

**James Jones & Sons Ltd
Hangingshaw Timber Treatment Facility**

**Operator Initiated Substantial Variation
PPC/A/1151289**

Draft for Consultation

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1 NON-TECHNICAL SUMMARY OF DETERMINATION

The applicant is looking to install one further high-pressure timber treatment plant and two low pressure timber treatment plants. The change increases the size of the treatment installation and will require additional soil and groundwater monitoring and the application of new containment measures and techniques to this additional area.

Further information is provided in the “non-technical summary” document

Glossary of terms

BAT - Best Available Techniques
CO - Coordinating Officer
ELV - Emission Limit Value

2 EXTERNAL CONSULTATION AND SEPA'S RESPONSE**Is Public Consultation Required -**

Advertisements Check:	Date	Compliance with advertising requirements
Edinburgh Gazette	03/12/2022	Yes
Annandale Herald	01/12/2022	Yes

Officer checking advert:

No. of responses received: None

Summary of responses and how they were taken into account during the determination:
N/A

Summary of responses withheld from the public register on request and how they were taken into account during the determination: N/A

Is PPC Statutory Consultation Required –

Food Standards Agency: No response received

Health Board: No response received

Local Auth: No response received

Scottish Water: N/A

Health and Safety Executive: N/A

NatureScot (PPC Regs consultation): Response received 08/12/2022 – “The Environmental Risk Assessment includes the appropriate control measures to protect these designated features from any negative pollution impact. Therefore, providing the control measures proposed in the application are adhered to, we are satisfied with the proposed variation to the PPC licence.”

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Discretionary Consultation - No	
Enhanced SEPA public consultation - No	
'Off-site' Consultation - No	
Transboundary Consultation - No	
Public Participation Consultation - Yes	
<p>STATEMENT ON THE PUBLIC PARTICIPATION PROCESS The Pollution Prevention and Control (Public participation) (Scotland) Regulations 2005 requires that SEPA's draft determination of this application be placed on SEPA's website and public register and be subject to 28 days' public consultation. The dates between which this consultation took place, the number of representations received and SEPA's response to these are outlined below.</p>	
Date SEPA notified applicant of draft determination	21 March 2023
Date draft determination placed on SEPA's Website	21 March 2023
Details of any other 'appropriate means' used to advertise the draft	
Date public consultation on draft permit opened	21 March 2023
Date public consultation on draft permit consultation closed	
Number of representations received to the consultation	
Date final determination placed on the SEPA's Website	
Summary of responses and how they were taken into account during the determination:	
Summary of responses withheld from the public register on request and how they were taken into account during the determination:	
Officer:	

3 ADMINISTRATIVE DETERMINATIONS
Determination of the Schedule 1 activity
No change to existing activity
Determination of the stationary technical unit to be permitted:
The applicant is looking to install one further high-pressure timber treatment plant and two low pressure timber treatment plants.

Determination of directly associated activities:

Addition of Photo Voltaic panels to provide electricity for the site.

Determination of 'site boundary'

The site boundary will increase due to construction of new building

Officer: CO

4 INTRODUCTION AND BACKGROUND**4.1 Historical Background to the activity and variation**

James Jones & Sons operate a number of sawmills and treatment plants across Scotland. This site was a purpose-built treatment facility constructed in 2016/17 and permitted on 28 April 2017. The original permit included one high pressure treatment autoclave, and the operator now wishes to install an additional high-pressure plant, and two low pressure plant.

4.2 Description of activity

The treatment of timber with water-based chemicals to preserve and protect the wood for use in construction. The operator proposes to install one additional high-pressure plant and one low pressure plant, with a second low pressure plant planned for 2024. The operator has provided a summary of the new plant below:

Main High-pressure autoclave: 100m³—likely annual throughput 45,000m³. Work Tank: 130m³.

Concentrate Tank: 31.5m³

Low Pressure Plant 1: 40m³ and 32m³ reserve tank—likely annual throughput of timber 28,000m³

Low Pressure Plant 2: 40m³ and 32m³ reserve tank—installation in 2024 (earliest) -likely annual throughput of timber 28,000m³

The treatment process can be summarised:

- Load timber onto the bogie with appropriate strapping to prevent flotation
- Ensure timber is aligned properly on the bogie to allow entry into the autoclave
- Carefully move the bogie into the autoclave to the rear stop position
- Close the door, ensuring the seal is clean and free from debris to avoid leaks
- Lock the door, ensuring safety devices are in position
- Ensure there is sufficient preservative in the work tank to flood the autoclave
- Select the treatment cycle appropriate to the timber and end use of the timber
- Start the treatment process:
 - INITIAL VACUUM: Air is evacuated out of the autoclave and the timber, creating negative pressure. Vacuum will be held in the autoclave for a set time depending on the treatment cycle selected
 - VACUUM FILL: Once Initial vacuum is completed, the autoclave will fill with preservative under vacuum and the vacuum pump(s) will switch back on. The full sensor usually positioned in the vacuum line detects that the autoclave is full
 - PRESSURE: Hydraulic pressure is raised by the start of the pressure pump. Monitoring of the preservative uptake starts when slight positive pressure is seen in the autoclave
 - PRESSURE RELEASE: This occurs when the pressure phase has timed out or the required amount of preservative has been injected into the timber. Pressure is usually released back into the storage tank
 - INITIAL DRAIN: Preservative is returned to the work tank once pressure has been released back to atmospheric. Autoclaves are usually emptied by gravity or by additional

pumps if the work tank is alongside or above. The empty sensor usually positioned in the main flood line detects that the autoclave is empty

- FINAL VACUUM: This is raised and maintained for the appropriate period
- VENT / FINAL DRAIN: After final vacuum, the negative pressure generated in the autoclave must first be vented before any preservative remaining inside the autoclave is recovered back to the work tank autoclave prior to opening the door which involves the pressurisation of the autoclave, pressure release and drain of the treatment chemicals

4.3 Outline details of the Variation applied for

As described above, the operator proposes to install one additional high-pressure plant and one low pressure plant, with a second low pressure plant planned for 2024. These will be housed in a purpose built bunded shed with strengthened concrete base. The operator also plans to install solar PV cell array on the roof of the building to provide power for the site. The site will remain a net importer of energy from the grid, the electricity generated will only exported when the site is not operational.

There will be some changes to chemical use on site:

- Tanagard 3755 and Tanatone will continue to be used along with Tanalith E9000 in the existing treatment plant, and Tanalith E8000 will no longer be used.
- Tanalith E9000, Tanagard 3755 and Protim ME7-50 will be used in the extended (new) part of the installation.

Chemical indicators required to detect the new treatment chemical (Protim ME7-50) in soil and groundwater will be updated see section 5.17

4.4 Guidance/directions issued to SEPA by the Scottish Ministers under Reg.60 or 61.

No specific directions.

4.5 Identification of important and sensitive receptors

The site is located between the nearby village of Johnstonebridge which is approximately 3 km to the North of the site and Lockerbie which is approximately 10km to the south of the site.

To the direct North of the site is Dinwoodie Mains which is a working farm with hotel at 0.5km distance.

To the adjacent East of the site is a railway line followed by the Hangingshaw and Dinwoodie Plantations at 0.5km away. To the South 1km away is a small area of housing called Dinwoodie Cottages and a tributary of Nethercleuch Burn.

To the direct West is the B7076 which runs parallel to the A74 followed by a tributary of Nethercleuch Burn. The nearest SSSI is 1.4km to the South of the site. Naturescot were consulted and are content that if the installation was run as described no adverse impact would occur. Site of Special Scientific Interest (SSSI's) are designated because they are considered of national importance for their flora and fauna and/or geology and geomorphology and one is located at Perchhall Loch for fen basin and beetles.

5 KEY ENVIRONMENTAL ISSUES

5.1 Summary of significant environmental impacts

Treatment chemicals used on site are labelled with Hazard statement H410 (among others) and can be "very toxic to aquatic life with long lasting effects" and therefore care must be taken to ensure that these chemicals do not enter the water environment.

Compliance with each BAT C is included in the table appended to the end of this report.

5.2 Implications of the Variation on - Point Sources to Air

This site does not use any substances which are likely to give rise to odours or solvent emissions (all treatment chemicals are water rather than solvent based). Standard conditions will remain in the permit to control odour, noise, and dust.

5.3 Implications of the Variation on - Point Source Emissions to Surface Water and Sewer

There are no point source emissions to sewer or surface water. The process is a closed system with any remaining preservative or water fed back into the system and recycled as preservative make up water.

5.4 Implications of the Variation on - Point Source Emissions to Groundwater

There are no point source emissions to groundwater.

5.5 Implications of the Variation on - Fugitive Emissions to Air

Fugitive emissions to air are unlikely as the chemicals used are water based, solvent based chemicals would be more likely to produce odour and emissions to air. All treatment processes are carried out within a bunded building and unlikely to escape. The sawmill is not covered by this permit.

5.6 Implications of the Variation on - Fugitive Emissions to Water

All operations are to be conducted within a bunded building. The total available bunding will be 751m³, and the total tank volume 405.5m³, this equates to a bund capacity of 185% of the total tank volume, which exceeds 110% of the largest tank as required by the permit. Construction drawings have been submitted which show water-stops in concrete joints.

Process controls are in place to ensure that the process cannot start unless the vessel is locked and catch locks safety mechanisms ensure that the doors cannot fully open if liquid is still in the vessel. The treated timber will remain on the bogey until it is touch dry before it is moved to covered drying area. The bogey/rail system has an impermeable tray below and all drops directed back into the treatment system along with the remaining preservative. The forklift used to load and unload packs from the treatment vessels will either be a captive truck or subject to cleaning prior to egress from the area. This forklift is cleaned in the treatment area prior to egress for service or repair. Cleaning water is then added to the treatment system. No treated timber leaves the drying areas until it is considered dry and drip free.

Environmental risk is said to be low based on a statement that the system is fully bunded and operates as a closed system. Based on the drawings provided with the application this appears to be accurate. Existing permit conditions will ensure containment measures remain fit for purpose and require ongoing inspection and maintenance.

This is in line with BAT 38 and is considered BAT.

5.7 Implications of the Variation on – Odour

As 5.5, odour is unlikely as the chemicals are water rather than solvent based.

5.8 Implications of the Variation on – Management

The site has an ISO 14001:2015 management system and provided examples of this and as part of the application. These will be used to control operations in the new treatment area.

5.9 Implications of the Variation on - Raw Materials/Raw material selection

No new raw materials will be used as part of the process in the new area. As per BAT 32, the operator has committed regularly reviewing chemical formulations as part of their membership of UK WPA.

5.10 Implications of the Variation on - Waste Minimisation Requirements

Minimal waste is produced from the process, all unused treatment chemicals are recirculated in the process.

5.11 Implications of the Variation on - Water Use

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Water is used to dose the concentrated treatment chemicals to the appropriate treatment concentration. When possible, rainwater is harvested from the roof area and used and topped up with mains water when required. There are no other uses of water in the process. Six new rainwater tanks have been installed as part of the variation, bringing the total rainwater storage to 143,100 litres in 8 tanks.

5.12 Implications of the Variation on - Waste Handling

No change to the waste handling arrangements on site, these are included in the management system and will be implemented in the new area of the site. There are no changes to any related conditions in the existing permit. Very little waste arises from the process and disposal routes are already agreed. The arrangements in place are in line with BAT-Cs.

5.13 Implications of the Variation on - Waste Recovery or Disposal

As 5.12.

5.14 Implications of the Variation on – Energy

Timber treatment is a relatively low user of energy and does not emit greenhouse gasses. The site is also planning the installation of photo voltaic roof array which will generate a substantial proportion of the required electrical supply by the end of 2023. The proposal includes the installation of 480 x JA solar 405W panels, this will provide a peak generator output of 194.40KWp for use within the Hangingshaw site, with this being exported to the grid with the site is not in operation. The site will still be a net importer of electrical energy, but this will avoid generation of 74,959 kg/year CO₂. Solar PV panels have been included as a directly associated activity in the permit.

5.15 Implications of the Variation for – Accidents and their Consequences

The plant has a number of safety features built into the control system including the following:

- Not allow the process to start unless the vessel is locked shut once the wood charge is loaded
- Door mechanism will not operate if control system detects fluid in the system
- Manually operated test cock, interlocked with the door which must be released before door will open and will reveal residual fluid in vessel
- Process controls include display to show fluid in vessel
- The safety relief valve set at the lower pressure set-point discharges into the fluid transfer pipe work system. The valve set at the higher, safety relief pressure is directed back to fluid storage.

As mentioned above, bunding in the shed has been designed to ensure that the bunds will contain 185% of the total capacity of all tanks, well above the required 110% of the largest container.

5.16 Implications of the Variation for – Noise

Noise has not been an issue on the site to date, and noise is not seen to be a significant issue across the timber treatment sector. All equipment is within a purpose built building and standard noise conditions will remain within the permit.

5.17 Implications of the Variation for – Monitoring

Due to the nature of timber treatment processes, there are no relevant BAT-AELs within the BAT conclusions and no ELVs to air or water will be included in the permit.

James Jones has had groundwater monitoring wells installed in the existing part of the site. The permit currently requires groundwater monitoring for Copper, 2-aminoethanol, Tebuconazole, Propiconazole, COD & pH every 5 years. The permit also requires soil monitoring for the same parameters every 10 years. These frequencies were determined using the processes outlined in SEPA guidance IED-TG-42.

Since the initial permit was issued in 2017 the BAT Conclusions document has been published and states that BAT is to monitor groundwater at a higher frequency than currently required. This causes a discrepancy between SEPA guidance and BAT, but BAT must take precedence. As a result, the

monitoring frequencies must be increased at this site due to this operator initiated substantial variation for an extension to the site.

BAT 44 indicates that the groundwater monitoring frequency may be reduced from the default of once every 6 months based on a risk assessment, or if pollutant levels are proven to be sufficiently stable. Accordingly, the risk assessment used to determine monitoring frequencies as set out in SEPA guidance has been utilised to determine the groundwater monitoring frequencies, adapting the maximum groundwater monitoring frequency from 5 years to 2 years. This ensures that SEPA follows its own internal procedures, whilst implementing the requirements of BAT into the permit.

The UK interpretational guidance for the sector states that the monitoring frequency should not be reduced unless all the measures in BAT 34 (d) to (f), BAT 40 and BAT 46 have been implemented which has been demonstrated by the applicant and is summarised in the attached table of BAT conclusions appended to this document.

The risk assessment has concluded that the lowest frequency of groundwater monitoring is required at the site, based on the information supplied in support of the application. To supplement the risk assessment process, it should also be noted that the existing part of the site has now been operational for over 5 years. This area is constructed to the same standards as the proposed extension and has now been subject to 2No. groundwater monitoring events, including collection of the baseline for the extension. No treatment chemicals have been identified in groundwater to date, adding weight to the conclusions of the risk assessment that the new plant will be well contained and is likely to pose a low risk of emissions to soil and groundwater.

3 new boreholes have been installed on site (MW04, MW05 and MW06) to allow monitoring of the soil and groundwater in the vicinity of the new shed and treatment plant and there is one new chemical, Protim ME7-50, which is to be used in the low pressure treatment vessels. The key indicator of this chemical, Permethrin, has been included in the monitoring requirements of the permit. These were included in the risk assessment above and have been added to the permit as part of the variation.

5.18 Implications of the Variation for – Closure

The operator has provided a copy of their current closure plan from their EMS, whilst brief, this is adequate and will be extended to include the new area. Standard closure conditions are included in the permit and

5.19 Implications of the Variation for - Site Condition Report (and where relevant the baseline report)

The application contained a revised version of the site condition report and baseline report updated to include the whole site, including the new building and treatment vessels. There is one new chemical, Protim ME7-50 which is used in the low pressure treatment vessels and the key indicator of this chemical, Permethrin, has been included in the monitoring requirements of the permit.

5.20 Implications of the Variation for - Consideration of BAT

A revised BRef "Surface treatment using organic solvents including wood and wood products preservation with chemicals" published in December 2020, prior to UK exit from the EU. Installations have 4 years to comply with these. The relevant BAT-C's are 30 to 47 and the operator has detailed how the new area of the site will comply with each of these BAT-Cs in the document "Final BAT Concl July 2022". This has been summarised in the table of BAT-Cs that has been appended to this document.

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6 OTHER LEGISLATION CONSIDERED
<i>Nature Conservation (Scotland) Act 2004 & Conservation (Natural Habitats &c.) Regulations 1994</i>
Is there any possibility that the proposal will have any impact on site designated under the above legislation? Site nearby but no impact
Justification: Nearby Perchall Loch is designated as a Site of Special Scientific Interest (SSSI's) are because they are considered of national importance for fen basin and beetles. This is 1.4km to the south the installation. Due to this SNH were consulted and advised the following <i>"The Environmental Risk Assessment includes the appropriate control measures to protect these designated features from any negative pollution impact. Therefore, providing the control measures proposed in the application are adhered to, we are satisfied with the proposed variation to the PPC licence."</i>
Screening distance(s) used – 5km
Officer: CO

7 ENVIRONMENTAL IMPACT ASSESSMENT AND COMAH
How has any relevant information obtained, or conclusion arrived at pursuant to Articles 5, 6 and 7 of Council Directive 85/337/EEC on the assessment of the effects certain public and private projects on the environment been taken into account? N/A
How has any information contained within a safety report within the meaning of Regulation 7 (safety report) of the Control of Major Accident Hazards Regulations 1999 been taken into account? N/A
Officer: CO

8 DETAILS OF PERMIT
Do you propose placing any non-standard conditions in the Permit. No
Do you propose making changes to existing text, tables, or diagrams within the permit? Yes
Outline of change: Update of Schedule 1 to include new treatment vessels, tanks in the stationary technical unit and the addition of photovoltaic cells as a directly associated activity.
Details including justification: To reflect proposed operations on site. There were errors in the existing permit whereby the capacity of the concentrate tank and rainwater storage tanks did not reflect actual capacities. This has been corrected in this variation and updated to include increased storage capacities from the new treatment shed.
Outline of change: Update of site plan

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Details including justification: To include the new building and show position of new treatment vessels.

Outline of change: Update to tables 3.1 and 3.2

Details including justification: Update to the soil and groundwater monitoring locations to include new building and processes, addition of Permethrin as an indicator for Protim ME7-50 used in the new low pressure treatment vessels and increase of groundwater monitoring frequency to 2 yearly to reflect the new requirements included in BAT 44.

9 EMISSION LIMIT VALUES OR EQUIVALENT TECHNICAL PARAMETERS/ MEASURES

Are you are dealing with either a permit application, or a permit variation which would involve a review of existing ELVs or equivalent technical parameters? Yes

Justification: Whilst there are no air or water ELVs contained within the permit, there are monitoring requirements for soil and groundwater.

This variation involves an extension to the site boundary and new treatment vessels to tables 3.1 and 3.2 containing the soil and groundwater monitoring requirements have been updated to increase the frequency of monitoring to 2 yearly, and to include the new chemical, Permethrin, to be used in the new low pressure plants as described in section 5.17 above.

10 PEER REVIEW

Has the determination and draft permit been Peer Reviewed? Yes

Name of Peer Reviewer and comments made: incorporated into text.

11 FINAL DETERMINATION

Issue of a Permit - Based on the information available at the time

Issue a Permit – Based on the information available at the time of the determination SEPA is satisfied that

- The applicant will be the person who will have control over the operation of the installation/mobile plant,
- The applicant will ensure that the installation/mobile plant is operated so as to comply with the conditions of the Permit,
- The applicant is a fit and proper person (specified waste management activities only),
- Planning permission for the activity is in force (specified waste management activities only),
- That the operator is in a position to use all appropriate preventative measures against pollution, in particular through the application of best available techniques.
- That no significant pollution should be caused.

Officer: CO

12 REFERENCES AND GUIDANCE

BREF: Surface Treatment Using Organic Solvents including Wood and Wood Products Preservation with Chemicals

UK Interpretational Guidance for Best Available Techniques (BAT) Surface Treatment Using Organic Solvents including Wood and Wood Products Preservation with Chemicals

IED-TG-02 PPC Technical Guidance on the Content and Scope of Site Reports

IED-PPC-TG4 Pollution Prevention and Control (PPC) Technical Guidance: A practical guide for Part A activities

Sector Guidance Note SG11 (draft) Guidance for Wood Products Preservation with Chemicals

IED-TG-03 Identifying a Substantial Change Variation

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BAT	Detail	Compliance detailed in application
BAT 1. In order to improve the overall environmental performance, BAT is to elaborate and implement an Environmental Management System (EMS) that incorporates all of the following features:		Very similar to requirements in SG11 and already assessed for the current installation and included in the permit. Site has current management system which meets ISO 14001:2015
BAT 30. In order to improve the overall environmental performance, BAT is to elaborate and implement an Environmental Management System (EMS) that incorporates all of the features (i) to (xx) of BAT 1 as well as the following specific features:	(i) Keeping up to date with the developments in biocidal products and in associated legislation (e.g. authorisation of products under the BPR) with a view to using the most environmentally friendly processes.	As above Operator regularly review chemical formulations via their membership of UK WPA. The Installation uses a limited arrangement of water-based chemicals. James Jones Hangingshaw installation will regularly review the types of water-based chemicals used in an attempt to improve performance and minimise environmental effects.
	(ii) Inclusion of a solvent mass balance for solvent-based and creosote treatment (see BAT 33 (c)).	N/A no solvents used on site
	(iii) Identification and listing of all environmentally critical process and abatement equipment (whose failure could have an impact on the environment) (see BAT 46 (c)). The list of critical equipment is kept up to date.	The Controlled equipment log is contained in the QMS with document REF QF16. QF16 will be updated to include the new treatment plants when they are installed and commissioned.
	(iv) Inclusion of plans for the prevention and control of leaks and spillages, including waste management guidelines for dealing with waste arising from spillage control (see BAT 46).	See Appendix II: Spillage Log Emergency Pack (Section 7) WI 08 - Spillage procedure
	(v) Recording of accidental leakages and spillages, and improvement plans (countermeasures).	All accidental leaks and spills are recorded and corrective and/or preventative actions are implemented in accordance with the EMS. Reference documents: 1. Spillage Log Spills are recorded, the cause(s) determined, corrective actions implemented and preventative actions to prevent reoccurrence. 2. Emergency Pack (Section 7) Details emergency procedures relating specifically to spillage of timber treatment chemicals 3. Work Instruction 08 – Treatment Plant Environmental

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		Work instruction including procedure to follow in the event of a spillage.
BAT 31. In order to prevent or reduce emissions of PAHs and/or solvents, BAT is to use water-based preservatives.	Description Solvent-based preservatives or creosote are replaced by water-based preservatives. Water acts as the carrier for the biocides. Applicability The applicability may be restricted due to product quality requirements or specifications.	Site only uses water based preservatives
BAT 32. In order to reduce the environmental risk posed by the use of treatment chemicals, BAT is to substitute treatment chemicals currently in use with less hazardous ones based on a regular (e.g. once every year) check aiming at identifying potentially new available and safer alternatives.	Applicability Substitution may be restricted due to product quality requirements or specifications.	Operator regularly review chemical formulations via their membership of UK WPA.
BAT 33. In order to increase resource efficiency and to reduce the environmental impact and risk associated with the use of treatment chemicals, BAT is to reduce their consumption by using all of the techniques given below.	a) use of an efficient preservative application system	<p>Closed pressurised immersion system used, no spraying. All unabsorbed process chemicals and drips fed back into system for reuse.</p> <p>At the design stage for any new products/processes, a team will select materials on the basis of their efficiency and effectiveness as well as environmental compatibility and quality in accordance with the appropriate operating procedures and all materials Preservatives are only available for use in the treatment process if they are approved under either the Control of Pesticides Regulations or, more recently, the Biocidal Products Regulations.</p> <p>Software packages are used to optimise the amount of preservative used against pre-set timber use classes. The type of treatment required is defined in BS 8417, depending on the Use Class and timber species.</p> <p>The required retention and penetration of preservative is specified in this standard. The treatment plant process control selects the appropriate treatment cycle parameters to ensure that the required specification is achieved.</p>
	b) control and optimisation of the consumption of the treatment chemicals for the specific end use	Plant operations are reviewed on a monthly, weekly and daily basis and the consumption of preservative against product produced is recorded automatically by the treatment plant

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		control systems (Software packages are used to optimise the amount of preservative used against pre-set timber use classes). Manual stock checks are also conducted weekly to cross check data.
	c) Solvent mass balance (n/a)	N/A no solvents used
	d) Measurement and adjustment of wood moisture before treatment	Moisture content control is carried out as part of the quality procedures and details are contained in the QMS. The moisture content of kiln dried timber is not checked before treatment as this process is controlled by the kiln drying operation. As moisture content is critical in achieving the correct retention and penetration of preservative, it is checked as required and as detailed in Work Instruction QW01 (QMS)
BAT 34. In order to reduce emissions from delivery, storage and handling of treatment chemicals, BAT is to use technique (a) or (b) and all of the techniques (c) to (f) given below.	a) Back venting	N/A no solvents used
	b) Capture of displaced air	N/A no solvents used
	c) Techniques to reduce evaporation losses due to heating up of stored chemicals	N/A chemicals not heated
	d) Securing delivery connections	Delivery connections are located within a bunded area. Delivery connections are routed to the top of the holding tank and therefore cannot leak. A manual closure is used when not in use.
	e) Techniques to prevent overflows during pumping	Concentrate storage tanks are fitted with high-level alarms while all tanks are fitted with volume indicators All deliveries of preservative chemical by tanker and are supervised by the trained plant operator or in his absence, a competent manager. See WI 08. The delivery driver is Hazchem trained and authorised to deliver hazardous materials.
	f) Closed storage containers	Only approved storage containers are used and these are closed. Storage tanks are closed and vented
BAT 35. In order to reduce the consumption of treatment chemicals and the consumption of energy and to reduce emissions of treatment chemicals, BAT is to optimise the wood charge of the vessel	a) Separation of wood in packs by spacers	Wood is separated in packs by spacers in accordance with James Jones Group Pack Size Procedure
	b) Sloping of wood packs in traditional horizontal treatment vessels	Wooden bearers can be used where necessary to aid runoff of excess liquid, especially for thin section material to aid runoff. LP is low liquid uptake and sloping vessels only applicable to high pressure processes. Even with no sloping of packs LP treated timber will usually leave the treatment

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and to avoid trapping of treatment chemicals by using a combination of the techniques given below.	c) Use of tilting pressure treatment vessels	vessel in drip free condition. HP Design includes "tilt of autoclave to minimise time to drip dry". The HP plant will include a tilting feature. LP is a low liquid uptake process. Tilting vessels are only used on high pressure (higher liquid uptake) vessels
	d) Optimised position of shaped wood pieces	Shaped profiles are positioned to prevent ponding of treatment solution
	e) Securing wood packs	Wood packs are strapped down to prevent lift during processing.
	f) Maximisation of the wood load	Vessels are filled with wood packs to the optimum practical capacity consistent with commercial variations in pack dimensions, so as to maximise production efficiency/output.
BAT 36. In order to prevent accidental leakage and emissions of treatment chemicals from non pressure processes, BAT is to use one of the techniques given below.	a) Double-walled treatment vessels with automatic leak detection devices	N/A Only pressurised processes carried out on site
	b) single-walled treatment vessels with sufficiently large and wood-preserved-resistant containment, fender and automatic leak detection device	N/A Only pressurised processes carried out on site
BAT 37. In order to reduce emissions of aerosols from wood and wood products preservation using water-based treatment chemicals, BAT is to enclose spraying processes, collect overspray and reuse it in the preparation of wood preservation solution		No spraying processes on site
BAT 38. In order to prevent or reduce emissions of treatment chemicals from pressure processes (autoclaves), BAT is to use all of the techniques given below.	a) process controls to prevent operation unless the treatment vessel door is locked and sealed	The plant control system will not allow the treatment process to start unless the vessel is locked shut once the wood charge is loaded.
	b) Process controls to prevent the treatment vessel from opening while it is pressurised and/or filled with preservative solution	Process controls include a display to show if liquid is present in the treatment vessel. The pressure is hydraulic only and the vessel cannot be pressurised unless it is completely full of liquid. The Process control displays pressure as well as tank contents
	c) Catch-lock for the treatment vessel door	The door mechanism will not operate if the control system detects fluid still in the vessel and/or insufficient fluid in

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		<p>storage. In addition, a manually operated test cock, interlocked with the door, must be released before the door will open. This will reveal any residual fluid in the vessel.</p> <p>There is a catch-lock safety mechanism on the door. This will catch the door if other systems fail and the door is opened when there is liquid in the vessel.</p>
	d) Use and maintenance of safety relief valves	The safety relief valve set at the lower pressure set-point discharges into the fluid transfer pipe work system. The valve set at the higher, safety relief pressure is directed back to fluid storage. Pressure relief valves are checked as part of the Weekly Maintenance schedule. Any relief valves found to be at fault are replaced
	e) control of emissions to air from the vacuum pump exhaust	N/A Waterbased preservatives only used and therefore, there are no emissions to air
	f) Reduction of emissions to air when opening the treatment vessel	The final vacuum is released from the vessel and air pressure is equalised. A final recovery phase then takes place to remove any remaining liquid from the vessel before opening the door. The purge cycle period is built into the process control software and has been calculated through experience.
	g) Application of a final vacuum to remove excess treatment chemicals from the surface of treated wood	Final vacuum applied as part of process to reduce dripping.
BAT 39. In order to reduce energy consumption in pressure processes (autoclaves), BAT is to use variable pump control.	<p>Description: After reaching the required working pressure, the treatment system is switched to a pump with reduced power and energy consumption.</p> <p>Applicability: Applicability may be limited in the case of oscillating pressure processes.</p>	Variable pump control is utilised within each plant. The Pressure pump automatically de-activates upon attainment of initial pressure.

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<p>BAT 40. In order to prevent or reduce the contamination of soil or groundwater from the interim storage of freshly treated wood, BAT is to allow sufficient dripping time after treatment and to remove the treated wood from the contained/bunded area only once it is deemed dry.</p>	<p>Description: To allow the surplus treatment chemicals to drip back into the treatment vessel, treated wood/wood packs are held in the contained/bunded area (e.g. above the treatment vessel or over a dripping pad) for a sufficient time after the treatment and before transfer to the post-treatment drying area. Then, before leaving the posttreatment drying area, treated wood/wood packs are, for example, lifted by mechanical means and suspended for a minimum of 5 minutes. If no dripping of treatment solution occurs, the wood is deemed to be dry.</p>	<p>The rail systems of each plant are built on an impermeable surface. All treatment solution draining from the plant loading systems and attached packs is directed back into the treatment plant system for re-use in the process via collection sumps. Wood packs remain in the post treatment drying area until they are defined as dry. Prior to removal from the post treatment drying area all packs will be checked to ensure they are dry and drip free as per the intended outcomes of Draft SG11 TGN BAT 32 (lifted by mechanical means and suspended for a minimum of 5 minutes). Once defined as dry, packs are then removed from the drying area to a covered storage area.</p>
<p>BAT 41. In order to reduce the quantity of waste sent for disposal, especially of hazardous waste, BAT is to use the techniques (a) and (b) and one or both of the techniques (c) and (d) given below.</p>	<p>a) Removal of debris prior to treatment (Debris (e.g. sawdust, woodchips) is removed from the surface of the wood/wood products before treatment.)</p>	<p>Only clean wood without debris is delivered to the treatment vessel. This is controlled under the QMS and detailed in Document QMS QW01</p>
	<p>b) Recovery and reuse of waxes and oils (When waxes or oils are used for impregnation, surplus waxes or oils from the impregnation process are recovered and reused.)</p>	<p>n/a No waxes or oils used on site</p>
	<p>c) Bulk delivery of treatment chemicals (Delivery of treatment chemicals in tanks to reduce the amount of packaging.)</p>	<p>Tanalith bulk delivered by tanker, tanker delivery area bunded.</p>
	<p>d) Use of reusable containers (Reusable containers used for treatment chemicals (e.g. intermediate bulk containers) are returned to the supplier for reuse.)</p>	<p>Protim concentrate will be delivered and stored in 1000 litre IBCs delivered by lorry and stored adjacent to the low-pressure treatment plants. IBC's are collected by the supplier for recycling and/or reuse.</p>
<p>BAT 42. In order to reduce the environmental risk related to waste management, BAT is to store waste in suitable containers or on sealed surfaces and to keep hazardous waste separately in a designated weather-protected and contained/bunded area.</p>		<p>Contaminated water is the only waste stream and this the result of occasional clean downs of the vessels and bunds. Any liquid waste is stored in correct containers provided by disposers and is bunded.</p>
<p>BAT 43. BAT is to monitor pollutants in waste water and potentially contaminated surface run-off water prior to</p>		<p>No emissions to water or sewer from the installation, closed system. Main waste water produced is during cleaning on an annual basis and is stored in containers before being removed off site by contractors.</p>

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<p>each batch discharge in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.</p>		
<p>BAT 44. BAT is to monitor pollutants in groundwater with a frequency of at least once every 6 months and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality. The monitoring frequency may be reduced to once every 2 years based on a risk assessment or if pollutant levels are proven to be sufficiently stable (e.g. after a period of 4 years).</p>		<p>Updated SCR provided, awaiting comment from Contaminated land re monitoring frequencies</p>
<p>BAT 45. BAT is to monitor emissions in waste gases with a frequency of at least once every year and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.</p>		<p>N/A Site only uses water based chemicals</p>
<p>BAT 46. In order to prevent or reduce emissions to soil and groundwater, BAT is to use all of the techniques given below.</p>	<p>a) Plant and equipment containment or bund</p>	<p>All plant and equipment are located within an adequately sized banded building with no drainage associated with the process.</p>

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		<p>The rail systems of each plant are built on an impermeable surface. All treatment solution draining from the plant loading systems and attached packs is directed back into the treatment plant system for re-use in the process via collection sumps.</p> <p>The only effluent produced is during cleaning of the tanks and vessels and all of this and any sludge produced is collected and removed by specialist waste contractors.</p> <p>As the whole building is bunded all valves, inlets/outlets of storage tanks, unloading zones storage of treated timber is located within the bund.</p>
b) Impermeable floors		<p>All floors are reinforced concrete to BS8500 and Exposure class XC3 with water stop expansion joints (see plan AA7163 ST02E).</p> <p>Liquids on the floors will be minimised by ensuring that the treated timber remains on the rails until drip dry when mechanically raised for 5 minutes.</p> <p>There is a drainage channel within the building to capture liquid run off. Residues will be disposed of as hazardous waste.</p>
c) Warning systems for equipment identified as 'critical'		<p>The plant control system will not allow the treatment process to start unless the vessel is locked shut once the wood charge is loaded. The door mechanism will not operate if the control system detects fluid still in the vessel and/or insufficient fluid in storage. In addition, a manually operated test cock, interlocked with the door, must be released before the door will open. This will reveal any residual fluid in the vessel. Process controls include a display to show if liquid is present in the treatment vessel</p>
d) Prevention and detection of leaks from underground storage and ductwork for harmful/hazardous substances and record-keeping		<p>No underground storage or ductwork.</p>
e) Regular inspection and maintenance of plant and equipment		<p>Preventative maintenance system in place and examples provided.</p>
f) Techniques to prevent cross-contamination		<p>A siphon break is fitted in the feed line to the water tank/preservative mixing system to prevent preservative</p>

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		<p>solution being sucked back into the mains in the event of a pressure drop.</p> <p>The rail systems of each plant are built on an impermeable surface. All treatment solution draining from the plant loading systems and attached packs is directed back into the treatment plant system for re-use in the process via collection sumps.</p> <p>All freshly treated pack movements occur over an impermeable surface which is drained back to a holding vessel by use of a drainage system.</p> <p>The forklift used to load and unload packs from the treatment vessels will either be a captive truck or subject to cleaning prior to egress from the area. This forklift is cleaned in the treatment area prior to egress for service or repair.</p> <p>Cleaning water is then added to the treatment system. There is no drainage system associated with the installation</p>
<p>BAT 47. In order to prevent or, where that is not practicable, to reduce emissions to water and to reduce water consumption, BAT is to use all of the techniques given below.</p>	a) Techniques to prevent contamination of rain and surface run-off water	<p>All process and chemical storage carried out within bunded buildings, all drying also takes place within building before being moved to an undercover storage area.</p> <p>Clean, uncontaminated rain or surface water is diverted away from the plant area, other than that collected off the treatment area roof for reuse as make up water.</p> <p>The forklift used to load and unload packs from the treatment vessels will either be a captive truck or subject to cleaning prior to egress from the area. This forklift is cleaned in the treatment area prior to egress for service or repair. Cleaning water is then added to the treatment system.</p> <p>Plan AA7163 ST02E shows drainage channel along edge of building connected to a floor channel for pumping from drip trays and channels</p> <p>All roof waters are discharged into the SUDS system and are separate from the immediate drying area drainage and recovery system.</p>
	b) Collection of potentially contaminated surface run-off water	<p>All processing, chemical storage and storage of damp timber are carried out within a bunded building and as it is a closed system there are no discharges.</p>
	c) Use of potentially contaminated surface run-off water	<p>There is no waste water outlet emission from the treatment process and/or treatment area. It operates as a closed</p>

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		system with any preservative solution and/or water runoff generated within the area recycled as preservative concentrate make up water
	d) Reuse of cleaning water	Water used for cleaning forklift is reused in process, all drips from drying timber on the
	e) Treatment of waste water	Waste water is not generated by the process which is a closed system. Waste water generated by cleaning is stored and disposed of by an authorised company.
	f) Disposal as hazardous waste	The only waste stream from the treatment is the occasional contaminated solution and sludges along with water for clean down of vessels. This is not a regular occurrence but is carried out approximately annually, and any contaminated liquid arising is all disposed of by licensed authorised hazardous waste disposal companies and records kept of all shipments.
BAT 48. In order to reduce emissions to water from wood and wood products preservation using creosote, BAT is to collect the condensates from the depressurisation and vacuum operation of the treatment vessel and from creosote (re)conditioning and either treat them on site using an activated carbon or sand filter or dispose of them as hazardous waste.	Description: Condensate volumes are collected, allowed to settle and treated in an activated carbon or sand filter. The treated water is either reused (closed circuit) or discharged to the public sewer system. Alternatively, the collected condensates may be disposed of as hazardous waste.	N/A installation does not use creosote
BAT 49. In order to reduce emissions of VOCs to air from wood and wood products preservation using solvent-based treatment chemicals, BAT is to enclose the emitting equipment or processes, extract the off-gases and send them to a treatment system (see techniques in BAT 51).		N/A site only uses water based chemicals
BAT 50. In order to reduce emissions of organic compounds and odour to air	Applicability: Grade C creosote may not be applicable in the case of cold climatic conditions.	N/A site do not use creosote

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from wood and wood products preservation using creosote, BAT is to use low-volatility impregnating oils, i.e. Grade C creosote instead of Grade B.		
BAT 51. In order to reduce emissions of organic compounds to air from wood and wood products preservation using creosote, BAT is to enclose emitting equipment or processes (e.g. storage and impregnation tanks, depressurisation, creosote reconditioning), extract the off-gases and use one or a combination of the treatment techniques given below.		N/A site do not use creosote
BAT 52. In order to reduce NOX emissions in waste gases while limiting CO emissions from the thermal treatment of off-gases in wood and wood products preservation using creosote and/or solvent		N/A site do not use creosote or solvents
BAT 53. In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to use one or a combination of the techniques given below.	a) Storage and handling of raw materials: Installation of noise walls and utilisation/optimisation of the noise-absorbing effect of buildings	No noise complaints received or expected
	b) Storage and handling of raw materials: Enclosure or partial enclosure of noisy operations	No noise complaints received or expected
	c) Use of low-noise vehicles/transport systems	No noise complaints received or expected
	d) Storage and handling of raw materials: Noise management measures (e.g. improved inspection and maintenance of equipment, closing of doors and windows)	No noise complaints received or expected
	e) Kiln drying: Noise reduction measures for fans	No noise complaints received or expected