

ECL Ref: ECL.038.01.01/EPR
Date: November 2018
FINAL



**APPLICATION FOR ENVIRONMENTAL PERMIT TO OPERATE A
PART B INSTALLATION UNDER THE ENVIRONMENTAL
PERMITTING (ENGLAND AND WALES) REGULATIONS 2016
(AS AMENDED)**

**ENVIRONMENTAL PERMIT TECHNICAL REQUIREMENTS
DOCUMENT**

**UNIT 10, ATLANTIC TRADING ESTATE,
BARRY**

Environmental Permit Technical Requirements Document



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List of Abbreviations/Acronyms

BAT	Best Available Techniques
DEFRA	Department for Environment Food and Rural Affairs
EA	Environment Agency
ECL	Environmental Compliance Limited
EHSS	Environmental, Health and Safety and Sustainability
EMS	Environmental Management System
EP	Environmental Permit
EP Regulations	Environmental Permitting Regulations (England and Wales) 2016
EWC	European Waste Catalogue
Lignia	Lignia Wood Company Limited
IBC	Intermediate Bulk Container
NRW	Natural Resources Wales
PPM	Planned Preventative Maintenance
SAC	Special Areas of Conservation
SOP	Standard Operating Procedures
SRS	Shared Regulatory Services
SSSI	Site of Special Scientific Interest
VGC	Vale of Glamorgan Council

1. INTRODUCTION

1.1. PROJECT OVERVIEW

- 1.1.1. This Application has been prepared on behalf of Lignia Wood Company Limited (“Lignia”) by Environmental Compliance Ltd (“ECL”), and relates to the proposed timber processing - specifically resin impregnation - activities at its Atlantic Trading Estate, Barry facility. The company has changed trading name being formally known as Fibre7. Therefore some of the information contained within this document references ‘Fibre7’, and this should be read as Lignia. The Certificate of Incorporation on Change of Name is shown in Appendix 1.
- 1.1.2. These activities fall under Schedule 1 of The Environmental Permitting (England and Wales) Regulations 2016 (“EP Regulations”), and, accordingly, the facility requires an environmental permit in order to be able to undertake the proposed activities.
- 1.1.3. Using its own patented and proprietary process, Lignia is proposing to manufacture a range of modified timber - the Lignia Product Range - as a direct, sustainable and cost-effective substitute for tropical hardwoods in the sawn hardwood market. Instead of using scarce, high-grade hardwoods such as mahogany and teak, Lignia is manufactured from a softwood, generally radiata pine but yellow pine, tulipwood or beech could also be used, impregnated with a proprietary phenol-formaldehyde resin.
- 1.1.4. The company philosophy and operating practices actively contribute towards some of the Goals and Objectives of the Welsh Government’s Well-Being of Future Generations (Wales) Act 2015 (see section 5.9, below).

1.2. INSTALLATION LOCATION

- 1.2.1. Lignia’s proposed facility is located at Unit 10, Atlantic Trading Estate, Barry, CF63 3RF. The facility (Installation) occupies an area of approximately 0.49Ha (4,853.59m²), and is centred on National Grid Reference ST136671 (12-figure reference 313646 167195).
- 1.2.2. The exact location of the Installation is indicated on the Installation Location Map provided in Appendix 2 of this document. The Installation boundary is indicated on the Installation Boundary Map, which is provided in Appendix 3 of this document.

1.3. PLANNING STATUS

Formal planning Pre-Application consultation was undertaken with Vale of Glamorgan Council (VGC) in April 2016, and a response provided on 10th June 2016 (Ref: P/DC/2016/00042/PRE). An Application for the Installation was submitted on 10th April 2018 (Ref: 2018/00420/FUL) although this was subsequently determined to be invalid by VGC (Ref: P/DC/SK/2018/00420/FUL) and therefore withdrawn. However, an Application is now being submitted with updated and additional details.

2. LISTED ACTIVITIES

2.1. INSTALLATION ACTIVITIES

2.1.1. As noted in Section 1.1. the listed activity undertaken by the installation is covered by the description in Schedule 1 of the EP Regulations, specifically:

- Part 2, Section 6.6 (*Timber activities*), Part B, paragraph (a)(ii):
- (a) Unless falling within Part A(2) of Section 6.1, manufacturing products wholly or mainly of wood at any works if the activity involves a relevant activity and the throughput of the works in any 12-month period is likely to be more than:
 - (i) 10,000 cubic metres in the case of works at which wood is only sawed, or wood is sawed and subjected to excluded activities; or
 - (ii) 1,000 cubic metres in any other case.

Note 1: "Relevant activity" means the sawing, drilling, sanding, shaping, turning, planning, curing or chemical treatment of wood. Given that the proposed activity involves curing of the wood with phenol-formaldehyde resin, Paragraph (a) (ii) is applicable.

Note 2: It was agreed that this is the applicable part of the EP Regulations with a representative of Cardiff County Council acting on behalf of the Vale of Glamorgan Council (the Regulatory body in this instance), referred to as Shared Regulatory Services (SRS).

2.2. DIRECTLY ASSOCIATED ACTIVITIES

2.2.1. There will be a number of directly associated activities at the Installation, namely:

- Operation of 5 Boilers; and
- Storage of raw materials.

3. OPERATING TECHNIQUES

3.1. PRINCIPLE OF THE PROPOSED PROCESS

- 3.1.1. The principle of the process is to fully impregnate the softwood cell wall with an aqueous phenol-formaldehyde resin and to polymerise and cross-link this to the wood via a curing and drying process in purpose-designed kilns.
- 3.1.2. The result is a resin 'locked' into the timber to give it additional density and durability and improved dimensional stability.
- 3.1.3. The process is fully computer-controlled.

3.2. OVERVIEW OF THE PROPOSED PROCESS

- 3.2.1. The Basic Steps Involved in the Proposed Process
 - Timber Selection: Lignia uses clear grade radiata pine grown in sustainably managed plantations in New Zealand, Australia, United States, South Africa, Chile and Spain. The timber is dried to a pre-determined moisture content and known density before receipt at the site. All timber received at the site will be legally logged, phyto-sanitary, FSC, PFC and EUTR certified.
 - Resin Formulation Preparation: The phenol-formaldehyde resin formulation will be delivered to site pre-prepared, and then recovered resin will be mixed with delivered resin in storage and subjected to on-site controlled dilution of the concentrated resin with water, when necessary.
 - Treatment: A known volume of timber is inserted into an autoclave and the resin formulation is forced into the timber for a pre-determined time using a vacuum/pressure cycle in order to ensure complete filling of all of the wood cell cavities. The duration of the treatment cycle varies dependent on the thickness of wood to be treated. The technical restrictions within the process mean that, on average, the maximum capacity of the process is less than 75m³ a day and therefore the activity is classed as a Part B in reference to the regulations.
 - Drying/Curing: Following treatment, the timber is kiln dried; this serves two functions: it reduces the moisture content of the timber to a suitable level and it cures the resin fixing it permanently inside the wood matrix.
 - Transportation: The finished Lignia product is then wrapped and containerised for transportation to Lignia's customers.
- 3.2.2. The facility has an existing Research and Development (R&D) plant that has been used to pilot resin formulations and test development product for user guarantee purposes. It is proposed to maintain use of the R&D facility for process development and optimisation

purposes. Treated product generated from the R&D plant is being utilised around the site rather than being sent for disposal by landfill.

- 3.2.3. Lignia estimate that approximately 2,900m³ of timber will be treated during the first year of operation, rising to approximately 15,000m³ in Year 5.
- 3.2.4. The arrangements at the Installation are indicated on the Site Layout Plan, which is provided in Appendix 4 of this document, and a process flow diagram for the activities is provided in Appendix 5 of this document.

3.3. PROPOSED OPERATING REGIME

It is proposed that the activities, in particular the kiln drying, described in this document will be undertaken 24 hours a day, seven days a week.

3.4. TECHNICAL STANDARDS

- 3.4.1. The Installation and its activities will be subject to, and will comply with, the relevant requirements of DEFRA's *Environmental Permitting - General Guidance Manual on Policy and Procedures for A2 and B Installations* and the following specific process guidance notes, which cover the activities detailed above, namely:
- DEFRA's Process Guidance Note 6/02(12) *Statutory guidance for the working of timber and manufacture of wood-based products* (September 2012); and
 - DEFRA's Process Guidance Note 6/03(11) *Statutory guidance for Chemical Treatment of Timber and Wood Based Products* (Revised June 2014). (Note – Many of the activities covered by PG6/03(11) are solvent emission activities and much of what is contained in the Note relates to this classification of activity. The proposed Lignia facility will not be using solvents and, accordingly, only those requirements which are not specifically related to solvent emission activities will be addressed in this document. Therefore, only those requirements in PG6/03(11) that relate to non-solvent activities are relevant.
- 3.4.2. It is anticipated that a Permit, if granted, will be issued by the Shared Regulatory Services (SRS) on behalf of Vale of Glamorgan Council ("VGC") and the Installation will be subsequently regulated by SRS on behalf of VGC in accordance with the conditions and requirements of the Permit.

3.5. TECHNICAL DESCRIPTION OF THE PROCESS

- 3.5.1. Lignia uses clear grade radiata pine grown in sustainably managed plantations in New Zealand, Australia, United States, South Africa, Chile and Spain. A sustainably managed plantation is one where the outer bands of trees are allowed to grow naturally providing a dense boundary to woodland, thereby limiting natural sunlight to the inner plantation. The inner trees are managed such that they are de-branched and the lack of sunlight forces the

trees to grow straight and taller to reach the sunlight. The Lignia process utilizes only the outer rings of the wood and not the central core as this is too dense for the process. The inner core of the trees is utilized for other sustainable purposes so that none of the wood is wasted. The debranching of the trees ensures that there are no knots in the outer rings of the wood.

- 3.5.2. The timber is delivered pre-sawn in predetermined lengths of between 4 and 6 metres in length and widths of 75mm to 310mm and depths of between 25mm and 75mm. The maximum wood length being determined by the size of the drying kiln and market demand. The wood is quality controlled on-site to ensure that it is suitable for use. A maximum of three months pre-treated wood stock can be retained on site within the main building at any time.
- 3.5.3. The flat packed wood is then mechanically de-stacked and 'sticked', using specially developed shaped wooden sticks which are placed between each plank of wood to provide ventilation. The wood is then placed through a vacuum process to remove any sugars and salts etc. before a high-pressure treatment is used to impregnate it with phenol-formaldehyde polymer resin. The resin formulation is initially delivered to site pre-prepared, with subsequent reuse of recovered resin reformulated on site via controlled dilution of the concentrated resin stored in the resin tank with water.
- 3.5.4. The wood needs to stand for up to 7 days after treatment depending on its thickness. The treated wood is stored within the main existing building for the duration of this period. This stage is quality critical and as such restricts production rates.
- 3.5.5. Following treatment, the timber is kiln dried; this serves two functions: it reduces the moisture content of the timber to a suitable level and it cures the resin, fixing it permanently inside the wood matrix. The wood is delivered to site with a moisture content of between 12-15% and the aim of the kiln drying process is to return it to this level after treatment, which raises the water content to about 35%. This element of the process is again quality critical and the wood needs to remain in the kilns for between 15 – 35 days (depending on the wood thickness and efficiency of the kiln drying process) to remove this moisture.
- 3.5.6. The kiln drying control system allows the operator to set the required temperature, relative humidity and air speed. There are two options for determining the end point of the cycle:
- drying by weight, the required weight is entered at the control panel, the product is placed onto a weighbridge in the kiln, on attainment of the required weight the kiln program automatically moves on to its cooling down phase and then switches off for unloading; or
 - basic time-based program, the operator sets the required drying time, the program automatically controls kiln conditions until the set time has elapsed, the kiln will then move on to cooling down and switching off ready for unloading
- 3.5.7. A known volume of timber is inserted into one of three lignification units which are to be installed inside the main existing building in an area adjacent to the new boiler house, where the wood will be subject to the final lignification process.

- 3.5.8. A 700kW boiler will provide the heat for the lignification units and is to be located as close as possible to the units in a new boiler house located externally to the main existing building constructed adjacent to its south elevation. It comprises a new purpose-built structure which is to be clad in Lignia timber which will have been produced on-site through the R&D plant. This ensures minimum waste leaves the site and also improves the appearance of the site within the mainly industrial setting.
- 3.5.9. On completion of the process, and relevant quality control checks, the wood is mechanically de-stacked, de-sticked and then restacked and containerised ready for transportation to customers.
- 3.5.10. The sticks used for ventilating the wood in the kiln dryers have been specifically developed for the process and can currently be recycled up to 18 times, thereby minimizing cost and maximizing the sustainability of the process.
- 3.5.11. New fencing will be erected along the southern and eastern boundary of the Site and will similarly be constructed from Lignia timber produced through the R&D plant.
- 3.5.12. Six bunded tanks are to be erected externally set on the concrete hardstanding between the existing main building and the wood drying kilns adjacent to the eastern elevation. The tanks are set within a concrete bund and five of the tanks are constructed of stainless steel to the individual specification for the liquid each is intended to hold, which is either resin or water, for use in the treatment process. The smaller sixth tank is to harvest rainwater to top up the larger service water tanks. The resin tanks will be agitated.

3.6. TANK CLEANING WASTE ARRANGEMENTS

- 3.6.1. When necessary, tanks will be washed out with water. Initially mains water will be used but in due course a mixture of mains water and grey water will be used. The washings will be transferred to an ISO Tanker ready for removal off site by a suitably permitted waste disposal contractor and taken for off-site treatment at a suitably permitted treatment facility.
- 3.6.2. In circumstances where the resin fails quality control tests and is deemed unusable it will be pumped out by tanker and returned to the supplier (Hexion) for reprocessing and reuse.

3.7. RESEARCH AND DEVELOPMENT (R&D) PLANT

- 3.7.1. There is a small laboratory-scale R&D plant located in the laboratory area. This will not be capable of any production, but will purely be used for process development work and quality checks. It will comprise:
- a small autoclave (approximately 0.56m³ capacity),
 - a small reactor (also approximately 0.56m³ capacity),
 - a small kiln (approximately 1.8m³ capacity), with an additional small independent 90kW boiler.

3.8. SITE SPILLAGE CONTAINMENT ARRANGEMENTS

3.8.1. There will be three separate bunded areas at the facility, as follows:

- one for the externally stored raw materials, water and resin,
- one for the internal impregnation process treatment area,
- and one for the R&D plant.

Details of these and the tanks/containers that they hold are provided in Table 1 below.

Table 1: Facility Bund Arrangements

Tank Description	Tank Designation	Tank Volume (m ³)	Containment Volume of Bund	Bund Capacity as % of Total Tank Capacity
<i>Main External Bunded Area:</i>				
Phenol-Formaldehyde Resin	Tank 1	30	-	-
Mixing	Tank 2	30	-	-
Mixing	Tank 3	30	-	-
Water Tank	Tank 4	54	-	-
Water Tank	Tank 5	54	-	-
Rainwater Harvesting Tank	Tank 6	2	-	-
Total Volume		200	84	42% of Total 155% of Largest Tank
<i>Main Internal Bunded Area:</i>				
Impregnation Plant	Tank 1	30	-	-
Total Volume		30	90	300%
<i>R&D Plant Internal Bunded Area:</i>				
Phenol-Formaldehyde Resin	IBC 1	1	-	-
Mixing	Tank 2	1.5	-	-
Water (Potable / Grey)	Tank 3	2	-	-
Total Volume		4.5	7.5	166%

3.8.1.1. Environment Agency (“EA”) and Natural Resources Wales (“NRW”) guidance indicates that bunds should be sized to hold 110% of the capacity of the storage tank contained within it and where there is more than one storage tank within the bund, the bund must be capable of storing 110% of the biggest tank’s capacity or 25% of the total tank capacity, whichever is the greater. It is evident from Table 1 that requirements are well in excess of these requirements. All tank filling points and emptying points are located within the bund, again in accordance with NRW guidance.

3.8.1.2. All bunded areas will be made impermeable.

4. MANAGEMENT SYSTEM

4.1 PROPOSED MANAGEMENT SYSTEM ARRANGEMENTS

4.1.1 Overview

- 4.1.1.1 Lignia will produce and implement a documented environmental, health and safety and sustainability (“EHSS”) management system at its Atlantic Trading Estate facility. The system is based on the principle of continuing improvement and sets out how EHSS risks will be evaluated and controlled. It will form an integral part of Lignia’s quality management system.
- 4.1.1.2 The EHSS management system, amongst other things, will identify, set, monitor and review environmental performance and key performance indicators. It will also incorporate a requirement to report annually on environmental performance, objectives, targets and future planned improvements.
- 4.1.1.3 To this end, Lignia will produce a documented EHSS Management System Manual, the purpose of which is to:
- provide a clear, systematic and effective framework for the management of EHSS risks;
 - identify EHSS roles and responsibilities throughout the organisation, and
 - provide consistent guidance for the management of records and documentation arising out of day-to-day activities.
- 4.1.1.4 Lignia intends to gain accreditation to the following standards:
- ISO 9001 - the international quality management standard,
 - ISO 14001 - the international environmental management standard, and
 - ISO 18001 - the international occupational health and safety management standard.

4.1.2 Site Management Structure

- 4.1.2.1 A draft management organogram is provided in Appendix 6 of this document.
- 4.1.2.2 The Production Manager will have day-to-day responsibility for environmental matters at the Installation, whilst the Quality Control Manager will deputise in the Production Manager’s absence.

4.2 ENVIRONMENTAL POLICY

- 4.2.1. Lignia will produce an EHSS Policy which sets out the Company’s aims in relation to environmental, health and safety and sustainability performance. A copy of the Policy Statement is provided in Appendix 7 of the document.

4.3 DETAILS OF ENVIRONMENTAL MANAGEMENT SYSTEM

- 4.3.1 Lignia plan to operate an environmental management system (“EMS”) at the Installation which will address quality and environmental matters. Lignia plan to attain certification for the employed EMS, being the international environmental management standard BS EN ISO 14001. A copy of some of the current Certificates of Registration are provided in Appendix 8 of this document.
- 4.3.2 The EMS will be structured on the general principles and requirements detailed in ISO 14001 and will comprise the following four elements:
- planning,
 - implementation and operation,
 - checking and corrective action, and
 - management review.
- 4.3.3 The environmental management element of the EHSS management system complies with the general principles and requirements of the international environmental management system standard ISO 14001.
- 4.3.4 Table 2 below summarises the structure of the EMS and provides an indication of the matters that each element will address.

Table 2: Summary of Lignia Environmental Management System

System Element	Matters Addressed
Planning	• Environmental Aspects • Legal and Other Requirements • Objectives and Targets • Management Programme.
Implementation and Operation	• Resources, Roles, Responsibilities and Authority • Training, Awareness and Competence • Consultation and Communication • Documentation • Document and Data Control • Operational Control • Emergency Preparedness and Response.
Checking and Corrective Action	• Performance Monitoring and Measurement • Incident Reporting / Investigation • Non-conformity, Corrective and Preventative Actions • Records and Record Management • Audits.
Management Review	• Review • Continual Improvement • Targets and Objectives

- 4.3.5 Lignia will put in place a comprehensive range of documented Standard Operating Procedures (“SOPs”) to address all of the issues detailed in Table 2.
- 4.3.6 There will be a planned preventative maintenance (“PPM”) programme in operation at the facility. The PPM will ensure that the plant and equipment used in the process are always maintained in proper working order.
- 4.3.7 Lignia will put in place a structured housekeeping regime to ensure that all areas are maintained to appropriate standards of cleanliness.

5 EMISSIONS

5.1. EMISSIONS TO AIR – FORESEEABLE EMISSIONS

- 5.1.1. There will be emissions to air from the activities undertaken at the Lignia facility from the following sources:
- The Drying Kilns (including point source from a scrubber should one be required)
 - Boiler Plant
 - Post impregnation ‘standing area’, as fugitive emissions (internal)
- 5.1.2. The locations of the above release to air are indicated on the Site Layout Plan, see Appendix 4.

5.2. EMISSIONS TO AIR – QUANTIFICATION

5.2.1. Overview

- 5.2.1.1. The chemical composition of the resin used in the treatment process is similar to that used in the production of particle board and fibre board. However, instead of being used as an adhesive the resin is being impregnated, with curing and subsequent cell structure bonding taking place. Therefore, the pollutants that are considered to be emitted from the Installation via the kilns are as follows:
- Formaldehyde;
 - Phenol;
 - Total aldehydes;
 - VOC’s, and
 - Particulates

5.2.2. Emission Limit Values

- 5.2.2.1. The specific relevant Process Guidance Notes make no reference to the pollutants detailed in Section 5.2.1.1., with the exception of particulates, above. It is deemed pragmatic to make reference to the nearest other relevant guidance which is the Sector Guidance Note SG1 A2 Particleboard, Orientated Strand Board and Dry Process Fibreboard. This document contains a number of emission limit values (ELV’s) applicable to the more stringent regulated Part A2 industry sector. Lignia aim to minimise their environmental impact in every way possible, and as such commit to operate to the ELV’s detailed in SG1 and shown below in Table 3, which summarises the proposed ELV’s for the potential pollutants arising from the proposed kilns.

Table 3: Pollutant Proposed Emission Limit Values (Kilns)

Pollutant	ELV (mg/Nm³)
Formaldehyde	20
Phenol (averaged over 2 hour period as monohydric phenol)	5
Total aldehydes (calculated as carbon)	20
VOC's (excluding particulates)	130
Particulates	20

- 5.2.2.2. In respect of the proposed boiler plant on site, the relevant Process Guidance Note does not specify emission limits so reference has been made to the Sector Guidance Note SG1 and also the Medium Combustion Plant regulations. Table 4 summarises the proposed ELV's for the pollutants arising from the boilers.

Table 4: Pollutant Proposed Emission Limit Values (Boilers)

Pollutant	ELV (mg/Nm³)
NOx	100
CO	100

- 5.2.2.3. The boiler plant serving the kilns (emission points A1 and A2) have a thermal input of 440kW each, and the boiler serving the lignification units (emission point A3) has a thermal input of 700kW. The total combined thermal input of all the boiler plant on the site is 1700kW or 1.70MW. A review of the 'aggregation rules' under the Medium Combustion Plant Directive (MCPD) has been performed and appears to identify that the boiler plant, as being less than 1MW each individually, fall outside of the scope of the MCPD. NRW have provided confirmation on the interpretation of the MCPD and agree that the boiler plant fall outside of the scope of the regulations.
- 5.2.2.4. There is a potential source of fugitive emissions whilst impregnated product is left in the 'standing area' for a period of up to seven days before being transferred to the kilns. The final stage of the impregnation process is a final vacuum period that removes as much of the 'free' resin product from the wood to help reduce the moisture content and ensure there are no drips whilst 'standing'. The reclaimed resin is transferred back to storage for reuse. This standing area is located within the production building which is covered by Health and Safety legislation. It is not anticipated there will be significant emissions at this stage of the process.

5.3. EMISSIONS TO WATER – PROPOSED ARRANGEMENTS

There will be no emissions to water from the Installation and its proposed activities.

5.4. EMISSIONS TO SEWER – PROPOSED ARRANGEMENTS

There will be no process emissions to sewer from the Installation and its proposed activities.

5.5. EMISSIONS TO LAND – PROPOSED ARRANGEMENTS

There will be no emissions to land from the Installation and its proposed Activities.

5.6. FUGITIVE EMISSIONS TO AIR

- 5.6.1. There will be no external fugitive emissions to air from the treated timber in relation to the Installation and its proposed Activities. Any treated timber stored outside will have completed the impregnation and curing process such that all treatment chemicals within the wood will have been fully cured and bonded to the cell structure of the wood. The wood will also have been returned to its delivered moisture content. As detailed above in Section 5.2.3.6, the standing area located under cover within the production area of the main process building is unlikely to be a source of significant fugitive emissions.
- 5.6.2 The activities proposed are industrial in nature and therefore noise will be generated on site. The installation is located within an industrial setting, albeit on a coastal boundary. The nearest sensitive receptor is HMS Cambria to the north east of the site and located closest to the kilns. A very basic noise assessment was performed to ascertain what the likely noise levels may be using variable speed fan equipment but set to maximum output. At a distance of 10m from the source a sound level of 55dB(A) was obtained. It is recognised that this was an indicative assessment and therefore it is proposed to carry out a noise survey during commissioning and identify whether there are likely to be any issues. A background noise assessment identified a night time ambient noise level of 36.5dB(L_{A90}) at the closest point to HMS Cambria. If necessary, mitigation measures will be implemented to ensure that complaints are not generated. The technical specification for the kiln fans are detailed in Appendix 9.

5.7. FUGITIVE EMISSIONS TO SURFACE WATER, SEWER AND GROUNDWATER

There will be no fugitive emissions to surface water, sewer and groundwater from the Installation and its proposed Activities.

5.8. ABATED EMISSIONS

- 5.8.1. The lignification units will benefit from a form of abatement at the end of the treatment cycle to ensure there are no emissions to air. The normal operation would be pressure release through a relief valve which results in noise and water vapour escaping to atmosphere, but instead these will be captured.
- 5.8.2. It is proposed to introduce a closed loop system by way of an underground steel lined trench, installed at a gradient, of sufficient dimension to dissipate the pressure from the treatment units on release and where the vapour from the vessel condenses within the trench. The condensate will then trickle down the length of the trench to a sump at the bottom where a float switch operated pump will remove the condensate to above ground waste storage tank (IBC) before being removed off-site to Veolia for disposal. Possible alternative uses for the condensate will be investigated.
- 5.8.3. The use of the trench for pressure relief also acts as a form of noise abatement by directing the sound underground and it dissipating into the steel lined trench and surrounding ground. This should mean that neighbouring premises will not notice any pressure relief activities taking place.

5.9. OTHER REDUCTIONS IN EMISSIONS TO AIR

- 5.9.1. It is worth noting that the site location has been chosen with a view to minimising emissions to air through reduced transportation of raw materials and product. The site is as close as possible to the resin manufacturing site and in close proximity to docks, where it is eventually hoped that the timber can be shipped to. Currently it is shipped to Avonmouth but negotiations are on-going to change this to Barry docks.
- 5.9.2. The longer term aim is to develop both a UK and European supply of timber that can be treated through the process which will further reduce the overall transportation requirements for the business and help towards the company vision of minimising its environmental impact. This will also help to reduce the need to log and transport scarce hardwoods to the UK and Europe and help offset the global impacts that this current activity is causing.
- 5.9.3. An electric vehicle charging port is being implemented on site to encourage employees to make use of electric vehicles, thereby also reducing emissions to air from the overall company activities and helping on a local level towards reducing traffic pollution.
- 5.9.4. The long term vision for Lignia is to look holistically at all of its activities and reduce their impact wherever possible. Not only will this vision be relevant for Lignia but it works towards creating sustainable alternatives for global improvement. In doing so the company is working towards the Goals and Objectives of the Well-being of Future Generations (Wales) Act 2015, which although is limited to public bodies in Wales, is relevant to all organisations across Wales.

6. TYPES AND AMOUNTS OF RAW MATERIALS (AND PROPOSED ARRANGEMENTS)

6.1. NATURE OF RAW AND AUXILIARY MATERIALS

- 6.1.1. The estimated annual quantities of raw materials that will be used at the facility are detailed in Table 5.

Table 5: Estimated Annual Usage of Raw and Auxiliary Materials

Raw/Auxiliary Material	Annual Quantity Used
Phenol-formaldehyde resin	8000 tonnes
Water	20000 litres
Timber	5 – 15000 m ³

- 6.1.2. Lignia has detailed specifications for all of its process-related raw materials, and all materials will be purchased to the relevant specifications from approved suppliers.

6.2. RAW MATERIALS STORAGE AND HANDLING ARRANGEMENTS

6.2.1. Incoming Timber Storage, Sorting and Grading Arrangements

- 6.2.1.1 On receipt at the facility, the timber will be offloaded into a designated storage area, where it will be sorted and graded prior to processing. There will be capacity to store approximately 1,550m³ of timber in the storage area.

6.2.2. Process-Related Raw Materials Storage Arrangements

- 6.2.2.1. A specially formulated phenol-formaldehyde resin will be delivered to the facility in road tankers. The resin will be offloaded into a stainless steel storage tank of 30m³ capacity, which will be externally located within the main bund (see Section 3.8.1).
- 6.2.2.2. Resin intended for use in the R&D plant will be stored in a 1m³ intermediate bulk container (“IBC”) within the internally located R&D plant bunded area (see Section 3.8.1).

6.2.3. Lignification Treatment

- 6.2.3.1. There will be three stainless steel lignification units that perform the final curing process, each of 10m³ capacity (30m³ total), which constitute the final quality critical stage. The process time for this stage varies depending on wood thickness being processed, but is far longer than ‘traditional’ timber treatment cycles. Therefore this stage is also considered a technical restriction to the maximum quantity of wood that can be treated in the process and consequently the daily capacity of the plant.

6.2.4. Water

- 6.2.4.1. Water for use in the process will be stored in 2 x 54m³ tanks which will be externally located

within the main bund (see Section 3.8.1). In due course, water will be harvested from the roof of the process building - 'grey water' - and mixed with mains water for use in the process. This measure will reduce the quantity of mains water used in the process.

- 6.2.4.2. Water intended for use in the R&D plant will be stored in a 2m³ IBC within the internally located R&D plant bunded area (see Section 3.8.1). Again, in due course, a mixture of mains water and grey water will be used.

6.2.5. **Record Keeping**

Lignia will keep documented records of all raw materials used at the facility and any relevant quality checks associated with them as part of the overall quality control and audit system for guarantee and certification purposes.

7. MONITORING

7.1. EMISSIONS TO AIR – PROPOSED ARRANGEMENTS

- 7.1.1. It is proposed to perform emission monitoring from the drying kilns on commissioning to ascertain the pollutants and concentrations released from the drying activity. The results from the monitoring will inform the need for specific abatement of the emissions, which has been planned for should the need arise. Table 6 below identifies the proposed pollutants and monitoring parameters.

Table 6: Monitoring Requirements

Emission Point (s)	Parameter	Limit (mg/m ³)	Method	Reference Period
A4 – A9	Formaldehyde	20	To be agreed with the Regulator	
A4 – A9	Phenol	5	To be agreed with the Regulator	
A4 – A9	Total aldehydes	20	To be agreed with the Regulator	
A4 – A9	VOC's	130	To be agreed with the Regulator	
A4 – A9	Particulates	20	To be agreed with the Regulator	

- 7.1.2. All extractive monitoring will be undertaken by an organisation that is suitably United Kingdom Accreditation Service (“UKAS”) accredited and holds the necessary certifications under the EA’s MCERTS Scheme for Manual Stack Sampling. All sampling personnel will hold the appropriate personal accreditations.
- 7.1.3. Any samples collected during periodic monitoring that require off-site analysis will be sent to a laboratory that is suitably UKAS accredited for that determinant and sample matrix.
- 7.1.4. Should periodic monitoring be required then it will be undertaken to the current requirements of the relevant CEN, ISO or SEPA sampling standards and the EA’s *Technical Guidance Note (Monitoring) M2 Monitoring of stack emissions to air*.

8. WASTE MINIMISATION

8.1. NATURE OF AND QUANTITIES OF PROCESS WASTES PRODUCED

- 8.1.1. There are only three 'waste' streams arising directly from the activities that will be undertaken at the facility, namely:
- Spent Resin;
 - Sticks;
 - Quarantined product

- 8.1.2. The estimated annual quantities of each 'waste' stream that will be generated at the facility are detailed in Table 7.

Table 7: Estimated Annual Quantities of Wastes that will be generated

Waste Stream	Quantity Generated
Spent Resin	Approx.. 60-70,000 litres pa
Sticks	20 m ³
Quarantined Product	Unknown at present

- 8.1.2.1. Spent resin will be returned to the supplier for reprocessing and re-use.
- 8.1.2.2. Sticks that are no longer useable will be collected and provided for biomass fuel.
- 8.1.2.3. Any quarantined product will be utilised on site for either cladding or internal fitting to improve the appearance of the facilities.

8.2. WASTE MANAGEMENT ARRANGEMENTS

- 8.2.1. Lignia will keep records of all wastes removed from the facility, whether the waste is sent for recovery/recycling or disposal. The records, which will be kept for a minimum of two years, detail:
- the name of the waste carrier and their waste licensing details;
 - the nature and origin of the waste;
 - the quantity of the waste;
 - a physical description of the waste;
 - a description of the composition of the waste;
 - any relevant hazardous properties (hazard and risk phrases);
 - European Waste Catalogue ("EWC") code;
 - any relevant handling precautions and substances with which it cannot be mixed; and
 - the destination of the waste.

- 8.2.2. The different waste streams produced at the facility will be stored separately in suitable containers. Incompatible wastes will be kept separate.
- 8.2.3. Waste storage areas and containers will be suitably and clearly labelled/signed.
- 8.2.4. Waste storage areas will be provided with the appropriate measures to minimise the risk of pollution arising from the storage of the waste.
- 8.2.5. All waste removal will be undertaken by suitably licensed specialist waste disposal contractors, and all recovery or disposal operations will be undertaken at suitably permitted waste treatment or disposal facilities.

8.3.	NON-PROCESS WASTE RECOVERY, RECYCLING AND DISPOSAL ARRANGEMENTS
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- 8.3.1. In addition, general non-process related waste streams produced at the facility - paper, cardboard, plastic etc. - will be collected and sent for recycling to suitable specialist recycling facilities.
- 8.3.2. On-site waste will be removed off-site to a suitably licensed installation for disposal.
- 8.3.3. Treated wood from the R&D Plant will be utilised on site where possible to minimise the amount of waste leaving site.

9. IMPACT ON THE ENVIRONMENT

9.1. ASSESSMENT OF POTENTIAL SIGNIFICANT ENVIRONMENTAL EFFECTS OF FORESEEABLE EMISSIONS TO AIR

9.1.1. Likely Emissions

9.1.1.1. The wood treatment Activities will give rise to emissions to air although these will be limited in quantity and nature. The foreseeable emissions are detailed below.

9.1.1.2. Emissions from the drying kilns will be:

- Damper controlled releases (point source) from each kiln section emission stack, comprising mainly water vapour but also potential chemical composition of the phenol formaldehyde polymer resin.
- Two kiln boiler plant emission stacks (point source) comprising combustion gases associated with natural gas fuel.
- Treatment chemical odours.

Point source – from each of the kiln section emission stacks.

Fugitive source – from the opening of each kiln section door (which should be infrequently due to extended drying process time).

9.1.1.3. Emissions from the lignification plant will be:

- Boiler plant emission stack (point source) combustion gases associated with natural gas fuel.

9.1.1.4. Emissions from the vacuum / pressure impregnation treatment process:

- The impregnation treatment process is a closed loop system so there are no expected emissions from this Activity.
- Post impregnation there will be fugitive emissions from the 'standing area' where treated wood will be held for a period of up to 7 days giving rise to chemical type odours within the process building. The intensity and duration of odours from this activity will be dependent on matters such as the ambient atmospheric conditions and the availability of polymer resin for reaction.
- It is not considered there will be significant odour emissions released externally during the transfer of treated wood to the kilns for drying.

9.1.1.5. Emissions from the R&D Plant will be:

- Fugitive odour emissions related to the autoclave impregnation plant and the 'standing time' both of which will be released internally.
- There will be emissions from the boiler plant associated with the combustion of natural gas but the boiler plant is only domestic sized.

9.1.2. **Quantification of Emissions**

- 9.1.2.1 Section 5.0 above identifies the potential emissions from the activities and proposes ELV's for the respective pollutants based on the nearest guidance documents available.
- 9.1.2.2. It is proposed that extractive emissions monitoring will be performed for emission points A4 to A9, inclusive, at the commissioning stage to quantify the actual pollutant emissions from the kiln drying activity. The results from the monitoring will inform the need for any abatement necessary and to what standards the equipment will have to achieve.
- 9.1.2.3. Although the boiler that serve the drying kilns and the lignification plant fall outside the scope of regulation it is proposed that they will achieve the ELV's of the nearest applicable guidance. Therefore the boiler plant will be tested on commissioning to ensure that emissions are within the proposed limits.

9.1.3 **Stack Heights**

- 9.1.3.1. The stack heights for the 3 boiler plant serving the drying kilns and the lignification plant have been determined using the D1 stack height guidance document. The calculations have utilised the proposed ELV's along with the proposed building dimensions provided for the Planning Application. The results of the calculations identified that the boiler stacks for the drying kilns should be 9.0m high, whilst the boiler stack for the lignification plant should be 11.0m high.

9.1.4 **Odour Emissions**

- 9.1.4.1. There are no formal ELV's for odours, however, assessment of odours are subjective but guided by the FIDOL factors. These factors relate to the Frequency, Intensity, Duration, Offensiveness, and Location of odours.
- 9.1.4.2. It is not considered there would be any substances used by Lignia that would give rise to 'offensive' odours, and likewise it is unlikely there would be sufficient odours that would emanate from the site for sufficient duration and intensity so as to cause a nuisance.
- 9.1.4.3. However, it is recognised that for activities that may have a potential for generating odours the regulator would normally stipulate a boundary odour condition in any permit

that may be granted. As such Lignia will ensure that their site activities will not give rise to any offensive odour noticeable beyond the site boundary.

9.1.5 Noise Emissions

9.1.5.1 Although noise emissions are not regulated in respect of Part B Permitted Activities Lignia recognise that their activities will generate noise and have a potential to cause a noise nuisance if not managed appropriately. It has already been stated that Lignia are seeking to minimise their impact on the environment in any way possible.

9.1.5.2 As a company, Lignia are keen to work towards the Welsh Government Goals and Objectives identified in the Well-Being of Future Generations legislation and also apply the policy of linking noise with air quality. As such the site activities will be managed in such a way so as to minimise noise emissions, and where that is not sufficient, implement appropriate mitigation to ensure that a noise nuisance is not created.

9.1.5.3 Therefore it is proposed to carry out a noise assessment during commissioning to identify the particular site activities that give rise to elevated noise and to ascertain what noise levels may be experienced by sensitive receptors. The aim is to achieve a night time noise level from drying kiln site activities to not exceed 45dB(L_{A90}) at the nearest sensitive receptor (HMS Cambria residential block), if this is deemed acceptable by the regulator.

9.2. EFFECT OF EMISSIONS TO AIR ON SENSITIVE ECOLOGICAL SITES

9.2.1. European Sites

There are no European-designated sites – i.e. Special Protection Areas (“SPAs”), Special Areas of Conservation (“SACs”) or Ramsar sites – within 2km of the Lignia Installation. For completeness, the nearest SAC is the Severn Estuary Area of Conservation and Ramsar site located at a distance of 5.4km east of the Lignia site.

9.2.2. Sites of Special Scientific Interest

9.2.2.1. There are two sites of Special Scientific Interest (“SSSIs”) within 2km of the Lignia Installation which are Hayes Point SSSI and the Bendrick Rock SSSI which both lie immediately adjacent to the southern boundary of the Lignia site. The SSSI is designated for its paleontological interest comprising a promontory of Carboniferous Limestone rock known as Bendrick Rock consisting primarily of mudstones, siltstones and conglomerates (Mercia Mudstone Marginal Facies) formed primarily by deposition of silt at the shoreline of a shallow muddy sea during the Early Triassic and Late Triassic periods and includes dinosaur footprints. It is not considered that any emissions to air from the facility will have any adverse impact on these SSSI. The quantity and concentration of emissions from the installation should not be at a level where they would adversely impact on the fossil

formations found within these SSSI. However, emissions testing will be carried out and, if necessary, abatement installed to ensure that there will be no adverse impact.

9.2.2.2. For completeness, the other known SSSI within the general area are listed below. It is not considered that Activities carried on at the Lignia Installation will have any impact on these SSSI.

- Sully Island SSSI, located 2.8km east
- Cog Moors SSSI, located 3km north east
- Cosmeston Lakes SSSI, located 4km north west
- Barry Woodlands SSSI, 4.2km north west
- Cliff Wood – Golden Stairs SSSI, 4.5km west
- Penarth Coast SSSI, 5.1km east.

APPENDIX I

Certificate of Incorporation on Change of Name



FILE COPY

CERTIFICATE OF INCORPORATION ON CHANGE OF NAME

Company Number **5987714**

The Registrar of Companies for England and Wales hereby certifies that under the Companies Act 2006:

FIBRE 7 UK LIMITED

a company incorporated as private limited by shares, having its registered office situated in England and Wales, has changed its name to:

LIGNIA WOOD COMPANY LIMITED

Given at Companies House on **30th July 2018**



* N05987714S *

The above information was communicated by electronic means and authenticated by the Registrar of Companies under section 1115 of the Companies Act 2006



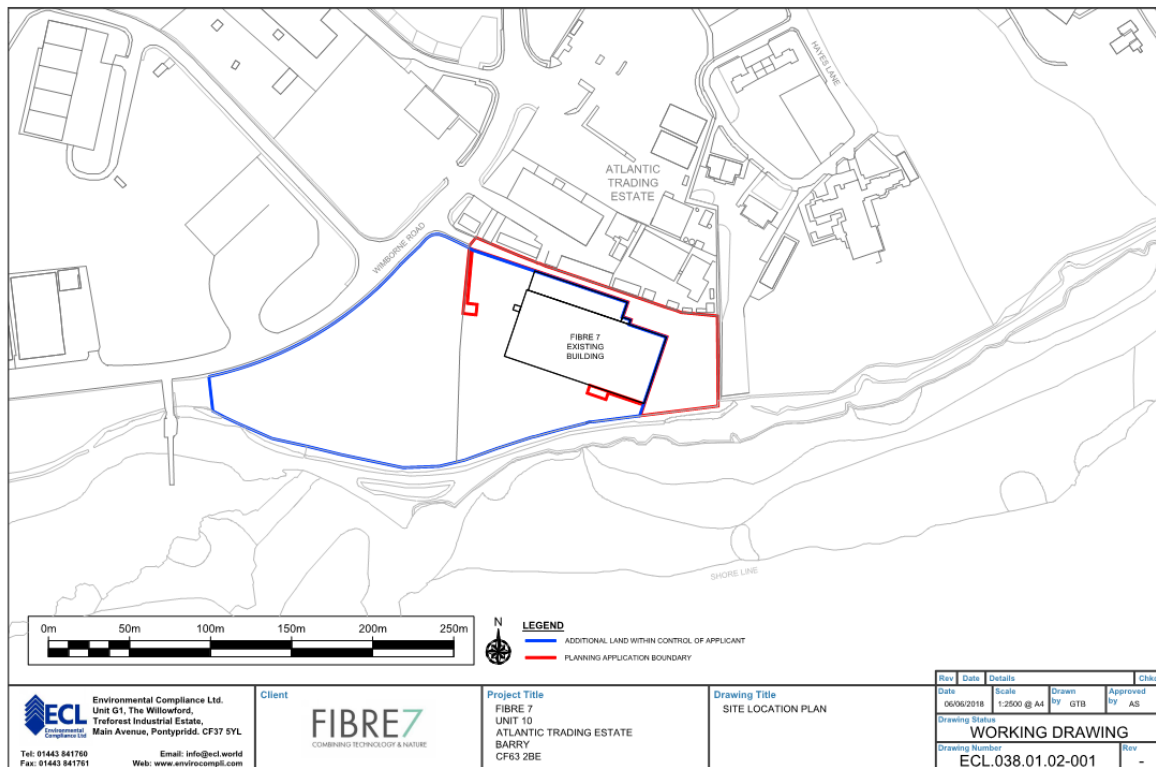
Companies House



THE OFFICIAL SEAL OF THE
REGISTRAR OF COMPANIES

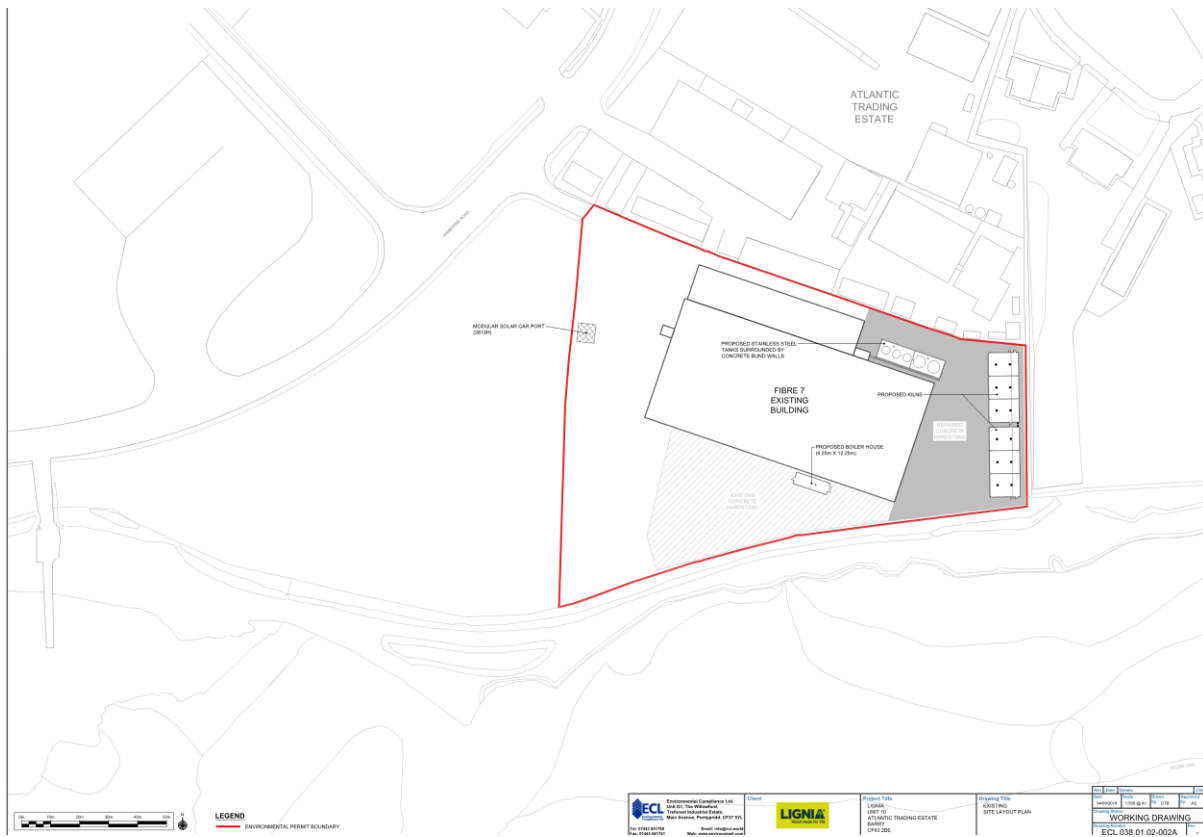
APPENDIX II

Installation Location Map



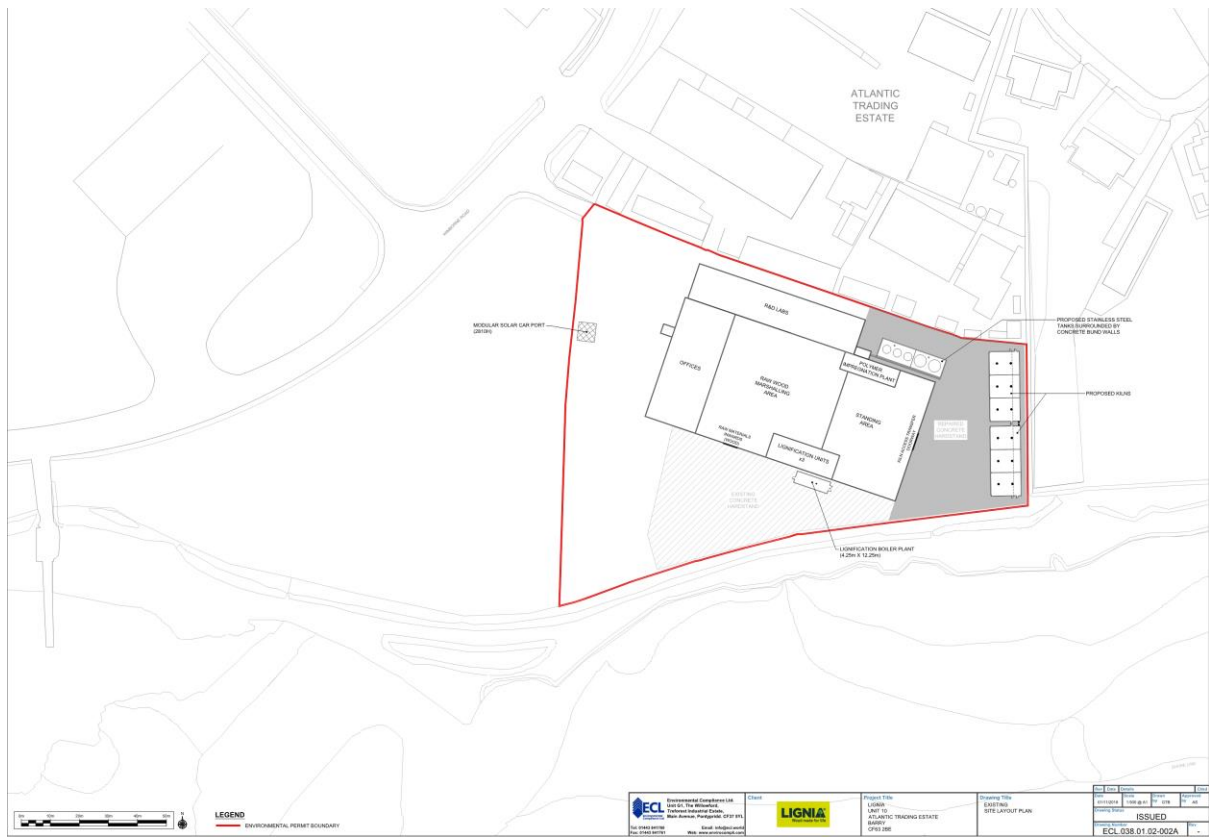
APPENDIX III

Installation Boundary Map



APPENDIX IV

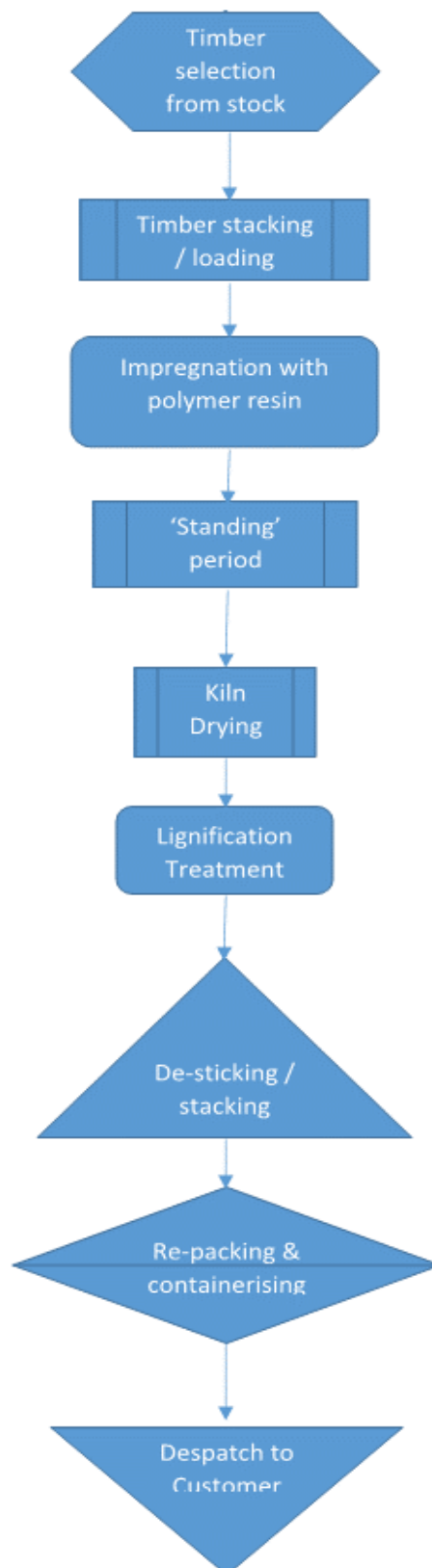
Site Layout Plan



APPENDIX V

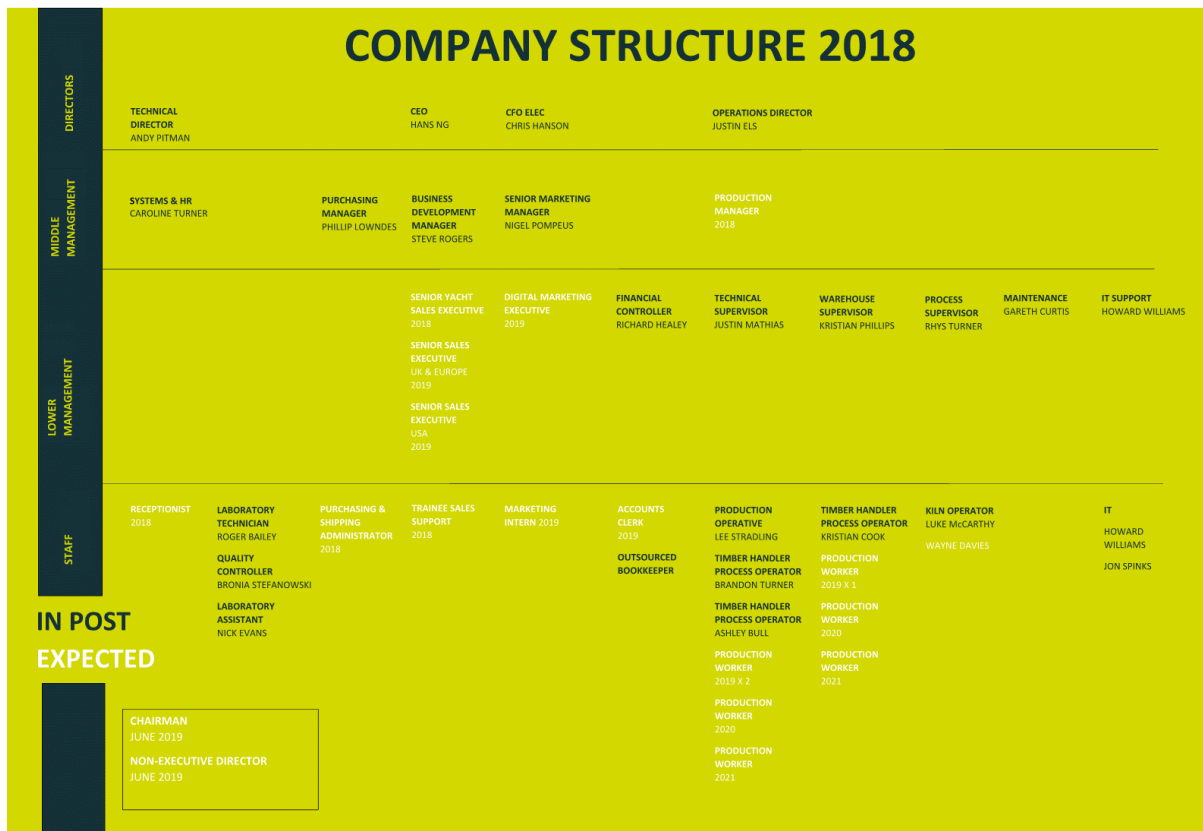
Process Flow Diagram

Process Flow Diagram



APPENDIX VI

Draft Management Organogram



APPENDIX VII

Environmental Policy Statement

LIGNIA Wood Company Limited
Ty Coed, Unit 10, Atlantic Trading Estate
Barry, Vale of Glamorgan, CF63 3RF UK

t +44 (0)1446 507077
w lignia.com
e enquiries@lignia.com



ENVIRONMENTAL POLICY STATEMENT

LIGNIA WOOD COMPANY LIMITED activities are the importation of timber, storage of timber, timber modification Lignification, exporting and distribution of Modified Timbers. These activities result in a variety of significant environmental effects including: the impact of management practices in the forests that provide the products we sell; the carbon emissions from our company cars, offices and processing facilities; and the industrial and office waste we generate during everyday business.

Our goal is to minimise our overall environmental footprint. This involves understanding and managing the environmental effects of all our operations to avoid, minimise, mitigate or offset their impact.

Continual improvement of our environmental performance and compliance with all relevant legislation is achieved through continuous monitoring and attention to relevant detail and Implementation into ISO 14001.

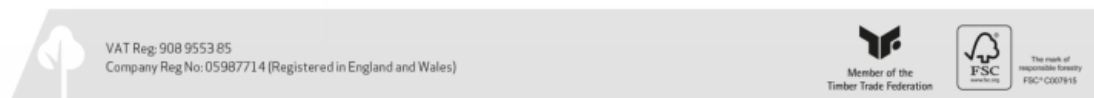
LIGNIA WOOD COMPANY LIMITED is committed to:

- Obtaining its timber and timber products from legal sustainable and responsibly managed sources FSC and PFC certified.
- Minimising the company's carbon footprint by efficient use of energy and investment in appropriate technologies.
- Maximising reuse, recycling or energy recovery to minimise waste sent to landfill.
- Enhancement of Environmental awareness amongst our employees, customers and suppliers.

TIMBER PURCHASING POLICY

The harvesting of timber can have a significant impact on the sustainability and well-being of the forests that are the source of our products. Being able to source from forest and plantations under sustainable management is essential to LIGNIA WOOD COMPANY LIMITED business, both long and short term. Supporting the economic viability of these through trade also protects the wide range of ecosystem goods and services that fully functional forests provide, locally and globally.

Our goal is that all our timber products will derive from both legal and sustainable managed sources. To achieve this goal, we are committed to:



- Fully comply with the European Union Timber Regulation No: 995/2010
- Progressively increase in the proportion of wood products we buy from credibly certified legal and well-managed forests as defined by third party schemes such as FSC and PEFC.
- Continuous monitoring of our purchases and regular external reporting of our performance to comply with Timber Purchasing Risk Management System.

CARBON EMISSIONS POLICY

Emission of Carbon Dioxide and other greenhouse gasses relating to company activity is a significant environmental effect. These arise from the production and delivery of our products, office operations, all forms of company travel and disposal of waste, through consumption of fuel and electricity.

Our goal is to reduce this impact as much as possible. To achieve this, we are committed to:

- Implement appropriate and affordable technologies and systems to reduce fuel and electricity use in all activities under our control.
- To measure and monitor the carbon impact of these activities.

WASTE MANAGEMENT POLICY

All companies produce operational waste from Office and / or industrial activities. LIGNIA WOOD COMPANY LIMITED is no exception, our waste output ranges from offcuts and sawdust from manufacturing sites to paper and drinks cans from our office operations.

Our goal is to manage our waste disposal to minimise that sent to landfill. To achieve this, we are committed to:

- Minimise waste through reduction and re-use where feasible and practicable.
- Segregation of recyclable from non-recyclable waste and disposal of both by reputable operators.
- Compliance with all legal obligations related to waste disposal.

These policy commitments were approved and re-endorsed by the LIGNIA WOOD COMPANY LIMITED directors in AUGUST 2018.

APPENDIX VIII

Certificates of Registration

Certificate



NEPCon hereby confirms that the Chain of Custody system of

Fibre7 UK Limited

Old Silk Works, Beech Avenue
BA12 8LX Warminster
United Kingdom

has been assessed and certified as meeting the requirements of
FSC-STD-40-004 V2-1; FSC-STD-50-001 V1-2

The certificate is valid from 08-12-2016 to 07-12-2021
Certificate version date: 22-11-2016

Scope of certificate

Certificate type: Single Chain of Custody

Certificate registration code

NC-COC-014267

FSC License Code

FSC-C108651



Justinas Janulaitis
Operations Director
Filosoofi 31, Tartu
Estonia

Specific information regarding products and sites is listed in the appendix(es) of this certificate. The validity and exact scope covered by this certificate shall always be verified at www.info.fsc.org.

FSC™ A000535 | The mark of responsible forestry | www.ic.fsc.org

This certificate itself does not constitute evidence that particular product supplied by the certificate holder is FSC™ certified [or FSC Controlled Wood]. Products offered, shipped or sold by the certificate holder can only be considered covered by the scope of this certificate when the required FSC claim is clearly stated on invoices and shipping documents.
The physical printed certificate remains the property of NEPCon and shall be returned upon request.



This is to certify that

Lignia Wood Company Limited

is a Timber Industry Member of TRADA
for the 12 month period ending
28th February 2019

A handwritten signature in black ink, appearing to read 'J. Edwards'.

Chief Executive



Timber Research and Development Association



Certificate of Membership

This certifies that

Fibre 7 UK Ltd

Is a member of Woodknowledge Wales

Member since: 1st April 2017



Gary Newman, Chair

1st April 2018

Issued on:

*Woodknowledge Wales champions the development of wood-based industries
for increased prosperity and well-being in Wales.*

We are an independent cross-sector alliance.

APPENDIX VIII

Kiln Fans Specification

Technical data

Fan type	AARM01-0800-B						
Part number	B222399						
Name	Drymax						
Installation acc. to ISO 5801	free inlet, free outlet						
Exploitable fan pressure	25 Pa						
Volumetric flow	30053 m³/h						
Nominal diameter	800 mm						
Pole number	4 p						
Revolutions per minute	1420 1/min						
Nominal current	6,4 A						
Starting current	-						
Power	3 kW						
Voltage / Connection	400 V / Y						
Max. continuous temp.	85 °C						
Pitch angle	25 °						
Shaft efficiency	8 %						
Weight	54 kg						
Delivery time	25-30 business days, after technical clarification						
Sound power level	96 dB(A)						
Sound power level in db(A)							
63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz
64	76	84	89	91	90	86	80

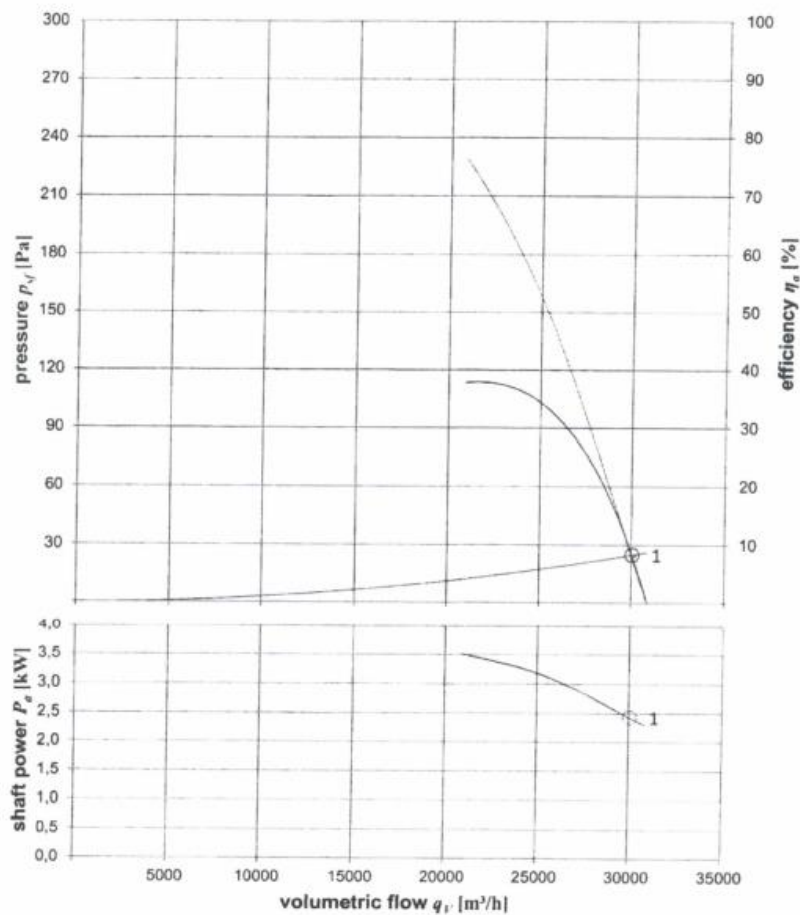
DLK Ventilatoren GmbH
Ziegeleistr. 18
D74214 Schöntal-Berlichingen

www.pollrichdlk.com
info@pollrichdlk.com
Anlage am: 18.10.2016
Stand vom: 18.10.2016

Characteristic

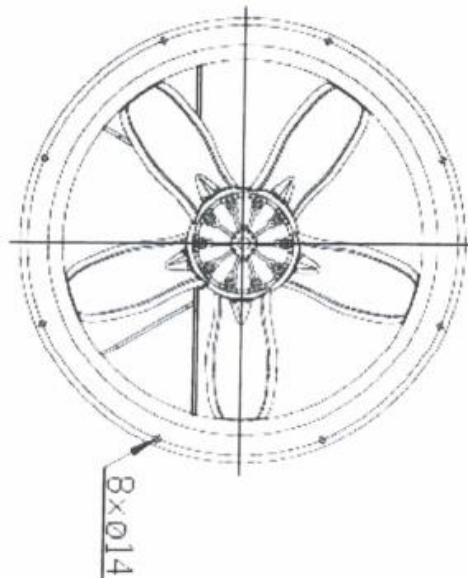
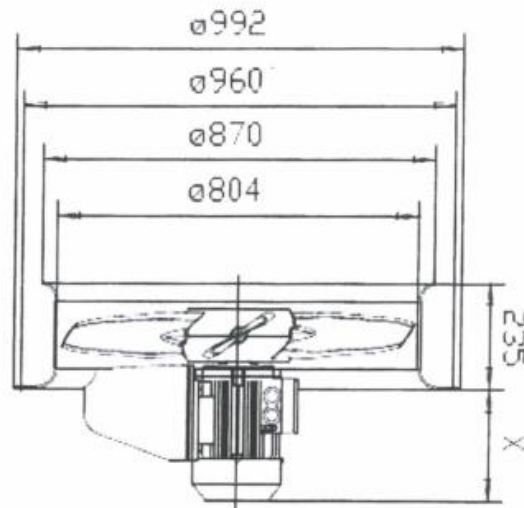
AARM01-0800-B

Operating point:	1
q_V [m³/h]:	30053
p_{st} [Pa]:	25
ρ [kg/m³]:	1,205
N [l/min]:	1420
P_a [kW]:	2,43



DLK Ventilatoren GmbH
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