ANNEX 2

VALIDATION OF RESPONSES

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Validation was a continuous process, with checks undertaken within five days of the survey response being entered into the database. This was done by including all the validation checks into the data entry Access database. The database was designed to run all the validation checks.

A complete list of the validation tests was run and companies were then contacted within the specified time frame. This was to ensure that the delay between receiving the questionnaire and contacting the company was minimised. In general, the enhanced validation procedure identified cases, which either fell outside of a pre-defined range or had figures which needed to be checked against the questionnaire or with the company itself. A two-stage approach was carried on from previous surveys:

- Stage 1: Scanning of questionnaire results prior to data entry; and
- Stage 2: Complete range of checks for all the companies

STAGE 1

Prior to data entry questionnaires were checked for completion before entering into the database. Although the questionnaire emphasises that businesses should fill in every box, it is possible that some of those with zero or minimal expenditure will fail to do this. Hence, judgement was required to ascertain when a business needed to be re-contacted to check empty boxes.

Generally businesses were re-contacted only if it appeared likely from the other entries on the questionnaire that the business had expenditure for that question. Re-contacting companies to ensure every box was filled would have been an overwhelming task, although improvements in the database entry stage meant that blank responses were flagged instantly, thus making the task more manageable.

STAGE 2

In the second stage a query was run on an access database that ran all the validation tests. These are described in **Figure 1**, and can be categorised as follows:

- Internal consistency checks (reference Test Numbers 7 to 12)
- Possible errors in data entry, IDBR database or questionnaire return (1 to 6 and 13 to 24)
- Wastewater checks (19 and 20)

- Empty boxes (25 to 27)
- Cost Savings Checks (29 to 38)

Figure 1 Validation Test Summary

Test Number	Test Explanation
1	End-of-Pipe as % of Turnover
2	Total integrated as % of Turnover
3	Total operational as % of Turnover
4	End-of-Pipe / Employees
5	Total integrated / Employees
6	Total operational / Employees
7	In-house+External = Total Operational
8	In-house percentages = 100
9	Operational Expenditure media percentages = 100
10	Integrated Expenditure media percentages = 100
11	Special Waste < total Waste
12	Individual external costs = External total
13	Environmental Capex as % of Total Capex
15	Savings as % of Turnover
17	Turnover / employees too large
18	Turnover / employees too small
19	Wastewater / Employees
20	Wastewater / Employees
21	Turnover as % of IDBR Turnover
22	Turnover as % of IDBR Turnover
23	Employees as % of IDBR Employees
24	Employees as % of IDBR Employees
26	All Questions have main fields filled
27	Media percentages completed in full
28	2.2b enviro friendly <= 2.2a integrated processes
29	Cost savings- raw material as % of Turnover is >= 2%
30	Cost savings- water use as % of Turnover is >= 2%
31	Cost savings - energy use as % of Turnover is >= 2%
32	Cost savings - waste disposal as % of Turnover is >= 2%
33	Cost savings - other as % of Turnover is >= 2%
34	Cost savings - raw material >= 10 000
35	Cost savings- water use >= 10 000
36	Cost savings - energy use >= 10 000
37	Cost savings - waste disposal >= 10 000
38	Cost savings - other >= 10 000
39	CAPEX >= 15% of Turnover
40	2.2b EnviroFriendly + EOP >= CAPEX
Other	Additional queries.

The Access database produced a list of companies that failed one or more of the tests listed in **Figure** 1. These questionnaires were then checked and four possible courses of action ensued:

a) The data entered was found to be incorrect and was changed;

b) The data was entered correctly, but there was an obvious error on the questionnaire. This was changed and recorded;

c) The data was entered correctly and there was no obvious error on the questionnaire. No further action was necessary; and

d) It was unclear what the answer should have been just by looking at the questionnaire and the company was therefore contacted to obtain the appropriate answer.

Similar to previous surveys, a complete range of the checks were run weekly on all the companies regardless of their size. This systematic validation approach was adopted to also identify disproportionately high or low expenditure.

Many companies failed on more than one criterion particularly if turnover was incorrect, as this has a knock-on effect in several of the other tests related to turnover.

The reason why quite a few companies failed checks 1, 2, 5, and 6 was that the capital expenditure in fact reflected a one off expenditure for a particular year. All questionnaires were checked for these failures and the companies were contacted to clarify specific responses.