Appendix C5 – rev. 1
Waste and Waste Framework Directive Compliance

1. Waste

Waste figures are for the 12 months ending April 2021. Any estimated weights are marked as such.

Table 1 – 12 Months' waste: types and amounts produced and Waste Framework Directive Compliance

Waste stream and relevant process	Storage	12 months disposal	Waste Code *= hazardous	Prevention	Preparing for re-use	Recycling	Other recovery	Disposal / Comments
Foundry sand (grains and lumps) from controlled alkaline-phenolic process; including 'bittings' (small refractory pieces)	In 8 cu. Yd. skips in Foundry Building	4571 tonnes	10 09 06	Box sizes (dictating how much sand is used) are generally selected on the size of the casting. "Sand-savers" may be employed where on occasion only over-size metal boxes / frames are available for moulds	Sand is routinely mechanically reclaimed on-site for re-use subject to quality thresholds / limitations of the binder system. Typically the ratio is 60% to 70% reclaimed sand to new sand, except for cores and other critical areas where the integrity of the mould requires dictated only new sand (or other 'virgin' sands, such as cromite or zircon) are used.	Subject to system capacity restrictions and balancing, sand can occasionally be recycled by means of discharged reclaimed sand (dry, free-flowing, bittings are removed) into a specific skip for disposal. This sand is sent to Tarmac Topblock for incorporation into concrete products.	Disposed off sand is occasionally mixed at landfill site with other materials to form a back-filling / capping layer to the land fill.	Balance to landfill
Fine silica sand dust from extraction of sand hoppers and shot-blasting cabinets	In approx 1t. bulk bags in foundry building and disposed of in 8yd skips	114 tones	10 09 12	No practical prevention means currently known off to reduce the amount of extracted dust.	No re-use options identified	No re-use options identified	No other recovery options identified.	Balance to landfill

(cont.) Table 1 – 12 Months' waste: types and amounts produced and Waste Framework Directive Compliance

Waste stream and relevant process	Storage	12 months disposal	Waste Code *= hazardous	Prevention	Preparing for re-use	Recycling	Other recovery	Disposal / Comments
Refractory melting-furnace linings, including concrete elements, and slag wastes from steel cutting operations	In 8 cu. yard skips in foundry building	764 tonnes	16 11 04	EAFs are routinely repaired with a 'sacrificial' sprayed on lining and the refractory lining is assessed, usually weekly be experienced operators. HFs and AOD linings are similarly inspected and repaired as practical so best life is achieved from linings. Melting practices have regards to things such charging and control over slag basicity to control chemical attack on furnace linings.	No re-use option is available due to the nature of the material / process – removal of linings often causes significant damage to the brick ./ concrete elements	--	--	Screened at waste transfer station and balance sent to landfill
Furnace slag from steel melting / casting and cutting slag from steel cutting	Slag-pen on storage yard	930 tonnes	10 09 03	Excessively dirty metal or metal containing excessive non-metallics is not routinely melted – material is bought to specification and inspected by operators before charging, which can reduce the amount of slag generated Control is exercised over slagging practices; quantities of slag generated are generally dictated by the chemical reactions inherent in the relevant steel-making method. In the AOD slags certain metallic elements can be 'reduced' back out of the slag where it is desirable to do so	Slag cannot be re-used	Slag from this type of steel-making process can be recycled through screening and by mixing at an appropriate transfer station to form a capping or infilling composite for land remediation / modelling	If processing high-value metals a third party recovery option may be considered to recover metal residues. Additionally would be subject to finding suitably permitted third party.	Sent to landfill

(cont.) Table 1 – 12 Months' waste: types and amounts produced and Waste Framework Directive Compliance

Waste stream and relevant process	**Storage**	**12 months disposal**	**Waste Code** *= hazardous	**Prevention**	**Preparing for re-use**	**Recycling**	**Other recovery**	**Disposal / Comments**
Canteen and general commercial / industrial wastes	In 1100 litre Eurobins at various locations inside foundry building	38 tonnes – this is an estimated weight	20 03 07	--	--	Disposed off to waste transfer station which uses Trommel to recycle about 80% of the waste disposed		Approx 80% recycled
Metal –mostly empty 205 litre drums that have contained alloys / scrap metals but also feeders, risers, scrap castings, flashings etc.	In 8 cu. yard skip on storage yard if for disposal	120 tonnes – this is an estimated weight	20 01 40	Castings are 'methoded' to prevent excessive cast (waste) metal and to provide a yield appropriate to the integrity of the cast product and to commercial and quality-derived expectations	Majority of metal is able to be re-used within the foundry process (and is technically not classed as waste) and is colour coded or can be identified by sampling or XRF-analysis. Occasionally work-load / analysis of metal prevents re-use and these are disposed off –e.g. steel skulls of varying analysis that cannot be or are not economically viable to feed back into the system. Drums retaining shape / integrity are often re-used on site for the storage of scrap or other materials.	Metal wastes are sent to an appropriate merchant where they join well established waste metal recycling streams.	--	To recycling / re-use
Wood – mostly wooden pallets that are no longer usable	In 8 cu. yard skip on storage yard and Jubilee site	190 tonnes	200138	Metal pallets are substituted for internal stores work.	It is not economical to repair pallets on site; insufficient space / facilities to segregate out those that may be repairable and those that aren't.	Taken to waste processing centre where wood is sorted	--	To recycling

(cont.) Table 1 – 12 Months' waste: types and amounts produced and Waste Framework Directive Compliance

Waste stream and relevant process	**Storage**	**12 months disposal**	**Waste Code** *= hazardous	**Prevention**	**Preparing for re-use**	**Recycling**	**Other recovery**	**Disposal / Comments**
Aerosols – from QA NDT inspection operation (UN number = 1950)	In 205 litre drums	Packed for disposal in 205 litre capacity drums and about 10 drums / year disposed of (estimate)	16 05 04	Aerosols represent the most efficient way of dye-penetrant activity with less waste than manual painting	Aerosols are not reusable	Transferred to appropriate transfer / processing station	--	On consignment basis
Oil – various oils from maintenance activities and electrical applications	In 205 litre drums; rear of moulding shop	4 x 205 litre drums	13 02 05*	No prevention strategies – most oil is related to maintenance and electrical activities	No re-use options in place	Oil is disposed off on consignment basis to recovery agents / processes	--	On consignment basis
Melting furnace extraction dust (from extraction plant serving EAF steel melting and AOD refining of steel)	In approx 1t bulk bags under extraction plant and loaded in bags by mobile plant into 20yd vehicle body.	28 tonnes	10 09 09*	No practical prevention means currently known off to reduce the amount of extracted dust.	Dust is not reusable in the process due to chemistry / steel making restraints and other practical safety considerations			Potential exists for palletisation of dust and re-use / recovery of metallic elements however batch quantities required / storage issues and variations in chemistry currently prevent this

Appendix C5 – rev. 1
Waste and Waste Framework Directive Compliance

(cont.) Table 1 – 12 Months' waste: types and amounts produced and Waste Framework Directive Compliance

Waste stream and relevant process	**Storage**	**12 months disposal**	**Waste Code** *= hazardous	**Prevention**	**Preparing for re-use**	**Recycling**	**Other recovery**	**Disposal / Comments**
Empty plastic IBCs having contained Alkaline phenolic resin or organic ester hardener (and residues contained therein)	Rear car-park Jubilee site	Estimate – 20 to 40 / year	15 01 10*	Bulk deliveries of many of these chemicals are not possible	Items are occasionally re-used on site Items are disposed off via carrier for cleaning re-use / repair where possible			Some IBCs that cannot be re-used may have their component parts recycled

Appendix C5 – rev. 1
Waste and Waste Framework Directive Compliance

Waste stream and relevant process	Storage	12 months disposal	Waste Code *= hazardous	Prevention	Preparing for re-use	Recycling	Other recovery	Disposal / Comments
Waste electronics and electronic equipment	In storage area	1t	(check list of wastes for each consignment)	No prevention methods currently identified	Electronic items are routinely repaired, refurbished and re-used on site by in-house expertise where possible / practical or by contractors			Waste disposed off to transfer station for onward recovery of component parts
Fluorescent lamps and bulbs	In storage area	0.02t		No prevention method currently identified	No re-use possible.			Waste disposed of to transfer station for onward recovery / processing
Fixer chemicals from radiographic film development	IBCs internally by Rad bays	12	09-01-04*	Fixer is used within modern automatic processing systems designed to minimise chemical use	Not possible with this waste		Silver is recovered from the waste fixer	To waste processing centre
Other hazardous wastes	-	- small ad-hoc quantities	various will apply according to waste	These are ad-hoc wastes ranging from out-of-date chemicals to clear-outs of old storage areas and similar	--	--	--	To waste transfer station