

[UK: GEORGE COX & SONS LTD.]

[CHRIS COX, NICOLE FIDLER, ALLAN DISCUA CRUZ]

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Author/s Biography/ies:

Author 1 Chris Cox

Chris Cox is Managing Director and principal shareholder of George Cox & Sons Ltd, a 75-year-old regional Highways and Civil Engineering company, working in the Northwest of England. He is responsible for the strategic direction of the organisation and has a hands-on role in all its commercial activities. He has overseen a 3-decade long period of steady growth, now with a turnover of £12-£14 million and 80 employees. He is the grandson of the original founder George Cox and son of Frank Cox, who ran the business from mid-1960's to early 1980's.

Running four separate business centres, the company principally operates on long term framework contracts, collaborating with both local authorities and private clients to achieve shared benefits and successes. These key objectives have been recognised by numerous industry awards in recent years for this approach and philosophy. The company also won the Northwest Large Engineering Family Business Award in 2021. Chris has collaborated with several research papers, including Productivity in SME's; Extent of notions of sustainability and responsibility central to Family Businesses; Succession planning in family business and Effective use of IT in SME's. He is a graduate Engineer from University College Swansea, a Teaching Fellow, and an Entrepreneur in Residence at Lancaster University. He has presented a series of lectures and workshops on running a family business, succession planning and entrepreneurial learning.

Author 2 Nicole Fidler

Nicole Fidler is the Contracts Co-ordinator at George Cox & Sons Ltd, a Northwest based civil engineering and highways contractor with 75 years' experience in the industry. With 10+ years of experience within various engineering industries, she has gained a diverse skill set, supporting clients in the sectors in which she has worked. Understanding client needs, expectations and aspirations has

been a key part of her job function. Translating this data and information into strategy and policy helps influence the future direction of the company.

Always working within a commercial environment, she is required to identify changes that will bring a material advantage, by best aligning what the organisation can offer to the requirements of the clients. She deals with the diversity of values placed by customers on the overall selection scoring matrix on social, environmental, and quality considerations (ranging from 0% to 60%). Working closely with the Managing Director, she is responsible for co-ordinating the company's quality submissions and is involved in much of the bid writing process. As part of the pre and post submission review process, Nicole is part of the team assessing initiatives that the company could cost effectively and employ to better align our objectives with that of the client.

Author 3 Allan Discua Cruz

Dr. Allan Discua Cruz is a member of the Pentland Centre for Sustainability in Business and director of the Centre for Family Business at Lancaster University Management School (UK). His current research interests relate to entrepreneurship by families in business. He has published in journals such as Entrepreneurship and Regional Development, Journal of Business Research, Journal of Business Ethics, Entrepreneurship Theory and Practice, International Journal of Entrepreneurial Behaviour and Research and International Small Business Journal among others. He has recently co-edited books around the topics of the family firm group phenomenon. He teaches courses in the area of entrepreneurial teams, small and medium-sized enterprises, social contexts and family business.

Sustainable Development at George Cox & Sons Ltd.

Established in 1947, George Cox & Sons Ltd are an award-, medium-sized civil engineering contractor based throughout the Northwest of England. Traditionally the company is a family run business, in its third generation. The company is now run by a mix of directors; however, the family ethos remains, with over eight father-son and uncle-nephew duos.

George Cox & Sons Ltd understands that it is a core principle of providing outstanding quality projects to its clients using an open and honest approach in all aspects of its delivery, is fundamental to its long-term sustainable development.

George Cox & Sons Ltd works with clients, consultants, and specialist contractors to offer design and build solutions for a broad range of infrastructure projects and have become renowned for working with their clients at an early stage to bring their expertise to the table, solving design and delivery problems. Figure 1 shows a completed road construction project at Travis Brow, Stockport, Lancashire, UK.

FIG 1 HERE

Due to global and public demands in the reduction of CO₂ emissions, pressure is now being felt across the family business to decarbonise many of their activities. However, this comes at a significant financial cost, one in which most clients are not prepared to pay.

The family business can tackle the 'low hanging fruit' for instance by changing light bulbs to low energy options, swapping to electric vehicles where available or providing alternative fuel solutions, such as biofuel. Although these changes are good, the greater issues lie with implementing the changes environmentally due to the construction and civil engineering industry being one of the main producers of CO₂. Lowering their carbon footprint is always on the agenda but there is a constant balancing act between being cost-efficient and carbon-efficient.

George Cox & Sons Ltd have a varied range of clients: starting with the commercial sector; who prioritise cost over **broader environmental considerations as outlined by SG#13**, through to public bodies; who have scoring factors in place to calculate carbon emissions as part of any project. With a vast majority of their clients now introducing a quality matrix to provide quantitative scoring mechanisms, this helps to evaluate the efforts that their supply chain is contributing towards sustainability, achieving an economically viable process of decarbonising, without losing market share or competitiveness. The aim at George Cox & Sons is to study the dilemma, explore their options and set in place a solid strategy that follows a thorough review procedure.

People behind the scenes:

- Chris Cox – Managing Director & Head of Commercial Strategy
- Matthew Edwards – Environmental & Decarbonisation Ambassador/Champion
- Beverley Harrison – Quality Manager
- Kate Atkinson – Procurement/Supply Chain
- Nicole Fidler – Marketing/Presentation

Vision and Mission

The mission of George Cox & Sons Ltd is to create long term sustainable projects within the Northwest, providing quality schemes for the local community that enhance the environment and provide essential transport links.

Products and/or Services offered by George Cox & Sons Ltd

- Paving Schemes
- Landscaping & Parks
- Car Parks
- Highways & Footways
- Walls & Structures
- Schools & Colleges
- Fencing & Gates

Key activities of business

- Expert advice on Civil Engineering aspects
- Local knowledge and understanding of the mechanisms of public sector projects
- Locally employed workforce and supply chain
- Design & build expertise
- Infrastructure Construction
- Value Engineering and Cost Saving Initiatives

- Section 278 works and Section 38 works
- Highway construction
- Junction improvements
- Traffic calming
- Road widening schemes
- Bulk excavation and fill

Background to George Cox & Sons Ltd

George Cox & Sons Ltd was founded in April 1947 by George Cox. At the age of 46, George left the security of employment as a street mason with Eccles Corporation and set up his own company as a flagging contractor, due to his background and knowledge within the civil engineering industry. Over the next two years, George established his reputation and gained work all over Bolton. George's two young sons, George Junior, and Frank would help him at weekends and during school holidays, something that became a family tradition.

In 1953, George Cox Senior and his two sons formalised their activities into a limited liability company and began to move away from paths and drives, to work for local corporations including Bolton, Atherton, Eccles, Sale and Manchester.

In 1957, the company moved into its own depot on Fletcher Street.

By 1965 the firm had expanded its operations from small scale projects such as footpaths and domestic properties, to large scale carriageway reconstruction, major drainage, and contracts for Local authority clients. Employing over 70 directly employed staff and running its own fleet of wagons, vans and cars.

George Senior retired in 1970, at the age of 70, but George Cox & Sons has remained a family-based company. It has come a long way from pushcarts and cash payments. Due to the ability and dedication of George's son, Frank, the firm's reputation now extends far beyond Bolton.

In the 1980s, Frank's two sons, Chris, and Martyn, along with his son-in-law, John Walsh, joined the firm. In 1992, along with Contracts Director Geoff Absalom, they took over the management of the company and presided over its continued growth. Figure 2 shows the current company structure. The company has since acquired offices in Stockport, in addition to its Farnworth head office, running throughout the whole of the Northwest of England. Now undertaking a diverse range of civil engineering projects, including highways, structures, landscaping and, still, high-quality paving. The organisation currently employs around 80 members of staff, with a further 24 direct subcontractors, who solely work for George Cox, meaning their livelihood is completely dependent on the success of the business.

FIG 2 HERE

Chris Cox, Managing Director, said; "All at George Cox & Sons are immensely proud of its history, heritage and place within the community. Our 75 years of continuous contracting has taught us the need for long term commercial sustainable planning". Figure 3 shows the current company logo.

FIG 3 HERE

George Cox & Sons Ltd base themselves on their family values, honesty, and trust, not just with their employees but their clients too. Long-term working relationships are gained through security and community. Therefore, with the support of its loyal and experienced staff, delivering quality projects to its clients, this well-respected family company is now set to continue for many more generations.

SDG 13 – Climate Action and George Cox & Sons Ltd

The SDG has seen to become important around the last two to three years, as an increase in legislation requirements have become far more important to their industry.

Within this time period, George Cox & Sons Ltd have begun to move more with society and their client base, but they cannot move too far ahead as this would become too commercially expensive. However, they are still mindful of what's going on and aware of the speed they need to progress at. Their current sustainable business plan is shown in figure 4.

The idea to begin their sustainable business plan was initiated by the Managing Director, Chris Cox and was discussed at the board level with an agreement from all to bring innovations into the business. It was decided Matthew Edwards would become the 'sustainable' champion and he was appointed to drive forward ideas.

Following a start-up meeting with the key people involved, discussions were made to explore the ideas of individuals and look to concentrate on a long-term strategy using the following steps (Figure 4):

FIG 4 HERE

The main goal identified by the family business, is to look for ways to improve their sustainability which does not have a prohibitive effect or impact on the business, by identifying areas with maximum impact, at minimum costs.

For example, the biggest consumer of carbon omissions within the company is the running of their wagons, by researching options to switch to biofuel, they have found this change can offer a 90% saving in carbon emissions.

As the family business is mainly driven by their clients, they often do not have an input into the materials chosen for many schemes, however they aim to highlight potential opportunities to influence change towards these materials such as opting for a recycled source. Nonetheless, opportunities for the family business to make these changes can be impacted by market availability, as all their materials are procured through the supply chain.

From their experience, specifications vary from client to client, and they have found the main choice of material tends to be primary over recycled materials (primary sourced materials are principally quarried aggregates i.e., stone / sand extracted from its sources as opposed to materials recovered from already used products). Recycled options are not yet able to reach the same technical performance as primary sources. Application is also limited, recycled materials contain high fines content, meaning it prohibits their use in wet weather, again another factor that is out of their control.

George Cox & Sons Ltd began to recognise that they can only address the complex sustainability challenges by contributing their efforts through collaboration with staff, clients, and members of the

supply chain. Addressing the delivery process, they have identified each key aspects of the process and those that can influence change. Every part of the delivery process and individuals therein, have a role to play in helping to meet these challenges. The supply partners managed through the company's Procurement Manager are encouraged to bring forward, alternative products (e.g. Tarmac part of the CRH group , switching its principal bituminous material to one manufactured at a lower temperature offering a 17% reduction on carbon.)

The company works with its clients and their design teams on product and design specification to reduce impact. Its Construction Managers along with their site teams assess site activities and the environmental impact and areas of improvement. Finally the finance and audit teams are engaged in setting benchmarks and measuring performance throughout the period of the projects. Whilst reengineering heavy plant and incorporating alternative fuels is incredibly impactful, educating staff members is of similar significance, when it comes to driving down carbon and being more environmentally conscious. Therefore, the family business looks to spread a company sustainable ethos from the top down.

Business Model and SDG 13

George Cox & Son's Ltd.'s main source of revenue is by providing a service to other businesses. Their product offered is the construction of highways and their customers consist of:

- Local & Transportation Authorities (NW)
- House Builders
- Tier I Construction Contractors

The family business obtains the vast majority of their work through a tendering process, in which a bidding model is used to review all opportunities received. The tender is broken down into elements in which the company can deliver directly and which elements needs to be sub-contracted to a specialist. The estimating department consult the company's Approved Sub-contractor Database to select suitable contractors. Each sub-contractor return is assessed on the most economically advantageous submission. Assessment is linked to financial and long-term sustainability considerations. The company assesses the following criteria:

- Price
- Previous experience
- Quality of workmanship
- Availability
- Locality to the contract
- Health & Safety aspects

Should there be any specialist activities whereby the company does not have a suitable contractor within its extensive supply chain, the estimating department will investigate and seek suitable contractors to add to the Approved Sub-contractor's Database before they provide a quotation.

It is not uncommon for clients to propose nominated contractors or suppliers. In such circumstances the company still requires nominated companies to complete the Appraisal Questionnaire and therefore become a George Cox Approved Sub-contractor.

It is the company best practice to engage and involve its supply chain partners before the commencement of schemes including pre-start meetings. It is this involvement that ensures all trades are aware of the scope of works and what needs to be achieved to meet the critical path on the programme. Another advantage is that this provides the supply chain the opportunity to use their previous experience and expertise to contribute to the programme. This allows them to make any

suggestions or provide alternative methods of construction and specifications, which may save the company and client time and money.

The main key activity and return on investment is their long-term framework contracts and the ability to provide full design and build capability. The family business uses a collaborative approach, based on long term trust, and established shared values. Thus, allowing them to avoid working in price-sensitive environments, enabling them to bring long term holistic savings, whilst allowing them to maintain profitable margins.

“85% of our workstream is based on long term frameworks or negotiated contracts” Chris Cox added.

Their operations are not capital heavy investments, meaning they buy in materials and plant to undertake activities, therefore achieving return on capital investment. Their procurement strategy is influenced, not driven by the SDG and any materials procured are on a cost basis, whilst taking the clients requirements into consideration.

SDG 13 – Climate Action and George Cox & Sons Ltd

The industry George Cox & Sons Ltd are in and especially their organisation is highly influenced by their:

- Clients
- Supply chain
- Subcontractors
- Employees
- Community

The bulk of their actions are influenced by their clients; however, they aim to move alongside their stakeholders, neither leading nor following. By mirroring the adoption of the SDG allows them to work at the same pace. George Cox & Sons must identify and predict the priorities of its client base and put into place measures that will meet and hopefully exceed their expectations. However, the financial cost is almost always the highest priority and as such any SDG lead incentives can only be brought forward at a speed that does not inflict too high a financial cost of the project. The specific proportion of financial cost / SDG adoption varies from client to client and George Cox and Sons constantly reviews its SDG adoption strategy in order to optimise its position with its variety of clients.

The family business is seeing the rise of more and more clients expecting sustainable options, which sees the industry moving forward in the right direction. Also, the development of technologies, for the likes of materials, to reduce their carbon footprint. Examples of technologies include Low or Zero carbon Concrete, low temperature bituminous materials, recovery of bitumen from planings (i.e. ground out tarmac) Electric Excavators, vehicles & plant. The process of beginning to identify the organisations carbon consumption has begun to uncover the major areas in which gains, and improvements can be made. This has involved working closely with their supply chain to provide information and data on their materials and services to establish benchmarks against which the changes can be measured.

Increased acceptance within the community has also been noted for the acceptance of new products with greater sustainability. Recycled products do not tend to be as aesthetically pleasing as primary sourced, the change in mindset is a positive factor. The most common source of subbase material locally is limestone, which is often bright white in appearance. Recycled material of mixed source was rejected in some instances because of its lower performance (but still within specification) but also it lacked the “cleanness” of quarried stone

There are micro environmental concerns that must be taken into consideration when working directly in the communities. These include simple matters such as dust and noise control, delivery routes of vehicles, start times on site, all matters that would affect those living near the site. Sites and cabins must be kept clean and tidy, along with containment, such as spill kits for the likes of oil, chemical or fuel spills. This is as opposed to the macro environmental concerns such as decarbonisation strategies. As the greater problem is not something normally seen on a daily basis, George Cox & Sons Ltd. tend not to be as assertive.

Challenges of working with SDG 13

As a business we are being faced with questions from our clients such as, “What is your organisations plan and approach towards decarbonisation in relation to internal business processes & project delivery?”

The main challenges the organisation is faced with are cost, client retention and supply or material availability.

George Cox & Sons Ltd. deal with these challenges by ascertaining a long-term sustainable strategy, based on long term commercial and professional relationships. For example, they have a 10-year framework contract with their largest Stockport MBC. Other frameworks are of between 3- 5-year duration. Over 76% of their work streams are derived from clients with whom they have a framework/ partnering agreement of a minimum 3-year duration. Strong relationships ensure their supply chain and stakeholders buy into their approach and they aim to bring the members of the supply chain and their stakeholders along with them to combat the issues they are faced with. However, due to their client base being varied, they find different clients have different approaches towards the SDG#13 and George Cox & Sons Ltd. feel it is their duty to assess each given scenario and decide the best approach to take with the particular client.

By having a flexible perspective and being able to respond to ‘shocks to the system’ allows them to cope with unforeseen circumstances to minimise business impact such as Covid. In this instance, a risk response was drawn up to combat the risk response and impact it may have on the organisation.

An example of a successful project concerning these challenges is the A580 scheme, a park and ride scheme for their client, Transport for Greater Manchester. Works involved the development of a 269-space car park where George Cox offered alternative methods of construction to the client adopting lime stabilisation techniques to the existing plot. This meant reusing the excavated material within the project by improving its nature. In turn, 400 wagon movements were saved and the need for the use of landfill or tips, meaning nothing left site. By adopting this method, offered a large economic and environmental saving to the client. Reducing used of primary source quarried material, reducing land fill, reducing anticipated land fill use, provided significant carbon reduction and general environmental benefits thus achieving an SDG 13 goal.

Kate Atkinson, head of procurement spoke about the challenges experienced within her role. Frustrations are felt towards clients specifying products such as street furniture and paving from overseas and is unable to source local or change supplier. If these changes were permitted by the client, decreasing freight, haulage and fuel usage would be an easy win towards the reduction of global emissions, thus contributing to the targets laid down in SDG#13.

Business and Greater Good - * Suggestion: Add pictures that symbolise impact outside the organisation.

George Cox is based and operates within the Northwest, and the family business geographical reach concentrates on this area.

As an organisation, they offer numerous benefits to their employees and community which is aligned with SDG#13. A popular 'Bike to Work' programme is operated, which includes safe storage facilities, to motivate employees to opt for cycling over the use of their vehicles, therefore, contributing towards reducing omissions and encouraging a healthy lifestyle. From this, they have set up company sporting and charity challenges, with staff raising funds for various causes.

The donation of spare or unused materials following the completion of a project, to local communities and businesses is often conducted. This helps with improvements and small projects, contributing to unnecessary wastage for them and spend for the community. Alongside this, they also assist with the donation of their resources and time through various charitable projects, such as primary schools & churches.

The family business is currently working closely with a major client to provide new woodland and green spaces for their borough, funded out of their own community projects fund. The project involves clearing existing wasteland, upgrading the soil and a programme of tree planting. The first site is programmed for winter 2022/23 and will consist of planting 80,000 trees to off-site their carbon impact and generate a positive environmental legacy. In developing current wasteland into an active Eco system, promoting wildlife corridors, by proving an inner-city woodland area and thereby generating further Co2 capture and by engaging communities and schools into positive environmental action George Cox & Sons believe they helping to achieve some of the SDG#13 goals. Moreover, they are looking to collaborate with other clients and boroughs of the Northwest to provide similar schemes.

Furthermore, their main benefit as a company is the training and development they offer to their employees. George Cox & Sons Ltd. always looks to employ people with little or no skill, with the ability to upskill individuals through their Skills Training Programme.

The idea to create their own in-house training department was initiated by its Managing Director, Chris Cox, and is run by their Skills Training Manager, Steve Abbott. Steve has been with George Cox for over 20 years and holds 48 years' experience within the industry.

Their programme concentrates on apprentices and lower-level operatives, to help enhance and develop them into multi-skilled tradesmen. Giving them the tools and ability to fulfil their future plans for a successful career.

By investing in people of the community and offering these opportunities, contributes towards their long-term strategy.

Not only do George Cox offer apprenticeships and internal programmes, but they also support their employees by promoting from within the company. This provides their staff with the opportunity to develop themselves within their current career and change job roles whilst being supported internally by their employer. In turn, assisting the organisation with employee retention.

What next for George Cox & Sons Ltd

George Cox is actively engaged with its existing clients in Low Carbon forums, to investigate and trial Low Carbon alternative products, such as:

- Zero Carbon Concrete
- Low Temperature Asphalts
- Extended use of recycled materials
- Offsetting of carbon

The process of benchmarking a project, with the anticipated carbon costs at the start of a project, and auditing its use as the construction process proceeds, is vital to providing real-life data against which tangible improvements can be both made and recorded.

By developing a unique auditing approach to run in parallel with their fiscal audits to measure usage, provides a clear accountable process to record the true carbon cost of a construction operation. This then allows for a cost/carbon comparisons to be made when reviewing low carbon alternatives. Thereby, providing clients with meaningful information and comparison information.

Localised carbon offsetting projects are also conducted in partnership with their clients. They provide the space and amenity land, and they undertake to prepare, plant, and maintain trees as part of the rewilding and reforestation process. The projects are to be run with local schools and communities.

George Cox & Sons Ltd have a fully documented ISO 14001 Environmental Management system which helps them to minimise the impact of their activities on the world around them. Their proposals for minimising their environmental impact include:

- Continuing to use the ECO recycling centre for depositing excavated material and sourcing recycled material (for example see figure 5).
- Their preference for local employment and a local supply chain will be one of the simplest and most effect mechanisms of reducing total mileage and consequently carbon impact
- Plant will be fuelled off site. Spills kits will always be used when fuelling
- Noise and vibrations stations will be established to ensure these are kept to the minimum achievable.
- Noise generating equipment is only used when necessary and turned off whenever possible
- All appropriate equipment is fitted with bafflers and silencers, which are checked prior to being used
- Changing vehicles & equipment to biofuel
- Travel smart (business mileage reduction)

FIG 5 HERE

George Cox & Sons Ltd approach to SDGs showcase the importance of sustainability goals for family firms and relates to the identity and interaction of the family with the community and the industry where they operate over time. Due to their long-term view (Lumpkin & Brigham, 2011) and deep connection with their community at the local and regional level (Howorth & Robinson, 2020), family firms like George Cox & Sons Ltd. may be more sensitive to setting and addressing sustainability goals that relate to concerns such as climate change as they interact with diverse community stakeholders over time (James, Hadjielias, Guerrero, Discua Cruz, & Basco, 2020).

References

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Lumpkin, G. T., & Brigham, K. H. (2011). Long-Term Orientation and Intertemporal Choice in Family Firms. *Entrepreneurship Theory and Practice*, 35(6), 1149–1169. <https://doi.org/10.1111/j.1540-6520.2011.00495.x>

Appendix

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Figure 1 shows a completed road construction project at Travis Brow, Stockport, Lancashire, UK.



George Cox & Sons Company Structure

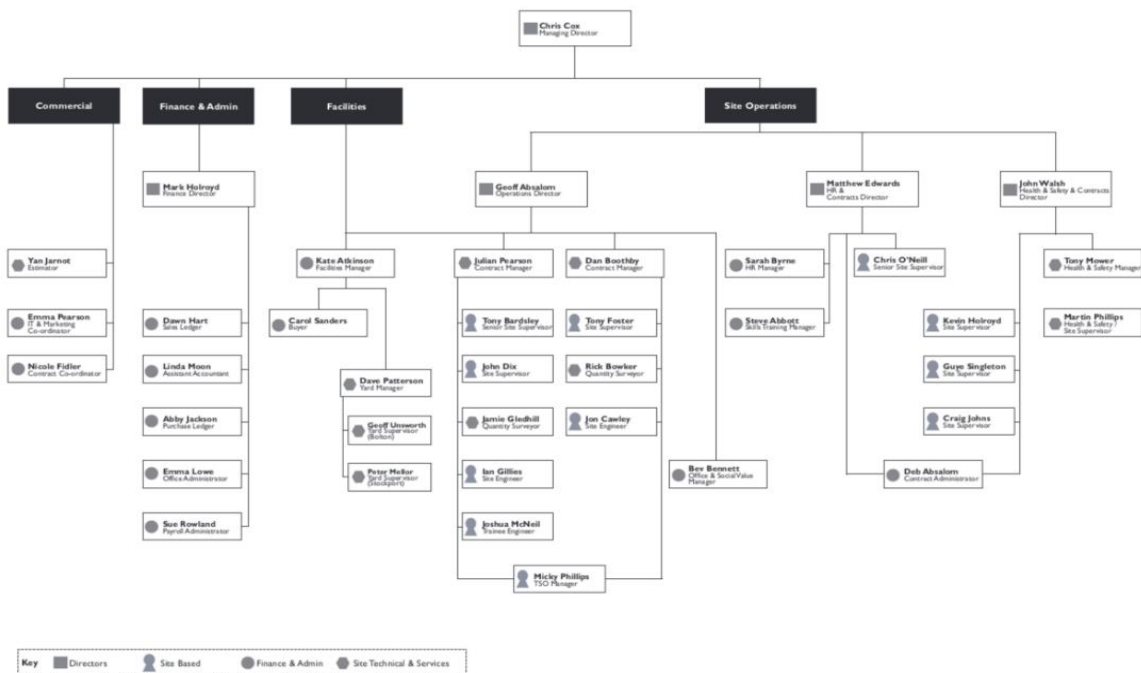


Figure 2 - George Cox & Sons Ltd Company Structure



Figure 3. George Cox & Sons Ltd company logo



Figure 4. George Cox & Sons Ltd sustainable business plan



Figure 5 – G Cox laying a recycled surface, comprising of recycled vehicle tyres at a recent cycle scheme in Wigan, Lancashire, UK.