

Development Case construction waste forecast Phase 1 - demolition

Land Use	Address/Property Name	Land Use Description	Floor Area m ²	Quantity waste generated from residential land use (tonnes)	Quantity of waste generated from commercial, social and leisure land use (tonnes)	TOTAL (tonnes)
DWELLING	BRIDGEFOOT COTTAGE		32.2	17.4		17.4
DWELLING	6 COOPERS VILLAS		2.5	1.3		1.3
DWELLING	5 COOPERS VILLAS		36.0	19.5		19.5
DWELLING	4 COOPERS VILLAS		31.6	17.1		17.1
DWELLING	3 COOPERS VILLAS		31.2	16.9		16.9
DWELLING	2 COOPERS VILLAS		36.5	19.8		19.8
DWELLING	1 COOPERS VILLAS		44.7	24.2		24.2
PRE SCHOOL EDUCATION	HIGH HOUSE FARM	Day Nurseries/Play Schools	109.6		83.0	83.0
DWELLING	TAM O SHANTER COTTAGE		54.7	29.7		29.7
DWELLING	ROSE COTTAGE		44.4	24.1		24.1
DWELLING	LITTLE GRANGE		43.8	23.7		23.7
DWELLING	THE GRANGE		59.7	32.4		32.4
DWELLING	FANTASIA HOUSE	Offices (Inc Computer Centres)	108.6	58.8		58.8
DWELLING	DORMERS		50.9	27.6		27.6
		Factories, Workshops and Warehouses (Incl Bakeries & Dairies)				
DWELLING	LE GRENIER		23.3	12.6		12.6
DWELLING	THE OLD DAIRY		0.0	0.0		0.0
DWELLING	3 CHAPTER HOUSE		42.8	23.2		23.2
DWELLING	2 WALTHAM HALL COTTAGES		37.7	20.4		20.4
DWELLING	1 WALTHAM HALL COTTAGES		49.9	27.1		27.1
DWELLING	GRANGE LODGE		65.6	35.6		35.6
DWELLING	MOLEHILL GREEN		40.8	22.1		22.1
DWELLING	MOLEHILL GREEN		40.8	22.1		22.1
DWELLING	MOLEHILL GREEN		38.7	21.0		21.0
DWELLING	MOLEHILL GREEN		48.5	26.3		26.3
DWELLING	MOLEHILL GREEN		41.1	22.3		22.3
DWELLING	MOLEHILL GREEN		39.3	21.3		21.3
PUBLIC HOUSE	MOLEHILL GREEN	Public Houses/Pub Restaurants (Inc. Lodge) (National Scheme)	66.5		50.3	50.3
		Factories, Workshops and Warehouses (Incl Bakeries & Dairies)				
DWELLING	OLD FORGE		49.6	26.9		26.9
DWELLING	RODINGS RISE		37.9	20.6		20.6
DWELLING	CONIFERS		60.8	33.0		33.0
DWELLING	1 SCHOOL VILLAS		31.0	16.8		16.8
DWELLING	2 SCHOOL VILLAS		30.8	16.7		16.7
DWELLING	3 SCHOOL VILLAS		31.5	17.1		17.1
DWELLING	4 SCHOOL VILLAS		31.4	17.0		17.0
DWELLING	5 SCHOOL VILLAS		32.7	17.7		17.7
DWELLING	6 SCHOOL VILLAS		32.8	17.8		17.8
DWELLING	CROFT END		51.0	27.6		27.6
DWELLING	7 SCHOOL VILLAS		33.8	18.3		18.3
DWELLING	8 SCHOOL VILLAS		33.6	18.2		18.2
DWELLING	BELSTOCK		45.3	24.5		24.5
DWELLING	OAKBURY HOUSE		77.2	41.9		41.9
DWELLING	TYRELLS		42.8	23.2		23.2
DWELLING	LYDDON		49.3	26.7		26.7
POST OFFICE	MOLEHILL GREEN	Post Offices	34.6		26.2	26.2
DWELLING	THE COTTAGE		27.6	15.0		15.0
DWELLING	THE BRAMBLES		50.4	27.3		27.3
DWELLING	BLOSSOMS COTTAGE		0.0	0.0		0.0
DWELLING	BLOSSOM COTTAGE		60.4	32.7		32.7
DWELLING	THE BUNGALOW		0.0	0.0		0.0
DWELLING	THE BUNGALOW		39.2	21.3		21.3
DWELLING	3 BURNT HOUSE VILLAS		30.8	16.7		16.7
DWELLING	SUNNYVIEW		50.2	27.2		27.2
DWELLING	2 BURNT HOUSE VILLAS		30.5	16.5		16.5
DWELLING	1 BURNT HOUSE VILLAS		29.9	16.2		16.2
DWELLING	4 BURNT HOUSE VILLAS		30.5	16.5		16.5
DWELLING	THE HOTSPURS		37.4	20.2		20.2
DWELLING	WHITE HOUSE FARM		44.4	24.1		24.1
DWELLING	NONE SUCH		47.7	25.9		25.9
DWELLING	LITTLE ORCHARD		50.7	27.5		27.5
DWELLING	YEW TREE COTTAGE		40.7	22.1		22.1
DWELLING	WHITE WEBBS		59.8	32.4		32.4
DWELLING	WHEEL WRIGHTS		37.6	20.4		20.4
DWELLING	VALHALLA		51.0	27.6		27.6
DWELLING	MURRAYFIELD FARM		48.7	26.4		26.4
DWELLING	MURRAYFIELD		60.8	33.0		33.0
DWELLING	THE HOPBIT		40.7	22.1		22.1
DWELLING	FRANKLINS COTTAGE		60.2	32.6		32.6
DWELLING	ASH TREE COTTAGE		38.2	20.7		20.7
DWELLING	CARTERS FARM		43.0	23.3		23.3
GENERAL COMMERCIAL	WALTHAM HALL		159.6		120.8	120.8
DWELLING	THE GATEHOUSE		34.6	18.8		18.8
DWELLING	WALTHAM HALL FARM		74.8	40.5		40.5
DWELLING	CARTERS COTTAGE		36.5	19.8		19.8
HIRE SHOP	WALTHAM HALL	Shops	108.9		82.4	82.4
GENERAL COMMERCIAL	WALTHAM HALL		31.2		23.6	23.6
DWELLING	1 BRIDGEFOOT COTTAGE		32.1	17.4		17.4
DWELLING	TIGGERS		37.1	20.1		20.1
TRAVEL AGENCY	WALTHAM HALL	Shops	110.5		83.7	83.7
HALL			58.2		44.0	44.0
ALLOTMENT			411.1			0.0
ELECTRICITY SUB STATION			20.6		15.6	15.6
POST BOX			3.8		2.9	2.9
TELECOMMUNICATIONS			9.6		73.5	73.5
TELECOMMUNICATIONS			3.8		2.9	2.9
DWELLING	THE WILLOWS		55.7	30.2		30.2
HALL			32.0		24.2	24.2
TOTAL			5384.7	1,625.0	633.0	2,258.0

ASSUMPTIONS:

- The waste generation rate for residential properties is 542 kg/m². SOURCE: A Construction, Renovation and Demolition (CRD) Waste Characterization Study by CH2M Gore and Storrie Limited on behalf of the Alberta Construction, Renovation, and Demolition (CRD) Waste Advisory Committee.
- The waste generation rate for all non-residential properties and structures is 757 kg/m². SOURCE: A Construction, Renovation and Demolition (CRD) Waste Characterization Study by CH2M Gore and Storrie Limited on behalf of the Alberta Construction, Renovation, and Demolition (CRD) Waste Advisory Committee.
- Ponds and other non-structural uses generate no waste

Phase 1 – new build, fit out and airfield infrastructure

Description	m ²	EPI (m ³ /100m ²)	100m ²	Volume of Waste (m ³)	Waste Density (tonnes/m ³)	Waste Generation (tonnes)	
Infrastructure Services							
Energy Centre/Sub station	Zone 10	1,625	23.80	16	387	0.90	348
Waste Centre	Zone 6	3,080	23.80	31	733	0.90	660
Visitor Centre	Zone 2	140	23.80	1	33	0.90	30
Border Inspection Point/Animal Reception Centre	Zone 8	1,500	23.80	15	357	0.90	321
Petrol Filling Station	Zone 3	1,000	23.80	10	238	0.90	214
Surface Access							
Forecourt	50% constructed	10,000	22.18	100	2,218	0.90	1,996
Coach/Bus Station Buildings	Zone 13	3,097	18.00	31	557	0.90	502
Train Station Buildings	Zone 13	2,500	22.18	25	555	0.90	499
Car Parking	10,300 Spaces Zone 13	224,025	22.18	2,240	49,689	0.90	44,720
Airfield							
New Runway	3,048m x 45m wide	137,160	22.18	1,372	30,422	0.90	27,380
Airside Fire Station & Airside Operations Unit	Zone 12	3,500	18.01	35	630	0.90	567
Traffic Control Tower	Zone 14	3,500	19.62	35	687	0.90	618
Operations Building			19.62	0	0	0.90	0
Sanitation & Waste	Zone 12	600	23.80	6	143	0.90	129
Snowbase	Zone 7	7,500	23.80	75	1,785	0.90	1,607
Surface Movement radar	Zone 12	600	18.00	6	108	0.90	97
Terminal	50% built	42,000	19.62	420	8,240	0.90	7,416
Pier 5	100% built	16,975	19.62	170	3,330	0.90	2,997
Pier 6	100% built	21,875	19.62	219	4,292	0.90	3,863
Commercial							
Hotel	400 rooms Zone 14	17,875	17.70	179	3,164	0.90	2,847
Maintenance Hangers x1	Zone 8	30,000	23.80	300	7,140	0.90	6,426
Cargo transit shed x1	Zone 8	20,320	23.80	203	4,836	0.90	4,353
Aviation Hangers	Up to 3 to be built (Zone 8)	21,250	23.80	213	5,058	0.90	4,552
Freight, industrial and catering		29,000	23.80	290	6,902	0.90	6,212
TOTAL						118,354	

Phase 1 – site compounds

Phase 1 Year	Peak Office Staff (no)	Peak Staff in on-site Accomodation (no)	Office Waste Generation Rate (tonnes/employee/year)	Accommodation Waste Generation Rate (tonnes/employee/year)	Total Office Waste (tonnes)	Total Accomodation Waste (tonnes)	Total Site Compounds Waste (tonnes)
2011	200	1,000	0.416	0.345	83.2	345	428.2
2012	400	1,000	0.416	0.345	166.4	345	511.4
2013	500	1,000	0.416	0.345	208.0	345	553.0
2014	500	1,000	0.416	0.345	208.0	345	553.0
2015	200	1,000	0.416	0.345	83.2	345	428.2
TOTAL							2,473.8

Phase 2

Description	m ²	EPI (m ³ /100m ²)	100m ²	Volume of Waste (m ³)	Waste Density (tonnes/m ³)	Waste Generation (tonnes)	
Surface Access							
Forecourt	50% constructed	10,000	22.18	100	2,218	0.90	1,996
Coach & bus station	Completed approx 20 bays	143	18.00	1	26	0.90	23
Car Parking	2,700 spaces added Zone 17	59,400	22.18	594	13,175	0.90	11,857
	Staff car parking max 1,900 spaces zone 2	41,800	22.18	418	9,271	0.90	8,344
Airfield							
New Runway	15m width expansion x 3,048m	45,720	22.18	457	10,141	0.90	9,127
Pier	50% of pier 7	8,663	19.62	87	1,700	0.90	1,530
Commerical Development							
Hotel	2 to 3 hotels and 1,000 extra rooms Zone 15	53,625	17.70	536	9,492	0.90	8,542
	Up to 550 rooms Zone 14	17,875	17.70	179	3,164	0.90	2,847
Hangar	Zone 7	8,500	23.80	85	2,023	0.90	1,821
Cargo	25% of new cargo shed built	8,840	23.80	88	2,104	0.90	1,894
TOTAL						47,981	

Phase 3

	Description	m ²	EPI (m ³ /100m ²)	100m ²	Volume of Waste (m ³)	Waste Density (tonnes/m ³)	Waste Generation (tonnes)
Infrastructure Services							
Car parking	4,850 added Zone 17	106,700	22.18	1,067	23,666	0.90	21,299
Terminal	Extended to allow 20mppa	18,100	19.62	181	3,551	0.90	3,196
Pier	50% of Pier 7	8,663	19.62	87	1,700	0.90	1,530
Commercial Development							
Hotel	300 room hotel Zone 16	13,860	17.70	139	2,453	0.90	2,208
Hotel	Zone 3	13,860	17.70	139	2,453	0.90	2,208
Cargo	50% of 2nd new cargo shed	8,840	22.80	88	2,016	0.90	1,814
Freight, industrial & catering	Expansion	37,000	22.80	370	8,436	0.90	7,592
Office	New office block in CTA	7,000	19.62	70	1,373	0.90	1,236
TOTAL							41,083

Phase 4

	Description	m ²	EPI (m ³ /100m ²)	100m ²	Volume of Waste (m ³)	Waste Density (tonnes/m ³)	Waste Generation (tonnes)
Infrastructure Services							
Car Parking	5,100 spaces Zone 17	112,200	22.18	1,122	24,886	0.90	22,397
Terminal	Expansion of Terminal	17,500	19.62	175	3,434	0.90	3,090
Piers	50% Pier 8	5,520	19.62	55	1,083	0.90	975
Commercial Development							
Hotel	300 rooms Zone 16	13,860	17.70	139	2,453	0.90	2,208
Car hire	Zone 3	4,750	17.70	48	841	0.90	757
Cargo	75% of 2nd new cargo shed	8,840	22.80	88	2,016	0.90	1,814
Freight, Industrial and catering	Expansion	44,000	22.80	440	10,032	0.90	9,029
Office	50% of office in zone adjacent to Endeavour House	7,000	19.62	70	1,373	0.90	1,236
Retail logisitcs centre	Logistics centre Zone 6	4,000	22.80	40	912	0.90	821
TOTAL							42,326

Phase 5

	Description	m ²	EPI (m ³ /100m ²)	100m ²	Volume of Waste (m ³)	Waste Density (tonnes/m ³)	Waste Generation (tonnes)
Infrastructure Services							
Car Parking	8,200 spaces (decked) added Zone 16	180,400	22.18	1,804	40,013	0.90	36,011
Terminal	Extension of Terminal 2	18,100	19.62	181	3,551	0.90	3,196
Piers	50% Pier 8	5,520	19.62	55	1,083	0.90	975
Commercial Development							
Hotel	300 rooms Zone 16	13,860	17.70	139	2,453	0.90	2,208
Hotel	300 more rooms Zone 3	13,860	17.70	139	2,453	0.90	2,208
2nd cargo shed	100% complete	8,840	22.80	88	2,016	0.90	1,814
Freight, Industrial & Catering	New facilities	52,000	22.80	520	11,856	0.90	10,670
Office	Final 50% of office in zone adjacent to Endeavour House	7,000	19.62	70	1,373	0.90	1,236
TOTAL							58,318

Cumulative assessment

G1 construction waste forecast (2011 to 2030)

	Floorspace (m ²)	BRE EPI Type	BRE EPI (m ³ /100m ²)	Volume of waste (m ³)	Waste Density (tonnes/m ³)	Waste generation (tonnes)
AG: Terminal Departures Extension (Bays 9 & 10)	14,242	Commercial Office	19.62	2,794	0.9	2,515
AK: Cargo Shed 3	12,807	Industrial	23.80	3,048	0.9	2,743
AL: Zulu Stands South	68,433	Civil Engineering	22.18	15,178	0.9	13,660
AN: Endeavour House 2	6,025	Commercial Office	19.62	1,182	0.9	1,064
AO: Yankee Stands South	55,437	Civil Engineering	22.18	12,296	0.9	11,066
AO1: Yankee Stands North	11,431	Civil Engineering	22.18	2,535	0.9	2,282
AQ: South Gate Hotel East	4,151	Residential	17.70	735	0.9	661
AU: R23 RAT 3	7,064	Civil Engineering	22.18	1,567	0.9	1,410
BA: Northside Staff Car Parking	19,399	Civil Engineering	22.18	4,303	0.9	3,872
BB & BC: Northside Long Stay Parking Phase 5 (North and South)	170,200	Civil Engineering	22.18	37,750	0.9	33,975
BD: South West Taxiway	35,702	Civil Engineering	22.18	7,919	0.9	7,127
TOTAL						80,375

The floorspace information is included in Appendix 6 and further details on the BRE EPIs are included in Appendix 9.