CIMA

Chartered Institute of Management Accountants

# Marshalls Plc

# Case studies

## Carbon labelling project and data warehouse whole life costing

Marshalls, founded in the late 1880s, is now the UK's leading supplier of superior natural stone and concrete landscaping products. The £378m turnover group operates its own quarries and concrete manufacturing sites throughout the UK. It has 2,500 employees.

Marshalls's business decisions are made over the long-term against a triple bottom line – environmental, social, and with stable economic growth – and it is trailblazing improvements in the sustainability of its business with particular emphasis on reducing the carbon footprint of its products.

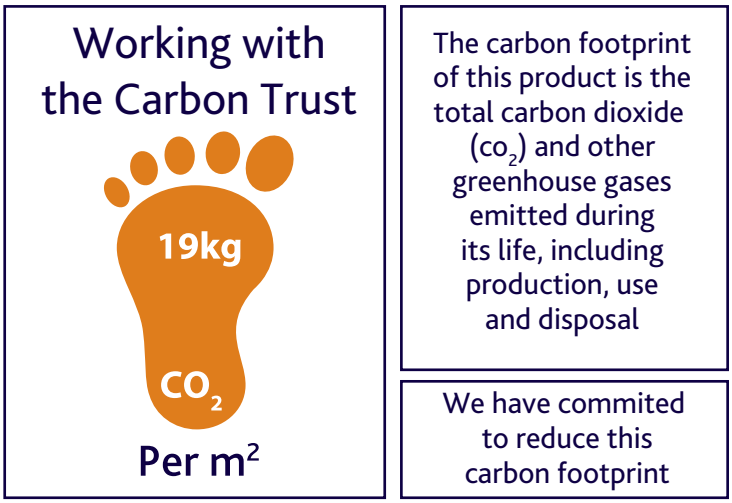
## Marshalls case study one

### Carbon labelling project

'Since we started our carbon reduction programme, Marshalls has made energy cost savings of over £525,000 and carbon emissions reductions of over 2,300 tonnes $CO_2$.' David Morrell, Head of Sustainability, Marshalls.

'Marshalls is working at the forefront of environmental profiling. They have given their customers a better understanding of how it all works and the opportunity to make comparisons that just were not possible a year ago. What's great about working with Marshalls is that they are happy to push the boundaries in their commitment to sustainability.' Dr Peter Bonfield, Chief Executive, BRE.

Marshalls was the first company to label its entire range and was the first in the landscaping industry to work with the Carbon Trust's labelling scheme.




Marshalls put together a team consisting of the sustainability manager, energy manager, management accountants, manufacturing site management, purchasing, market research and representatives from the BRE and the Carbon Trust. This forum agreed that the management accounting team would be best able to provide accurate and consistent data that could be properly audited and reconciled. Also, they had the most extensive access to, and understanding of, systems that provide the robust information and reporting required.

The project timetable and data requirements were agreed between finance and the sustainability manager in January 2008 - finance would manage the process and would liaise with the Carbon Trust to conduct cluster analysis, creating product 'families' with similar emission characteristics. All work needed to be completed by October 2008, so that audited labelling could be used in their 2009 domestic brochure.

In April 2008, the management accountants created a pilot data file for one manufacturing site to act as a template across all remaining sites. This site manufactures a broad range of products, enabling early understanding of any issues that might arise across the range of product families.

The accountants first extracted raw material usage from their data warehouse. Postcodes were added with the help the group procurement team to establish the mileage involved in transporting the raw materials to the site.

| Supplier | 2007 tonnage value | Postcode Supplied | Transport type | Miles | Typical load tonnes | Type of order | Order no. | Receipt date | No. of loads in 2007 | Invoice reference |
|---|---|---|---|---|---|---|---|---|---|---|
| AN Supplier | 10,000 | AA3 4AA | Road | 150 | 28 | Bulk | xxxxxxxx | May-07 | 357 | xxxxxxxx |

Data supplied by purchasing team

Mileage from Multi Map

Relates to a bann purchase order number

Total annual tonnage divided by tonnes per load

Invoice to be shown on Empower to prove the data

Next, they extracted the tonnage of finished products from the production data cube. Although this shows a clear output volume, it does not tell you how much raw material was actually used – so it was compared to the tonnage used in the manufacture extracted from a separate data cube.

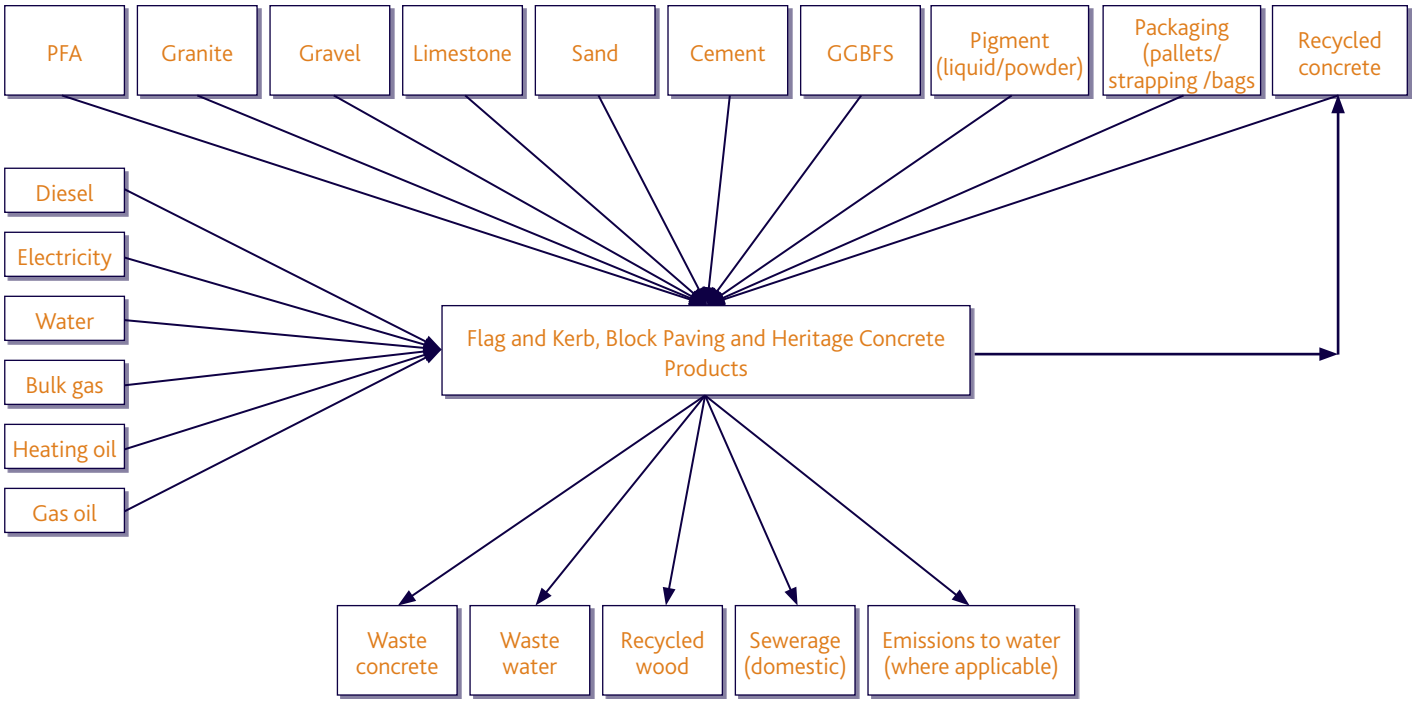
These two data sets had to reconcile with a tolerance of 5% as part of the audit carried out by BRE and the Carbon Trust. There were a large number of products, so it was agreed to 'cluster' the products into families – such as 'Flag and Kerb' or 'Semi Dry CBP' – shown below.

| Product | Tonnage |
|---|---|
| A | 5,000 |
| B | 10,000 |
| C | 10,000 |
| D | 20,000 |
| E | 10,000 |
| **Total** | **55,000** |

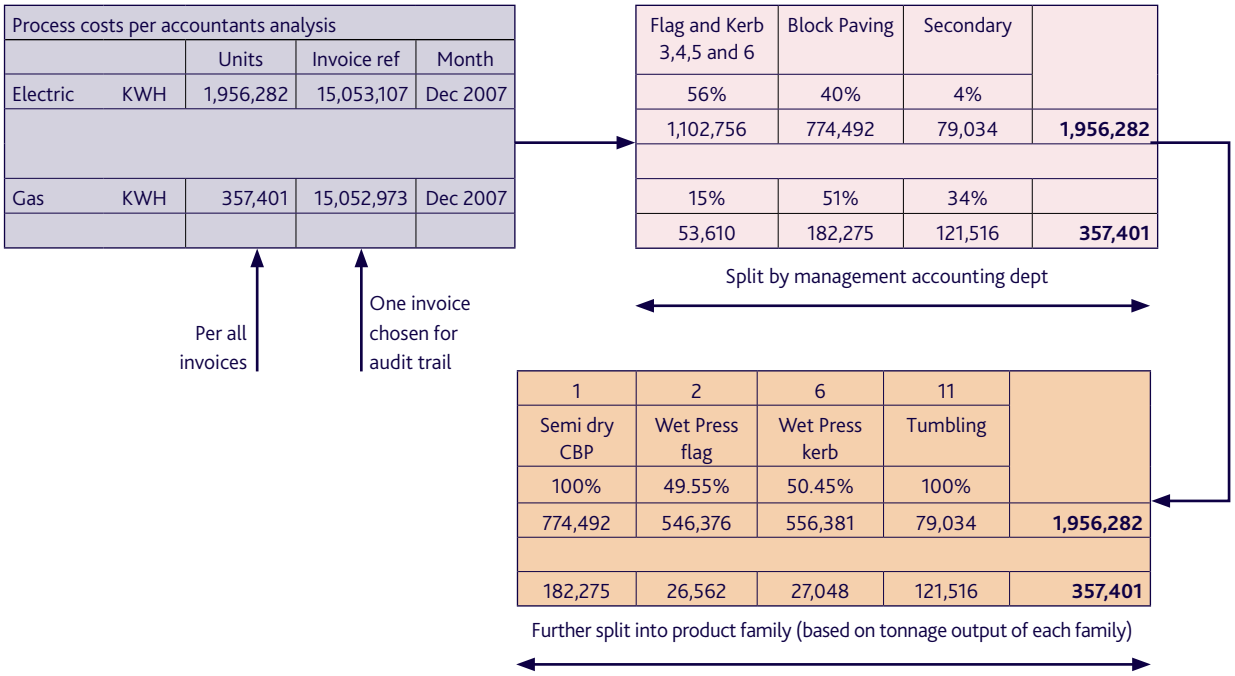
| Raw material | Tonnage | Semi dry CBP | Flag and Kerb | Wet cast | Secondary |
|---|---|---|---|---|---|
| Cement | 33,000 | 10,000 | 10,000 | 10,000 | 3,000 |
| Limestone | 15,000 | 4,545 | 4,545 | 4,545 | 1,364 |
| Colour | 5,000 | 1,515 | 1,515 | 1,515 | 455 |
| Packaging | 2,000 | 606 | 606 | 606 | 182 |
| **Total** | **55,000** | **16,666** | **16,666** | **16,666** | **5,001** |

Note: illustrative data only

Then the management accountants established the process costs involved with the manufacture – including electricity, gas, water, heating, waste and so on. The following process flow diagram was completed to ensure no processes were missed.



The kWh of electric and gas used was measured by extracting invoices from the general ledger. This tied utility usage to the management accounts – another important part of the BRE and Carbon Trust audit. Once the total was calculated, it was then apportioned across the manufacturing departments based on the monthly apportionments in the management accounts. The data was then apportioned into each respective product family according to the relative manufacture tonnage of each family. A similar process was adopted with the production waste, heating etc.




The last part of the calculation was to look at the transport of finished products to the customer – usually from site of manufacture to service centre, and then on to the final customer. But the products may also travel straight from site to the customer. To establish the complete mileage, the management accountant produced a report showing sales by place of origin – and place of sale, including information about inter site transfers. The Carbon Trust provided their agreed mileage to the 'centre of population' for each of these locations. Marshall's management accountants then calculated the mileage from site to site. This then allowed a total mileage per product family to be established.

E.g. - assume no inter company t/fs tonnage

| Family | Place A | Place B | Place C | Total |
|---|---|---|---|---|
| Semi Dry | 7,000 | 5,000 | 4,667 | 16,667 |
| Flag and Kerb | 3,000 | 7,000 | 6,667 | 16,667 |
| Wet Cast | 9,000 | 2,000 | 5,667 | 16,667 |
| Secondary | 1,000 | 2,500 | 1,500 | 5,000 |
| **Total** | **20,000** | **16,500** | **18,501** | **55,001** |
| | | | | |
| Miles to each place | 35 | 80 | 56 | |

Ton miles

| Family | Place A | Place B | Place C | Total | Average miles per product family from works of manufacture to centre of population |
|---|---|---|---|---|---|
| Semi Dry | 245,000 | 400,000 | 261,352 | 906,352 | 54 |
| Flag and Kerb | 105,000 | 560,000 | 373,352 | 1,038,352 | 62 |
| Wet Cast | 315,000 | 160,000 | 317,352 | 792,352 | 48 |
| Secondary | 35,000 | 200,000 | 84,000 | 319,000 | 64 |
| **Total** | **700,000** | **1,320,000** | **1,036,056** | **3,056,056** | 56 |

The final spreadsheets of completed data were then reformatted to suit both BRE and the Carbon Trust. From this information, the Carbon Trust assigned a relevant carbon labels for each product family. An example of the final output, for the product family, Semi dry CBP is shown below, alongside the final 2009 domestic brochure entry.

| **Total $CO_2$ E Footprint of process** | | |
|---|---|---|
| Total footprint | 10,263,920 | Kg $CO_2$ equiv. |
| **Footprint per tonne** | | |
| Semi dry CBP including transport | 161.18 | Kg $CO_2$ equiv. / tonne |
| **% Footprint by supply chain stage** | | |
| Raw material | 90% | Kg $CO_2$ equiv/tonne |
| Manufacture | 14% | Kg $CO_2$ equiv/tonne |
| Distribution and retail | 0% | Kg $CO_2$ equiv/tonne |
| Use | -20% | Kg $CO_2$ equiv/tonne |
| Disposal | 13% | Kg $CO_2$ equiv/tonne |
| **Total** | **98%** | **Kg $CO_2$ equiv/ tonne** |

## 2009 domestic brochure entry

Marshalls

# Argent® Paving

Argent's contemporary cool greys and granite aggregate textures suit bold geometric paving patterns

working with the Carbon Trust

17kg CO2 Per m²

GARDEN PAVING

## Argent paving

- Can be laid on a full bed of mortar with mortar-pointed joins of 8-10 mm.
- Can also be laid on screeded sand with sand-filled joints of 2-5mm for 450mm or less.
- On no account must Argent paving be laid butt jointed.
- You can buy less full pack quantities - even single units if required.

| Paving | Sizes mm (nominal) | No./m²* | Weight (kg/each) | Weight (kg/pack) | No./pack | Colours | Order select | kg CO Per m² |
|---|---|---|---|---|---|---|---|---|
| Smooth | 400 x 400 x 38 | 5.9 | 13.8 | 828 | 60 | LT,DK | ✓ | 30 |
| Coarse | 400 x 400 x 38 | 5.9 | 13.8 | 828 | 60 | | ✓ | 17 |
| Smooth | 600 x 600 x 38 | 2.7 | 3.2 | 800 | 25 | | ✓ | 30 |
| Coarse | 600 x 600 x 38 | 2.7 | 3.2 | 800 | 25 | | ✓ | 17 |

Marshalls

# Drivesett® Argent®

Argent's granite look makes it particularly suitable for more contemporary driveways

working with the Carbon Trust

22kg CO2 Per m²

DRIVEWAYS

## Argent paving

- Three block size mean that drivesett argent can be laid random course patterns
  (normal ratio three medium, two large, one small).
- Packs contain all three block sizes and are shrink wrapped.
- Joint filling sand and keybond are recommended.
- A rubber faced vibrating plate should be used.
- For coordinating paving and walling.
- You can buy less than full pack quantities ifrequared minimum quantity is one square metre.
- For coordinating kerbs and edgings.

| Drivesett Argent | Sizes mm | No./Pack | Weight (kg/each) | Area (m²*/pack) | Colours | Order select | kg CO Per m² |
|---|---|---|---|---|---|---|---|
| | 240 x 160 x 50 | 120 | 1202 | 4.61 | LT,DK, GR | ✓ | 22 |
| | 160 x 160 x 50 | 216 | | 5.53 | | | 22 |
| | 80 x 160 x 50 | 48 | | 0.61 | | | 22 |
| **Total** | | 384 | 1202 | 10.75 | | | 22 |

# Marshalls case study two

## Data warehouse whole life costing

'We decided to carbon label our entire domestic range so our customers could compare our products and make an informed choice about what they buy. In all, we labelled 503 products. In order to be able to consolidate the necessary information for this exercise we needed the right tools to automate the job.' Andy Ackroyd ACMA, Commercial Accountant, Marshalls.

In order to provide the necessary datasets, Marshalls turned to its data warehouse, which contains daily updated information enabling the team to establish whole life costing of carbon emissions. It stores financial and non financial metrics mainly drawn from its ERP system, Baan, and then uses data mining tool ProClarity to build data cubes. These allow the finance team to analyse the information in a number of different ways.

In this case, the data cubes covered materials usage, production, sales and general ledger data. From these the necessary reports could be produced. They cover:

- Inbound transport volumes of raw materials and data about suppliers
- Finished product output, from the materials usage data cube
- Place of origin and place of sale for each product family, drawn from the sales data cube
- General ledger information – to extract cost data such as utilities etc

Extract from Datawarehouse report - this data would then be captured by Proclarity and could be viewed in Baan via the Purchase Order

| Tr Origin description | Fin Tr description | Dim description | Amount | Supplier | Supplier name | Date | Unit | Order no | Pos | Seq | Whse | Item | Item description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Purchase | Receipt | Site A | 10,000.00 | AAAAAA | AAAAAAAA | 2007 | ton | XXXXXX | 50 | 60 | 6B | BB | CEMENT |

This was an important part of the reconciliation process for the Carbon Trust and BRE

Read CIMA's latest report *Accounting for Climate Change* at **www.cimaglobal.com/sustainability**

The report includes case studies from other organisations and looks at how management accountants, their skills and their tools can provide business intelligence to support strategy and influence decision making, driving their organisations to mitigate and adapt to climate change. If you are interested in sharing your own insights and experiences in this area, we would be delighted to hear from you. Please email us at r**esearch@cimaglobal.com**

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