

Wider environmental indicators: EPRT and other emissions

Introduction

Shanks utilises a wide variety of different waste management technologies, from recycling systems, anaerobic digestion and mechanical biological treatment to thermal treatment, composting and landfill. Because these technologies use different processes their potential significant environmental emissions are likewise different. For example, the potential significant emissions for a landfill site will be different to those for a composting site.

Of course, there will be some common emissions issues, the most obvious one being carbon impact. Shanks reports fully on these emissions in the carbon footprints contained in the Group's annual corporate responsibility publications. In addition, Shanks also reports on other environmental indicators, such as water use. However, beyond these common indicators, reporting in a meaningful way to stakeholders on potentially significant emissions becomes more complex because of the wide variety of technologies used and the varied significant emissions these may produce. Such reporting requires common indicators of significance and a common set of parameters to report against.

All of Shanks sites operate under environmental permits issued by the relevant regulator in the country or region that site operates in. With the exception of Shanks Canadian operations, these permits fall under common European (EU) law and regulation. Part of this regulation is that at larger facilities where a regulator deems that an operation may have significant emissions the site is required, under its permit, to report on specified emissions using the European Pollution Release and Transfer (EPRT) protocols. This gives Shanks a common set of emissions and measures of significance which can be reported against for these sites.

However, EPRT does not cover all of Shanks operations, only those larger facilities where the regulator has deemed there may be significant emissions. In practice this means that Shanks EPRT emissions reporting covers some 71% of the wastes its sites handle, leaving 29% not covered by EPRT. This does not mean that Shanks does not report significant emissions from such non-EPRT sites. The table below lists Shanks operational types in broad categories, whether they are covered by EPRT requirements, brief descriptions of potential significant emissions and where Shanks reports on these.

For example, a small or medium sized recycling plant will, typically, have two forms of significant emissions: Indirect green house gas (GHG) emissions associated with the electricity used on site to power recycling equipment and direct GHG emissions from diesel use in heavy mobile plant. There will be other emissions, such as discharges to sewer from employee welfare facilities, but these are very unlikely to be significant. In a similar manner, for a vehicles operation (waste collection lorries) the significant emission will be direct GHG emissions from the diesel used in these lorries. In synopsis:

- ✓ For Shanks non-EPRT sites and operations the major relevant significant emissions are generally those associated with carbon impact, which Shanks reports on in the carbon footprints contained in its annual corporate responsibility publication
- ✓ For Shanks sites which are covered by EPRT, significant carbon impact emissions are likewise reported on in the company's carbon footprints, and significant non-carbon impact emissions, as deemed by the regulator, fall under EPRT reporting requirements

Operational type, EPRT designation and potential significant emissions

EPRT designation	% tonnes handled	Indicative site/operation types	Description of potential significant emissions	Where reported
Waste handling sites/operations falling under EPRT	71%	Landfills	Treated leachate to environment/sewer Methane to environment from landfill gas Direct CO ₂ and other GHG to environment from landfill gas Direct CO ₂ and other GHG to from green energy generation Direct CO ₂ and other GHG emissions from fuel use (mobile plant)	CO ₂ and other GHG emissions included in Shanks carbon footprints in annual Corporate Responsibility Report. Other emissions in EPRT data as below
		Mechanical Biological treatment	Effluent discharge to environment/sewer Direct CO ₂ and other GHG to environment Indirect GHG emissions from power use (eg, electricity) Direct CO ₂ and other GHG emissions from fuel use (mobile plant)	
		Hazardous waste treatment	Effluent discharge to environment/sewer Direct CO ₂ and other GHG to environment Indirect GHG emissions from power use	
		Major recycling plants	Indirect CO ₂ and other GHG emissions from power use (eg, electricity) Direct CO ₂ and other GHG emissions from fuel use (mobile plant)	
		Large composting plants	Direct CO ₂ and other GHG to environment from compost process Indirect GHG emissions from power use (eg, electricity) Direct CO ₂ and other GHG emissions from fuel use (mobile plant)	
		Large anaerobic digestion plants	Direct CO ₂ and other GHG to from green energy generation Indirect GHG emissions from power use (eg, electricity) Direct CO ₂ and other GHG emissions from fuel use (mobile plant)	
Waste handling sites/operations not falling under EPRT	29%	Medium and minor recycling plants	Indirect CO ₂ and other GHG emissions from power use (eg, electricity) Direct CO ₂ and other GHG emissions from fuel use (mobile plant)	CO ₂ and other GHG emissions included in Shanks carbon footprints in annual Corporate Responsibility Report
		Medium and minor recovery plants	Indirect CO ₂ and other GHG emissions from power use (eg, electricity) Direct CO ₂ and other GHG emissions from fuel use (mobile plant)	
		Medium anaerobic digestion plants	Direct CO ₂ and other GHG to from green energy generation Indirect GHG emissions from power use (eg, electricity) Direct CO ₂ and other GHG emissions from fuel use (mobile plant)	
		Waste transfer stations	Direct CO ₂ and other GHG emissions from fuel use (mobile plant)	
		Civic amenity and similar sites	Direct CO ₂ and other GHG emissions from fuel use (mobile plant)	
Non-waste handling sites	NA	Vehicles operations	Direct CO ₂ and other GHG emissions from fuel use (road lorries)	
		Offices	Indirect CO ₂ and other GHG emissions from power use (eg, electricity) – note, only likely significant for larger offices	

Between Shanks carbon footprints, contained in the Group's annual corporate responsibility publications, and reported EPRT results for the company's larger sites where the regulator has deemed an emission is likely to be significant, the majority of Shanks significant emissions are covered. For carbon impact emissions please see Shanks annual corporate responsibility publications (available from Shanks Group's web site at www.shanksplc.co.uk/our-responsibilities). For EPRT reported emissions please see below.

EPRT reported emissions

The table below shows the results for Shanks sites under the EPRT reporting requirements. These are cumulative results – the total reported emissions for all of Shanks sites across the Group which are required to report on the relevant indicator. Which emissions any individual site is required to report against is decided by the regulator who issues the environmental permit for that site and, as might be expected from the differing technologies employed, reporting requirements vary from site to site. To assist stakeholders in interpreting the data commentary is given next to each emission data-set. However, reflecting the complexity of the data, the following issues also need to be accounted for when considering the information shown:

- ✓ The threshold figures given under EPRT (shown in the columns headed 'EPRT thresholds') are for single sites. That is they are an indication of significance for a single site and not for multiple sites or a company's total emissions. Shanks has chosen to report on all EPRT emissions in this document and commentary is given beside each emission data set on whether any single site reported emissions above EPRT threshold
- ✓ EPRT is concerned with the 'release' and 'transfer' of emissions. Much of the data shown below is for the release of emissions. However, some is for the transfer of emissions, such as emissions associated with a wastewater stream which is sent for further treatment (for example, a discharge to a sewer where further treatment will be applied before release into the environment). Commentary on emissions resulting from transfer rather than release is given alongside emissions data sets and such transfer emissions data is shaded in a different colour
- ✓ Much of the below data is based on monitoring of emissions. However, some is based on modelling rather than actual monitoring. In particular where the emissions may be from a diffuse source, such as fugitive emissions of methane through a landfill cap where direct measurement is not practical. As with most modelled data its value may be more in an ability to benchmark rather than as an exact measurement of emissions
- ✓ In addition for data derived from models some of the assumptions laid into the model used may result in over-estimation of emissions. For example, emissions of CFCs and HCFCs from landfill sites may be lower than shown as a result of assumptions in the models used to derive this data. Commentary is given on this aspect where relevant alongside data sets

EPRT data table

EPRT Ref. No.	Component (note - only components Shanks is required to report against shown)	EPRT thresholds			Shanks Group totals			Commentary on results
		Kg/year to air	Kg/year to water	Kg/year to land	Kg/year to air	Kg/year to water	Kg/year to land	
1	Methane (CH ₄)	100000			1505707			Exceeded at a site level at landfill sites, as is the case for most landfill sites. Note data is based on models typically
2	Carbon monoxide (CO)	500000			25949			Threshold not exceeded at any site
3	Carbon dioxide (CO ₂)	100000000			314721362			Threshold exceeded at one site - hazardous waste destruction site with consequent off-set against wider environmental damage

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		Kg/year to air	Kg/year to water	Kg/year to land	Kg/year to air	Kg/year to water	Kg/year to land	
6	Ammonia (NH3)	10,000			1433	2904.66		Threshold not exceeded at any site
8	Nitrogen oxides (NOx/NO2)	100000			328658			Threshold exceeded at one site - hazardous waste destruction site with consequent off-set against wider environmental damage
11	Sulphur oxides (SOx/SO2)	150000			35050			Threshold not exceeded at any site
12	Total nitrogen		50000	50000		155211		Exceeded at one site only – this data is for wastewater transferred for further treatment before release
13	Total phosphorus		5000	5000		10293		Exceeded at one site only – this data is for wastewater transferred for further treatment before release
14	Hydrochlorofluorocarbons (HCFCs)	1			49.55			Exceeded at landfill sites. Note data is based on models typically and likely over-estimated
15	Chlorofluorocarbons (CFCs) (6) 1	1			14.84			Exceeded at landfill sites. Note data is based on models typically and likely over-estimated
17	Arsenic and compounds (as As)	20	5	5		26.406		Exceeded at one site only – this data is for wastewater transferred for further treatment before release
18	Cadmium and compounds (as Cd)	10	5	5		0.517		Threshold not exceeded at any site
19	Chromium and compounds (as Cr)	100	50	50		33.404		Threshold not exceeded at any site
20	Copper and compounds (as Cu)	100	50	50		24.39		Threshold not exceeded at any site
21	Mercury and compounds (as Hg)	10	1	1		0.321		Threshold not exceeded at any site
22	Nickel and compounds (as Ni)	50	20	20		142.37		Exceeded at one site only – this data is for wastewater transferred for further treatment before release
23	Lead and compounds (as Pb)	200	20	20		35.948		Threshold not exceeded at any site

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		Kg/year to air	Kg/year to water	Kg/year to land	Kg/year to air	Kg/year to water	Kg/year to land	
24	Zinc and compounds (as Zn)	200	100	100		180.004		Exceeded at one site only – this data is for wastewater transferred for further treatment before release
34	2 1,2-dichloroethane (EDC)	1000	10	10		18		Exceeded at one site only – this data is for wastewater transferred for further treatment before release
35	2 Dichloromethane (DCM)	1000	10	10		39		Exceeded at one site only – this data is for wastewater transferred for further treatment before release
40	Halogenated organic compounds (as AOX)		1000	1000		16.04		Threshold not exceeded at any site
51	Simazine		1	1		0.39		Threshold not exceeded at any site
55	1,1,1-trichloroethane	100				1.2		Threshold not exceeded at any site
56	1,1,2,2-tetrachloroethane	50			0.082	0.4		Threshold not exceeded at any site
58	Trichloromethane	500	10			4		Threshold not exceeded at any site
60	Vinyl chloride	1000	10	10	0.122	10.8		Threshold not exceeded at any site. Note – data is expressed as a < figure and represents worst case
62	Benzene	1000	200	200	0.160	11.6		Threshold not exceeded at any site
68	Naphthalene	100	10	10		2.016		Threshold not exceeded at any site
71	Phenols (as total C)		20	20		62.584		Exceeded at one site only – this data is for wastewater transferred for further treatment before release
73	Toluene		200	200	0.292	15.38		Threshold not exceeded at any site
76	Total organic carbon (TOC) (as total C or COD/3)		50000		12657	353276.33		Exceeded at one site only – this data is for wastewater transferred for further treatment before release

EPRT Ref. No.	Component (note - only components Shanks is required to report against shown)	EPRT thresholds			Shanks Group totals			Commentary on results
		Kg/year to air	Kg/year to water	Kg/year to land	Kg/year to air	Kg/year to water	Kg/year to land	
79	Chlorides (as total Cl)		2000000	2000000		4150474.1		Exceeded at one site only – this data is for wastewater transferred for further treatment before release
82	Cyanides (as total CN)		50	50		21.85		Threshold not exceeded at any site
83	Fluorides (as total F)		2000	2000		193		Threshold not exceeded at any site
86	Particulate matter (PM10)	50000			70367.89			Threshold not exceeded at any site

Notes and key

- ✓ Data is for 2010 as reported by Shanks sites under EPRT
- ✓ Some of the data (such as methane and carbon dioxide) is already reported on as carbon equivalents in Shanks carbon footprints
- ✓ Exceeding an EPRT threshold, even at an individual site, does not imply any breach of an environmental permit or an unacceptable level of emission, simply that the emission is significant

EPRT component	Component name	EPRT site threshold	Threshold level	Cumulative emission for releases	Data	Cumulative emission for transfers	Data	Commentary on results	Comment
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Future Shanks corporate responsibility reports will include a synopsis of EPRT data and emissions as part of the Group's reporting of wider environmental aspects. This document is intended for those stakeholders who wish a more detailed view of the Group's potentially significant emissions and is available as a stand-alone document from Shanks Group's web site at www.shanksplc.co.uk/our-responsibilities. Other information on Shanks approach to corporate responsibility can also be found in these web pages.