

The title of the report, 'Environmental Report 2018', displayed in a teal, sans-serif font. The text is positioned on a white background that has a curved bottom edge, set against a backdrop of a vast landscape of purple flowers and rolling hills under a clear blue sky.

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Environmental management policy

The JBA Group is committed to minimising the environmental impact of its operations and activities, as far as is reasonably practical, and using its influence to promote better environmental outcomes. Concern for, and protection of, the environment is integral to our professional activities and the management of the Group.

We maintain an ISO 14001:2015 certified Environmental Management System that is appropriate to the nature, scale and environmental impacts of our activities and services. We are committed to the continual improvement of our environmental management system, the prevention of pollution and reducing our per capita carbon emissions. JBA Consulting is a registered IEMA EIA Quality Mark organisation, making a contribution towards excellence in Environmental Impact Assessments.

We comply with all legislation, standards, statutory and other obligations and best practices which are relevant to our activities and the jurisdictions in which we operate. We seek to comply with client policies where required and reasonably possible to do so without conflicting with our own policies or other obligations

Environmental report

This report summarises the environmental performance of our operations in terms of our waste, carbon emissions and use of resources. It includes an assessment of our carbon footprint. It covers the period from 1 November 2017 to 31 October 2018 and includes the following subsidiary operating companies trading within the JBA Group: Jeremy Benn Associates Limited, JBA Risk Management Limited, JBA Consulting Engineers and Scientists Limited (Ireland) and JBA (IoM) Limited. A small number of staff from these companies work from non JBA offices where their environmental impact cannot be separated out from the main occupant. It is therefore excluded from this report but is likely to be offset by a similar number of non JBA staff who operate at JBA offices.

| | | |
|--------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
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Carbon footprint

A printed copy of this document will result in a carbon footprint of 181g if 100% post-consumer recycled paper is used and 231g if primary-source paper is used, assuming the report is printed in black and white on A4 paper and in duplex.

Abbreviations

| | |
|-----------------|------------------------------------------------------|
| BVM | Belle Vue Mills, Skipton |
| CAD | Computer Aided Design |
| CO ₂ | Carbon dioxide |
| Defra | Department for Environment, Food and Rural Affairs |
| EIA | Environmental Impact Assessment |
| EMS Rep | Environmental management system representative |
| EPI | Environmental performance indicator |
| FCERM | Flood and Coastal Erosion Risk Management |
| Group | JBA Group Limited |
| IEMA | Institute of Environmental Management and Assessment |
| IoM | Isle of Man |
| ISO | International Standards Organisation |
| IT | Information technology |
| JBA | JBA Group Limited |
| KWh | Kilowatt hours |
| LR | Lloyd's Register |
| NYMNP | North York Moors National Park |
| OPW | Office of Public Works |
| WRAP | Waste and Resources Action Programme |

Summary of our 2017-18 performance

Overview

We continued to demonstrate sound environmental management of our activities during the year from November 2017 to October 2018. In particular, we

-  encouraged no and low carbon modes of transport for business travel and commuting, with an increase in staff commuting in this way, and by improving our vehicle fleet efficiency and reducing its emissions;
-  reduced our per capita carbon footprint;
-  reduced our per capita paper consumption and the majority of the paper we purchase is recycled;
-  reduced the per capita emissions from our measured office energy use;
-  reduced the per capita emissions associated with our business mileage;
-  extended our business travel monitoring programme to include three international offices; and
-  extended our energy use monitoring programme to include our data centre.

Objectives and intended outcomes

In 2017-18, we set ourselves three overarching environmental objectives with the aim of achieving the following outcomes:

Intended outcomes

Recognition as an environmentally responsible business.

Year on year reduction in carbon emissions.

Certification to ISO 14001:2015 and EIA Quality Mark.

Evidence of our professional expertise, innovation and value to the environment.

Objectives

Environmental impacts – reduce the adverse environmental impacts of the operational activities of the JBA Group.

Environmental management – improve our environmental management of projects.

Influencing stakeholders – widen our influence on stakeholders to achieve better environmental outcomes.

Performance against our objectives

To help us achieve our intended outcomes, we identified key actions for each objective and monitored our performance.



Objective - Environmental impacts

We identified the following key actions to minimise the adverse environmental impacts of our operational activities in 2017-18:

- reduce our per capita CO₂ emissions from our paper use
- reduce our per capita CO₂ emissions from our energy use
- encourage no and low carbon modes of transport for business travel and commuting
- minimise business waste sent to landfill
- monitor and report on consumption of natural resources within our operational activities

We significantly reduced our per capita CO₂ emissions from paper use, with a 12.5% reduction on last year.

We successfully lowered our per capita energy emissions in those offices where JBA energy use is metered, and included energy used within our data centre in our monitoring.

We successfully encouraged no and low carbon modes of transport. By applying the JBA Travel Hierarchy we achieved a small decrease in per capita travel emissions, our Environmental Reward Scheme saw a 20% increase in qualifying staff commutes, and the fuel efficiency of our vehicle fleet increased by 2 mpg whilst its emissions reduced by 12g CO₂/km.

We successfully reduced the waste per capita we sent to landfill and increased the amount of waste per capita sent for recycling: 19% less waste to landfill and 36% more waste to recycling per capita than last year.



Objective - Environmental management

For 2017-18 the key actions we identified to improve our environmental management of projects were:

- improve environmental risk assessment in projects
- improve reporting of environmental incidents
- identification and mitigation of potential environmental impacts
- identification of good environmental design

We have improved how we assess environmental risk in projects with improvements made to IMS documentation and updates to training identified.

We have improved our process for reporting environmental incidents.

We achieved recognition as an environmentally responsible business, maintaining our certification to ISO 14001:2015 and achieving new certification to the EIA Quality Mark. In delivering environmental impact assessments we have been able to identify and encourage good environmental design.

Objective - Influencing stakeholders



In 2017-18 our key actions to widen our influence amongst stakeholders were:

- to record our wider contribution to environmental management good practices
- to provide staff training in the application of environmental good management techniques and tools
- to contribute to national environmental records

Our staff in Ireland have provided professional expertise to the Office of Public Works (OPW) by supporting the development of their Environmental Management System (EMS), and have promoted environmental management good practices by delivering training to OPW staff on environmental impact assessment, habitats directive appropriate assessment and improving environmental performance of maintenance activities.

We have influenced project design to provide better environmental outcomes through our environmental impact assessment services, and have influenced national Flood and Coastal Erosion Risk Management (FCERM) and wider environmental policy through our policy, strategy and research services.

Objectives for 2018-19

For 2018-19, we have again set ourselves objectives and identified key actions to help us achieve our intended outcomes. We will continue to monitor our performance against these objectives.

| Objective | Key actions | Intended outcome |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reduce the adverse environmental impacts of the operational activities of the JBA Group. | <ul style="list-style-type: none"> Reduce our use of natural resources. Reduce our energy use and associated carbon emissions. Reduce our waste. Increase staff awareness of our environmental impacts. Monitor and report environmental performance within our operational activities. | <ul style="list-style-type: none"> Recognition as an environmentally responsible business. Year on year reduction in carbon emissions. |
| Improved environmental management of projects. | <ul style="list-style-type: none"> Improve environmental risk assessment in projects. Improve reporting of environmental incidents. Identification and mitigation of potential environmental impacts. Identification of good environmental design. | <ul style="list-style-type: none"> Recognition as an environmentally responsible business. Certification to ISO 14001:2015 and EIA Quality Mark. |
| Wider influencing of stakeholders by our staff to achieve better environmental outcomes. | <ul style="list-style-type: none"> Record our overall contribution to environmental management good practices. Provide staff training in the application of environmental good management techniques and tools. Contribute to national environmental records. | <ul style="list-style-type: none"> Evidence of our professional expertise, innovation and value to the environment. |

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Environmental performance indicator audit results - year to 31 October 2018

1.1 Key action: reduce per capita paper use

Key action achieved



Per capita paper use fell by 12.5%

On average, each member of staff uses three reams of paper less than six years ago

Table 1-1: Paper use

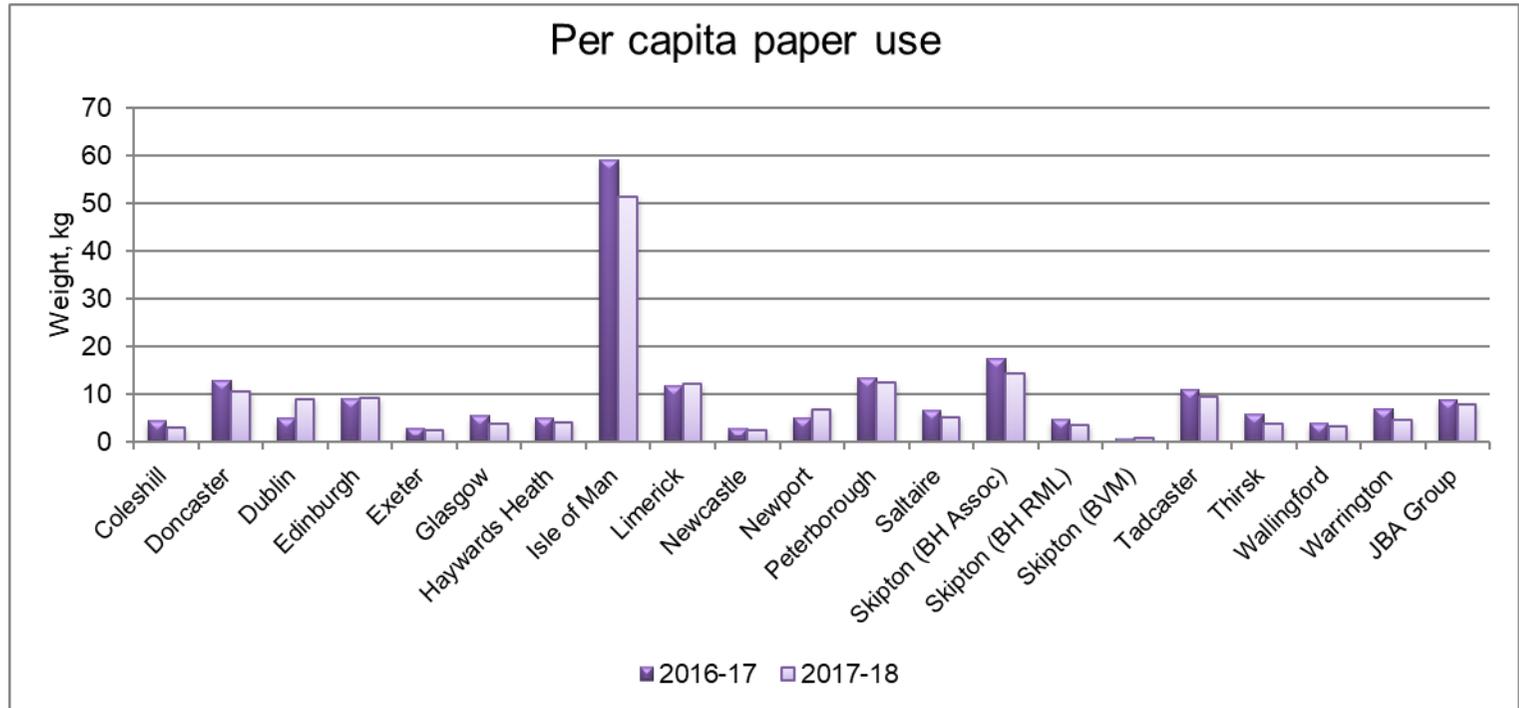
| | Virgin paper used (kg) | Recycled paper used (kg) | Total paper used (kg) | Paper used per capita (kg) | Change in per capita paper use (kg) | Change in per capita paper use (%) | Recycled paper use (%) |
|---------|------------------------|--------------------------|-----------------------|----------------------------|-------------------------------------|------------------------------------|------------------------|
| 2016-17 | 583 | 3,639 | 4,222 | 8.94 | -0.77 | -7.93% | 86.2% |
| 2017-18 | 689 | 3,601 | 4,290 | 7.82 | -1.12 | -12.5% | 83.9% |

Table 1-1 shows that we **achieved** our key action to reduce our per capita paper use compared to 2016-17. In 2017-18 we **achieved a significant reduction, 12.5%**, with our paper use dropping from 8.94kg to 7.82kg per capita. This continues to build on reductions achieved in previous years: six years ago, the equivalent figure was 14.0kg per capita.

Figure 1-1 compares per capita paper use at each of our offices during 2017-18 and 2016-17. This demonstrates both the year-on-year decrease and the wide variation in paper use across our offices. Monitoring our paper use enables us to provide each office with a realistic annual target based on their paper use the previous year. Individual office monitoring allows us to focus our attention on those offices where per capita paper use is highest and where there is the greatest potential for future reductions.

The variation reflects differing client requirements and types of projects our offices undertake: our Isle of Man clients require hard copy plans and reports, as do the internal drainage boards served from our Doncaster office; the design work undertaken at our Tadcaster, Peterborough and Edinburgh offices also requires the production of paper drawings. In all these offices we are encouraging our clients to reduce their requirement for hard copy documentation and the results of this can be seen in substantial reductions in per capita paper use at Doncaster and Tadcaster over the last three years. Our head office in Skipton, and to a lesser extent our Limerick office, hosts and provides materials throughout the year for workshops and training courses where delegates require paper-based materials.

Figure 1-1: Per capita paper use at our offices and across the JBA Group



1.2 Key action: reduce per capita CO₂ emissions from our measured energy use

Key action achieved



Our monitoring now includes electricity used in our data centre

We monitor the energy used by 78% of our staff

54% of the electricity we used came from renewable resources

| Table 1-2: Energy emissions | | | | | |
|-----------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------|
| | Total CO ₂ emissions from energy use at monitored offices (kg) | Total CO ₂ emissions from energy use extrapolated for all offices (kg) | Per capita CO ₂ emissions from energy use at monitored offices (kg) | Change in per capita CO ₂ emissions at monitored offices (kg) | Change in per capita CO ₂ emissions at monitored offices (%) |
| 2016-17 | 172,227 | 236,015 | 439 | -121 | -22% |
| 2017-18 | 194,438 | 248,485 | 431 | -8 | -2% |

Table 1-2 shows that we **achieved** our key action to reduce per capita CO₂ emissions in offices where we can measure our energy use. For the first time, we have been able to include energy used at our data centre in our monitoring. Despite including this additional energy use, our purchasing decisions and energy efficient operational procedures have enabled us to reduce our measured per capita emissions by 2% compared to last year.

We calculate our energy use data from meter readings at offices where JBA energy consumption can be measured separately from that of other occupants. In 2017-18, we measured our energy consumption at the 14 offices listed below and our data centre. 78% of our staff work in the monitored offices and so this data provides a good estimate of overall JBA energy use as the offices vary in terms of size, location and work type.

| | | | | |
|-------------------------|-----------------------|-----------------------------------|--------------------------|-------------|
| Doncaster | Edinburgh | Glasgow | Haywards Heath | Isle of Man |
| Limerick | Newcastle New! | Newport | Peterborough New! | Saltaire |
| Skipton, Broughton Hall | Tadcaster | Wakefield data centre New! | Wallingford | Warrington |

Figure 1-2 compares the energy used per capita at offices where JBA energy use is measured and Figure 1-3 shows the resulting CO₂ emissions. Our most significant energy use is electricity and thus it is important that we concentrate our efforts on managing our electricity use. We purchase electricity collected from renewable resources for our Doncaster, Glasgow, Newport, Skipton Broughton Hall, Tadcaster and Wallingford offices. In 2017-18, this accounted for 54% of the electricity used across the JBA Group.

Figure 1-2: Measured per capita energy use

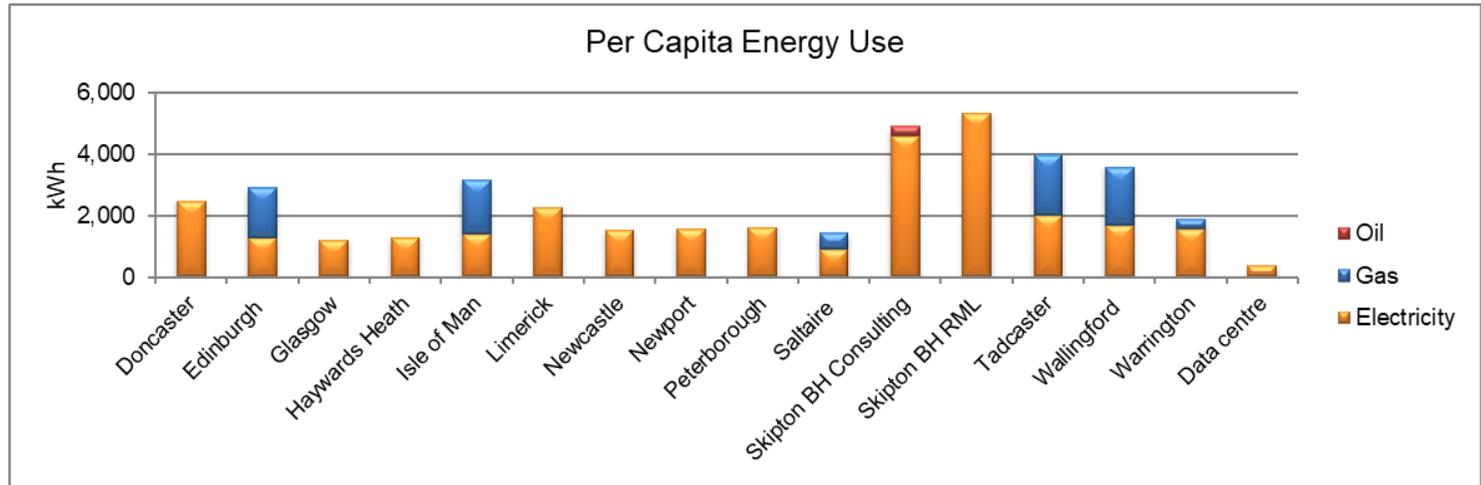
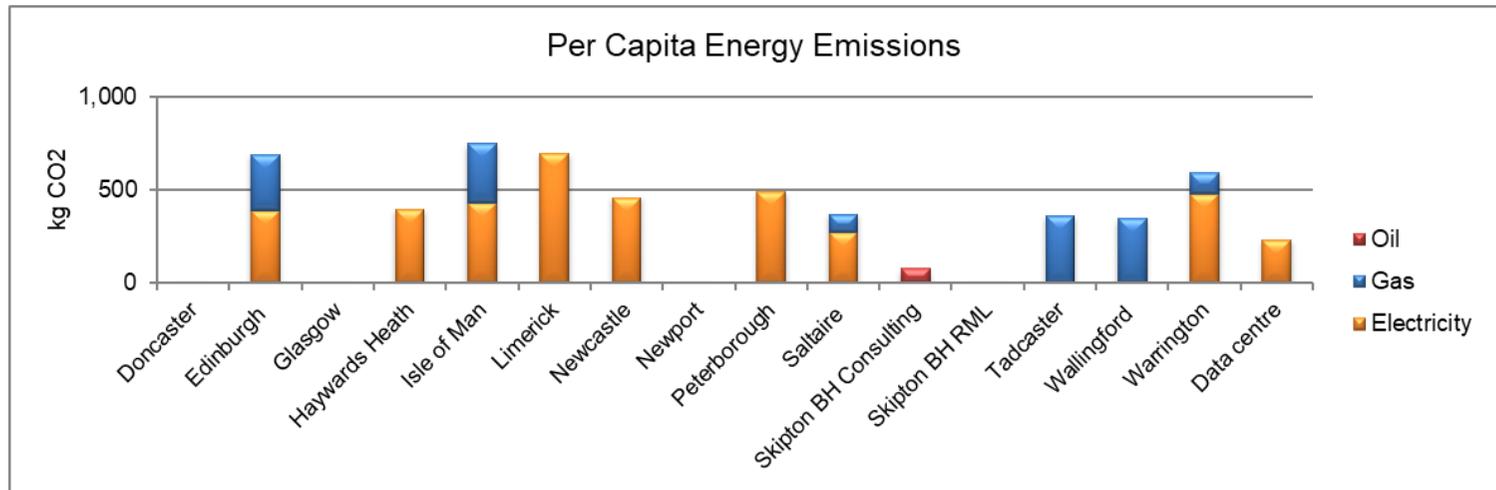


Figure 1-3: Per capita emissions from measured energy use



1.3 Key action: monitor and report our business travel emissions and encourage low carbon modes of transport for commuting and business travel

Key action achieved



We reduced our per capita emissions from business travel

Monitoring now includes three international offices

| Table 1-3: Travel emissions | |
|-----------------------------|----------------------------------------------------------------------------------------------------|
| Key action | Activities |
| i | Monitor and report business travel emissions |
| | Quarterly reporting Annual reporting |
| ii | Encourage low carbon modes of transport for commuting and business travel |
| | Promotion of the JBA Travel Hierarchy Improved office facilities Environmental Reward Scheme |

We **achieved** both key actions in 2017-18.

We recorded our business travel emissions through our pool car, purchase order and expense systems and we reported the results to staff on a quarterly basis. This year we included three of our international offices, for which we are now able to monitor business travel. These offices tend to have a higher amount of business travel related to them, due to the necessity for supporting staff to visit the offices. Figure 1-4 compares the per capita travel emissions recorded for each of our offices in 2017-18. Across the JBA Group, our per capita travel emissions were slightly less than the previous year, despite including the international offices. Our average travel emissions are 205gCO₂/mile.

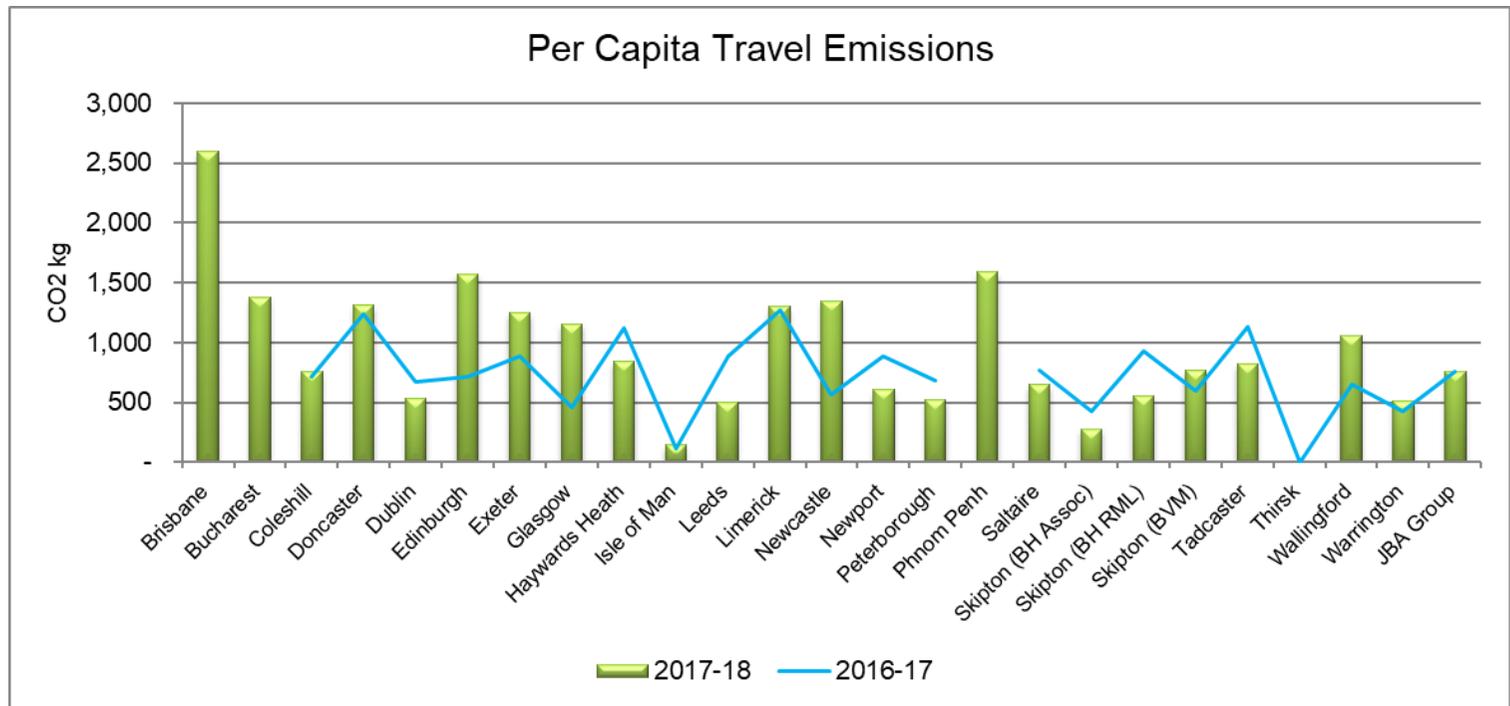
The variation in emissions between offices, and compared to the previous year, reflects the differing requirements of the projects undertaken this year at particular offices: our Edinburgh office has been involved in the LUCAS project, collecting survey data at a large number of locations across the UK; in our Newcastle, Wallingford and Skipton Belle Vue Mills offices we are undertaking new international projects requiring travel at the outset and to support developing relationships with clients. Across our offices we promote the JBA Travel Hierarchy, encouraging staff to avoid travel if possible, which is supported by the availability of video and telephone conferencing facilities. Where travel is necessary, particularly overseas, staff are encouraged to combine business meetings to minimise the number of instances of travel.

We support low carbon commuting and business travel

We encourage our staff to adopt low carbon commuting practices and business travel through a variety of actions.

-  We provide office facilities that support cycling, such as showers and secure cycle storage
-  We offer a financial incentive via our Environmental Reward Scheme for low carbon commuting
-  Our Edinburgh office took part in a ride to work week
-  We promote the JBA Travel Hierarchy
-  We offer financial assistance to encourage rail travel
-  We improve the efficiency and reduce the emissions of our pool car vehicle fleet

Figure 1-4: Per capita emissions from our business travel



1.4 Key action: monitor and report business waste from our offices

Key action achieved



We encourage recycling to avoid waste going to landfill

Table 1-4: Business waste

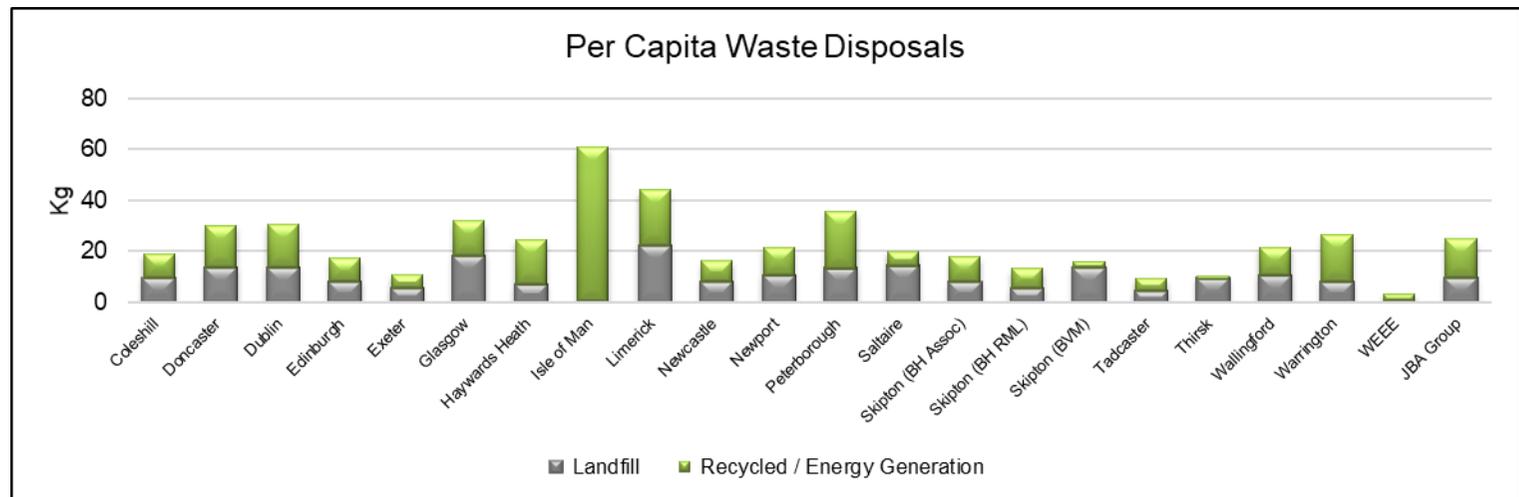
| Key action | Activities |
|------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Monitor and report business waste from our offices Minimise business waste sent to landfill | Waste records Quarterly reporting Annual reporting |

We **achieved** these key actions in 2017-18.

Our business waste monitoring processes cover all of our UK, Ireland and Isle of Man offices. We monitor the amount of business waste each of our offices disposes of and identify how much is sent to landfill and how much is recycled or sent for energy generation. This data is reported to management and staff on a quarterly basis and is shown in Figure 1-5. We actively recycle and encourage recycling of many types of waste to minimise waste to landfill.

Figure 1-5: Per capita business waste

We monitor and report business waste from all UK, Ireland and IoM offices



Environmental achievements beyond our EPIs

2.1 Certifications

ISO 14001:2015

Our EMS is certified to ISO 14001:2015

In January 2017, the environmental management system of JBA Group was awarded ISO 14001:2015 certification following an external assessment by Lloyd’s Register (LR). This confirmed the successful transition of our certification from ISO 14001:2004 and acknowledged that our environmental management system enables us to:

-  enhance our environmental performance;
-  fulfil our compliance obligations; and
-  achieve our environmental objectives.

In September 2017, the ISO 14001:2015 certification of our environmental management system was renewed for three years following an external recertification assessment by LR. Further external assessments by LR in 2018 confirmed that our environmental management system continues to be effective.

Figure 2-1: ISO 14001:2015 certificate





IEMA Environmental Impact Assessment Quality Mark

In 2018, JBA Consulting was accepted by the Institute of Environmental Management and Assessment (IEMA) as an Environmental Impact Assessment (EIA) Quality Mark organisation.

The EIA Quality Mark is a voluntary scheme, operated by IEMA, that allows organisations that lead the co-ordination of statutory EIAs in the UK to make a voluntary commitment to excellence in their EIA activities. Every year, EIA activity is independently reviewed to ensure it delivers excellence in a range of areas, such as EIA management, regulatory compliance and team capabilities.

As part of this accreditation, we have demonstrated commitment to sharing and improving EIA practice.

Figure 2-2: IEMA EIA Quality Mark certificate



JBA Consulting is registered with IEMA as an EIA Quality Mark organisation

2.2 Environmental services provided by JBA

As an environmental consultant, concern for, and protection of, the environment is integral to our professional activities. This section provides just a few examples of the ways our work interacts with and benefits the environment.

Environmental Impact Assessments

Environmental Impact Assessment (EIA) is a statutory process required as part of planning consent or marine licence application for infrastructure development projects where there are likely to be significant effects on the environment, for example on human health; biodiversity; land, water, climate; or because of the interaction between such factors. For those projects deemed EIA Development there is a legal requirement that significant environmental effects are reported by competent experts.

JBA Consulting are committed to providing excellence in EIA activities, recognised through their registration with IEMA as an EIA Quality Mark organisation. As part of the voluntary Quality Mark scheme EIA activity is independently reviewed on an annual basis for excellence in EIA management, content, context and influence, regulatory compliance, team capabilities, presentation and improving EIA practice.

Example 1: Runswick Bay Environmental Impact Assessment

Runswick Bay is a popular tourist town on the North Yorkshire coast, designated a conservation area and lying within a marine conservation zone in the North York Moors National Park (NYMNP). Studies showed the seawall was at risk of collapsing, putting the town at risk of flooding. We were appointed to design a scheme promoted by Scarborough Borough Council to reduce the risk of coastal erosion, seawall deterioration, wave overtopping and flooding. Our coastal, maritime, river engineering and environmental management teams worked together to develop an innovative solution which focused on coastal protection and ecological enhancement. The habitat creation method used is the largest of its type in the country and based on innovative scientific trials undertaken in collaboration with Hull University. Our team prepared a statutory Environmental Impact Assessment (EIA) and Environmental Statement which was submitted to the NYMNP, and a marine licence submitted to the Marine Management Organisation.

Example 2: Hurst Castle Environmental Impact Assessment

Hurst Castle is owned and managed as a visitor attraction on behalf of English Heritage and is highly vulnerable to coastal erosion and undermining. We developed a scheme for extended coastal protection to provide better protection to Hurst Castle from coastal erosion. An environmental impact assessment identified many benefits from these proposals.

We provide ecological and environmental services for the Coal Authority

Our topographic surveyors support delivery of various environmental services

We use innovations to achieve better environmental outcomes

Coal Authority Engineering Services Framework

JBA Consulting has been appointed to the Coal Authority's Framework for the Provision of Engineering Services until January 2022.

We are a chosen consultant for delivery of projects in the ecological and environmental sector, minewater treatment schemes; scoping, feasibility and design, as well as hydrogeology and land drainage, including agricultural and specialist land drainage.

Topographic survey

We undertake topographical surveys for a wide range of projects concerned with monitoring and improving the environment in the areas in which we work.

In 2017-18, we conducted surveys of embankments and flood walls, river channels, a dam and Environment Agency gauging stations. Our surveyors reported on railway infrastructure scour and carried out topographical surveys to aid scour protection design in Fife.

We gathered information on building thresholds to inform a Flood Protection Scheme in Aberdeenshire and provided precise GPS levels for hydrological monitoring near Carlisle.

LUCAS project

In 2018, a large land cover and land use study was repeated across Europe by Eurostat. We were once again involved in the extensive programme of field survey, with 40 of our staff collecting data and more than 500 soil samples taken at over 22,000 data points in the UK and Ireland.

During the field survey, the JBA-developed GISmapp software was used on iOS devices to enable electronic data capture and provision of local ground information digitally. This eliminated the need for printed data collection and information sheets, significantly reducing the paper used in the field survey and the environmental impact of provision of information by post. Approximately 3kg of paper was saved compared to the 2015 survey.

We provide a range of environmental services to OPW in Ireland

OPW EMS development, environmental training and environmental impact reduction

We continued to provide a range of environmental services to the Office of Public Works (OPW) in Ireland in 2017-18.

We contributed expert advice and assisted in the development of the OPW's ISO 14001:2015 compliant Environmental Management System (EMS).

We developed and delivered environmental training for OPW staff. This enabled us to promote environmental best practice to flood risk and drainage maintenance project managers and engineers by improving their understanding of impact assessment and encouraging the application of good environmental management techniques and tools through the delivery of Environmental Risk Assessment training.

We have collaborated with the OPW environment section to strive for improvements in their environmental performance through reduction of the environmental impact of their maintenance activities.

2.3 Paper and printing

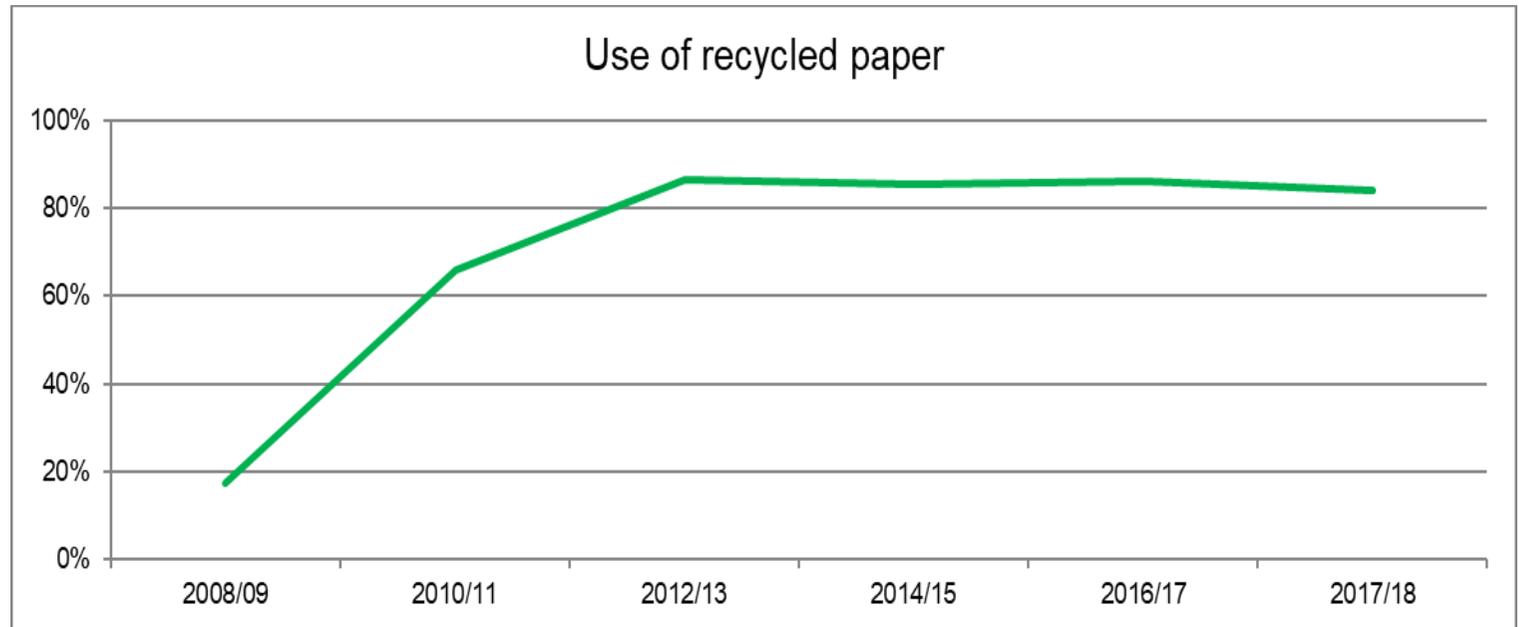
We prevented 500kg of CO₂ emissions by using recycled paper

Recycled paper

By using recycled paper instead of 100% virgin paper we have avoided almost 500kg of CO₂ emissions. This is approximately equivalent to the emissions produced by driving 1,650 miles in an average car, boiling a kettle 32,250 times, or using an LCD TV continuously for 121 days.

84% of the paper we used in 2017-18 came from recycled sources. As Figure 2-3 shows, we have significantly increased the proportion of recycled paper we use from 17% to 84%.

Figure 2-3: Trend in use of recycled paper



84% of the paper we use comes from recycled sources

We help boost demand for recycled print cartridges

Print cartridges

Several JBA offices purchase remanufactured print cartridges for their printers. This helps to boost demand for remanufactured print cartridges and reduces our environmental impact by

-  reducing the use of fossil fuels;
-  lowering the pollution created in extracting virgin resources;
-  decreasing the fuel used in transporting products;
-  eliminating landfill waste; and
-  supporting local economies.

Digital documentation

We use electronic documentation wherever possible, continue to decrease our use of paper documents and encourage our clients to do the same.

Internally, we use digital purchase orders, the majority of our HR records are digital and we store supplier invoices electronically. Our IMS documentation is all digital, as is the vast majority of our project documentation, and we distribute newsletters, bulletins and learning and development documentation via our intranet.

We use Design Review software to reduce printing requirements

Design review software

We use Autodesk Design Review software to review CAD drawings digitally. This allows comment boxes and approval stamps to be added to drawings and has significantly reduced the number of drawings we need to print.

Scrap paper

We reuse scrap paper, such as out of date headed paper, for note pads and draft prints.

Awareness

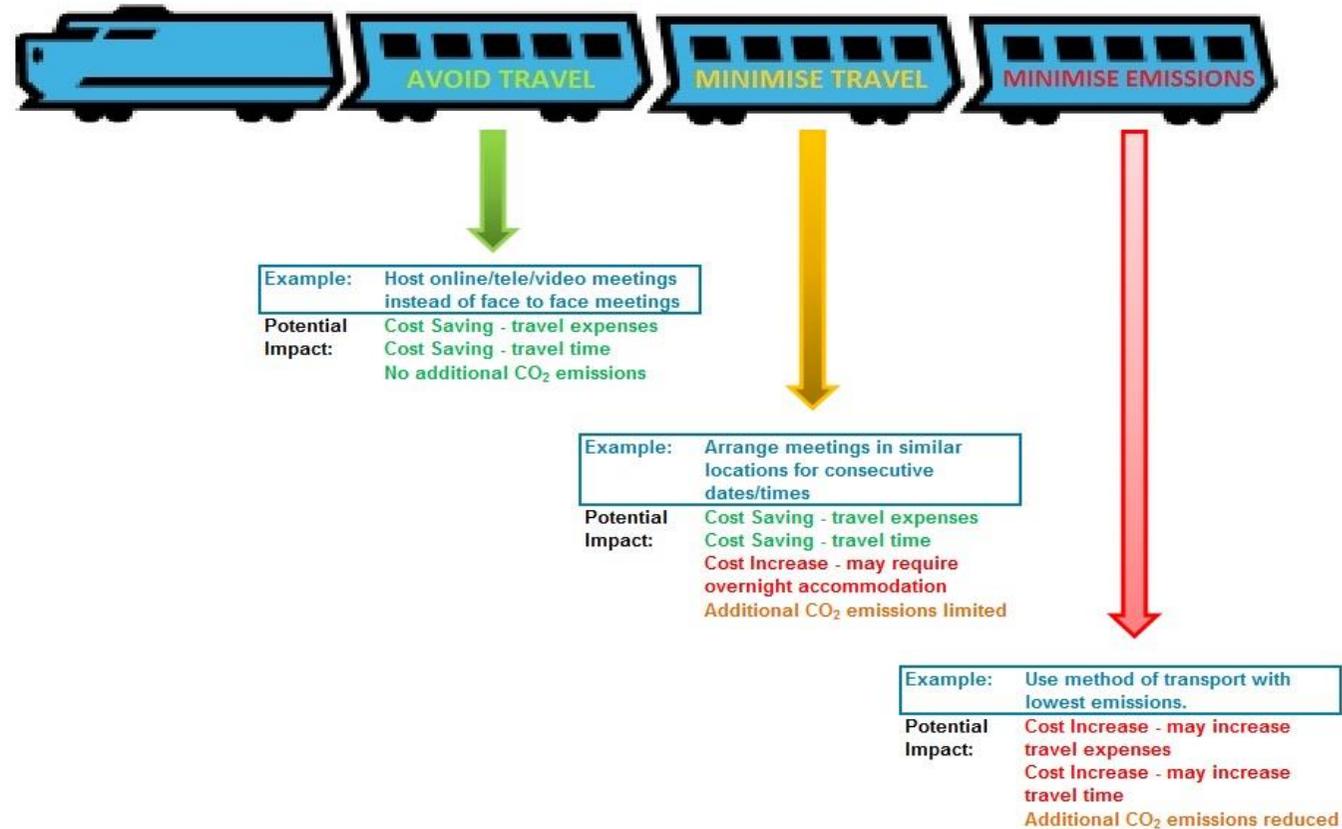
We encourage staff to keep their printing requirements to a minimum by reminding staff of the environmental and financial costs of printing.

2.4 Business travel

The JBA travel hierarchy

We promote a travel hierarchy within JBA that encourages staff to avoid travel where possible and to minimise the environmental impact of any essential travel by using a low carbon means of transport. We remind staff about the travel hierarchy at office and team meetings, in internal news items and during internal audits.

Figure 2-4: JBA travel hierarchy



We used public transport for 29% of our business travel

Our vehicle fleet is low on emissions and high on fuel economy

We have decreased the average CO₂ emissions and increased the fuel economy of our fleet vehicles

The JBA vehicle fleet

We maintain a fleet of company vehicles for essential business travel that cannot be undertaken by public transport. The majority are low emission, fuel efficient vehicles apart from three utility vehicles that are required to meet our off-road access needs; their use is restricted to such purposes.

Table 2-1 shows the average CO₂ emissions and fuel economy of our fleet. The changes we made to our fleet in 2017-18 resulted in average CO₂ emissions decreasing by 12 gCO₂/km and average fuel economy increasing by 2 mpg.

| Table 2-1: JBA vehicle fleet | | | | | |
|---------------------------------|------------------------|------------|---------------------------------|------------------------|------------|
| Vehicle | CO ₂ (g/km) | Fuel (mpg) | Vehicle | CO ₂ (g/km) | Fuel (mpg) |
| Grey Corsa Exc AC CDTi Ec | 88 | 86 | Silver Focus 1.6 TDCi | 115 | 64 |
| Silver Astra 1.6 CDTi Ecofl | 94 | 79 | Blue Astra 1.7 CDTi 16v Ecoflex | 119 | 63 |
| Red Astra Design CDTi | 95 | 79 | Dark Grey Astra SRI CDTi | 119 | 63 |
| Silver Astra 1.6 CDTi Excite | 97 | 76 | White Combo Van 1.3 CDTi | 130 | 57 |
| White Astra 1.6 CDTi | 97 | 76 | White Combo Van 1.3 CDTi | 130 | 57 |
| Black Astra 1.6 CDTi | 104 | 76 | White Astra Van Club CDTi | 132 | 57 |
| Blue Astra Estate | 101 | 74 | White Doblo Van | 148 | 55 |
| Black Qashqai | 99 | 74 | White Boxer 335 L3 HDi | 195 | 41 |
| Black S60 R-Design D2 | 103 | 72 | White Ranger XL D/Cab 4x4 | 192 | 35 |
| Silver Astra CDTi Exclusive | 104 | 72 | White Fourtrax TDL Fieldman | 244 | 30 |
| Average across the fleet | | | | 117 | 64 |

Taking the train
avoided
128,000kg of
carbon emissions

Our staff
cycled over
400 miles on
JBA business

We reward
low carbon
commutes

Public transport

In accordance with the JBA travel hierarchy, we used public transport for 29% of our business mileage in 2017-18; this equated to over 580,000 miles. Taking the train in preference to making a journey by car reduced our carbon emissions by over 128,000 kg.

Where practical, we use trains and ferries in preference to planes for journeys from the UK to Ireland. We encourage regular travel by train for business mileage by offering staff an interest free loan for the purchase of corporate season tickets and by reimbursing the cost of railcards when they are used to purchase tickets for business travel.

Car hire

If public transport is not a viable option and company vehicles are not available, we use low emission hire cars for essential business travel.

We are a member of the Enterprise Car Club which enables us to combine public transport with car hire by providing access to short term hire vehicles at rail stations. This makes it possible for us to travel by rail even if our destination is not close to a station.

Cycling

To encourage staff to cycle, we pay a generous expenses rate to staff who use a bicycle for business travel. This has resulted in a significant increase in the mileage cycled by staff on JBA business; in 2017-18 staff cycled over 400 miles on JBA business.

Influencing stakeholders

Our project managers regularly include estimates of the potential carbon emissions savings for a range of transport and meeting options in tender submissions. This helps to raise awareness amongst our staff and clients of the potential that exists to reduce carbon emissions by making changes to the way we work.

Rewarding low carbon commutes

In 2017-18, the JBA Environmental Reward Scheme paid over £32,000 to staff as reward for regularly using low carbon methods of commuting. Under this scheme, staff who walk, cycle, car-share or use public transport to travel to work for a significant proportion of their journeys are entitled to receive a financial bonus. 226 members of staff qualified for this reward in 2017-18, a 20% increase on the previous year.

2.5 Waste

Waste minimisation

We manage our waste in accordance with the waste hierarchy and minimise the waste that we produce by reducing, re-using and recycling resources. As part of the Waste and Resources Action Programme's (WRAP) recycling week we circulated information about waste and recycling to all staff, to promote recycling and encourage improvements across the company.

Plastic

Last year our Edinburgh office reduced their use of plastic dispensers by buying cleaning and hygiene products in bulk and refilling and re-using the original containers. They continue to monitor office supplies and use eco-friendly products.

Some of our offices obtain milk from local suppliers in returnable, reusable glass bottles, minimising single-use plastic containers.

JBA branded plastic pens have been replaced with pens made from recycled cardboard, following a staff suggestion and with the support of JBA management.

Paper handtowels

The use of paper handtowels has been reduced in the Limerick office after staff engaged in the 'shake and fold' challenge, using only 1 sheet of towel per wash.

Electrical equipment

Wherever possible we re-use our electrical and IT equipment within the Group but if an item reaches the end of its useful life within JBA we dispose of it via a central contract managed by our IT department. Our current contract is with Data Managed Disposals who provide a service to re-use or recycle redundant electrical equipment in a secure, certified and auditable fashion using techniques recommended by Defra. Data Managed Disposals is a licensed upper tier waste carrier and complies with all relevant legislation, including the UK WEEE Regulations and the UK Data Protection Act. Items are collected from a central JBA office to minimise the mileage associated with disposing of our electrical equipment.

Batteries

Where possible we use rechargeable batteries in our equipment. We return waste batteries to the manufacturer for recycling.

Our Edinburgh office refill and re-use plastic containers to reduced plastic waste

Our redundant electrical items are re-used or recycled

Our offices
recycle multiple
waste streams

JBA Group is
registered as a
lower tier waste
carrier

Zero landfill from
our used ink
cartridges

Recycling

Wherever possible, our offices recycle their waste. We now recycle the following items at the majority of our offices:

- batteries
- CDs/DVDs
- organic waste
- print consumables
- card
- electrical equipment
- paper
- tetra-pak cartons
- cans
- glass
- plastic bottles

In 2018-19 we will be working towards implementing recycling schemes for more types of waste, including pens, bottle tops and crisp packets.

Paper and card

All offices have arrangements in place with licensed waste management companies to recycle waste paper; these include for the secure disposal of confidential waste paper, where required, and in some offices, paper towels.

The JBA Group is registered as a lower tier waste carrier. This allows staff to take excess cardboard from new IT and other electrical equipment to their local recycling centre and to transport waste between offices to central collection points.

Organic waste

Several offices collect and dispose of their organic waste via compost bins to avoid sending it to landfill.

Print consumables

We return used print consumables to the manufacturer for re-use or recycling. Where this is not possible, we dispose of them via Office Green. This is an office products waste collector that operates a zero waste to landfill policy. Cartridges are re-used where possible and what can't be re-used, including associated packaging, is recycled. Office Green collection schedules are organised to prioritise reducing their carbon footprint over speed.

To minimise the mileage incurred in collecting our used print consumables we have placed collecting boxes at a number of our offices. Print consumables from other offices are taken to one of these offices when staff are travelling for other purposes.

We recycle CDs and DVDs

CDs and DVDs

Our use of CDs and DVDs has reduced over the years with the majority of project deliverables being supplied digitally and software products being available online. For any waste discs that we do identify, we co-ordinate the collection and send them to Polymer Recycling for destruction, recycling and retrieval of raw materials. Polymer Recycling guarantees to recycle 100% of the discs, jewel cases and inserts using no chemicals and creating no waste.

Where possible, collections from several offices are combined into fewer, larger packages to reduce the environmental impact of packaging and transportation. Transportation between offices occurs when staff are visiting for other reasons. Small quantities of waste discs are sent to Polymer Recycling via the post to minimise the carbon footprint of transportation. Larger quantities are collated and delivered from our Warrington office, which is close to Polymer Recycling's site.

Raising awareness - WRAP's Recycling Week

In September 2018, we supported the Waste and Resources Action Programme's (WRAP) recycling week. WRAP is a registered charity promoting the reduction of waste, the production of sustainable material and using resources efficiently, through multiple initiatives to improve sustainability in businesses, government and communities.

This year the theme of WRAP's recycling week was '*Recycling. We do. Because it matters.*' Their aim was to capture attention giving simple but important messages about why recycling matters.

Throughout recycling week, we shared information with our staff on the benefits of recycling and how best to reduce waste both at work and at home, encouraging our offices and individuals to recycle more.

We support environmental initiatives and publicity campaigns



We hold virtual meetings and webinars to help reduce our business mileage

2.6 Virtual communications

Office 365

We have migrated our systems to Microsoft's Office 365 environment which gives all staff access to Skype for Business.

It is now standard practice for staff to use Skype as the go-to means of communication instead of travelling to face-to-face meetings. Skype gives all staff increased functionality during teleconferences and phone calls; remote file sharing and viewing is now routine.

Skype also supports our overseas communications, with both clients and staff. By doing so, it reduces the need for overseas travel.

Teleconferences

All staff have access to teleconference facilities provided by Arkadin. Where Skype is not appropriate, we use Arkadin throughout the Group and with external parties as a normal method of hosting internal and external meetings. This helps to reduce our environmental impact by removing the need for business travel.

Webinars

In addition to meetings, we use our virtual conferencing facilities for broadcasting webinars, training courses and presentations to all offices. This avoids the need for the presenters to travel to each JBA office thus reducing the mileage, carbon emissions and staff time.

2.7 Office management

Office representatives raise awareness

Environmental management system representatives

We have a designated Environmental Management System Representative (EMS Rep) at each of our offices. EMS Reps play a key role in monitoring our environmental performance, driving improvements and raising awareness of our environmental processes and procedures such as our travel hierarchy, switch off when not in use policy and waste management procedures.

Our offices are close to clients and public transport

Office location and size

Environmental issues are a key consideration when we select locations for our offices. These include commuting distances for staff, proximity to client offices and accessibility by public transport. Our Exeter, Isle of Man, Newcastle and Wallingford offices, for example, are located very close to key clients; our Haywards Heath, Newcastle, Newport, Saltaire, Skipton BVM and Warrington offices are all within walking distance of train stations and some offices, such as Edinburgh, Newcastle, Saltaire, Skipton Broughton Hall, Skipton BVM, Tadcaster and Warrington have facilities for bike storage and showers to encourage staff to cycle to work.

We manage our office space to ensure each office is an appropriate size for its current population. This helps us to run energy efficient offices by avoiding empty space.

We use energy efficient lighting and install accessible power switches

Lighting and equipment

To minimise unnecessary energy consumption, our Doncaster, Warrington and Skipton offices have motion sensitive lights; the lights in our Haywards Heath office are on a timer; many offices, such as Coleshill, Exeter and Newcastle have lighting in banks that can be switched on and off as appropriate; our Warrington office has LED lighting; and lighting which was not required in Skipton has been disconnected.

Our Wakefield data centre has state of the art environmental controls and efficiencies within the building.

We fit desktop power supplies to desks to make it easier for equipment to be switched off when not in use.

We restrict the purchase of wireless keyboards and mice to minimise our use of batteries.

We monitor our use of processing machines and remind staff that, in line with our *switch off when not in use* policy, they should be turned off if not being used.

We improved heating efficiency in our Dublin, Edinburgh and Warrington offices

We monitor our water use

We support local communities and social enterprises

Office improvements

This year our Dublin office moved to a new floor in the same building which offered improvements in heating efficiency. They made further improvements by installing carpets and blinds to reduce heat loss.

Our Edinburgh office has made a number of improvements this year, installing a new energy efficient boiler and new hot water calorifier improving hot water retention and providing a regulated hot water supply for showers on site. The improved facilities are encouraging more staff to commute by cycling. Three sides of the building have had window film applied to reduce solar glare, make the office environment more comfortable and reduce the need for office cooling.

We fitted thermostats on all radiators in our new Warrington office, applied window film to all windows and introduced additional recycling facilities. The office move in Newcastle has given us greater control over our office heating and a more comfortable office environment. We have installed more efficient printers in our Skipton offices. Solar panels on our shared office in Thirsk help to reduce our carbon emissions by capturing renewable energy.

We have had significant influence and input into the planning of our new eco-friendly Skipton offices, currently under construction.

Water monitoring

We monitor water use at any of our offices where JBA water use is separately metered. Currently this is possible at our Tadcaster, Wallingford and Doncaster offices.

Local suppliers

Where possible we support the local economies around our offices by using local suppliers.

Our head office uses locally based HR advisers, pension administrators, financial auditors and solicitors. All our offices use local cleaning and maintenance companies and, where possible, we use surveyors located close to our projects. Some offices obtain milk from local suppliers and we use AirBnB rooms for some business travel stays.

Social enterprise

We support Newground by subscribing to its environmental and health and safety legislation update service and attending its training events. Newground is a social enterprise that distributes its profits in the form of grants to environmental and community projects to help regenerate local communities.

2.8 Connecting with the environment

Sharing ideas on how to communicate flood risk

JBA Trust held a 'Demonstration Day' to raise awareness of how physical models and visualisation tools can support outreach and educational activities to communicate flood risk.

We share ideas and information with local organisations



A wide range of organisations were involved, sharing their thoughts and ideas on how the models could be used in the community, with schools, practitioners and policy makers. These included:

| | | | |
|-------------------------|----------------------|-------------------------|--------------------------|
| Aire Rivers Trust | Calderdale Council | Cheshire Wildlife Trust | Environment Agency |
| Hydrotec | iCASP | Lancaster University | National Trust |
| Natural Resources Wales | Moors for the Future | Yorkshire Water | Yorkshire Wildlife Trust |

Just Be Active

Our new *Just Be Active* initiative encouraged staff to interact with their local environment

In July we introduced a new initiative designed to encourage staff to increase their physical activity for a month. We encouraged staff to make pledges that specified how they intended to increase their activity.

Many of the pledges staff made, such as walking, running or cycling, involved engaging with the natural environment and so this health and wellbeing led initiative also had environmental benefits in that it encouraged staff to get out and about and enjoy their local environment.

Just Be Active was successful and enjoyed by staff and so we intend to repeat this initiative on an annual basis.

We support environmental initiatives, activities and fund-raising events

Mountain walking, running, cycling and outdoor games

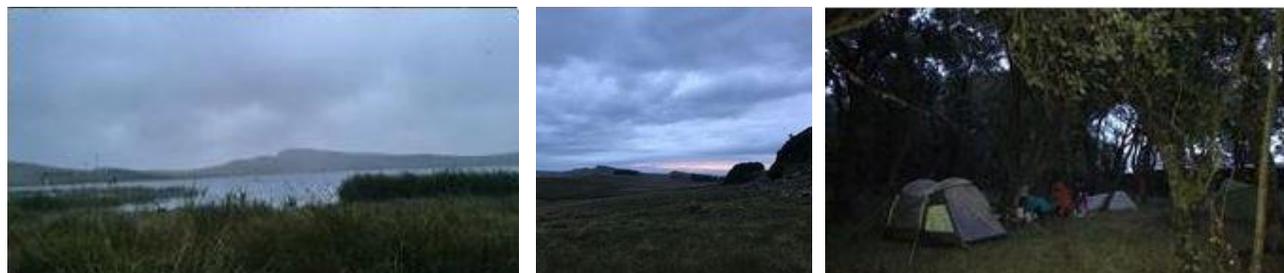
JBA staff regularly take part in the Yorkshire Three Peaks Challenge. Taking in the peaks of Phen-y-Ghent, Wharfedale and Ingleborough this is a fantastic opportunity for our employees to get out and enjoy the natural environment together.



A team of runners from our Haywards Heath office completed the Great South Run raising vital funds for the Portsmouth Downs Syndrome Association.

Two teams from our Yorkshire offices challenged each other in the Yorkshire Marathon Corporate Relay in York. It was a closely run race and the fantastic team efforts helped to raise money for Groundwater Relief, a charity working to alleviate poverty by helping develop and manage groundwater resources, and Mates in Mind, helping to raise awareness of mental health and wellbeing in the construction industry.

Five intrepid explorers from our Newcastle office went on a micro-adventure in the Northumberland countryside, enjoying the outdoors hiking and camping overnight, and all using public transport for access.



Some of our Haywards Heath staff braved the British weather to enjoy the natural environment on their annual social ride, cycling 38km from the office to Hove.

Staff from our Tadcaster office participated in a 6-a-side football game raising funds for Sport Relief.

Our Peterborough office held an outdoor Highland Games event for staff.

In Skipton, staff from our Broughton Hall offices joined together for a walk in the sunshine in the beautiful grounds of the estate.



2.9 Carbon sequestration

Catgill Wood

We established
and maintain
new woodland

In 2007, we established a new woodland, Catgill Wood, on land within the Broughton Hall Estate in North Yorkshire under an agreed management scheme. We planted over 5,000 mixed native broadleaf trees on a 1.62 hectare area of land. Based on research by the Forestry Commission¹, Catgill Wood is expected to sequester 8.75 tonnes of CO₂ each year.

Although the CO₂ sequestered by Catgill Wood represents a small proportion of our carbon footprint, Catgill Wood is a very tangible sign of the importance we attach to our environmental performance. Establishing and maintaining the wood clearly demonstrates our commitment to the environment and has enthused and involved staff – in its original creation, its ongoing maintenance and as a recreational resource.

Figure 2-5: Catgill Wood



¹ Forestry Commission Publications. Climate Change Information Pack, Sheet 6 Mitigation: Planting More Trees.

Carbon footprint

We measure our carbon footprint as the CO₂ emissions that result from energy use in our offices and our business travel.

3.1 Emissions from our energy use

Total CO₂ emissions from our energy use down by 19% since 2010

Table 3-1: CO₂ emissions from energy use

| Year | Total energy used ¹ (kWh) | Total green energy used (kWh) | Total non-green energy used (kWh) | Equivalent emissions ² (kg CO ₂) | Emissions per capita ¹ (kg CO ₂) | Change in total emissions (kg CO ₂) | Change in total emissions (%) | Change in emissions since 09-10 (%) |
|---------|--------------------------------------|-------------------------------|-----------------------------------|---------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------|-------------------------------|-------------------------------------|
| 2009-10 | 928,938 | 151,527 | 777,411 | 308,474 | 1,402 | | | |
| 2016-17 | 1,420,752 | 703,124 | 717,628 | 236,015 | 499 | | | |
| 2017-18 | 1,837,084 | 866,987 | 970,097 | 248,485 | 454 | +12,470 | +5.3% | -19.4% |

Notes: 1 Data recorded at offices where JBA energy use can be monitored extrapolated to estimate usage at unmonitored offices.
2 Carbon emissions calculated using formulae from UK Government GHG Conversion Factors for Carbon Reporting 2017

Per capita energy use emissions reduced by 68% in 8 years

Our total energy use and emissions are calculated from a combination of recorded and estimated data. Recorded data is used for offices where JBA energy use is metered but for multi-occupant offices where JBA energy use is not separately metered, energy use and emissions have been estimated using a per capita average from our monitored offices.

JBA has continued to expand during 2017-18 but we have managed our energy use to minimise the increase in emissions. Our per capita emissions have continued to fall; in 2017-18 they were 68% less than eight years ago.

Table 3-1 shows a 29% increase in our total energy use but only a 5% increase in the associated emissions. The increase in energy use can be explained by the inclusion of energy use at our data centre in our reporting for the first time and an increase in overall staff numbers. Our total current emissions are now 19% lower than in 2009-10; this is despite a 150% increase in full time equivalent staff and an associated increase in the number of JBA offices and office space.

3.2 Emissions from our business travel

Emissions per business mile remained constant

Table 3-2: CO₂ emissions from all business travel

| Year | Total miles | Change in miles | Total emissions (kg CO ₂) | Change in emissions (kg CO ₂) | Emissions per capita (kg CO ₂) | Emissions per mile (kg CO ₂) |
|---------|-------------|-----------------|---------------------------------------|-------------------------------------------|--------------------------------------------|------------------------------------------|
| 2016-17 | 1,761,446 | +178,669 | 364,960 | +45,302 | 759 | 0.20 |
| 2017-18 | 2,056,887 | +295,441 | 421,565 | +56,605 | 755 | 0.20 |

Notes: Emissions calculated using the conversion factors current at the time (source: www.defra.gov). For 2017-18 these are:

| | | | | | | | |
|-----------|-------|-------------------|-------|-------------------|-------|--------------|-------|
| Train | 0.070 | Bus/coach | 0.044 | Plane | 0.254 | Ferry | 0.178 |
| Hire car | 0.249 | Pool car (petrol) | 0.249 | Pool car (diesel) | 0.231 | Personal car | 0.294 |
| Motorbike | 0.182 | Bicycle | 0 | Taxi | 0.243 | Ferry | 0.178 |

Per capita travel emissions are slightly less

Table 3-2 shows that both our annual travel mileage and the associated emissions increased in 2017-18, but our per capita emissions decreased slightly and our emissions per mile remained constant. This is despite our 2017-18 travel data including business mileage for three international offices for the first time – Brisbane, Bucharest and Phnom Penh.

The per capita mileage and emissions per mile for these international offices tend to be higher than for UK and Ireland offices because they have a greater need for international travel.

Travel is a necessary part of our work dictated by the location and nature of our projects and we strive to minimise its environmental impact wherever possible by following the JAB Travel Hierarchy.

3.3 Overall Group emissions

Overall carbon emissions increased by 11.5%

Energy use and travel emission monitoring expanded

Per capita carbon footprint decreased by 2.5%

| Table 3-3: Total JBA Group emissions | | | | | | | |
|--------------------------------------|--------------------------------------------|----------------------------------------|---------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------|------------------------------------|
| | Energy use emissions (kg CO ₂) | Travel emissions (kg CO ₂) | Total emissions (kg CO ₂) | Total emissions per capita (kg CO ₂) | Annual change in emissions (kg CO ₂) | Annual change in emissions (%) | Change in emissions since 2009 (%) |
| 2009-10 | 308,474 | 146,570 | 455,044 | 2,068 | | | |
| 2016-17 | 236,015 | 364,960 | 600,975 | 1,301 | | | |
| 2017-18 | 248,485 | 421,565 | 670,050 | 1,269 | +69,075 | +11.5% | +47% |

Table 3-3 shows our overall carbon footprint calculated by combining the CO₂ emissions from our energy use and our business travel.

In 2017-18, our overall carbon footprint increased by 11.5% but our per capita carbon footprint decreased by 2.5%, compared to the previous year.

These changes are due to a 13% increase in full time equivalent staff numbers within the JBA Group and an increase in the number of JBA office buildings and office space included in our monitoring. The data analysed this year includes energy use at the data centre and travel emissions from three international offices for the first time.

Since 2009-10 our total emissions have increased by 47% compared to an increase in staff numbers of 150%.

Summary of our performance for the financial year 2017-18

Table 5-1: Environmental performance summary

| | Key action: 2017-18 | Results: 2017-18 | Results: 2016-17 | Year on year change | Percentage difference | Key action achieved in 2017-18 |
|--------------------------------------|---------------------------------------------------------------|---------------------|---------------------|---------------------|--------------------------|--------------------------------------------------|
| Paper use | | | | | | |
| Per capita (kg) | per capita reduction in kg | 7.82 | 8.94 | - 1.12 | - 12.5% | yes significant reduction |
| Energy emissions | | | | | | |
| Per capita (kg CO ₂) | per capita reduction in kg CO ₂ at metered offices | 431 | 439 | - 8 | - 2% | yes small reduction, data centre now included |
| Travel emissions | | | | | | |
| Business travel emissions | Monitor and report | achieved | achieved | n/a | n/a | yes 3 offices added |
| Commuting and business travel | Encourage low carbon modes of transport | achieved | achieved | n/a | n/a | yes |
| EPI 4 Business waste | | | | | | |
| Monitor and report business waste | | achieved | achieved | n/a | n/a | yes |
| Carbon footprint (tonnes) | | 670 | 601 | + 69 | + 1.5% | |
| Carbon footprint per capita (tonnes) | | 1.27 | 1.3 | - 0.32 | - 2.5% | |

Environmental objectives and actions for the year ahead

For 2018-19, we have again set ourselves objectives and identified key actions to help us achieve our intended outcomes. We will continue to monitor our performance against these objectives.

| Objective | Key actions | Outcome |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reduce the adverse environmental impacts of the operational activities of the JBA Group. | <ul style="list-style-type: none"> Reduce our use of natural resources. Reduce our energy use and associated carbon emissions. Reduce our waste. Increase staff awareness of our environmental impacts. Monitor and report environmental performance within our operational activities. | <ul style="list-style-type: none"> Recognition as an environmentally responsible business. Year on year reduction in carbon emissions. |
| Improved environmental management of projects. | <ul style="list-style-type: none"> Improve environmental risk assessment in projects. Improve reporting of environmental incidents. Identification and mitigation of potential environmental impacts. Identification of good environmental design. | <ul style="list-style-type: none"> Recognition as an environmentally responsible business. Certification to ISO 14001:2015 and EIA Quality Mark. |
| Wider influencing of stakeholders by our staff to achieve better environmental outcomes. | <ul style="list-style-type: none"> Record our overall contribution to environmental management good practices. Provide staff training in the application of environmental good management techniques and tools. Contribute to national environmental records. | <ul style="list-style-type: none"> Evidence of our professional expertise, innovation and value to the environment. |



Offices at:

Coleshill
Doncaster
Dublin
Edinburgh
Exeter
Glasgow
Haywards Heath
Isle of Man
Leeds
Limerick
Newcastle upon Tyne
Newport
Peterborough
Saltaire
Skipton
Tadcaster
Thirsk
Wallingford
Warrington

Registered Office

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