	84.698	0.073	1.2	0.5	O K
7200 min Winter	84.685	0.060	1.0	0.3	O K
8640 min Winter	84.678	0.053	0.9	0.2	O K
10080 min Winter	84.673	0.048	0.7	0.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	52.662	0.0	60.6	68
120 min Winter	31.800	0.0	73.2	124
180 min Winter	23.353	0.0	80.6	180
240 min Winter	18.644	0.0	85.8	236
360 min Winter	13.543	0.0	93.5	338
480 min Winter	10.792	0.0	99.4	384
600 min Winter	9.043	0.0	104.1	462
720 min Winter	7.823	0.0	108.0	540
960 min Winter	6.219	0.0	114.5	694
1440 min Winter	4.493	0.0	124.1	994
2160 min Winter	3.241	0.0	134.3	1364
2880 min Winter	2.568	0.0	141.9	1672
4320 min Winter	1.847	0.0	153.1	2248
5760 min Winter	1.461	0.0	161.4	2872
7200 min Winter	1.217	0.0	168.1	3624
8640 min Winter	1.048	0.0	173.7	4264
10080 min Winter	0.923	0.0	178.5	4992

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.400	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time Area Diagram

Total Area (ha) 0.137

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.046	4	8	0.046	8	12	0.046

Model Details

Storage is Online Cover Level (m) 88.060

Pipe Structure

Diameter (m) 1.050 Length (m) 73.000
Slope (1:X) 500.000 Invert Level (m) 84.625

Hydro-Brake Optimum® Outflow Control

Unit Reference	MD-SHE-0063-2000-1300-2000
Design Head (m)	1.300
Design Flow (l/s)	2.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	63
Invert Level (m)	84.625
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.300	2.0
Flush-Flo™	0.280	1.7
Kick-Flo®	0.564	1.4
Mean Flow over Head Range	-	1.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake Optimum® as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.4	1.200	1.9	3.000	2.9	7.000	4.4
0.200	1.7	1.400	2.1	3.500	3.2	7.500	4.5
0.300	1.7	1.600	2.2	4.000	3.4	8.000	4.6
0.400	1.6	1.800	2.3	4.500	3.5	8.500	4.8
0.500	1.5	2.000	2.4	5.000	3.7	9.000	4.9
0.600	1.4	2.200	2.5	5.500	3.9	9.500	5.0
0.800	1.6	2.400	2.6	6.000	4.1		
1.000	1.8	2.600	2.7	6.500	4.2		

Appendix 10.1

Geo Environmental Appraisal Report

A2Dominion Developments Ltd
North West Bicester
Exemplar - Local Centre
Geo Environmental Appraisal Report

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A2Dominion Developments Ltd

Exemplar - Local Centre

Geo Environmental Appraisal Report

Author	Stephanie Goodwin	
Checker	Alison Pugh	
Approver	George Flower	

Report No 5121-UA005241-UE31R-01

Date April 2015

CONTENTS

1 Introduction

1.1 Terms of Reference

Hyder Consulting (UK) Ltd. (Hyder) has been instructed by the A2Dominion Developments Ltd (A2Dominion) to undertake a Geo Environmental Appraisal Report for the new proposed Local Centre development of the Exemplar Phase of the NW Bicester Masterplan Area.

A Local Centre was included within the original Exemplar application however the layout has changed and therefore this report is required to support the application for this change.

1.2 Scope of work

The purpose of this report is to identify the baseline conditions (environmental, geological, hydrogeological and hydrological conditions) present at the Local Centre development and determine any potential contamination risks that might arise from the proposed use of the Site.

1.3 Proposed Development

The Development proposals for the Local Centre cover a total site area of approximately 6.4 ha; and include: "*Development of a new local centre comprising a 503 sqm convenience store (Use Class A1), 444 sqm of retail units (flexible Use Class A1/A3/A5), 664 sqm pub (Use Class A4), 523 sqm community hall (Use Class D1), 869 sqm nursery (Use Class D1), 614sqm of commercial units (flexible Use Class A2/ B1/ D1) with associated access, servicing, landscaping and parking*".[1]

The new design of the Local Centre is shown below:

Figure 1 Design of Local Centre (extract from NW Bicester Exemplar Local Centre document)

[1] From Environmental Compliance Report

1.4 Source of Information

As part of this appraisal report various sources of information have been used and are detailed below.

- Data presented in the Hyder Phase 1 Desk Study Report (Ref 1). This covers the entire NW Bicester Masterplan and relevant information for the Local Centre is detail below.
- Information from the Exemplar ES (Ref 2) which includes data obtained from intrusive investigations undertaken across the Exemplar development site including the Local Centre such as data from NW Bicester Eco-Town - Exemplar Site, Supplementary Combined Ground Investigation, Factual & Interpretative Report Bridges & Pumping Station
- British Geological Survey (BGS) Geology of Britain Viewer (online)
- Environmental Agency (EA) What's in my backyard? (Online)

1.5 Limitations and Expectations

This report has been compiled from a number of sources, which Hyder believes to be trustworthy. However, Hyder is unable to guarantee the accuracy of information provided by others. The report is based on information available at the time of writing. Additional information may become available in the future which may have a bearing on the conclusions of this report and for which Hyder cannot be responsible.

2 Site Settling

2.1 Site Description

The town of Bicester lies approximately 24km to the north east of Oxford and 28km to the south east of Banbury. The M40 motorway lies 2km to the south west, with ready access to the town from Junction 9.

The Local Centre which is the subject of this report is located within first phase of a wider development which is known as the Exemplar phase. This is currently under construction; and the entire subject site is currently occupied as a construction compound, materials lay down and handling area in accordance with the approved Construction Environmental Management Plan relative to the existing planning permission (Ref 10/01780/HYBRID) for the Exemplar phase.

A plan showing the red line boundary of the subject site is provided below.

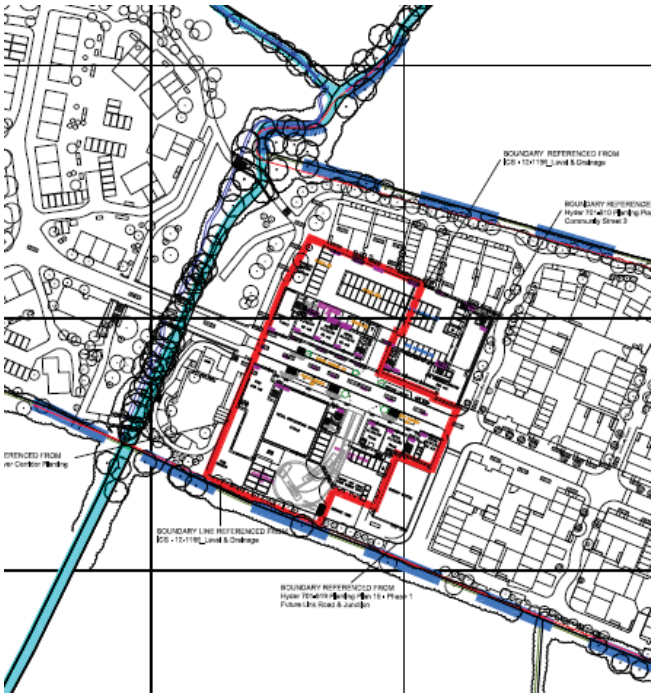

Figure 2 Red line boundary for Local Centre within the Exemplar Development (extract from Drawing BIMP6_701 from NW Bicester Exemplar Local Centre document)

2.2 Site History

A review of the historical Ordnance Survey maps contained within the sources of information indicates that since the earliest available map (1881), the site has been dominated by agricultural activity. As mentioned in the description above, the site is currently been used as a construction compound for the development of the Exemplar site. The surrounding area is mainly agricultural / greenfield use.

2.3 Geology

2.3.1 Published Geology

The published 1:50,000 scale British Geological Survey map (BGS) Sheet 85 of Buckingham (Drift 1970, Solid 1975) (Ref. 3), and information provided within the information sources indicates that the site is underlain by drift deposits comprising Alluvium typically with sandy, calcareous clay overlying gravelly clay. Head deposits are also expected near the streams.

The solid geology was shown to comprise of the Cornbrash Formation (CB) overlying the Forest Marble Formation (FMB) and the White Limestone Formation (WHL).

2.3.2 Encountered Geology

Intrusive investigations have been undertaken across the NW Bicester Masterplan area including the Exemplar site. One borehole (BH01) was drilled within the subject site boundary during the supplementary investigation and encountered the following;

- 0-0.2m thickness of Topsoil (slightly gravelly Silt/Clay);
- very stiff slightly sandy slightly gravelly Silt/clay with occasional cobbles of limestone, encountered to 2.1m depth;
- very stiff blue grey slightly gravelly Silt/Clay, encountered at 4m, below which Limestone was encountered to the base of the borehole at 8m

This is generally consistent with the anticipated published geology.

2.4 Hydrogeology

The Environmental Agency (EA) website (Ref 4) indicated that the bedrock beneath the area under consideration is designated as a Secondary A Aquifer. These are aquifers which are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flows to rivers.

The Site is not located within a Source Protection Zone and there are no licensed abstractions or private water supply points on the subject site.

Groundwater was encountered standing at approximately 6.3m depth in BH5, the nearest available monitoring well, which is located to the south of the subject site. To the north of the subject site, groundwater levels were recorded at shallower depth of 3.1m (BH1) and 2.9m (TP1), coincident with the top of the Cornbrash Formation at those locations.

2.5 Hydrology

There is a watercourse, known as Town Brook, to the west of the subject site which flows in a south westerly direction towards the A4095.

2.6 Additional Environmental Data

Based on information from the available sources and a review of the EA website to ensure that the data is current, the following environmental information has been obtained about the subject site;

- There are no landfill sites present within the subject site. A historical landfill is recorded at the Avonbury Business Park which is over 1km to the south.
- There are no historic or current sources of industrial activity; farming being the only use of the land.
- A detailed BR 211 Radon Report was obtained from the British Geological Survey (BGS) as part of the Desk Study and states that the estimated probability of a property being above the Action Level for radon is 3-5% and therefore basic radon protection measures are required in the construction of new properties for the site.
- Based on the limited analysis during the intrusive investigations undertaken in the vicinity of the subject site, no contaminants of concern were identified when compared to a residential with plant uptake scenario, i.e. a more sensitive land use than the proposed Local centre.
- During the Hyder investigation, one water sample was taken from borehole BH5 to the south of the subject site and analysed predominantly for metal contaminants. All the results were below the Water Quality Standards (WQS) values.
- Gas monitoring (3 rounds) was undertaken during the Hyder investigation. One borehole (BH5) is in close proximity to the subject site and is within the Exemplar phase development.

  Using the data obtained, gas screening values (GSV) have been calculated and the highest GSV are; Methane 0.0003l/h (BH5) and Carbon Dioxide 0.011l/h (BH5), which indicate a NHBC Green Scenario (low risk) in relation to ground gases. Further monitoring across the site may be required to ensure that there is no variation across the Development.

3 Environmental Risk Assessment

Geo-environmental assessments are required to consider the significance of potential contamination in terms of plausible contaminant source-pathway-receptor contaminant linkages. As part of this process, it is necessary to develop a conceptual model of these potential contaminant linkages by identifying the potential contamination sources, sensitive receptors and potential exposure pathways. A risk assessment is then undertaken to determine the likelihood and significance of these potential contaminant linkages.

Based on the information presented above the potential sources on the subject site are limited to radon / ground gases. The risk is considered to be low and can be mitigated by including appropriate radon gas protection measures into the design of new buildings within the subject site.

During site construction works, site workers should remain vigilant to the possible risk of encountering localised “unforeseen” areas of contaminated soils. Should potentially contaminated soil be encountered, further testing would be required to assess the risks to the health and safety of site workers, site end users and other sensitive receptors.

All persons engaged in site construction works should be made aware of the findings of the intrusive investigation and the hazards associated with handling potentially contaminated materials. Although no contaminants of concern have been detected within current investigations, a precautionary approach should be taken. It is thus recommended that all works are conducted in accordance with the Health and Safety Executive publication entitled “Protection of Workers and the General Public during the Development of Contaminated Land” (Ref 5).

4 References

1 NW Bicester Eco-town. Phase 1 Desk Study. Report Number 2501-UA001881-UP33R-01. Hyder Consulting (UK) Ltd., 2010.

2 NW Bicester, Environmental Statement Volume 1 (2010)

3 British Geological Survey map Sheet 85 of Buckingham (Drift 1970, Solid 1975)

4 Environmental Agency http://maps.environment-agency.gov.uk

5 HSE (1999) Protection of Workers and the General Public during the Development of Contaminated Land

Appendix 14.1

Site Waste Management Plan

A2 Dominion Developments Ltd

NW Bicester Exemplar Local Centre

Outline Site Waste Management Plan

Issue Date: 23rd April 2015
Report no: UA005241-5113
Revision: 01

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NW Bicester Exemplar Local Centre

Outline Site Waste Management Plan

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Approver	Natalia Fernandez-Ferro	

Hyder Report No UA005241-5113

Date 23rd April 2015

CONTENTS

1 Introduction

Hyder Consulting (UK) Limited (HCL) was instructed by A2 Dominion, 'the Client', in April 2015 to complete an Environmental Compliance Report for the North-West Bicester Exemplar Local Centre 'the Development'. As an appendix to the Environmental Compliance Report, Hyder have produced this Outline Site Waste Management Plan (SWMP).

On 1st December 2013, the Site Waste Management Plans Regulations 2008 were revoked. However, the implementation of a SWMP remains industry best practice and a requirement of Planning Policy Statement: eco-towns - *A supplement to Planning Policy Statement 1*. This Outline SWMP has been prepared for the Client using the revoked SWMP Regulations 2008 as guidance and consists of this document and a populated Excel Waste and Resources Action Programme (WRAP) SWMP Template, a PDF of which is contained at the end of this document.

The Outline SWMP, prepared at Preliminary Design, will be live documentation that will evolve into a SWMP prior to the construction phase of the Development commencing. This will be updated regularly during the course of the construction of the Development. Preparing an Outline SWMP at an early stage of design facilitates the identification and implementation of waste minimisation opportunities at the design stage and reuse and recycling opportunities during onsite operations, reducing the quantities of construction waste sent to landfill. Preparing an Outline SWMP also encourages the review of current waste reduction and recovery practice levels, highlighting areas where good and best practice can be achieved.

The main purpose of the Outline SWMP will be to assess and record how waste is reduced, reused, recycled and disposed of by the Development's project team. This effectively means:

1. Recording decisions taken to prevent waste through concept and design.
2. Forecasting waste produced onsite.
3. Planning how to reduce, reuse and then recover the forecast waste.
4. Implementing and monitoring the planned waste related activity.
5. Reviewing the SWMP and recording lessons learnt.

1.1 Site Location and Description

Cherwell District Council (CDC) granted planning permission (Ref 10/01780/HYBRID) for the development of some 21 ha of land within the North West Bicester Masterplan Area as an 'Exemplar phase'. The permission for this hybrid application included detailed consent for some 393 residential homes, roads and infrastructure including an Energy Centre. It also granted outline permission for a neighbourhood centre comprising non residential uses including community facilities, local retail, pub and office space; as well as a new primary school.

This Outline SWMP is submitted in support of changes to the existing parameter plans for the non-residential uses located on the Exemplar Phase, previously consented in outline as part of application (Ref 10/01780/HYBRID); and comprises the development of

a new local centre comprising a 503 sqm convenience store (Use Class A1), 1108 sqm of retail units (flexible Use Class A1/A3/A4/A5), 523 sqm community hall (Use Class D1), 860 sqm nursery (Use Class D1), 607 sqm of commercial units (flexible Use Class A2/ B1/ D1) with associated access, servicing, landscaping and parking.

2 Outline SWMP Template

2.1 Introduction

Preparing the Outline SWMP Template at Preliminary Design 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 Outline SWMP Template also facilitates the identification and implementation of waste minimisation opportunities and reuse and recycling opportunities during subsequent design stages, reducing the quantities of construction, demolition and excavation waste sent to landfill. The Development's Outline SWMP Template is presented in a series of 6 Stages that cover the Development's process from policy and setup to repair, refurbish, completion and use:

Stage 1 Policy and setup: the Pre-repair/refurbish Team records the administration details and set targets;

Stage 2 Preparation and concept design: the Pre- repair/refurbish Team prepare the initial concept and undertake design decisions to reduce waste;

Stage 3 Detailed design: the Pre- repair/refurbish Team forecast the waste and record the waste reduction/minimisation actions;

Stage 4 Pre- repair/refurbish: the Pre- repair/refurbish Team record the waste carriers, waste destinations and waste management and recovery actions;

Stage 5 Construction: the repair/refurbish Team record the actual waste movements, and;

Stage 6 Post completion and use: the repair/refurbish Team review KPIs, report, compare actual quantities with estimates and sign the declaration.

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

The SWMP provides options for planning and processing waste during the construction activities of the Development. It also demonstrates that A2 Dominion is a considerate client who is interested in maximising opportunities for reuse and recycling that are cost neutral (or cost negative) and in diverting waste from landfill.

2.2 Limitations

In the absence of sufficient Scheme design information, an initial quantification of the waste arisings forecast to be produced by the Development has been made using preliminary design information on the types of building structures to be utilised combined with the respective floor areas. BRE industry benchmarks have been applied to this information to gain waste forecast quantification. These are considered to provide a reliable basis for assessment of the conditions at the proposed Development.

As development of the design continues the accuracy and extent of the information available on which waste quantifications are based will improve, supporting the effective planning and management of any wastes likely to arise from the Development.

2.3 Outline SWMP Implementation

The populated Excel Waste and Resources Action Programme (WRAP) SWMP Template provides a focal point to collect waste data from construction - related activities onsite. Instructions are contained within Section 2.4.

The key roles and associated responsibilities for implementation of the SWMP are summarised below. These roles and responsibilities are based on those required by the now revoked SWMP Regulations 2008:

Team member	Key role
Client and Developer	Promote waste minimisation and insist on good practice from all team members; Ensure that all hazardous wastes have been identified prior to construction; and Review strategy over time and identify waste reduction opportunities.
Designer	Consider design options and reduce bespoke elements; Specify the use of recycled content materials; and Identify waste prevention and reduction opportunities.
Main Contractor – Site Manager	Develop site specific waste strategy, implement and communicate to all parties; Assist in design process to reduce waste and monitor implementation; Drive segregation of waste arisings and designation of areas for waste activities; Facilitate onsite storage compounds and treatment of segregated materials; Reduce waste being brought onto site as packaging, etc.; Ensure appropriate waste storage and containers onsite; Identify and confirm all destinations for waste leaving the site, including hazardous; Ensure appropriate offsite transport in line with local regulatory requirements; and Keep proper records of all wastes produced, reused and sent offsite.
Subcontractor	Develop method statements for activities onsite; Liaise with Main Contractor agree way forward; Assist in ensuring onsite practices are safe and will not impact the environment; and Ensure that wastes are properly segregated.
Site workers	Question unsatisfactory practices onsite and follow instructions as provided; Assist in ensuring onsite practices are safe and will not impact the environment; and Ensure that wastes are properly segregated.

2.4 Outline SWMP

Site Waste Management Plan

Version 3.1

Click here for help ?

Introduction

A Site Waste Management Plan (SWMP) is used to plan, implement, monitor and review waste minimisation and management on construction sites.

WRAP's SWMP Template is a tool that enables you to identify good and best practice opportunities to drive down waste and potentially reduce costs.

This tool will help you to:

- produce an effective SWMP;
- set actions to prevent, reduce and recover waste;
- identify waste reductions at the design stage;
- forecast the waste arisings;
- record waste carriers and waste management facilities;
- prepare waste management actions;
- record actual waste movements;
- benchmark against Standard, Good and Best Practice; and
- review and compare waste figures across projects.

Guidance

Please click on the questions below for more information on the SWMP template.

- Why use the SWMP template?
- What is a SWMP used for?
- Who should use the SWMP template?
- How to use the SWMP template?
- How to maximise the effectiveness of the SWMP?
- What are the benefits of using the WRAP SWMP?
- What are the alternatives to the SWMP template?
- Additional advantages

Document control

Revision number	Review Date (DD/MM/YY)	User / Name	Summary of actions / amendments	Project stage
1	15.04.15	Hyder Consulting (UK) Limited	Preliminary SWMP	Planning

Why use the SWMP template?

Back to top

The SWMP 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.

To understand why populating a SWMP is important, it is useful to refer to the **SGBP levels** t in this tool. It details the standard, good and best practice levels for waste management and recovery throughout all project stages. It also lists potential opportunities at each project stage and offers guidance on how to achieve improved project waste performance.

What is the SWMP used for?

Back to top

A SWMP is used to:

- record decisions taken to prevent waste through concept and design;
- forecast waste produced on site;
- plan how to reduce, reuse and then recover the forecasted waste;
- implement and monitor the planned activity; and,
- review the SWMP and record lessons learnt.

Who should use the SWMP and when?

Back to top

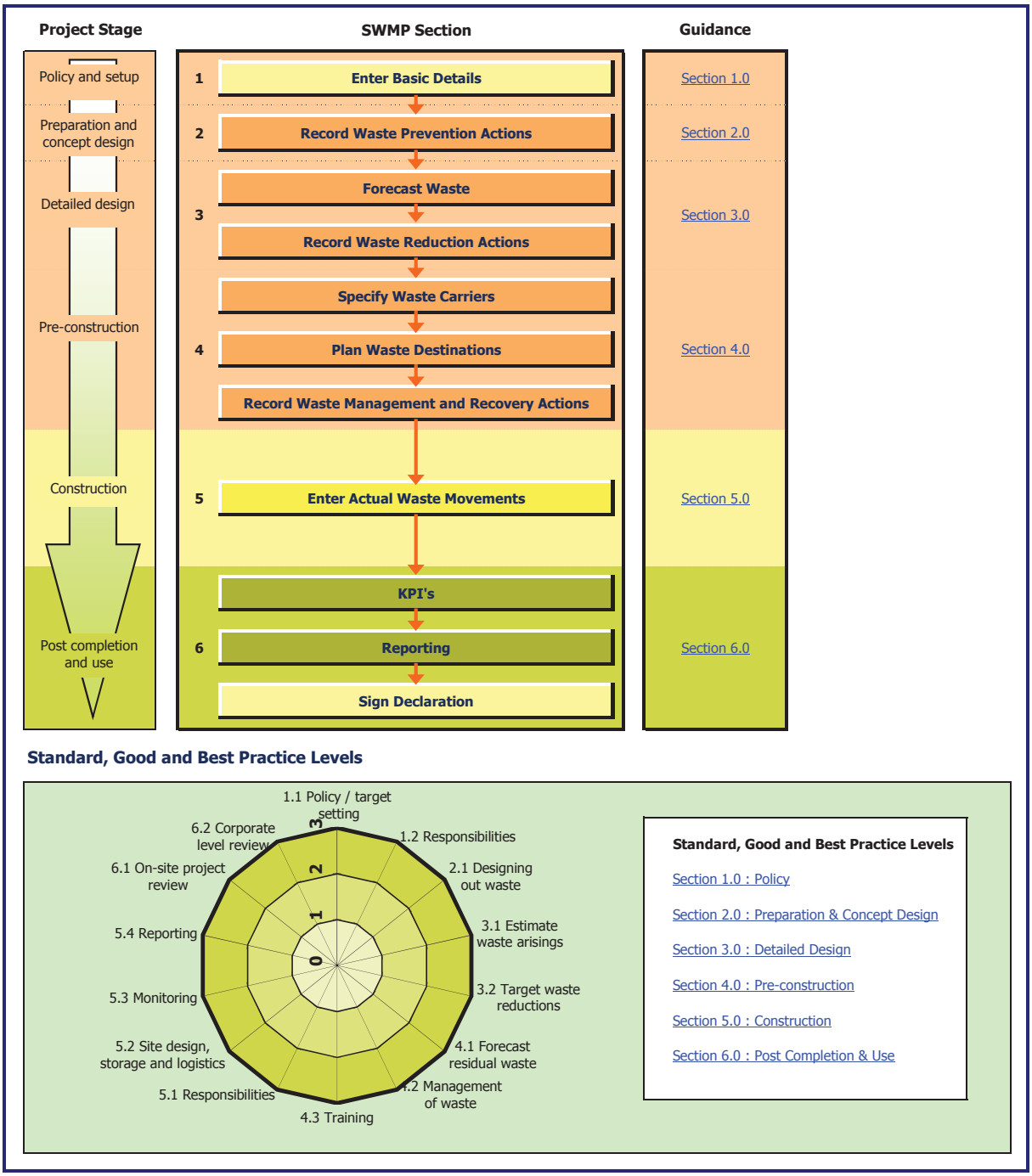
A SWMP can be used on any construction site. The client and the principal contractor will work together to develop and maintain the SWMP with input from the project team. A SWMP should be started as early in the project as possible to achieve the greatest benefit.

The diagram on the **Project Homepage** hows the project stages at which each sheet should be completed. There are also links to guidance on how to complete each sheet and why.

Site Waste Management Plan

Version 3.0

Project title : Bicester Exemplar Local Centre



Standard, Good and Best Practice Levels

Standard, Good and Best Practice Levels

Section 1.0 : Policy

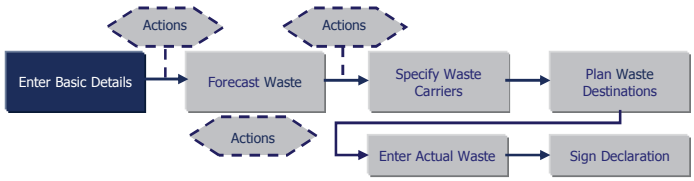
Section 2.0 : Preparation & Concept Design

Section 3.0 : Detailed Design

Section 4.0 : Pre-construction

Section 5.0 : Construction

Section 6.0 : Post Completion & Use



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Tell me about this sheet

What to enter? Enter details of the project client, principal contractor, location and value . Select the metrics for the project (e.g. floor area) and record any project targets (e.g. waste to landfill, waste arisings, etc.).

When? The basic details, metrics, project targets and the schedule sections of this sheet should be completed at the onset of a project. The sign off, explanation of deviation from the plan and lesson learnt sections should be completed at the end of the project.

Why? To provide project details and identify the person(s) responsible for the project SWMP.

Basic Details

Client name :	A2 Dominion, P3Eco
Principal contractor :	TBC
Owner of document :	Hyder Consulting (UK) Limited
Project title :	Bicester Exemplar Local Centre
Project Reference :	UA005241-5113 Appendix 14.1
Project location :	Bicester
Project postcode :	OX27 8TG
Construction value :	TBC
Type of construction :	Commercial other
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	3,134	m2

Project targets

Please select project targets applicable to your project

KPI	Phase	Target	Unit
Waste to landfill	All	0	t
Material reused on site	All	N/A	t
Waste arisings	Construction	N/A	t
Material reused on site	Excavation	N/A	t

Schedule

Start date :	TBC	dd/mm/yy
Completion date :	TBC	dd/mm/yy

Site Waste Management Plan Sign Off

Position	Name	Contact Details
Client	A2 Dominion, P3Eco	
Principal Contractor	TBC	
Site Waste Management Plan Drafter	Hyder Consulting (UK) Limited	
Others (optional)		
Client WM Representative (if applicable)		
Project Manager		
Waste Management Coordinator/Champion		
Design Coordinator		
Document Controller / Secretary		

This is stage 6.3 of the template. Complete this declaration at the end of the construction project

Confirmation that the plan has been monitored on a regular basis to ensure that work is progressing to plan and that the plan was updated.	
Signed by:	
Organisation:	
Position:	
Date:	
Signed by:	
Organisation:	
Position:	
Date:	

	Explanation of any deviation from the plan
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7	

	Where relevant, drawing on any lessons learnt, an action plan to address these for the next project
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2	
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5	
6	
7	

wrap

Tell me about:

2 Waste Prevention Actions

3 Waste Reduction Actions

4 Waste Management and Recovery Actions

What to enter? Record relevant details including the action taken, action owner and waste impact for each of the following:
- the waste prevention actions taken before the development of the SWMP. This could include decisions taken at the **design stage** such as specifying modular units or standard sizes;
- any actions identified to reduce the forecast waste. The information is added to the waste prevention actions; and
- planned site practices, to record any actions that impact on project waste recovery. This could be actions such as on site practice or the segregation requirements of the waste contractor.

When? This worksheet should be populated during the **preparation and concept design** stage. Subsequently, actions identified to reduce the forecast waste during the **detailed design** stage should be added to the table. Finally, the actions for project waste recovery arising during **pre-construction** should be entered here too.

Why? This information forms an action log that is built up throughout the development of the SWMP / duration of the project and can be printed out for use on site.

Waste Actions

Enter actions in the next available row below

Number	Type of Waste Action	Action Taken	Action owner	Reference to project document /	Waste stream	Material type	Estimated Cost Saving	Waste reduced		Date for completion (dd/mm/yyyy)	Status
								(m^3)	(tonnes)		
1	Waste Prevention Action	Complete a WRAP Designing out Waste Workshop.	Design Consultants		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 Consultants		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 Consultants		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	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					
5	Waste Reduction Action	Retain top soil, treat it onsite with compost (or other remediation) and use for soft landscaping, etc.	Principal Contractor		Inert - Soil & stones	soil and stones other than those mentioned in 17 05 03					
6	Waste Reduction Action	Use existing soft landscape that can't be retained (trees, shrubs) as compost and soft landscape top mulch.	Principal Contractor		Wood	wood					
7	Waste Prevention Action	Use recycled aggregates (either onsite or offsite) in concrete mix, as fill, etc.	Principal Contractor		Inert - mixture of concrete, bricks, tiles etc.	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06					
8	Waste Reduction Action	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).	Principal Contractor		Packaging	mixed packaging					
9	Waste Prevention Action	Embed all of the design options to be pursued into project briefings and procurement documentation as appropriate. When incorporating requirements for waste reduction in procurement documents, refer to WRAP guidance on model wording.	Principal Contractor								
10	Waste Management and Recovery Action	Use an on-site baler to compact paper, card and plastic packaging to take up less space ready for recycling.	Principal Contractor		Packaging	mixed packaging					
11	Waste Management and Recovery Action	Use the national colour-coding scheme for waste containers to ensure waste is separated efficiently.	Principal Contractor		Other C&D segregated waste						

Tell me about:

2 Waste Prevention Actions

3 Waste Reduction Actions

4 Waste Management and Recovery Actions

What to enter? Record relevant details including the action taken, action owner and waste impact for each of the following:
- the waste prevention actions taken before the development of the SWMP. This could include decisions taken at the **design stage** such as specifying modular units or standard sizes;
- any actions identified to reduce the forecast waste. The information is added to the waste prevention actions; and
- planned site practices, to record any actions that impact on project waste recovery. This could be actions such as on site practice or the segregation requirements of the waste contractor.

When? This worksheet should be populated during the **preparation and concept design** stage. Subsequently, actions identified to reduce the forecast waste during the **detailed design** stage should be added to the table. Finally, the actions for project waste recovery arising during **pre-construction** should be entered here too.

Why? This information forms an action log that is built up throughout the development of the SWMP / duration of the project and can be printed out for use on site.

Waste Actions

Enter actions in the next available row below

Number	Type of Waste Action	Action Taken	Action owner	Reference to project document /	Waste stream	Material type	Estimated Cost Saving	Waste reduced		Date for completion (dd/mm/yyyy)	Status
								(m^3)	(tonnes)		
12	Waste Management and Recovery Action	Order materials in bulk where appropriate with minimal / reusable packaging where possible.	Principal Contractor		Packaging	mixed packaging					
13	Waste Prevention Action	Put in place Materials Logistic Plan looking at supply routes, handling, storage and security for main construction phase of the project.	Principal Contractor								
14	Waste Prevention Action	Use recycled material in sub-base.	Principal Contractor		Inert - Soil & stones	soil and stones other than those mentioned in 17 05 03					
15	Waste Prevention Action	Supplier to provide block paviour construction for thinner construction.	Principal Contractor		Inert - mixture of concrete, bricks, tiles etc.	concrete					
16	Waste Prevention Action	Specify biodegradable packaging where possible and identify suitable composting method. Biodegradable materials should not be landfilled.	Principal Contractor		Packaging	mixed packaging					
17	Waste Prevention Action	Specify the use of reconstituted faced stones with a high percentage of recycled content.	Architect		Inert - Soil & stones	soil and stones other than those mentioned in 17 05 03					
18	Waste Prevention Action	Specify the use of street furniture made with recycled plastic.	Design consultants		Metals	mixed metals					
19	Waste Prevention Action	Specify the use of recycled material in compost.	Design consultants		Mixed C&D waste (17 09 04)						
20	Waste Prevention Action	Translocate existing hedgerows where appropriate.	Design consultants		Other C&D segregated waste	biodegradable waste					
21	Waste Management and Recovery Action	Suppliers remove and process waste, e.g. Paint.	Principal Contractor		Segregated Haz Waste						
22	Waste Prevention Action	Specify recycled content in hard landscaping, e.g. eco kerb 75% quarry waste.	Architect		Inert - Soil & stones						
23	Waste Prevention Action	Specify recycled plant pots or root ball wrapping.	Architect		Other C&D segregated waste						
24	Waste Prevention Action	Specify recycled plastic planks for pedestrian and cycle bridges.	Architect		Other C&D segregated waste	plastic					
25	Waste Prevention Action	Specify pre-made pedestrian/cycle bridges.	Architect		Metals	mixed metals					
26	Waste Prevention Action	Combine utilities in single trench.	Design consultants		Other C&D segregated waste						
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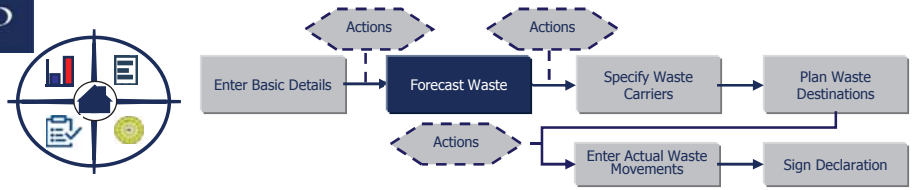

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Tell me about this sheet

A2 Dominion, P3Eco
TBC
Hyder Consulting (UK) Limited

Bicester Exemplar Local Centre

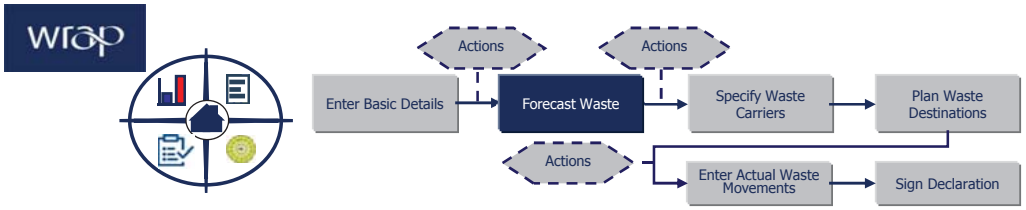
What to enter? Enter your forecast for each waste material using the included pre-determined list of wastes. The template will automatically convert your estimate from tonnes to m^3, or m^3 to tonnes.

When? This worksheet should be completed by the project team during the **detailed design** stage.

Why? This worksheet is key to planning how to reduce, reuse and recover waste. Data entered here is used within the reporting sheet to measure forecast vs. actual performance.

Forecast Waste

						Forecast Quantities		**Calculated Quantities** (Converting between m^3 and t)		
C, D or E Activity	**Waste Stream**	**Material Type**	**Further description of waste - optional**	**Suggested LOW Code**	**Waste or Re-Use**	**(m^3)**	**(tonnes)**	**(m^3)**	**(tonnes)**	**Forecast provided by**
Excavation	*Packaging*	*plastic packaging*	*plastic packaging*	*15 02 02*	*Off-site destination*	*###*	*###*	*###*	*###*	*A.N Other*
Construction	Other C&D segregated waste	bituminous mixtures other than those mentioned in 17 03 01	Asphalt	17 03 02	Off-site segregated	36.3		36.30	29.77	
Construction	Inert - mixture of concrete, bricks, tiles etc.	bricks		17 01 02	On-site re-use	32.2		32.20	38.64	
Construction	Other C&D segregated waste	mixed municipal waste	Canteen/office/adhoc	20 03 01	Off-site segregated	17.6		17.60	3.70	
Construction	Inert - mixture of concrete, bricks, tiles etc.	concrete		17 01 01	On-site re-use	91.9		91.90	116.71	
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	1.3		1.30	0.33	
Construction	Other C&D segregated waste	Furniture and bulky items		20 03 07	Off-site segregated	3.6		3.60	0.65	
Construction	Gypsum (17 08 02)	gypsum-based construction materials other than those mentioned in 17 08 01		17 08 02	Off-site segregated	14		14.00	4.62	
Construction	Mixed Hazardous - C&D waste (17 09 03*)	other construction and demolition wastes containing dangerous substances		17 09 03*	Off-site mixed	71		71.00	19.17	
Construction	Inert - mixture of concrete, bricks, tiles etc.	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06		17 01 07	On-site re-use	116.1		116.10	143.96	
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	8.8		8.80	2.20	
Construction	Other C&D segregated waste	aqueous liquid		16 10 02	Off-site segregated	13.2		13.20	11.88	
Construction	Metals	mixed metals		17 04 07	Off-site segregated	53.1		53.10	22.30	
Construction	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		17 09 04	Off-site mixed	212.6		212.60	68.03	
Construction	Packaging	mixed packaging		15 01 06	Off-site mixed	29.1		29.10	6.11	



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Tell me about this sheet

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Bicester Exemplar Local Centre

What to enter? Enter your forecast for each waste material using the included pre-determined list of wastes. The template will automatically convert your estimate from tonnes to m³, or m³ to tonnes.

When? This worksheet should be completed by the project team during the **detailed design** stage.

Why? This worksheet is key to planning how to reduce, reuse and recover waste. Data entered here is used within the reporting sheet to measure forecast vs. actual performance.

Forecast Waste

						Forecast Quantities		**Calculated Quantities** (Converting between m^3 and t)		
C, D or E Activity	**Waste Stream**	**Material Type**	**Further description of waste - optional**	**Suggested LOW Code**	**Waste or Re-Use**	**(m^3)**	**(tonnes)**	**(m^3)**	**(tonnes)**	**Forecast provided by**
Construction	Other C&D segregated waste	baled plastic	Plastics - not necessarily baled	17 02 03	Off-site segregated	12.2		12.20	2.81	
Construction	Inert - mixture of concrete, bricks, tiles etc.	tiles and ceramics		17 01 03	On-site re-use	3.3		3.30	1.95	
Construction	Wood	wood		17 02 01	Off-site segregated	53.5		53.50	18.19	
								0.00	0.00	
								0.00	0.00	
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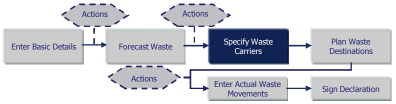

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Tell me about this sheet

A2 Dominion, P3Eco
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Bicester Exemplar Local Centre

What to enter? Enter the details of each waste carrier and each waste management facility you intend to use.

When? This sheet should be completed by the person responsible for the SWMP during the **pre construction** phase.

Why? The template uses this information in subsequent sheets to enable you to match waste streams with waste facilities and actual waste movements. Entering the data on this sheet avoids repetitive data entry on subsequent sheets within the tool. It also helps to:
- identify all persons removing the waste; and
- identify all waste carriers and registration numbers.

The Client and the Principal Contractor must take all reasonable steps to ensure that:
- they have a copy of, or reference to, the written description of the waste required by section 34 of the Environmental Protection Act 1990;
- all waste from the site is dealt with in accordance with the waste duty of care in section 34 of the Environmental Protection Act 1990(3) and the Environmental Protection (Duty of Care) Regulations 1991(4); and
- materials will be handled efficiently and waste managed appropriately.

Specify Waste Carriers

Name	Contact Details	Date checked with Environment Agency (dd/mm/yyyy)	Registration Number	Expiry Date (dd/mm/yyyy)
TBC				

Specify Waste Management Facilities

Name	Type of facility	% reused if known	% recycled if known	% energy recovery if known	% total all forms of recovery	Overall diverted from landfill /	Date checked with Environment Agency (dd/mm/yyyy)	Licence / Exemption Number	Location of relevant documentation, e.g. WTN	C, D or E Activity (Leave blank if same facility & recovery rate are used for different waste streams)	Waste Stream			
MRF	Segregated waste sent off site		75%	25%		100%				Construction	Other C&D segregated waste			
Metal Recycling facility	Segregated waste sent off site		100%			100%				Construction	Metals			
MRF	Mixed waste sent off site		95%	5%		100%				Construction	Mixed C&D waste (17 09 04)			
Hazardous waste recycling facility	Mixed waste sent off site		50%			50%				Construction	Segregated Haz Waste			
Hazardous waste recycling facility	Mixed waste sent off site		50%			50%				Construction	Segregated Haz Waste			
MRF	Segregated waste sent off site		100%			100%				Construction	Gypsum (17 08 02)			
Wood recycling facility	Segregated waste sent off site		95%	5%		100%				Construction	Wood			
						0%								
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Tell me about this sheet

A2 Dominion, P3Eco
TBC
Hyder Consulting (UK) Limited
Bicester Exemplar Local Centre

What to enter? Enter a waste management action for each different waste type. The template consolidates the material types into a pre-determined list of waste streams and allows you to select a waste management facility and disposal cost for each waste stream.

When? This sheet should be completed during the pre-construction phase.

Why? Plan Waste Destinations' performs one simple task – it allows you to match up your forecast waste streams with expected waste management facilities (entered in

The Client and the Principal Contractor must take all reasonable steps to ensure that:

- they have a copy of, or reference to, the written description of the waste required by section 34 of the Environmental Protection Act 1990;
- all waste from the site is dealt with in accordance with the waste duty of care in section 34 of the Environmental Protection Act 1990(3) and the Environmental Protection (Duty of Care) Regulations 1991(4); and
- materials will be handled efficiently and waste managed appropriately.

Total estimated forecast waste	Total (m^3)	Total (t)
Total from Waste Streams	526.30	189.75
Total Reused on site	243.50	301.26

Plan Waste Destinations

Construction
Demolition
Excavation

Construction

	Forecast				Cost of waste disposal			
Waste sent offsite	Estimated Volume (m^3)	Estimated Weight (t)	Proposed Destination	% Diverted from landfill	£/m^3	£/t	Cost Forecast	Comments
Gypsum	14.00	4.62	MRF (Construction Other C&D segregated waste)	100%			FALSE	
Metals	53.10	22.30	Metal Recycling facility (Construction Metals)	100%			FALSE	
Wood	53.50	18.19	Wood recycling facility (Construction Wood)	100%			FALSE	
Packaging	29.10	6.11	MRF (Construction Other C&D segregated waste)	100%			FALSE	
Mixed Hazardous - C&D waste	71.00	19.17	Hazardous waste recycling facility (Construction Segregated Haz Waste)	50%			FALSE	
Mixed C&D waste	212.60	68.03	MRF (Construction Mixed C&D waste (17 09 04))	100%			FALSE	
Other C&D segregated waste	93.00	51.32	MRF (Construction Other C&D segregated waste)	100%			FALSE	
	526.30	**189.75**					**£0.00**	

	Forecast	
Retained on site	Estimated Volume (m^3)	Estimated Weight (t)
Reused on site	243.50	301.26
	243.50	**301.26**

?

Tell me about this sheet

A2 Dominion, P3Eco
TBC
Hyder Consulting (UK) Limited
Bicester Exemplar Local Centre

What to enter? Enter a waste management action for each different waste type. The template consolidates the material types into a pre-determined list of waste streams and allows you to select a waste management facility and disposal cost for each waste stream.

When? This sheet should be completed during the pre-construction phase.

Why? Plan Waste Destinations' performs one simple task – it allows you to match up your forecast waste streams with expected waste management facilities (entered in

The Client and the Principal Contractor must take all reasonable steps to ensure that:

- they have a copy of, or reference to, the written description of the waste required by section 34 of the Environmental Protection Act 1990;
- all waste from the site is dealt with in accordance with the waste duty of care in section 34 of the Environmental Protection Act 1990(2) and the Environmental Protection (Duty of Care) Regulations 1991(4); and
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Total estimated forecast waste	Total (m^3)	Total (t)
Total from Waste Streams	526.30	189.75
Total Reused on site	243.50	301.26

Plan Waste Destinations

Construction
Demolition
Excavation

Demolition

Waste sent offsite	Forecast Estimated Volume (m^3)	Forecast Estimated Weight (t)	Proposed Destination	% Diverted from landfill	Cost of waste disposal £/m^3	Cost of waste disposal £/t	Cost of waste disposal Cost Forecast	Comments
	0.00	0.00					£0.00	

Retained on site	Forecast Estimated Volume (m^3)	Forecast Estimated Weight (t)
	0.00	0.00

Excavation

Waste sent offsite	Forecast Estimated Volume (m^3)	Forecast Estimated Weight (t)	Proposed Destination	% Diverted from landfill	Cost of waste disposal £/m^3	Cost of waste disposal £/t	Cost of waste disposal Cost Forecast	Comments
	0.00	0.00					£0.00	

Retained on site	Forecast Estimated Volume (m^3)	Forecast Estimated Weight (t)
	0.00	0.00

?

Tell me about this sheet

A2 Dominion, P3Eco
TBC
Hyder Consulting (UK) Limited
Bicester Exemplar Local Centre

What to enter? Enter the details of each waste movement (using the pre-determined list of wastes) and its destination for your project. Note – the template pulls through waste carrier and waste management facility data entered earlier in tab 4-Specify Waste Carriers (to avoid repetitive data input). Enter your data in the 'Actual Waste Movements' table starting at cell C30. The summary 'Waste totals' table will update accordingly.

When? Record your actual waste movements once the construction team has mobilised on site.

Waste Totals

Display summary as:
Tonnes

Waste Stream	Total waste arising (Tonnes)	Total material retained on site (Tonnes)	Total waste sent offsite (Tonnes)	Total waste to landfill (Tonnes)	Total waste recovered offsite (Tonnes)	Cost of waste disposal
Inert - Soil & stones						£0.00
Hazardous - Soil & stones						£0.00
Non Haz (Non Inert) - Dredgings						£0.00
Segregated Haz - Soil & stones						£0.00
Gypsum						£0.00
Metals						£0.00
Wood						£0.00
Packaging						£0.00
Inert - Building rubble						£0.00
Inert - Glass						£0.00
Mixed Hazardous - C&D waste						£0.00
Mixed C&D waste						£0.00
Segregated Haz Waste						£0.00
Other C&D segregated waste						£0.00
Total						**£0.00**

Actual Waste Movements

Movement Number	C, D or E Activity	Waste Stream	Material Type	Further description of waste (optional)	LOW Code used	On or off site destination	Off site carrier	Off site destination	On site reuse explanation (optional)	Overide facility recovery rate for individual skip	Overall diversion from landfill / recovery (further detail on	Date of Movement(s) (dd/mm/yyyy)	Waste Totals				
													(m^3)	(tonnes)	Actual Cost	£/m^3	£/t
1											100%						
2											100%						
3											100%						
4											100%						
5											100%						
6											100%						
7											100%						
8											100%						
9											100%						
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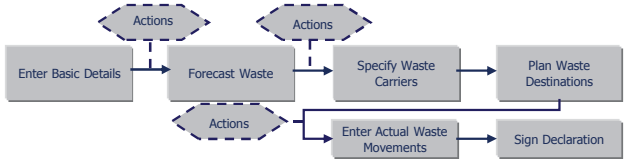

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1.0 Policy

Step 1.1	Explanation	Practice Level	How to achieve	Guidance available to help	Practice level targeted (please select)	Action (use to record more detail if you wish)
Policy / target setting	At this early stage it is advisable that high level targets are set which will govern and inform company strategy. These targets will then be incorporated into each construction project as they progress along the project lifecycle (and through the RIBA or equivalent stages).	Standard	Set high level qualitative aspirational policy goals for company performance on reducing waste arisings and increasing waste recovery.	WRAP have produced a number of Model Procurement clauses which can be incorporated into procurement documents to help meet these requirements. The model wording relates to policy documents, invitation to tender documents, pre-qualification questionnaires or contractual appointment documents. Actions 1A, 1B and 1C contain model wording that helps clients and principal contractors to set corporate, high level and project specific targets for achieving resource efficiency in construction projects. The guidance can be found here: http://www.wrap.org.uk/content/approach-procurement-resource-efficiency	Best Practice	
		Good	Insert quantified company wide targets for reducing waste arisings and increasing waste recovery into company policy documents.			
		Best	Process to insert quantified project specific waste reduction targets based on industry Best Practice benchmarks or previous project experience for reducing waste arisings and increasing waste recovery into company policy documents.			

Step 1.2	Explanation	Practice Level	How to achieve	Guidance available to help	Practice level targeted (please select)	Action (use to record more detail if you wish)
Responsibilities (for the SWMP)	There are a number of required responsibilities for early stage coordination of the Site Waste Management Plan (SWMP). Responsibilities for the operation of the SWMP are listed below in section 5.1.	Standard	Meet requirements for identifying the client, principal contractor and person drafting the Site Waste Management Plan.	WRAP have produced a number of Model Procurement Requirements to help incorporate these requirements into prequalification questionnaires and invitation to tender documents The guidance can be found here: http://www.wrap.org.uk/content/approach-procurement-resource-efficiency	Best Practice	
		Good	Involve all members of the project team and ensure everyone knows about SWMP and how it affects them.			
		Best	Include SWMP responsibilities as an agenda item at project team meetings, ensuring all team members are involved and contribute to project waste reduction and recovery actions.			

2.0 Preparation and Concept design

It is advisable that early on in the design process waste planning is included in the agenda of client and design team meetings. The design guidance document, Designing out Waste, identifies the process that can be applied to further achieve this aim:

Step 2.1	Explanation	Practice Level	How to achieve	Guidance available to help	Practice level targeted (please select)	Action (use to record more detail if you wish)
Designing Out Waste	There are numerous opportunities to reduce waste during the design process. Designing out waste before it arises is one of the most efficient ways to reduce project waste arisings. However, as such decisions need to be taken early, engagement with the design team early on in the life of a project is key.	Standard	Capture decisions made that may have an impact on waste. These decisions may not have been taken with waste reduction in mind, but may have an effect on project waste arisings nonetheless.	WRAP provide regeneration and demolition guidance that can be found here: http://www.wrap.org.uk/construction/tools_and_guidance/regeneration.html WRAP provide guidance on Designing Out Waste, which can be found here: http://www.wrap.org.uk/designingoutwaste	Best Practice	
		Good	Discuss with the project team at an early design stage how it might be best to reduce waste arisings through making changes to the design.			
		Best	Systematically identify, prioritise and implement waste reduction actions at the design stage. Consider cost, programme and waste reduction potential.			

3.0 Detailed Design

Step 3.1	Explanation	Practice Level	How to achieve	Guidance available to help	Practice level targeted (please select)	Action (use to record more detail if you wish)
Estimate waste arisings	edcf	Standard	Standard practice is to estimate waste arisings at the pre-construction stage.	WRAPs freely available Net Waste Tool allows you to enter simple project details and forecast likely waste arisings, together with suggesting waste reduction and segregation opportunities and recycled content material substitutions. The Net Waste Tool can be accessed here: http://nwtool.wrap.org.uk/ http://nwtool.wrap.org.uk/	Best Practice	
		Good	Forecast waste arisings for each component using industry data.			
		Best	Forecast waste arisings for each component using modified wastage rates based on past company experience.			

Step 3.2	Explanation	Practice Level	How to achieve	Guidance available to help	Practice level targeted (please select)	Action (use to record more detail if you wish)
Target waste reductions	This Step involves identifying and recording waste reduction methods to reduce the quantity of waste estimated in Step 3.1.	Standard	Identify waste management action for each of the different waste types forecast to arise on the construction project, including re-using, recycling, recovery and disposal.	WRAPs freely available Net Waste Tool allows you to enter simple project details and forecast likely waste arisings, together with suggesting waste reduction and segregation opportunities and recycled content material substitutions. The Net Waste Tool can be accessed here: http://nwtool.wrap.org.uk/ http://nwtool.wrap.org.uk/ WRAP also provide guidance on logistics planning that can be found here: http://www.wrap.org.uk/construction/how_do_i_reduce_waste/logistics.html	Best Practice	
		Good	Target waste arisings for each construction component using industry standard actions			
		Best	Target waste arisings for each construction component. As an example these actions could be to target accurate ordering (accurate material requirements, realistic wastage rates), logistics planning (delivery strategy, adequate storage, efficient movement of materials to the workface) or installation elements (efficient working and installation and storage of offcuts for reuse).			

4.0 Pre-construction

Step 4.1	Explanation	Practice Level	How to achieve	Guidance available to help	Practice level targeted (please select)	Action (use to record more detail if you wish)
Forecast residual waste	In addition to designing out waste at (Step 2.1), and estimating outline waste arisings (Step 3.1), it is required to forecast residual waste arisings before going to site. This final residual waste forecast is the last and most detailed waste forecast that is done before site mobilisation. Once this final waste forecast is completed, waste management and recovery options can be implemented to ensure the waste is recycled, reused or recovered.	Standard	Forecast waste according to general estimates, fulfilling requirement to identify each waste type expected to be produced in the course of the project.	WRAPs freely available Net Waste Tool allows you to enter simple project details and forecast likely waste arisings, together with suggesting waste reduction and segregation opportunities and recycled content material substitutions. The Net Waste Tool can be accessed here: http://nwtool.wrap.org.uk/ http://nwtool.wrap.org.uk/ WRAP have produced a number of Model Procurement Requirements to help incorporate these requirements into prequalification questionnaires invitation to tender documents, and appointment contracts. The guidance can be found here: http://www.wrap.org.uk/content/approach-procurement-resource-efficiency	Best Practice	
		Good	Good practice relates to forecasting waste arisings at the detailed design stage. Refer to Step 3.1. Good practice for Step 4.1 relates to forecasting residual waste arisings in conjunction with the principal contractor and agreeing the waste reduction and recovery standards to be achieved on the project.			
		Best	Building on Good Practice, hold talks with the rest of the supply chain (waste management contractors, sub-contractors) to determine waste reduction and recovery actions for the project.			

Step 4.2	Explanation	Practice Level	How to achieve	Guidance available to help	Practice level targeted (please select)	Action (use to record more detail if you wish)
Management of Waste	This step relates to the efficient management of waste once it has been created on site. Step 4.2 which deals with the management of waste on site should be implemented in line with any targets identified in sections 1.0, 2.0 and 3.0 above. As noted above in Step 2.1, off-cuts should be stored safely on site for reuse.	Standard	Identify waste management action for each waste stream	WRAPs freely available Net Waste Tool allows you to enter simple project details and forecast likely waste arisings, together with suggesting waste reduction and segregation opportunities and recycled content material substitutions. The Net Waste Tool can be accessed here: http://nwtool.wrap.org.uk/ WRAP also provide guidance on developing and implementing a material logistics plan. The logistics plan guidance can be found here: http://www.wrap.org.uk/construction/construction waste http://www.wrap.org.uk/construction/how_do_i_reduce_waste/logistics.html allows you to enter the postcode of your site and pin point waste management facilities and materials/products suppliers within a region or radius of your chosen distance. It can be found here http://www.bremap.co.uk/	Best Practice	
		Good	Identify recycling and recovery options for each waste stream for which recycling and recovery is viable			
		Best	Maximise opportunities for resource efficiency through following the waste hierarchy (prevention, minimisation, reuse, recycling, recovery, disposal)			

Step 4.3	Explanation	Practice Level	How to achieve	Guidance available to help	Practice level targeted (please select)	Action (use to record more detail if you wish)
Training	It is necessary that all site workers are trained on the Site Waste Management Plan, providing information on how it affects them. Training prospects should be seen as opportunities to engage with the supply chain and gain buy-in from them – as it will be the supply chain who will be able to significantly contribute to any project resource efficiency targets.	Standard	The principal contractor should provide training to every construction worker needed for the particular work to be carried out within the terms of the site waste management plan. This can be in the form of toolbox talks.	WRAP provide a wealth of background information on waste reduction and recovery, including guidance documents, case studies and best practice guides. General WRAP construction guidance can be found here: http://www.wrap.org.uk/construction/tools_and_guidance/index.html WRAP also provide a short guidance note for small and medium sized contractors on reducing construction waste. It can be downloaded here: http://www.wrap.org.uk/sites/files/wrap/W676%20Actions%20to%20reduce%20waste%20in%20construction%20projects%20and%20minor%20works_FINAL.pdf	Best Practice	
		Good	Building on standard practice, provide bespoke training to all subcontractors and identify waste reduction actions where they can contribute.			
		Best	Building on good practice and share experience from previous projects or sites. Use the training exercise to inform continual improvement.			

5.0 Construction

Step 5.1	Explanation	Practice Level	How to achieve	Guidance available to help	Practice level targeted (please select)	Action (use to record more detail if you wish)
Responsibilities (on site)	Once the SWMP has been developed it must be implemented on site. This Step outlines how to assign responsibility for ensuring the SWMP is delivered.	Standard	Meet requirements for identifying the client, principal contractor and person drafting the Site Waste Management Plan.	WRAP have produced a number of Model Procurement Requirements to help incorporate these requirements into prequalification questionnaires and invitation to tender documents The guidance can be found here: http://www.wrap.org.uk/content/approach-procurement-resource-efficiency	Best Practice	
		Good	Waste champion is appointed for the whole site.			
		Best	Building on Good Practice, individuals and sub contractors should be made responsible for specific waste streams, with the waste champion holding these project members to account.			

Step 5.2	Explanation	Practice Level	How to achieve	Guidance available to help	Practice level targeted (please select)	Action (use to record more detail if you wish)
Site design, storage and logistics	Space permitting, key waste streams should be segregated. The segregation scheme should include appropriate training, monitoring and enforcement with clear signage and using the National Colour Coding Scheme.	Standard	Meet requirement that all waste from the site is dealt with in accordance with the Environmental Protection Act and Environmental Protection (Duty of Care) Regulations.	WRAP have produced a number of Model Procurement Requirements to help incorporate these requirements into prequalification questionnaires and invitation to tender documents The guidance can be found here: http://www.wrap.org.uk/construction/achieving_resource_efficiency/model_procurement_requirements/index.html	Best Practice	
		Good	Before work starts on site consider layout and skip locations. Use segregated containers at the workface.			
		Best	Ensure separate containers are provided for Hazardous Waste, material storage areas are clearly located and signed or arrange for just in time delivery and prevent double handling.			

Step 5.3	Explanation	Practice Level	How to achieve	Guidance available to help	Practice level targeted (please select)	Action (use to record more detail if you wish)
Monitoring	Monitoring progress against the actions in the site waste management plan more often that every six months can inform ongoing site achievement of the planned waste reduction and recovery actions. It can be part of the live review process and inform continual improvement. Once data is collected, it will form a baseline against which clients can evaluate and improve on resource efficiency performance. Step 5.3 should therefore be linked with Step 6.2.	Standard	Monitor and update the Site Waste Management Plan not less than every six months	WRAP provide guidance on measurement and reporting on construction projects. It can be found here: http://www.wrap.org.uk/construction/tools_and_guidance/reporting_portal.html	Best Practice	
		Good	Principal contractor to review the construction schedule and set appropriate project review and monitoring dates with the client.			
		Best	Building on Good Practice, review site progress against the Site Waste Management Plan and implement changes to revise site activities based on performance where necessary.			

Step 5.4	Explanation	Practice Level	How to achieve	Guidance available to help	Practice level targeted (please select)	Action (use to record more detail if you wish)
Reporting	Reporting is an integral part of the Site Waste Management Plan process. Good and best practice relate to recording and reporting waste arisings in increasing levels of detail. WRAP provide a method note that defines the standard by which the construction industry has agreed to record and report waste arisings. The link to this guidance is listed in the 'guidance'	Standard	Ensure the Site Waste Management Plan is kept at the site, and that the Plan is available for two years after completion of the construction project.	WRAPs Reporting Portal has been developed to allow the construction industry to report on its progress in implementing Site Waste Management Plans and record actual site achievements. It can be found here: http://www.wrap.org.uk/construction/tools_and_guidance/reporting_portal.html	Best Practice	
		Good	Report waste generation, recovery and disposal arising by construction phase (construction, demolition and excavation).			
		Best	Report lessons learnt through the project, including the good and best practice levels achieved.			

6.0 Post-completion

Step 6.1	Explanation	Practice Level	How to achieve	Guidance available to help	Practice level targeted (please select)	Action (use to record more detail if you wish)
On-site project review	The on-site project review is an opportunity for the site project team to review their progress post completion. Good and best practice items relate to the process of continuous review and learning.	Standard	Meet requirements to compare Site Waste Management Plan forecast versus actual performance, and record any deviations from the Plan.	WRAPs National Reporting Portal has been developed to allow the construction industry to report on its progress in implementing Site Waste Management Plans and record actual site achievements. It can be found here: http://www.wrap.org.uk/construction/tools_and_guidance/reporting_portal.html	Best Practice	
		Good	Building on Standard Practice, review the Site Waste Management Plan to identify any improvements that could have been made (e.g. to improve waste reduction or recovery, or the accuracy of the forecast).			
		Best	Building on Good Practice, hold a post completion project team meeting to debrief and learn lessons from the Site Waste Management Plan process that can be used to inform future practice.			

Step 6.2	Explanation	Practice Level	How to achieve	Guidance available to help	Practice level targeted (please select)	Action (use to record more detail if you wish)
Corporate level review	The corporate level review uses the SWMPs produced on individual sites to compare construction projects against company baseline performance. If a baseline does not exist, then the first project will become the baseline against which performance in future projects will be measured against.	Standard	Meet requirements to compare Site Waste Management Plan forecast versus actual performance, and record any deviations from the Plan.	WRAPs Reporting Portal has been developed to allow the construction industry to report on its progress in implementing Site Waste Management Plans and record actual site achievements. It can be found here: http://www.wrap.org.uk/construction/tools_and_guidance/reporting_portal.html	Best Practice	
		Good	Record project performance in the following areas: cost savings achieved, total waste arisings, total waste to landfill, total waste reductions achieved and recycled content used.			
		Best	Use data collected in Step 6.1 standard practice to benchmark performance across your portfolio of projects, using the data to inform continual improvement. Using the data gathered and lessons learnt, set company policy on expected metrics (cost savings, waste arisings, waste reductions, total waste to landfill) for similar project types going forward. Integrate lessons learnt into corporate construction procedures.			

My targets

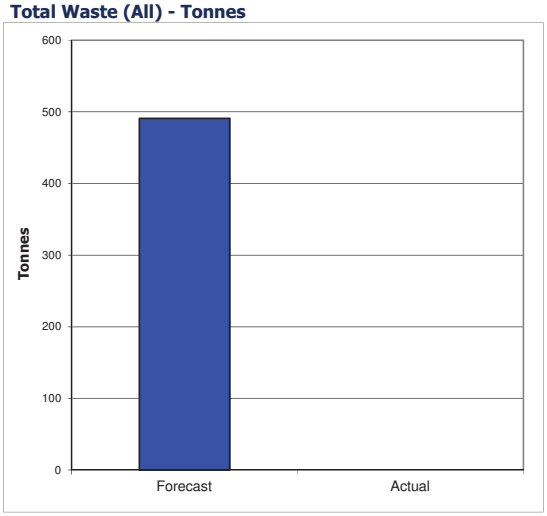
KPI	Target
Waste to landfill (All)	0t
Material reused on site (All)	N/At
Waste arisings (Construction)	N/At
Material reused on site (Excavation)	N/At

KPI Report

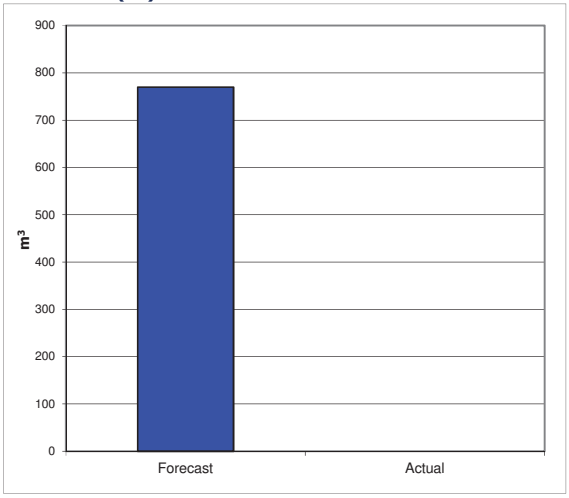
Select Metric :	Total
Select Phase :	All

	Forecast		Actual	
	m^3	Tonnes	m^3	Tonnes
Total Waste	769.80	491.01	0.00	0.00
Total Waste to landfill	35.50	9.59	0.00	0.00
% Waste diverted from landfill	95%	98%	#DIV/0!	#DIV/0!
% Material reused on site	32%	61%	#DIV/0!	#DIV/0!

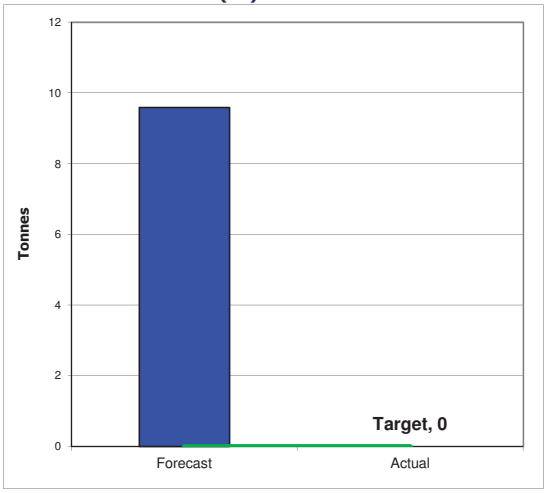
Total Waste (All) - Tonnes



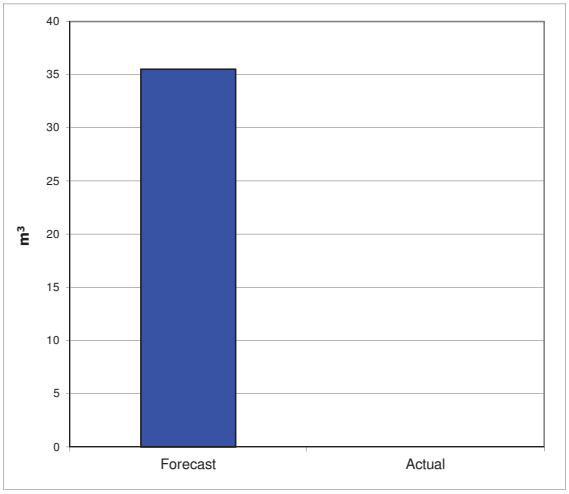
Total Waste (All) - m3



Total Waste to Landfill (All) - Tonnes



Total Waste to Landfill (All) - m3



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A2 Dominion, P3Eco
TBC
Hyder Consulting (UK) Limited
Bicester Exemplar Local Centre

View data in: tonnes

Reporting

Combined stages C,D and E

Construction

Demolition

Excavation

	Forecast		Actual	
	m³	Tonnes	m³	Tonnes
Total Waste	769.80	491.01	0.00	0.00
Total Waste to landfill	35.50	9.59	0.00	0.00
% Waste diverted from landfill	95%	98%	#DIV/0!	#DIV/0!
% Materials reused on site	32%	61%	#DIV/0!	#DIV/0!

Combined stages C, D and E

		Waste and material arisings		Waste sent offsite		Materials kept onsite		Sent to landfill		Diverted from landfill		Cost of waste disposal (offsite)	
Forecast/Actual		F	A	F	A	F	A	F	A	F	A	F	A
Unit		tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	£	£
Total		491.01		189.75		301.26		9.59		180.16			
Class	Non Haz (Inert)	301.26				301.26							
	Haz	19.17		19.17				9.59		9.59			
	Non Haz (Non Inert)	170.58		170.58						170.58			
Assigned Waste Stream	Inert - Soil & stones												
	Non Haz (Non Inert) - Soil & stones												
	Non Haz (Non Inert) - Dredgings												
	Segregated Haz - Soil & stones												
	Gypsum	4.62		4.62						4.62			
	Metals	22.30		22.30						22.30			
	Wood	18.19		18.19						18.19			
	Packaging	6.11		6.11						6.11			
	Inert - Building rubble	301.26				301.26							
	Inert - Glass												
	Mixed Hazardous - C&D waste	19.17		19.17				9.59		9.59			
	Mixed C&D waste	68.03		68.03						68.03			
	Segregated Haz Waste												
	Other C&D segregated waste	51.32		51.32						51.32			
List of Waste (LOW) Code	08 01 11*												
	08 01 12												
	08 01 13*												
	08 01 14												
	edcf												
	08 03 18												
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	17 01 02	38.64				38.64							
	17 01 03	1.95				1.95							
	17 01 06*												
	17 01 07	143.96				143.96							
	17 02 01	18.19		18.19									
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	17 02 03	2.81		2.81									
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	20 01 36	0.33		0.33									
	20 01 99												
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	20 03 01	3.70		3.70									
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	16 05 07*												
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	20 01 02												
	20 01 39												

		Recovery of materials and wastes											
		Re-used				Recycled				Energy recovery			
		off-site		on-site		off-site		on-site		off-site		on-site	
Forecast/Actual		F	A	F	A	F	A	F	A	F	A	F	A
Unit		tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Total				301.26		160.34				19.82			
Class	Non Haz (Inert)			301.26									
	Haz					9.59							
	Non Haz (Non Inert)					150.75				19.82			
Assigned Waste Stream	Inert - Soil & stones												
	Non Haz (Non Inert) - Soil & stones												
	Non Haz (Non Inert) - Dredgings												
	Segregated Haz - Soil & stones												
	Gypsum					3.47				1.16			
	Metals					22.30							
	Wood					17.28				0.91			
	Packaging					4.58				1.53			
	Inert - Building rubble			301.26									
	Inert - Glass												
	Mixed Hazardous - C&D waste					9.59							
	Mixed C&D waste					64.63				3.40			
	Segregated Haz Waste												
	Other C&D segregated waste					38.49				12.83			
List of Waste (LOW) Code	08 01 11*												
	08 01 12												
	08 01 13*												
	08 01 14												
	edcf												
	08 03 18												
	13 01 12*												
	13 01 13*												
	13 05 01*												
	13 05 03*												
	13 05 06*												
	13 07 01*												
	14 06 01*												
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	14 06 03*												
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	15 01 09												
	15 01 10*												
	15 01 11*												
	15 02 02*												
	15 02 03												
	16 01 03												
	16 01 07*												
	16 02 09*												
	16 06 01*												
	16 06 02*												
	16 06 03*												
	16 06 04												
	16 07 08*												
	16 10 01*												
	17 01 01			116.71									
	17 01 02			38.64									
	17 01 03			1.95									
	17 01 06*												
	17 01 07			143.96									
	17 02 01												
	17 02 02												
	17 02 03												
	17 02 04*												
	17 03 01*												
	17 03 02												
	17 03 03*												
	17 04 01												
	17 04 02												
	17 04 03												
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	17 04 11												
	17 05 03*												
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	19 13 01*												
	20 01 01												
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	20 01 11												
	20 01 21*												
	20 01 23*												
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	20 01 99												
	20 02 01												
	20 03 01												
	20 03 03												
	20 03 04												
	20 03 06												
	20 03 07												
	08 01 19												
	13 01 11*												
	13 02 08*												
	16 05 07*												
	10 11 03												
	20 01 02												
	20 01 39												

Construction

		Waste and material arisings		Waste sent offsite		Materials kept onsite		Sent to landfill		Diverted from landfill		Cost of waste disposal (offsite)	
Forecast/Actual		F	A	F	A	F	A	F	A	F	A	F	A
Unit		tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	£	£
Total		491.01		189.75		301.26		9.59		180.16			
Class	Non Haz (Inert)	301.26				301.26							
	Haz	19.17		19.17				9.59		9.59			
	Non Haz (Non Inert)	170.58		170.58						170.58			
Assigned Waste Stream	Inert - Soil & stones												
	Non Haz (Non Inert) - Soil & stones												
	Non Haz (Non Inert) - Dredgings												
	Segregated Haz - Soil & stones												
	Gypsum	4.62		4.62						4.62		FALSE	
	Metals	22.30		22.30						22.30		FALSE	
	Wood	18.19		18.19						18.19		FALSE	
	Packaging	6.11		6.11						6.11		FALSE	
	Inert - Building rubble	301.26				301.26						FALSE	
	Inert - Glass											FALSE	
	Mixed Hazardous - C&D waste	19.17		19.17				9.59		9.59		FALSE	
	Mixed C&D waste	68.03		68.03						68.03		FALSE	
	Segregated Haz Waste											FALSE	
	Other C&D segregated waste	51.32		51.32						51.32		FALSE	
List of Waste (LOW) Code	08 01 11*												
	08 01 12												
	08 01 13*												
	08 01 14												
	08 01 18												
	08 03 18												
	13 01 12*												
	13 01 13*												
	13 05 01*												
	13 05 03*												
	13 05 06*												
	13 07 01*												
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	14 06 02*												
	14 06 03*												
	14 06 04*												
	14 06 05*												
	15 01 01												
	15 01 02												
	15 01 03												
	15 01 04												
	15 01 05												
	15 01 06	6.11		6.11									
	15 01 07												
	15 01 09												
	15 01 10*												
	15 01 11*												
	15 02 02*												
	15 02 03												
	16 01 03												
	16 01 07*												
	16 02 09*												
	16 06 01*												
	16 06 02*												
	16 06 03*												
	16 06 04												
	16 07 08*												
	16 10 01*												
	17 01 01	116.71				116.71							
	17 01 02	38.64				38.64							
	17 01 03	1.95				1.95							
	17 01 06*												
	17 01 07	143.96				143.96							
	17 02 01	18.19		18.19									
	17 02 02												
	17 02 03	2.81		2.81									
	17 02 04*												
	17 03 01*												
	17 03 02	29.77		29.77									
	17 03 03*												
	17 04 01												
	17 04 02												
	17 04 03												
	17 04 04												
	17 04 05												
	17 04 06												
	17 04 07	22.30		22.30									
	17 04 09*												
	17 04 10*												
	17 04 11												
	17 05 03*												
	17 05 04												
	17 05 05*												
	17 05 06												
	17 05 07*												
	17 05 08												
	17 06 01*												
	17 06 03*												
	17 06 04	2.20		2.20									
	17 06 05*												
	17 08 01*												
	17 08 02	4.62		4.62									
	17 09 01*												
	17 09 02*												
	17 09 03*	19.17		19.17									
	17 09 04	68.03		68.03									
	19 13 01*												
	20 01 01												
	20 01 08												
	20 01 11												
	20 01 21*												
	20 01 23*												
	20 01 25												
	20 01 35*												
	20 01 36	0.33		0.33									
	20 01 99												
	20 02 01												
	20 03 01	3.70		3.70									
	20 03 03												
	20 03 04												
	20 03 06												
	20 03 07	0.65		0.65									
	08 01 19												
	13 01 11*												
	13 02 08*												
	16 05 07*												
	10 11 03												
	20 01 02												
	20 01 39												

		Recovery of materials and wastes											
		Re-used				Recycled				Energy recovery			
		off-site		on-site		off-site		on-site		off-site		on-site	
Forecast/Actual		F	A	F	A	F	A	F	A	F	A	F	A
Unit		tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Total				301.26		160.34				19.82			
Class	Non Haz (Inert)			301.26									
	Haz					9.59							
	Non Haz (Non Inert)					150.75				19.82			
Assigned Waste Stream	Inert - Soil & stones												
	Non Haz (Non Inert) - Soil & stones												
	Non Haz (Non Inert) - Dredgings												
	Segregated Haz - Soil & stones												
	Gypsum					3.47				1.16			
	Metals					22.30							
	Wood					17.28				0.91			
	Packaging					4.58				1.53			
	Inert - Building rubble			301.26									
	Inert - Glass												
	Mixed Hazardous - C&D waste					9.59							
	Mixed C&D waste					64.63				3.40			
	Segregated Haz Waste												
	Other C&D segregated waste					38.49				12.83			
List of Waste (LOW) Code	08 01 11*												
	08 01 12												
	08 01 13*												
	08 01 14												
	08 01 18												
	08 03 18												
	13 01 12*												
	13 01 13*												
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	16 01 03												
	16 01 07*												
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	16 06 01*												
	16 06 02*												
	16 06 03*												
	16 06 04												
	16 07 08*												
	16 10 01*												
	17 01 01			116.71									
	17 01 02			38.64									
	17 01 03			1.95									
	17 01 06*												
	17 01 07			143.96									
	17 02 01												
	17 02 02												
	17 02 03												
	17 02 04*												
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	13 01 11*												
	13 02 08*												
	16 05 07*												
	10 11 03												
	20 01 02												
	20 01 39												

Demolition

		Waste and material arisings		Waste sent offsite		Materials kept onsite		Sent to landfill		Diverted from landfill		Cost of waste disposal (offsite)	
Forecast/Actual		F	A	F	A	F	A	F	A	F	A	F	A
Unit		tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	£	£
Total													
Class	Non Haz (Inert)												
	Haz												
	Non Haz (Non Inert)												
Assigned Waste Stream	Inert - Soil & stones												
	No Haz (Non Inert) - Soil & stones												
	Non Haz (Non Inert) - Dredgings												
	Segregated Haz - Soil & stones												
	Gypsum											FALSE	
	Metals											FALSE	
	Wood											FALSE	
	Packaging											FALSE	
	Inert - Building rubble											FALSE	
	Inert - Glass											FALSE	
	Mixed Hazardous - C&D waste											FALSE	
	Mixed C&D waste											FALSE	
	Segregated Haz Waste											FALSE	
	Other C&D segregated waste											FALSE	
List of Waste (LOW) Code	08 01 11*												
	08 01 12												
	08 01 13*												
	08 01 14												
	08 01 18												
	08 03 18												
	13 01 12*												
	13 01 13*												
	13 05 01*												
	13 05 03*												
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	15 01 03												
	15 01 04												
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	15 01 10*												
	15 01 11*												
	15 02 02*												
	15 02 03												
	16 01 03												
	16 01 07*												
	16 02 09*												
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	16 07 08*												
	16 10 01*												
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	17 01 02												
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	19 13 01*												
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	20 01 08												
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	20 01 35*												
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	20 03 03												
	20 03 04												
	20 03 06												
	20 03 07												
	08 01 19												
	13 01 11*												
	13 02 08*												
	16 05 07*												
	10 11 03												
	20 01 02												
	20 01 39												

		Recovery of materials and wastes											
		Re-used				Recycled				Energy recovery			
		off-site		on-site		off-site		on-site		off-site		on-site	
Forecast/Actual		F	A	F	A	F	A	F	A	F	A	F	A
Unit		tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Total													
Class	Non Haz (Inert)												
	Haz												
	Non Haz (Non Inert)												
Assigned Waste Stream	Inert - Soil & stones												
	No Haz (Non Inert) - Soil & stones												
	Non Haz (Non Inert) - Dredgings												
	Segregated Haz - Soil & stones												
	Gypsum												
	Metals												
	Wood												
	Packaging												
	Inert - Building rubble												
	Inert - Glass												
	Mixed Hazardous - C&D waste												
	Mixed C&D waste												
	Segregated Haz Waste												
	Other C&D segregated waste												
List of Waste (LOW) Code	08 01 11*												
	08 01 12												
	08 01 13*												
	08 01 14												
	08 01 18												
	08 03 18												
	13 01 12*												
	13 01 13*												
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	16 01 03												
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	16 07 08*												
	16 10 01*												
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	20 01 36												
	20 01 99												
	20 02 01												
	20 03 01												
	20 03 03												
	20 03 04												
	20 03 06												
	20 03 07												
	08 01 19												
	13 01 11*												
	13 02 08*												
	16 05 07*												
	10 11 03												
	20 01 02												
	20 01 39												

Excavation

		Waste and material arisings		Waste sent offsite		Materials kept onsite		Sent to landfill		Diverted from landfill		Cost of waste disposal (offsite)	
Forecast/Actual		F	A	F	A	F	A	F	A	F	A	F	A
Unit		tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	£	£
Total													
Class	Non Haz (Inert)												
	Haz												
	Non Haz (Non Inert)												
Assigned Waste Stream	Inert - Soil & stones											FALSE	
	Non Haz (Non Inert) - Soil & stones											FALSE	
	Non Haz (Non Inert) - Dredgings											FALSE	
	Segregated Haz - Soil & stones											FALSE	
	Gypsum											FALSE	
	Metals											FALSE	
	Wood											FALSE	
	Packaging											FALSE	
	Inert - Building rubble											FALSE	
	Inert - Glass											FALSE	
	Mixed Hazardous - C&D waste											FALSE	
	Mixed C&D waste											FALSE	
	Segregated Haz Waste											FALSE	
	Other C&D segregated waste											FALSE	
List of Waste (LOW) Code	08 01 11*												
	08 01 12												
	08 01 13*												
	08 01 14												
	08 01 18												
	08 03 18												
	13 01 12*												
	13 01 13*												
	13 05 01*												
	13 05 03*												
	13 05 06*												
	13 07 01*												
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	16 01 07*												
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	16 06 04												
	16 07 08*												
	16 10 01*												
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	17 01 02												
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	17 09 04												
	19 13 01*												
	20 01 01												
	20 01 08												
	20 01 11												
	20 01 21*												
	20 01 23*												
	20 01 25												
	20 01 35*												
	20 01 36												
	20 01 99												
	20 02 01												
	20 03 01												
	20 03 03												
	20 03 04												
	20 03 06												
	20 03 07												
	08 01 19												
	13 01 11*												
	13 02 08*												
	16 05 07*												
	10 11 03												
	20 01 02												
	20 01 39												

		Recovery of materials and wastes											
		Re-used				Recycled				Energy recovery			
		off-site		on-site		off-site		on-site		off-site		on-site	
Forecast/Actual		F	A	F	A	F	A	F	A	F	A	F	A
Unit		tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Total													
Class	Non Haz (Inert)												
	Haz												
	Non Haz (Non Inert)												
Assigned Waste Stream	Inert - Soil & stones												
	Non Haz (Non Inert) - Soil & stones												
	Non Haz (Non Inert) - Dredgings												
	Segregated Haz - Soil & stones												
	Gypsum												
	Metals												
	Wood												
	Packaging												
	Inert - Building rubble												
	Inert - Glass												
	Mixed Hazardous - C&D waste												
	Mixed C&D waste												
	Segregated Haz Waste												
	Other C&D segregated waste												
List of Waste (LOW) Code	08 01 11*												
	08 01 12												
	08 01 13*												
	08 01 14												
	08 01 18												
	08 03 18												
	13 01 12*												
	13 01 13*												
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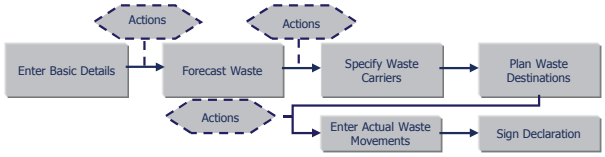
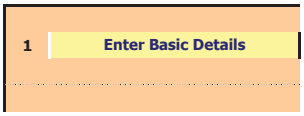


E-learning: A full e-learning module can be found on the WRAP website. This will show you how to complete the template and work through an example.
http://www.wrap.org.uk/content/site-waste-management-plan-tools-video-tutorials

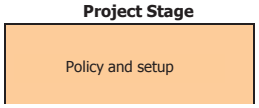
Welcome to the WRAP Site Waste Management Plan Template. This short help page has been provided to guide you through how to use the template.
You may find it easier to use Excel Full Screen view to navigate around the SWMP Template.

Project Homepage



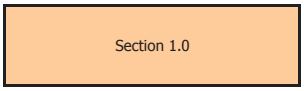
This is the main part of the SWMP Template and allows you navigate to all worksheets in the Template. The buttons on the homepage as shown here allow you to navigate through the document. Start at the top with Enter Basic Details and end at the declaration, each button is also accompanied by guidance as shown.

Project Stage



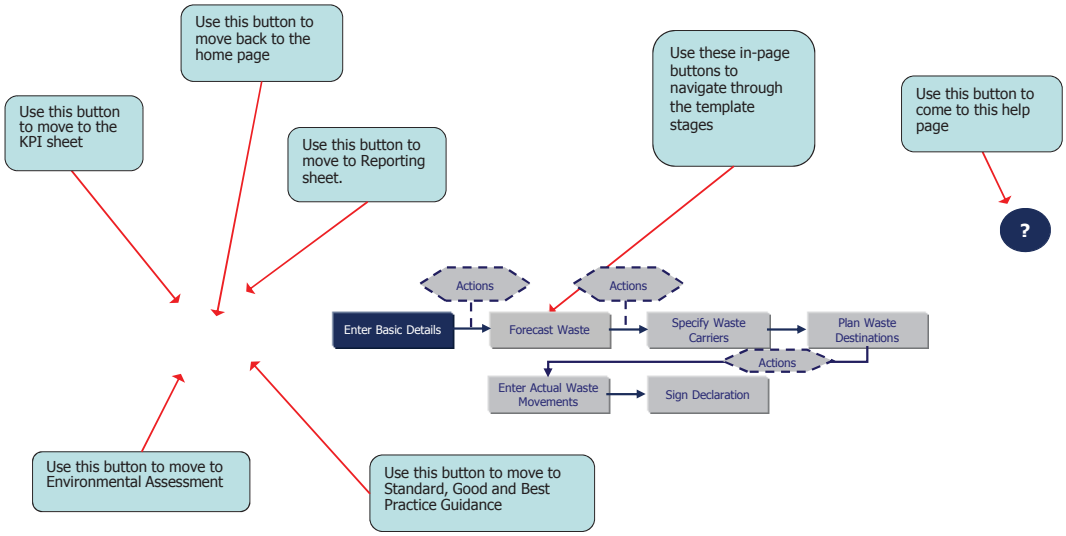
The template follows the project stages to help you find where you are in your project.

Guidance

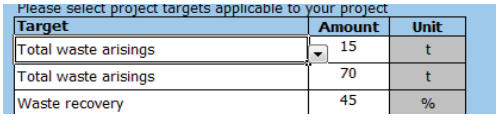


Each Step is accompanied by guidance that explains how to use an SWMP to achieve Good and Best Practice waste reduction and recovery on site.

The 'Tell me about your sheet' tab tells you what each sheet is for and how to use it. If you get stuck hover over the box and it will tell you what to do.

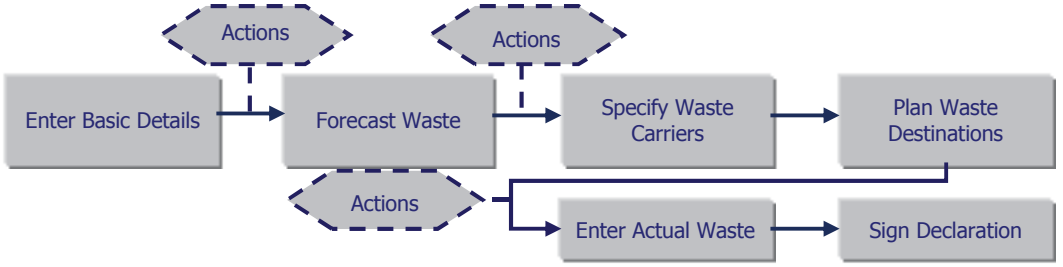


There is more guidance on each sheet, hover over a box where you see a red triangle in the corner.


Please select project targets applicable to your project

Target	Amount	Unit
Total waste arisings	15	t
Total waste arisings	70	t
Waste recovery	45	%

When you click on a box you will see that some you enter using a drop down list and others use free entry. Look for the arrow on the right side of the box. If there is one there click it and select from the menu.



?

Tell me about this sheet

Environmental Assessment Methods

An advantage of using the SWMP template is to meet requirements for Environmental Assessment Methods such as BREEAM and CEEQUAL.

This page helps users who are striving towards achieving requirements of these Environmental Assessments to draw out the information they require.

It should be noted that:

- not all projects require an Environmental Assessment but those that do can use this sheet for guidance; and
- users should check the relevant assessment manuals (if) applicable to their project for compliance with waste management requirements.

Common Requirements for Environmental Assessment Methods (EAMs)

There are some requirements with regards to Site Waste Management Planning that are common to many EAMs. The following is a suggested list of good practice which may be required for compliance. Users should check the guidance for the relevant assessment method for exact requirements.

- Compliance with Environmental Protection Act 1990 and the Environmental Protection (Duty of Care) Regulations 1991(4).
- Regular updating of the SWMP and evidence of review and implementation.
- Determine and follow a formal waste minimisation plan.
- Set targets to reduce, re-use and / or recycle waste.
- Active monitoring of targets for the duration of the project.
- Report % of inert waste material that has been segregated (on or off-site) and diverted from landfill.
- Report % by volume of non-hazardous waste material that has been segregated (on or off site) and diverted from landfill.

BREEAM

A Site Waste Management Plan is required to achieve credits under the BREEAM issue relating to construction waste management. There are certain aspects that must be included in a SWMP. The checklist below summarises some of these.

It is important to note that either mass **or** volume can be recorded for BREEAM and users are advised to choose the unit that suits their project and targets most appropriately.

targets most appropriately.

Checklist

Does your SWMP include the following?	Completed?	Notes
Target benchmark for resource efficiency i.e. m^3 of waste per $100m^2$ or tonnes of waste per $100m^2$	No	
Procedures and commitments for minimising non-hazardous waste in line with the benchmark	No	
Procedures for minimising hazardous waste	No	
Procedures for monitoring, measuring and reporting hazardous and non-hazardous site waste	No	
Procedures for sorting, reusing and recycling construction waste into defined waste groups (see additional guidance section), either on site or through a licensed external contractor	No	
The name or job title of the individual responsible for implementing the above.	No	

	Forecast		Actual	
	Total (m^3)	**Total** (t)	**Total** (m^3)	**Total** (t)
Construction waste per $100m^2$ GIFA	No GIFAm2 entered	No GIFAm2 entered	No GIFAm2 entered	No GIFAm2 entered

Diversion of non-hazardous waste from landfill	**Volume** (%)	**Tonnage** (%)	**Volume** (%)	**Tonnage** (%)
Non-demolition %	65.15%	36.15%	No waste	No waste
Demolition %	No waste	No waste	No waste	No waste