

MANNOK CEMENT LTD
ANNUAL SUSTAINABILITY REPORT

January – December 2020



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1. Introduction

Mannok Cement, formerly Quinn Cement until the company rebranded in November 2020, has been in cement production since 1989 originally at its Derrylin Site, Co. Fermanagh using local raw materials from the quarry facilities. Given the increasing demand generated from the construction sector over the years, a second plant was commissioned in 1998 at Ballyconnell, Co. Cavan (Scotchtown Cement Works), approximately one mile from the Derrylin facility. The two plants have a combined capacity of over 1.7 million tonnes of cement annually.

2. Cement Manufacture

Scotchtown Cement Works produces Portland Cement, which is a composite of synthetic minerals exhibiting hydraulic properties on mixing with water. The main raw materials are limestone (rich in calcium) and shale (rich in silica, iron and aluminium). These are extracted from quarries close to the cement works.

The raw materials used in the manufacture of cement are processed by crushing, blending and milling to produce a homogenous “raw meal”, which passes through a high temperature kiln, where a thermal process produces a synthetic mineral called “clinker”. The clinker and additives are milled into a fine powder - “cement”.

Blending Cement

The production and application of cements with increased volumes of additives have a long and successful tradition in Europe. Today, about 70% of the cements produced and used in Europe contain MAC (Minor Additional Constituents) up to 20%, as permitted by the European standard for cement. Mannok Cement firstly began producing CEM II A/V in 2005 using fly ash sourced from Kilroot power station in Carrickfergus.

Today Mannok Cement produce a CEM II A/L using locally sourced limestone. This makes a huge contribution towards the reduction of CO₂ emissions by using cements with reduced clinker percentage and increased MAC.

These blended cements enhance the ecological efficiency of concrete construction as the use of CEM II allows for reduction of CO₂ emissions during cement manufacture. CEM I is being increasingly replaced by CEM II in the Irish and European markets.

3. Sustainability

Sustainable Development is defined as - 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Brundtland report (1987)).

The 2005 World Summit noted that there are three pillars of sustainability: environment, social and economic. The representation below highlights the links of the three pillars.

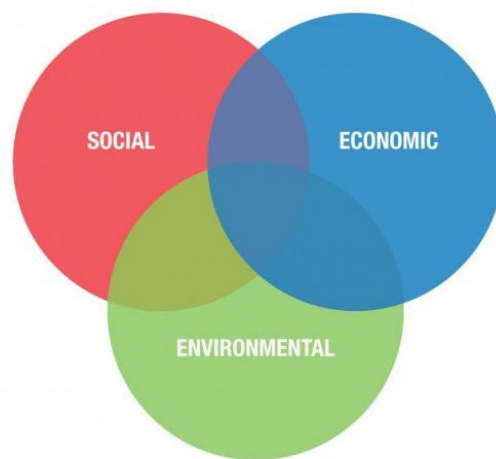


Figure 1: Sustainability

The main drivers for sustainability at Mannok Cement are;

High quality cement:

Mannok Cement is a registered firm with BS EN ISO 9001 and holds the quality marks of both British and Irish National Standards, indicating that it produces an independently audited and quality certified product.

Energy Efficient production:

Mannok Cement is a modern and efficient plant which commenced operation in 2000 having been commissioned in 1998. The latest BAT (Best Available Techniques) are implemented at the plant which allows cement production to be undertaken in an energy efficient manner. In addition, Mannok Cement is a member of Sustainable Energy Authority of Ireland's Energy Agreements Programme under which we have developed and achieved an accredited ISO 50001 Energy Management System. The focus of the Energy Management System will be continuous and sustainable improvement in energy efficiency.

Continued Production of Eco-efficient CEM II:

CEM II cements replaces up to 20% of clinker in cement with locally available limestone. This considerably reduces the CO₂ emissions per tonne of cement. Mannok Cement first commenced production of Eco-efficient CEM II in 2005. The technical merits and performance of CEM II cement in conjunction with the excellent environmental credentials have allowed for the production of CEM II to increase significantly over the years from its initial production.

Substitution of fossil fuels with alternative fuels:

In 2014 Mannok Cement completed one of its most significant sustainability projects to date at its site in Ballyconnell. This was the plant upgrade for the use of Alternative Fuels. In 2010 Mannok Cement were granted planning permission and in 2012 granted an Industrial Emissions Licence to co-fuel the plant with SRF (Solid Recovered Fuel). In 2014 co-fuelling commenced with SRF under its Industrial

Emissions Licence. The plant upgrade has environmental, social and economic benefits:

- The combustion of coal gives rise to CO₂, which is a global warming gas. Through part displacement of coal with lower carbon SRF, it enables Mannok Cement to reduce its carbon footprint.
- Reduced use of coal which is an imported non-renewable fuel by replacing with SRF which is a renewable fuel and can be sourced from local waste contractors.
- Reduced quantities of material from the waste sector sent to landfill as waste is recovered and processed into SRF.
- Energy is recovered from a waste source and there is no additional ash residue as it is fully incorporated into the manufacture of the cement product.

Promotion of excellence in environmental, health and safety standards:

Mannok Cement operates under Environmental and Health and Safety Management Systems. In 2010 the Environmental Management System became accredited to ISO 14001. The company transitioned to ISO 14001:2015 in 2017. Environmental Performance is discussed in further detail in Section 3.1.

Communicate with the local community:

This report is publicly available to members of the local community, stakeholders and any interested parties. Information on our Environmental Performance is also publicly available on the Environmental Protection Agency website in our Annual Environmental Report, and on the Mannok website. Mannok Cement normally operates an open-door approach and has facilitated many site visits for schools, universities and local residents down the years. However, these were restricted in 2020 due to the COVID-19 situation. Many Mannok employees are from the local community, through internal communication they are made aware of operations of all Mannok facilities and are welcome to visit our site at an agreed time. Annually

Mannok Cement runs an open day for customers, which includes a tour of the manufacturing facility. Unfortunately, such events were limited in 2020 due to the pandemic. Social media is used where appropriate for communication and promotional purposes.

3.1 Environmental

Mannok Cement operates under the conditions of an Industrial Emissions Licence from the Environmental Protection Agency (EPA). This is a single integrated licence which places conditions on all emissions from the facility and its environmental management. In September 2010, the Mannok Cement EMS became accredited to the ISO 14001 standard. Mannok Cement transitioned to ISO 14001:2015 successfully in October 2017, through independent auditing and certification. The new standard demonstrates greater focus on leadership and planning, improved performance, life cycle consideration and communication.

Mannok Cement reports to the EPA on all aspects of the environment including water and air Emissions. At the end of each year an Annual Environmental Report is produced in accordance with the conditions of our IE Licence. The Annual Environmental Report can be viewed on the Environmental Protection Agency website (IE Licence No: P0378-03).

Mannok Cement are committed to benefiting the Circular Economy. The Circular Economy is the philosophy that in nature there is no waste. Similarly in business, materials that are discarded from one process can be used elsewhere in a manner that allows resources to be regenerated, emissions reduced, and efficiency improved. The circular economy includes the drive away from non-renewable fossil fuels, reduction in the use of virgin raw materials and it also incorporates the wider aspects of economics and trade. Mannok Cement has a policy for a sustainable life cycle approach considering the circular economy and a reduction on impact on resources and climate change while maintaining efficiency and quality of product.

Cement is an important product for the Circular Economy as it eventually makes concrete which is 100% recyclable. Cement can also utilise materials discarded from other industry as a resource.

3.2 Social

Throughout its history the company has played a significant and leading role in the development and support of the local community in which it operates. This has been particularly important as the Cavan/Monaghan/Fermanagh area, which historically has been a deprived region. Mannok is now a major source of employment and supports related business associations for the Mannok company. Mannok views the implementation of effective Corporate Social Responsibility (CSR) as a critical long-term success factor as well as an important social duty.

At a local level the company sponsors numerous cultural, agricultural, sporting and educational activities. Over the years these have included local Drama, Feis, Dance Groups, Agricultural & Ploughing events, GAA clubs, Golf Classics, Soccer, Rugby and School Development Funds. Alongside these main categories there are many other local community-based events that we support. In 2020 however many of the yearly events were cancelled due to the COVID-19 pandemic.

Mannok Cement are active members of the Cement Manufacturers of Ireland (CMI). The aim of CMI is to represent the cement industry in Ireland, taking account of the views of all stakeholders and to ensure the many advantages of having a vibrant indigenous cement industry are clearly communicated. Through the CMI organisation we are members of CEMBUREAU. This is the representative organisation of the cement industry in Europe. The Association acts as spokesperson for the cement industry before the European Union institutions and other public authorities and communicates the industry's views on all issues and policy developments with regard to technical, environmental, energy and other issues.

Mannok Cement is not a member of but do contribute to the World Business Council for Sustainable Development (WBCSD) Cement Sustainability Initiative (CSI). This is a global effort by 23 major cement producers with operations in more than 100 countries who believe there is a strong business case for the pursuit of sustainable development. Collectively these companies account for about one third of the world's cement production and range in size from very large multinationals to smaller local producers.

3.3 Economic

Mannok, through its various operations and manufacturing plants situated between Ballyconnell and Derrylin contribute significantly to the local and regional economies. There are over 800 people employed directly within the broader Mannok company not to mention the additional significant employment generated in various service, supply and ancillary industries. By investing in a strong team at Mannok, long term and sustainable benefits are being achieved for both the company and the area. Mannok Cement's contribution is an integral part of the area's economic system.

Apart from the direct employment associated with the Cement Works, additional employment is sustained within the services sector by means of the multiplier effect. The Mannok Cement site has proven to have a positive influence on sustaining employment levels in the locality and currently employs approximately 150 employees directly when lorry drivers are included.

In 2020, Mannok again picked up awards at the National Buying Group (NGB) supplier awards picking up four awards at the online ceremony. The four awards won were:

- Product of the Year: Mannok Master Grade Cement
- General Building Supplier of the Year

- Heavyside Brand of the Year
- Lockdown Hero of the Year

The NBG Awards are a celebration of excellence within the UK merchant supply sector, rewarding achievement and showcasing outstanding service from individuals, brands and businesses by one of the UK's largest merchant buying groups.

This success at the 2020 NBG Awards came just weeks after the announcement of an extended exclusivity deal for Mannok's Master Grade Cement which gives NBG customers exclusive access in the GB market to the award winning product until the end of 2024, extending the current partnership by three years.

4. BES 6001

Mannok Cement's commitment to Sustainability is highlighted through our efforts in achieving the **BRE Environmental and Sustainability Standard BES 6001 Responsible Sourcing of Construction Products**. In April 2012, Mannok Cement became accredited to BES 6001 for the first time with a performance rating of '**Very Good**' and have continued to maintain this performance rating.

The BRE standard BES 6001 has been published to enable construction product manufacturers to ensure and then prove that their products have been made with constituent materials that have been responsibly sourced. The BRE Environmental and Sustainability Standard describes the organisational governance, supply chain management and environmental and social aspects to be addressed in the certification and approval of the responsible sourcing of construction products.

The requirements of this Standard provide a framework against which all construction products may be assessed. The framework comprises a number of criteria setting out the requirements of an organisation in managing the supply of

construction products in accordance with a set of agreed principles of sustainability, the precise scope of which is determined by stakeholder engagement.

The standard takes into consideration Quality, Environmental, Health and Safety of Mannok Cement and our suppliers. It also looks at the areas of Resource use, GHG Emissions and Employment among others.

The requirements and associated actions have been structured into three components:


- Organisational Management Requirements
- Supply Chain Management Requirements
- Requirements related to the management of sustainable development.

Certain requirements, or elements of the requirements, are considered compulsory for organisations applying for certification against this Standard.

Each element is explained in more detail below.

4.1 Responsible Sourcing Policy

Mannok Cement has adopted a Responsible Sourcing Policy as can be seen below:

	Mannok Cement Ltd.	Issue Date: 05/11/2020
Title:	Responsible Sourcing Policy	Issue No. 6
Document Reference:	5.2.2	Authorised by: TP Feehan

Responsible Sourcing Policy

The purpose of this policy is to confirm our commitment to meeting the Environmental and Sustainability Standard expected by our customers. We recognise that our purchasing decisions of the organisation can impact on society and the environment therefore we commit to the requirements of BES 6001 Responsible Sourcing of Building Products.

The requirements of BES6001 will be achieved through Mannok Cement's Quality Management System - ISO9001, Environmental Management System - ISO14001 and Safety management System and similar credentials of our suppliers.

The main objective of the company is to optimise the process involved in manufacturing cement to IS EN 197-1, ensuring that the final product is of the optimum quality while minimising our carbon footprint and reducing impact on the environment. These objectives, carried out through responsible sourcing, will help meet the main challenges facing the cement industry today.

We adopt a systematic approach to all aspects of our cement manufacturing and as such we strive to meet the requirements of ISO 9001, ISO 14001, ISO 50001 and BES 6001.

Mannok Cement adopts procedures and disciplines to ensure that;

Employment and Skills: The system is effectively implemented, by undertaking relevant skills training and conducting appropriate sustainability awareness training.

Fundamental Right to Work: Mannok Cement operate Equal Opportunity, Recruitment and Training and Development policies and procedures to ensure international norms concerning human rights, labour practices and fundamental rights to work are respected.

Ethics: We strive to reduce the negative impact of our operation, service and products on the environment by effectively carrying out the above standards.

Legal Compliance: Legal requirements will comply with section 3.2.2 of BES 6001 We will operate in compliance with all national laws and regulations including, environmental, health and safety, quality and labour laws and as appropriate take into account principals from relevant international laws.

Transport: We will minimise our transport impact on the environment in accordance with our Transport Policy.

Health and Safety: We will establish a system to prevent pollution, accidents, ill-health and injury, to both people and the environment, while respecting the needs of both local communities and stakeholders.

Stakeholder Engagement: We will communicate environmental awareness to our employees, contractors and customers, ensuring it is understood and implemented in accordance with the environmental policy.

We will provide for the employee's welfare, engage with stakeholders and local communities, to take their views on board ensuring all parties engage in constructive and transparent dialogue so our operations are fully understood.

Through our membership of CMI and CEMBUREAU we communicate with stakeholders on common cement industry issues.

Greenhouse Gas Emissions: We will strive to reduce greenhouse gases and fossil fuel usage, and where possible to maximise renewable energy sources, while using our raw material resources in the most sustainable manner.

Lifecycle assessment (LCA): We will strive to improve the lifecycle environmental performance through the identification and improvement of significant environmental aspects and impacts.

Energy Use: Mannok Cement considers energy management and conservation and optimisation of energy and resources of paramount importance in its drive toward sustainability, as outlined in the Energy Policy. Using the framework of ISO 50001 Mannok Cement commits to continual improvement of the sites Energy Management System.

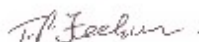
Site Stewardship and Resource Use: We source the majority of our constituent materials from ISO accredited sites as proof of site stewardship, we strive to maximise the use of recycled and secondary materials. Process water is recycled in a closed loop system to minimise groundwater extraction and water use outside production requirements is minimal. Many of the Mannok Quarry sites maintain Site management, Landscaping or Biodiversity plans.

Financial Stability: We will strive to continue to invest in alternative fuels, materials and technology to obtain long-term financial and environmental stability. Stability will be managed by developing the green economy approach addressing independence in energy supply, natural resource stewardship and job creation.

Complaints and Prosecutions: We will have a robust complaints and prosecution procedure, which will deal promptly with any issues and corrective actions, in a transparent and efficient manner. We will strive to be open and responsive to interested parties and the needs of stakeholders will be considered in operations. Mannok Cement will produce an Annual Sustainability Report to communicate actions to stakeholders.

Supply Chain Management: We will select and approve suppliers in line with the best practice outlined within the requirements of ISO 9001:2015 and BES6001 and as outlined in the Purchasing Policy around the selection of suppliers.

By implementing this policy, we strive to adhere to the principals of responsible sourcing, while maintaining our environmental responsibilities through our operation. This is achieved by investing in the most up-to-date technology, and implementing the Best Available Techniques in the industry.

Signed:  Date: 05/11/2020



4.2 Quality Management

Mannok Cement is a registered firm with BS EN ISO 9001, and holds the quality marks of both British and Irish National Standards and CE marking, indicating that it produces an independently audited and quality certified product. In June 2017 Mannok Cement successfully transitioned to ISO 9001:2015. The new standard demonstrates greater focus on leadership and planning, improved performance, life cycle consideration and communication.

4.3 Supplier Management Systems

This section of the standard deals with how the constituent raw materials are managed for sustainability including quality, environmental and health and safety. The majority of materials used by Mannok Cement are supplied by other divisions of the wider Mannok company; therefore there is significant control and transparency in the supply chain. Mannok Quarries operate under documented Quality and Health & Safety Management Systems and are accredited to ISO 14001 for their Environmental Management System.

Other suppliers of Mannok Cement are vetted for Environmental, Health and Safety and Quality standards through the supplier approval clauses of the company's BS EN ISO 9001 accredited Quality management System

4.4 Requirements related to the management of sustainable development

This section of the standard deals with key aspects of sustainability and how they are considered within Mannok Cement.

The key requirements are:

- Greenhouse Gas Emissions
- Energy Use
- Resource Use
- Waste Prevention and Waste Management
- Water Abstraction
- Lifecycle Assessment (LCA)
- Ecotoxicity
- Transport Impacts
- Employment and Skills
- Local Communities
- Business Ethics

Each requirement is discussed in further detail below.

4.4.1 Greenhouse Gas Emissions

Mannok Cement is a participant in the EU Emissions Trading Scheme (EU ETS). Annual Greenhouse Gas Emissions are independently verified and submitted to the Environmental Protection Agency Climate Change Unit. Verified CO₂ Emissions are also reported to the EPA through the EPR (Environmental Performance Reporting). Earlier this year CEMBUREAU, the representative organisation of the cement industry in Europe published its 2050 Carbon Neutrality Roadmap. This comprehensive document sets out the cement industry's ambition to reach net zero emissions along the cement and concrete value chain by 2050. The Roadmap looks at how CO₂ emissions can be reduced by acting at each stage of the value chain – Clinker, Cement, Concrete, Construction and (re)Carbonation – to achieve zero net emissions by 2050. Through our active membership of CMI, Mannok Cement are aligned to the CEMBUREAU commitment to reducing the sectors environmental footprint and will continue to support the ambition of a carbon neutral economy.

Objectives and Targets

Objective	Target
Reduce combustion CO ₂ emissions by increasing fossil fuel displacement using alternative fuels (SRF).	15% reduction in CO ₂ /t clinker by end of 2020. Reduce overall transport CO ₂ impacts as SRF domestically sourced.
Provide customers with a lower carbon cement option - CEM II	Reduction in overall CO ₂ per tonne of cement

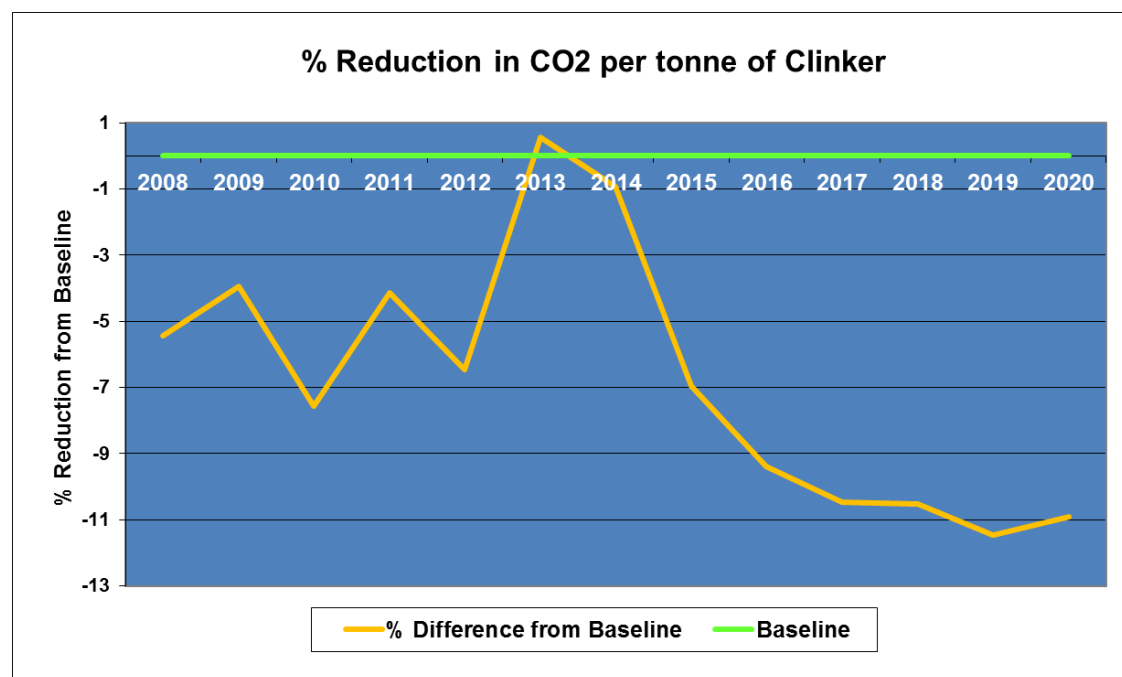
Metric

% Reduction in CO₂ emissions per tonne of clinker produced with a target of 15% reduction in CO₂ by 2020 based on ETS baseline year, with the introduction of Alternative Fuels.

It can be seen in the performance indicator metric below that CO₂ emissions per tonne of clinker produced over the last number of years has been in decline. However, a slight rise was experienced in 2020 due to production interruptions. The

CO2 emission rate is expected to reduce further in the new decade with optimisation of the co-fuelling process using the alternative fuel SRF (Solid Recovered Fuel). Although the target of 15% reduction was not achieved by the end of 2020 the metric has generally been going in the right direction. Mannok are in the process of carrying out a review of these targets as part of a new sustainability strategy. These new targets shall be presented in the next version of the Annual Sustainability Report. For now, it is envisaged that the target of 15% reduction CO2 per tonne of clinker shall be achieved by the end of 2022. By which stage our new targets shall be in place.

Performance indicator



4.4.2 Energy Use

As the cement manufacturing process is energy intensive, Mannok Cement considers energy management and the conservation of energy and resources to be of paramount importance in our drive towards sustainability.

Mannok Cement is part of an Energy Agreement Program (EAP) coordinated by Sustainable Energy Authority of Ireland (www.seai.ie). Our involvement in this program along with our membership of the Large Industry Energy Network (LIEN) allows us to draw ideas from energy efficiency experts across multiple manufacturing sectors.

Mannok Cement has developed an Energy Policy, Energy Management System and procedures and has achieved accreditation to the energy efficiency standard ISO 50001. ISO 50001 is designed to optimize the internal energy consumption throughout the organization. The overall objective of the standard is to support organisations wanting to set up a comprehensive energy management system, and to continually improve their energy performance, with the aim of lower energy costs and less greenhouse gas emissions. ISO 50001 follows closely the structures of ISO 14001, which allows for many similar requirements to be implemented across standards and facilitates the integration of additional requirements. In an Energy Management System where energy awareness is high throughout the entire workforce it can lead to substantial, sustainable energy improvements.

Mannok Cement is committed to sustainable energy use and energy efficiency. The ISO 50001 accreditation adds to our existing accredited ISO14001 Environmental and ISO9001 Quality Management Systems.

Energy Policy

Mannok Cement considers energy management and the conservation and optimisation of energy and resources are of paramount importance in its drive toward sustainability.

Mannok Cement recognises that energy consumption impacts on the environment in a number of ways. It is our policy to manage energy consumption in a manner that will minimise CO₂ emissions from the plant and limit environmental impact and contribution to climate change. This policy covers all energy use apart from vehicular, at Mannok Cement for cement production as defined by the energy management system scope and boundaries.

This Energy Policy outlines the company's commitment to compliance with applicable Irish and European energy legislation and other requirements.

Senior Management at Mannok Cement are responsible for ensuring that energy management is prioritised across all operations and that energy policy is appropriately defined, documented and implemented. Mannok Cement will provide the necessary resources and information to ensure effective management of energy and strive to improve energy and resource efficiency in premises, equipment, plant and motors, operations and employee behaviour. Mannok Cement commit to ensuring:

- Continual improvement in energy performance;
- The availability of information and necessary resources to achieve objectives and targets;
- Compliance with applicable legal requirements and other requirements to which the organisation subscribes related to energy use, consumption and efficiency;
- Support for the purchase of energy efficient products and services and design for energy performance improvement;
- Control of energy consumption and improved energy efficiency through better productivity and working conditions;
- Raising the awareness and consciousness among staff and contractors of the impact of wasting energy in their daily role through training and energy conservation promotion;
- The monitoring of energy consumed in as detailed a manner as is practical that will allow for continuous assessment and improvement;
- The identification of significant energy use and to implement plans to reduce consumption on a continuous basis;
- The setting of objectives and targets using the framework of the ISO 50001 compliant energy management system and to review progress on an ongoing basis.

Mannok Cement recognises the role of the cement industry in reducing GHG emissions. We are committed to reducing our CO₂ in line with the national targets of the Kyoto Protocol, its successors including the Paris Agreement and industry targets set out through CMI, CEMBUREAU and WBCSD. These targets will be achieved through introduction of alternative fuels, clinker substitution, CEM II and energy efficiency measures.

Examples of efficiency initiatives in this area include:

- Reduction in clinker contents in cement through the provision of CEM II products.
- Metering and automated monitoring of utilities and fixed electricity usage
- Lighting Surveys

In 2014 Mannok Cement moved towards more sustainable sources of energy with the implementation of our Alternative Fuels initiative to displace fossil fuel consumption with waste derived fuels and this has been of great benefit to energy reduction for the site and will contribute to improvements as the process is optimised.

Objectives and Targets

Objective	Target
Maintain an effective Energy Management System	Maintain accreditation to ISO 50001
Improve sites energy efficiency	Implement conclusions of the latest Energy audit
Efficient overall combustion and electrical energy performance	Energy management system targets set out for Coal and SRF and electrical

4.4.3 Resource Use

Almost 100% of constituent materials of Mannok Cement originate from ISO 14001 accredited sites. Due to the nature of the product most materials are virgin material but where possible substitutions are made for recycled and reused materials. Up to 10% of virgin Gypsum used at Mannok Cement is replaced with recycled gypsum.

All waste materials from the process are recycled back into the process to ensure the most efficient use of raw materials.

Energy use on site is strictly managed for optimum efficiency through our participation in the Emissions Trading Scheme and through the implementation of the ISO 50001 accredited Energy Management System.

Objectives and Targets

Objective	Target
Source materials from sustainable suppliers	100% constituent materials from ISO14001 accredited sites
Reduce combustion CO2 emissions by increasing fossil fuel displacement using alternative fuels (SRF).	15% reduction in CO2/t clinker by end of 2020 (extended to end of 2022). Reduce overall transport CO2 impacts as SRF domestically sourced.
Provide a lower carbon cement option - CEM II	Reduction in overall CO2 per tonne of cement
Assess Resource Supplier Performance	Carry out at least one site visit per year with each constituent material supplier to be visited every 3 years

Metrics

(i) Use of materials derived from the waste industry (Alternative Fuels SRF) for fuel source, as a % of total fuel use, with a target of 40% Alternative Fuel usage.

			2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Relevant Section	Performance Indicator													
3.4.3	a Materials diverted from the waste stream (SRF) for use as a fuel source as a % of total fuel energy use	%	0	0	0	0	0	0.01	26.67	29.59	39.98	36	36.7	36.4

4.4.4 Waste Prevention and Waste Management

Mannok Cement operate a very strong waste segregation policy based on the waste management hierarchy where elimination is the most preferred and landfill is the least preferred waste management option. Segregation allows for the best possible waste treatment option which is based on the traditional waste hierarchy and the principle of – Reduce, Reuse, Recycle.

To reduce waste to landfill from Mannok Cement, general waste goes to local waste contractors for processing into SRF which can then be recovered as an alternative fuel back at Mannok Cement. This is a perfect example of a circular economy in practice.

Objectives and Targets

Objective	Target
Minimise Waste - maximise % of waste recycled	0 tons of waste to landfill

Metrics

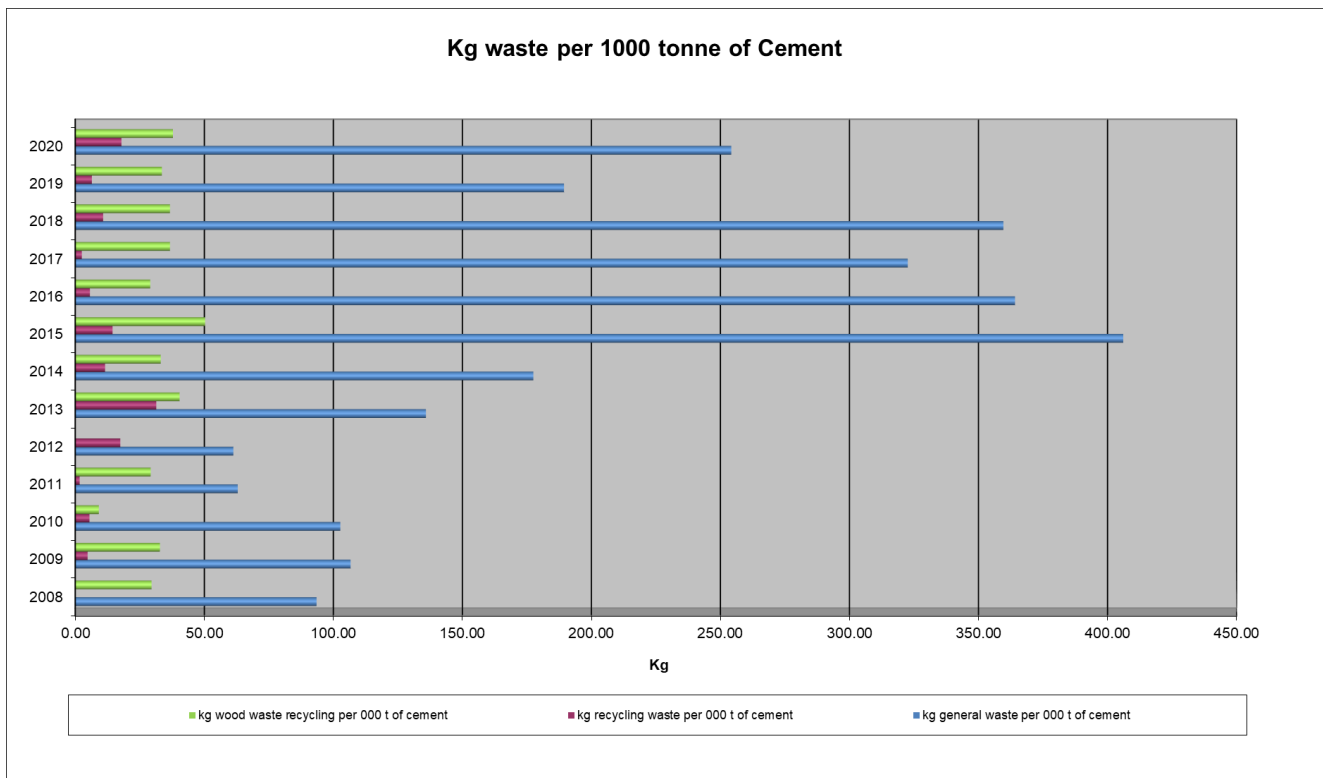
(i) Tonnes of general waste as a proportion of production output, with a target of <150 kg of waste per tonne of total cement product.

(ii) Tonnes of recyclable waste (paper, carboard & plastic packaging) diverted from landfill as a proportion of production output, with a target of <10kg of recyclable material per tonne of total cement product.

(iii) Tonnes of wood waste recycled and diverted from landfill as a proportion of production output, with a target of <25kg of recycled wood per thousand tonne of total cement product.

Overall, we aim to have 0 tons of waste sent to landfill.

Performance Indicator



4.4.5 Water Extraction

Water comes from two sources on site: (i) mains water and (ii) borehole water. The mains water supply is used for canteens and welfare facilities whereas the borehole water is used in the process and for cooling. Where possible reuse loops are used for process and cooling water, however much of the water is required in the process. All staff and contractors are given relevant training in water management through induction or environmental awareness training.

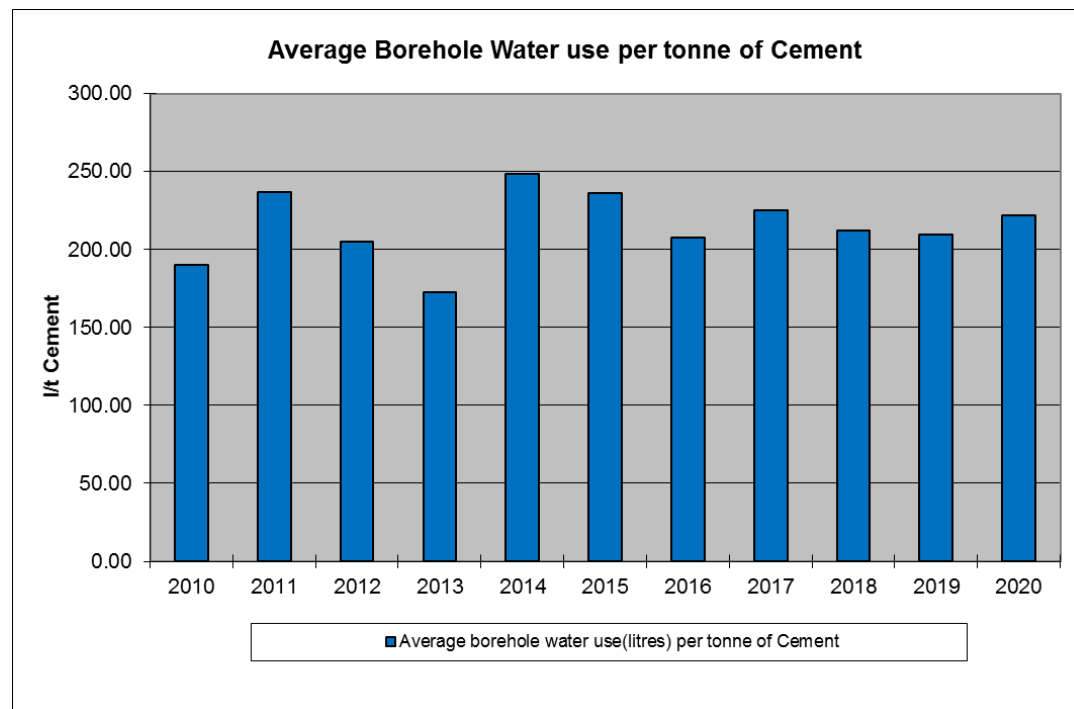
Objectives and Targets

Objectives	Targets
Reduction in borehole water usage	Develop a rainwater collection and reuse system
No unnecessary water usage	Assess for leaks routinely. Maintain water abstraction for production below 300 l/t Cement

Metrics

(i) Maintain water abstraction for production below 300 l/t Cement

Performance Indicator



* Please Note Borehole Water Use statistics are only available from 2010

4.4.6 Life Cycle Assessment

Life Cycle Assessment (LCA) is a technique to assess the environmental aspects and potential impacts associated with a product, process, or service, by:

- Compiling an inventory of relevant energy and environmental releases
- Evaluating the potential environmental impacts associated with identified inputs and releases.

Mannok Cement have carried out gate to gate lifecycle assessment which is a partial lifecycle assessment looking at only the value-added process in the entire production chain. In 2020 Mannok Cement progressed the lifecycle assessment further by appointing independent consultants to carry out a more in-depth analysis. This helps reach the objective of expanding the scope of lifecycle assessment and as this work is progressed we will move closer to achieving the objective of an EPD for our cement products.

Objectives and Targets

Objectives	Targets
Expand the scope of the lifecycle assessment	Assess the potential for more extensive range of environmental aspects
Environmental Product Declaration for cement	Achieve independently verified Environmental Products Declaration (EDP) that conforms with ISO 14025 and ISO 21930 or EN15804.

Declared Unit – The declared unit used in this study is 1 tonne of Cement. The list of significant inputs for the production of 1 tonne of cement (CEM I) is clinker, gypsum, and ferrous sulphate. The environmental analysis was limited to identify total energy consumption and total carbon dioxide (CO₂) emissions per ton of cement (CEM I).

The following processes of gate to gate have been considered:

- Mining and crushing Raw Materials.

Limestone is quarried and brought to the cement plant where it is crushed to a maximum size. The crushed limestone is ground together with other materials such as shale, silt and bauxite. The mixture is called raw meal.

- Preheater tower and Kiln

Raw meal passes through the preheater which helps to decrease the demand for energy in the kiln. Raw meal is fed into a rotating kiln, maximum temperature in the kiln is around 1450°C. This temperature allows for a chemical reaction to occur which forms clinker most of the energy in cement production is used in this calcination process. Fuels used in the kiln are coal, diesel oil, and alternative fuels. Coal is used more than other fuels.

- Clinker cooler and clinker store

Clinker is air cooled and stored.

- Cement Mill

Clinker is then fed to the cement mill where it is milled with additives. The main constituents of cement are clinker, gypsum, crushed limestone, ferrous sulphate, and grinding aid products, these are all ground together to form cement.

- Cement silos

The finished cement is loaded and stored here prior to sale distribution.

Table 1: Percentage Distribution and amounts of fuels consumed in the kiln per ton of cement (CEM I: 95% clinker)

Type of Fuel 2020	Amount (GJ/t)	Percentage of Total Fuel Tonnage (%)
Coal	2.66	64%
Alternative Fuel*	0.99	36%
Diesel	0.013	0.007%
Propane	0	<0.01%
Total	3.663	100
*Alternative fuels introduced Nov 2014		

Table 2 Amounts and sources of fossil CO2 emissions from the production of 1 ton of cement (CEM I: 95% clinker)

Process 2020	Amount of CO2 (kg)	Proportion (%)
Combusted fuels in the kiln (ETS)	285	35%
Process Carbon ETS	521	64%
Electric Power	5.12	<1%
Total	811.12	100

Results show that the most significant energy consumption and CO2 emissions are related to the clinker kiln, due to the process of calcination of limestone and fuel combustion in the kiln. Of total CO2 emissions, 64 % and 35 % result from the calcination process and fuel combustion respectively.

4.4.7 Transport Impacts

Mannok Cement transport cement throughout the Republic of Ireland, Northern Ireland and the UK. The Metric below is based on the average miles travelled per tonne of cement delivered.

A new Mannok Cement depot opened in Rochester London in 2012. It was initially observed that the average mile metric increased per tonne due to the increased supply of bulk cement to GB. However, over time the average miles per tonne has generally decreased. This has been achieved by increases in exports by bulk shipment.

Mannok considers efficient and sustainable transport to be of paramount importance. Over 100 new trucks have been purchased by Mannok in last five years with the aim of becoming more sustainable and environmentally friendly. All vehicles are designed to be as light as possible so they can carry greater payloads and thereby reduce overall annual journey numbers. 96% of the current Mannok Cement fleet is Euro 6 standard compliant or higher, meaning that vehicle emissions are now lower

than in previous years. This has been due to purchase of new trucks. Driver training has been introduced alongside the purchasing of new trucks, with manufacturers providing dedicated trainers to show the driver how to get optimal performance from the truck and help achieve better fuel efficiency, as well as reduce carbon footprint. The use of AdBlue, a liquid used to reduce the nitrous oxide emissions of diesel engines, is currently averaging 8% of overall fuel usage. Average fuel efficiencies have improved by up to 1 mile per gallon over the older vehicles, leading to a fleet saving of over 80,000 gallons annually. The introduction of cement tankers with blowers mounted on the trucks rather than the tank has led to an increased payload of over 1 ton per load. This is equating to 115 fewer truck journeys per 100,000 tonne of bulk cement. Trucks are equipped with the use of a tracker system to optimize delivery routes and all curtain-sider loads carry mixed products from other divisions, maximizing vehicle utilisation whilst reducing the number of journeys, fuel used, as well as reduced carbon impact.

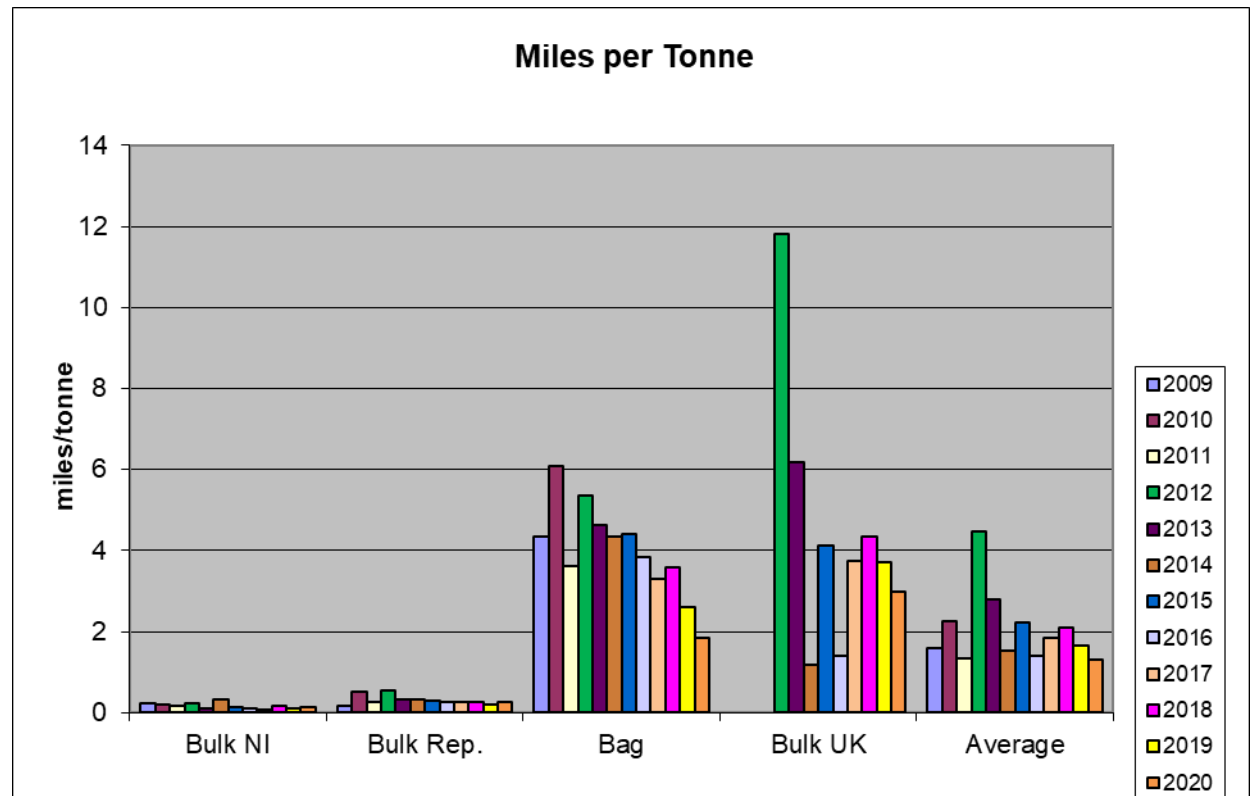
Objectives and Targets

Objectives	Targets
Policy of purchasing vehicles for sustainability	Target of 100% Euro 6 standard cement trucks by end of 2021 Introduction of sustainable alternatively fuelled trucks before end of 2025
Maximise vehicle and driver performance	Ensure all drivers are appropriately trained
Maximise payloads	Reduced journeys, fuel usage and emissions. Increase efficient tanker combinations (additional 1 ton payload) on the fleet to 40% by end of 2025. (Currently sitting at 19.5%)
Reduce overall transport Impact on Environment	Decrease miles per tonne by increasing exports by bulk shipment and transfer station sales

Metrics

Maintain an annual metric below 4 miles per tonne of cement delivered.

Performance Indicator



4.4.8 Employment and Skills

All staff are given relevant training on an ongoing basis, including ISO14001, ISO5001 and BES 6001 training. All contractors and new employees receive induction training which includes awareness of BES 6001, Sustainability, Environmental and Energy information.

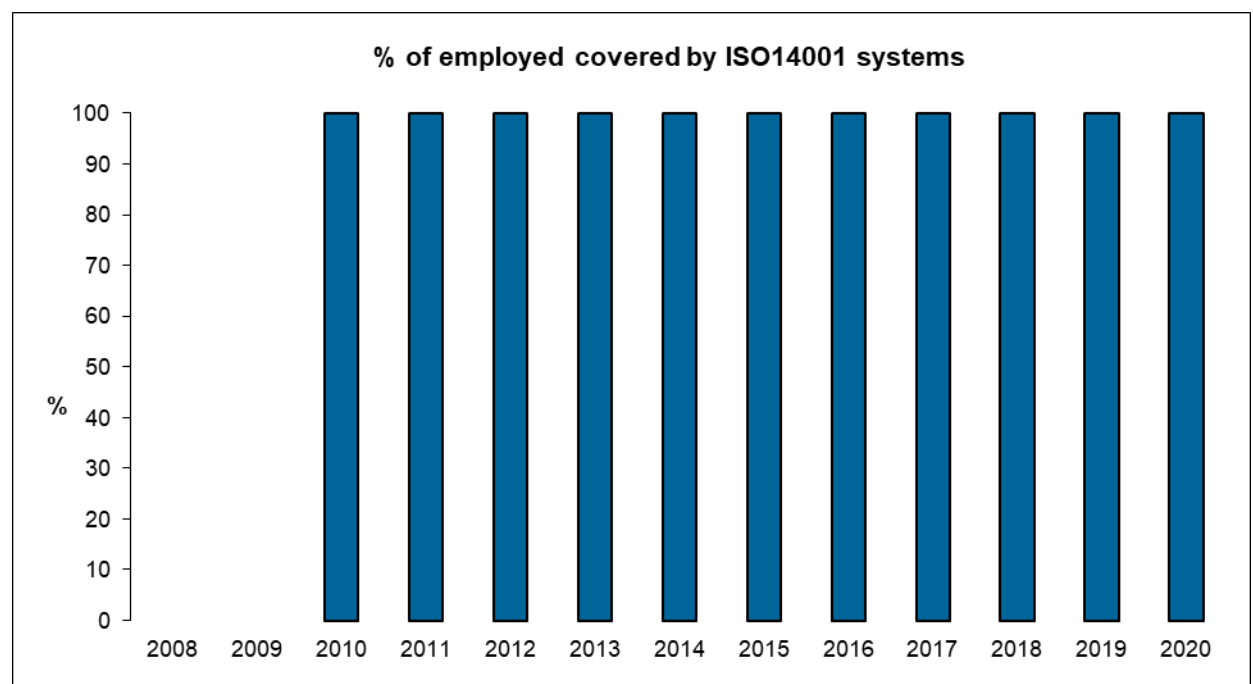
Objectives and Targets

Objectives	Targets
Effective and sustainable workforce	All staff on site aware of BES6001

Metrics

% of employees covered by certified ISO14001:2015 system (i.e. Training and Competence sections), with a target of 100%

Performance Indicator



4.4.9 Local Communities

Mannok Cement as part of the wider Mannok company has developed and grown within and with the support of the local community. Mannok is the most significant employer in the area and this has sustained growth within the community.

Information on Mannok Cement's policies and performance is publicly available for stakeholders and interested parties. Mannok Cement welcome interested parties for site visits and facilitate the development of others through offering student work placements and educational site tours (second and third level institutions). Social media is also used to provide information to the public and this particularly useful in 2020 due the restrictions around contact and communication.

A notice board is found at the entrance of the facility, the board displays key information in relation to the site as well as emergency out of hours contact telephone number. In the event of a complaint Mannok Cement have a fully documented procedure for investigating complaints.

Objectives and Targets

Objectives	Targets
Maintain open channels of communication with community	Continue Company Newsletter – Mannok People, Mannok Planet included
Develop the local community	Continue partnerships and engagement with local schools

Metrics

(i) Number of Convictions for Emissions other than CO₂ with a target of 0.

Performance Indicator

		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Performance Indicator	Unit of expression													
Number of convictions for air and water emissions per annum	Number per annum	0	0	0	0	0	0	0	1	0	0	0	0	1

4.4.10 Business Ethics

Business Ethics are very important to Mannok Cement as it provides the guidelines on how to react to situations by what is considered core values of what is '*right*'. Ethics within Mannok Cement are underpinned through Human Resources policies and procedures which outline a set of acceptable behaviours and conduct for dealing with moral duties and obligations.

Currently within Mannok Cement there is no documented code of business ethics however there are a number of policies that influence ethics and facilitate the main actors within an organisation to behave ethically with regard to specific matters these include:

- Anti-Bribery and Corruption Policy – Relates to upholding the integrity and reputation of the company and lists honesty, fairness and integrity as key tenets. Zero tolerance on bribery or corruption. .
- Harassment / Bullying Policy – Aim to promote a good and harmonious working environment.
- Whistle Blowing Policy – Staff may become aware of confidential information and have the option to report any concerns in a structured manner
- RoI and UK Disciplinary Policy and Procedure – Separate policies for respective legislation. Disciplinary issues, unfair dismissal, industrial relations.
- Grievance Policy – sets in place mechanism for employees to report and resolve problems. Informal and Formal stage.

Further Information

www.epa.ie

www.cement.ie

www.cembureau.eu/

<https://www.mannokbuild.com/>