



Appendix 17-1 - Table 17.1: Construction and Refurbishment - Residential, Commercial and Industrial

Project: Carrow Works

Assumptions - New Build Benchmarks

Residential	15.3	l/100m ²	SMARTwaste BRE (October 2017)
Community	13.7	l/100m ²	SMARTwaste BRE (October 2017)
Commercial Other	21.0	l/100m ²	SMARTwaste BRE (October 2017)
Commercial Retail	15.7	l/100m ²	SMARTwaste BRE (October 2017)

Assumptions - Refurbishment Benchmarks

Commercial (retail)	13.5	m ³ per 100 m ²	Construction Resources and Waste Platform (2010)
Commercial (offices)	14.1	m ³ per 100 m ²	Construction Resources and Waste Platform (2010)
Residential	17.8	m ³ per 100 m ²	Construction Resources and Waste Platform (2010)
Waste density	320	kg/m ³	SEPA/Ea Data (1998/99)

Parcel	Name	Building	Type	Designation	GIA (m ²)	NIA (m ²)	Estimated Construction Waste (tonnes)
1	Gateway	1A	New Apartment	Residential	5,245	4,044	802
1	Gateway	-	Refurb Apartment	Residential	-	-	-
2	Waterside	2A	New Apartment	Residential	11,990	9,427	1834
2	Waterside	2B	New Apartment	Residential	14,408	11,432	2204
2	Waterside	2C	New Apartment	Residential	14,665	11,665	2244
3	Railway Side	3A	New Apartment	Residential	21,584	17,594	3302
3	Railway Side	3B	New Apartment	Residential	3,268	2,580	500
4	Build to rent	4A	New Apartment	Residential	18,920	14,635	2895
5	Private Housing	5A	New Apartment	Residential	6,037	4,821	924
6	Housing Area 1	Housing	New Build House	Residential	12,842	12,842	1965
7	Housing Area 2	Housing	New Build House	Residential	22,713	22,713	3475
8	Abbey Grounds	Housing	New Build House	Residential	900	900	138
8	Abbey Grounds	-	Refurb Houses	Residential	-	-	-
9	Abbey Gardens	Housing	New Build House	Residential	3,465	3,465	530
9	Abbey Gardens	9A	New Apartment	Residential	1,944	1,152	297
10	Food Store	10A	New Apartment	Residential	5,104	4,016	781
11	Mustard Seed Driers	-	-	-	-	-	-
1	Gateway	Building 92	Existing	Commercial	1,003	-	43
1	Gateway	Building 207	Existing	Commercial	1,314	-	57
1	Gateway	Building 206/5	Existing	Commercial	2,444	-	106
1	Gateway	Building 7/7A/8/8A	Existing	Commercial	2,478	-	107
1	Gateway	Building 209	Existing	Commercial	7,230	-	312
1	Gateway	Building 1A	New	Commercial	459	-	96
1	Gateway	Building 1B	New	Commercial	850	-	179
2	Waterside	Building 2A	New	Commercial	788	-	165
2	Waterside	Building 2B	New	Commercial	1,001	-	210
2	Waterside	Building 2C	New	Commercial	1,044	-	219
3	Railway Side	Building 3A	New	Commercial	664	-	139
3	Railway Side	Building 3B	New	Commercial	175	-	37
10	Food Store	Building 10A	New	Commercial	2,203	-	463
10	Food Store	Building 10B	Existing	Industrial	1,182	-	51
10	Food Store	Building 10C	New	Industrial	911	-	191
10	Food Store	Building 10D	New	Industrial	911	-	191
11	Mustard Seed Drier	Building 35	Existing	Commercial	1,974	-	85
Total					169,716		24,545

Data Sources

WRAP (2010). Summary Report - Material bulk densities (Project code: ROT039)
 WRAP (2018). Household food waste: restated data for 2007-2015
 02022_IllustrativeMasterplanSummaryNewApartmentsSchedule_220520
 02022_IllustrativeMasterplanNewHousingSchedule_220520

Assumptions

Refurbishment apartments and refurbished houses GIA not currently available, no estimate provided.
 At this stage of the design, GIA and NIA figures are assumed to be the same figure.
 Where buildings are existing the refurbishment rate has been utilised.
 17 09 04 mixed construction and demolition wastes (density factor of 0.32)
<https://www.sepa.org.uk/media/163323/uk-conversion-factors-for-waste.xlsx>
 Commercial/Industrial refurbishment assumes commercial retail rates
 Commercial new builds assume commercial (other) rates



Appendix 17-1 - Table 17.2: Operational Phase - Commercial and Industrial

Project: Carrow Works

Assumptions

Office space	10	m ² /per person	Estimate - Regulation 10 of Workplace Regulations of 1992 and ACOP L24
Office	50	l/per person	BS5906:2005
Restaurant	75	litres/number of covers	BS5906:2005
Leisure	100	litres/per m ² floor area	BS5906:2005
Supermarket (small)	100.0	litres/per m ² floor area	BS5906:2005
Supermarket (large)	150.0	litres/per m ² floor area	BS5906:2005
Fast food outlet	5.0	litres/sales	BS5906:2005
Shopping Centre	10.0	litres/per m ² floor area	BS5906:2005

Parcel	Name	Building	Type	Proposed Use Category	Designation	Total GIA (m ²)	Total Weekly Refuse (Litres)	Residual 1,100 litre Bins
1	Gateway	Building 92	Existing	Unknown	Commercial	1,003	10,030	9
1	Gateway	Building 207	Existing	Unknown	Commercial	1,314	13,140	12
1	Gateway	Building 206/5	Existing	Unknown	Commercial	2,444	24,440	22
1	Gateway	Building 7/7A/8/8A	Existing	Unknown	Commercial	2,478	24,780	23
1	Gateway	Building 209	Existing	Unknown	Commercial	7,230	72,300	66
1	Gateway	Building 1A	New	Unknown	Commercial	459	4,590	4
1	Gateway	Building 1B	New	Unknown	Commercial	850	8,500	8
2	Waterside	Building 2A	New	Unknown	Commercial	788	7,880	7
2	Waterside	Building 2B	New	Unknown	Commercial	1,001	10,010	9
2	Waterside	Building 2C	New	Unknown	Commercial	1,044	10,440	9
3	Railway Side	Building 3A	New	Unknown	Commercial	664	6,640	6
3	Railway Side	Building 3B	New	Unknown	Commercial	175	1,750	2
10	Food Store	Building 10A	New	Unknown	Commercial	2,203	22,030	20
10	Food Store	Building 10B	Existing	Unknown	Industrial	1,182	11,820	11
10	Food Store	Building 10C	New	Unknown	Industrial	911	9,110	8
10	Food Store	Building 10D	New	Unknown	Industrial	911	9,110	8
11	Mustard Seed Drier	Building 35	Existing	Unknown	Commercial	1,974	19,740	18
Total						26,631	266,310	242

Data Sources

WRAP (2010). Summary Report - Material bulk densities (Project code: ROT039)

WRAP (2018). Household food waste: restated data for 2007-2015

02022_IllustrativeMasterplanDetailedCommercialSchedule_220520

02022_IllustrativeMasterplanDetailedIndustrialSchedule_220419

Assumptions

GIA is based on schedule total area.

Some commercial areas are based on estimates, using existing building areas.

Industrial areas assume the provision of a mezzanine level, calculated at 50% of the GIA.

As proposed commercial use is not available a standard 'shopping centre' rate has been utilised.



Appendix 17-1 - Table 17.3: Operational Phase - Residential

Project: Carrow Works

Assumptions

Residential Waste	<input type="text" value="30"/> litres/unit	BS 5906:2005	Bulk density food	<input type="text" value="0.29"/> kg/litre	WRAP (2010)
Residential Waste	<input type="text" value="70"/> litres/bed	BS 5906:2005	Waste food	<input type="text" value="1.5"/> kg/person/week	WRAP (2018)
Residual Provision	<input type="text" value="75%"/> % of weekly total	Estimated			
Recycling Provision	<input type="text" value="50%"/> % of weekly total	BS 5906:2005	BS 5906:2005 Waste management in buildings - Code of practice		
Food waste	<input type="text" value="0.4"/> litres/person/week	Calculation	Domestic weekly generation = No. dwellings x (70 litres x bedrooms) + 30 litres		

Parcel	Name	Building	Type	GIA (m ²)	NIA (m ²)	Total Homes	1B-2P Total	2B-3P Total	2B-4P Total	3B-5P	3B-6P	4B-7P	5B-9P	Total Weekly Refuse (Litres)	Total Weekly Residual Waste (Litres)	Residual 1,100 litre Bins	Total Weekly Recycling (Litres)	Recycling 1,100 litre Bins	Weekly Food Waste (litres)	Weekly Food 240-litre Bins
1	Gateway	1A	New Apartment	5,245	4,044	62	23	5	34	0	0	0	0	7,160	5,370	5	3,580	3	86	0.4
1	Gateway	-	Refurb Apartment	-	-	125	0	125	0	0	0	0	0	17,530	13,148	12	8,765	8	163	0.7
2	Waterside	2A	New Apartment	11,990	9,427	150	56	20	74	0	0	0	0	17,170	12,878	12	8,585	8	204	0.8
2	Waterside	2B	New Apartment	14,408	11,432	186	82	38	66	0	0	0	0	20,390	15,293	14	10,195	9	236	1.0
2	Waterside	2C	New Apartment	14,665	11,665	194	100	28	66	0	0	0	0	20,250	15,188	14	10,125	9	238	1.0
3	Railway Side	3A	New Apartment	21,584	17,594	284	110	92	82	0	0	0	0	32,150	24,113	22	16,075	15	358	1.5
3	Railway Side	3B	New Apartment	3,268	2,580	46	29	12	5	0	0	0	0	4,500	3,375	3	2,250	2	50	0.2
4	Build to rent	4A	New Apartment	18,920	14,635	250	117	79	54	0	0	0	0	26,900	20,175	18	13,450	12	299	1.2
5	Private Housing	5A	New Apartment	6,037	4,821	77	23	18	36	0	0	0	0	9,260	6,945	6	4,630	4	106	0.4
6	Housing Area 1	Housing	New Build House	12,842	12,842	110	0	0	0	36	74	0	0	23,160	17,370	16	11,580	11	271	1.1
7	Housing Area 2	Housing	New Build House	22,713	22,713	234	0	78	0	127	0	29	0	45,800	34,350	31	22,900	21	466	1.9
8	Abbey Grounds	Housing	New Build House	900	900	9	0	0	0	9	0	0	0	1,920	1,440	1	960	1	20	0.1
8	Abbey Grounds	-	Refurb Houses	-	-	6	0	6	0	0	0	0	0	870	653	1	435	0	8	0.0
9	Abbey Gardens	Housing	New Build House	3,465	3,465	33	0	0	0	28	0	0	5	7,690	5,768	5	3,845	3	80	0.3
9	Abbey Gardens	9A	New Apartment	1,944	1,152	25	7	3	15	0	0	0	0	3,100	2,325	2	1,550	1	36	0.2
10	Food Store	10A	New Apartment	5,104	4,016	65	25	8	32	0	0	0	0	7,440	5,580	5	3,720	3	88	0.4
11	Mustard Seed Driers	-	-	-	-	0	0	0	0	0	0	0	0	-	-	0	-	0	0	0.0
Total				143,085	121,286	1,856	572	512	464	200	74	29	5	245,290	183,968	167	122,645	111	2709	11.3

Data Sources

WRAP (2010), Summary Report - Material bulk densities (Project code: ROT039)
 WRAP (2018), Household food waste: restated data for 2007-2015
 02022_IllustrativeMasterplanSummaryNewApartmentsSchedule_220520
 02022_IllustrativeMasterplanNewHousingSchedule_220520

Assumptions

Refurbishment apartments and refurbished houses assumed to be 2B-3P (as information is not available)
 At this stage of the design, GIA and NIA figures are assumed to be the same figure.