DPS Process Solutions Limited

Caldicot R&D Facility

Environmental Permit Application

Fire Prevention Plan

August 2017

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1.0 Review

1.1 Document Review Procedures

1.1.1 This Fire Prevention Plan is to be reviewed every four years or when required by a change in operations.

Table 1: Document Review

Date of Review	Comments	Name and signature of Reviewer	Date of Next Review
August 2017	Plan prepared		August 2021

2.0 Document Overview

2.1 Document Requirements

2.1.1 This document has been prepared by WYG on behalf of the operator, DPS Process Solutions Limited (DPS), in support of an Environmental Permit Application to undertake waste treatment and storage activities at Severn Bridge Industrial Estate in Caldicot.

2.1.2 The Fire Prevention Plan has been produced in accordance with the Natural Resources Wales (NRW) 'Fire Prevention and Mitigation Plan' guidance published in May 2016. The report identifies the potential causes and effects of a fire, and describes the measures that will be in place to prevent the occurrence of a fire at the site. In addition, the report would provide details on the planned response to a fire incident and explain how fire water would be contained. All staff have access to this Fire Prevention Plan, fire drills are undertaken bi-annually as a minimum or after changes to procedure.

2.1.3 This document forms part of the site's Environmental Management System (EMS) and will be reviewed on an annual basis and in the event of any fire-related incidents.

2.2 Site Context

2.2.1 The application site is situated to the east of the Severn Bridge Industrial Estate, off Symondscliff Way, approximately 1.2km south east from the town of Caldicot and is centred at approximate National Grid Reference (NGR) ST 49340 87990. The site location is shown on Drawing No. DPS/A102691/PER/01.

2.2.2 Access to the site is achieved via Symondscliff Way which runs parallel to the western boundary of the site. The immediate surroundings of the site comprise an industrial setting to the west, south and north west of the site. Beyond the industrial estate is the residential area of Deepweir. A railway line is located approximately 40m east from the application site and runs in a north-south direction. Residential dwellings of Gray Hill View are located to east of the site, beyond the railway line.

2.3 Permitted Activities

2.3.1 It is the intention of DPS to undertake the treatment and storage of waste at the application site.

Waste treatment activities will comprise manual sorting, separation, screening, baling, shredding, crushing or compaction into different components.

2.3.2 The proposed activities on site will fall under the following Recovery and Disposal operations, provided for in Annex II to Directive 2008/98/EC of The Council of 19th November 2008 Waste.

Table 2: Proposed R/D Codes

R/D Code	Description of Activity
D15	Storage pending any of the operations numbered D1 to D14 (excluding temporary storage, pending collection, on the site where it is produced)
R13	Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)
D14	Repackaging prior to submission to any of the operations numbered D1 to D13
D9	Physio-chemical treatment not specified elsewhere in Annex IIA which results in final compounds or mixtures which are discarded by means of any of the operations numbered D1 to D8 and D10 to D12.
R3	Recycling/reclamation or organic substances which are not used as solvents
R4	Recycling/reclamation of metals and metal compounds
R5	Recycling/reclamation of other inorganic materials.

3.0 Assessing Fire Risk

3.1 Risk of Fire

Types of Combustible Materials on Site

3.1.1 The types of combustible wastes received at the site are likely to consist of the following materials:

- Plastics;
- Wood;
- Textiles;
- Rubber;
- Scrap metals; and
- Fragmentiser materials

3.1.2 The composition of the waste stream will vary and is likely to contain various proportions of the materials identified above depending on the source of the waste. The list above is not an extensive list of all permitted wastes as it just details those which are combustible and therefore relevant to this report.

Storage Capacity

3.1.3 The facility will have storage capacity for 500 tonnes of pre-treated material and 500 tonnes of segregated material post treatment. These materials will be stored in accordance with this Fire Prevention Plan as detailed on site layout plan reference J17002-DPSPS-R-XD-0002.

Amounts of Waste Received Daily

3.1.4 It is proposed that the site will receive not more than 54 tonnes per day for treatment.

Causes of a Fire

3.1.5 With reference to the NRW guidance, it is considered that the potential causes of fire at the site are as follows:

- Arson or vandalism;

- Self-combustion of received and processed waste materials (e.g. chemical oxidation, microbial decomposition);
- Plant or equipment failure;
- Electrical faults;
- Naked lights;
- Discarded smoking materials;
- Hot works, e.g. welding, cutting;
- Industrial heaters;
- Hot exhausts;
- Damaged/exposed electrical cables;
- Reactions between incompatible materials;
- Sparks from loading buckets;
- Incompatible wastes; and
- Deposited hot loads.

3.1.6 Any of the causes detailed above has the potential to ignite waste materials upon the site although the separated fractions consisting of wood and plastics are recognised as having the highest potential combustibility.

3.1.7 The likelihood of fire on the site is directly proportionate to the suitability of control systems in place through DPS's EMS. The procedures for the reduction of fire risk are discussed in detail in Section 4 of this report and it is considered that through the implementation of the control measures discussed within this document that the likelihood of fire on site is considered low.

3.1.8 The consequences of a fire are discussed below with mitigation measures detailed in a further section.

3.2 Effect of a Fire

Source/Pathway

3.2.1 The effects of a fire may be both immediate and long term, presenting a significant burden for the operator and regulatory agencies. The potential causes of a fire have been discussed within Section 4 above and are reviewed below with reference to NRW guidance and provide an assessment of the source and potential pathway for pollution:

- firewater run-off transporting pollutants to surface water and groundwater;
- thermal radiation harming nearby properties and residents leading to fire spread;
- creation of hazardous waste by the fire and impacts of fire-fighting;
- explosions and projectiles harming sensitive receptors and spreading the fire to unaffected areas;
- transport disruption resulting from road and rail closures;
- nuisance from smoke, odour and particulates through the air; and
- threat to life and property.

Receptors

3.2.2 Sensitive receptors within 1km of the facility have been identified in Table 3 below as they are seen as those which could be most impacted by a fire incident. The location of these receptors are provided in Drawing Number DPS/A102691/REC/01.

Table 3: Location of Sensitive Receptors within 1km from the Site

Receptor	Direction from Operational Area	Minimum Distance from proposed permit boundary (approx.) (m)
Designated ecological habitats e.g. Ramsars, SAC, SPA, SSSI		
Severn Estuary (Wales) Ramsar, SPA, SAC, SSSI	S	608
Gwent Levels – Magor and Undy SSSI	SW	360
Other Designations e.g. National Parks, AONB, World Heritage Sites		
N/A		
Historical buildings/listed buildings/archaeological sites		
Listed Buildings		
Castle Lodge	NW	490
Caldicot Castle	NW	690
Ye Olde Tippling Philosopher P.H	W	665
Prospect House	W	895
Court House	NW	990
The Old Rectory	NE	400

Garden Walls of underwood	NE	430
Manor Farmhouse and Manor Cottage	NE	445
Portskewett House	NE	615
Portskewett War Memorial	NE	565
Cross in Churchyard of the Church of St Mary	NE	525
Church of St Mary	NE	515
Old cottage/storehouse in churchyard of church of St Mary	E	525
Schools/Hospitals/Shops		
The Archbishops Rowan Williams Church in Wales Primary School	NE	675
Commercial and Industrial Premises		
Severn Bridge Industrial Estate	N, W, S	Adjacent
Old Pill Farm Industrial Estate	SW	445
Pill Farm Industrial Estate	SW	445
Castlegate Business Park	NW	195
Domestic Dwellings		
Residential area to the west of the Severn Bridge Industrial Estate	W	450
Residential area to the east of the application site	E	80
Highway or Minor Roads		
Caldicot By-pass (B4245)	W	515
Caldicot Road	N	60
Crick Road	NE	410
Symondscliff Way	W	>10
Second Severn Crossing (M4)	S	630
Sensitive Land Uses e.g. farmland, allotments, commercial fish farms		
N/A		
Surface Water		
Nedern Brook	SW	315
Other		
Caldicot Castle and Country Park	NW	645

4.0 Fire Risk Reduction

4.1 General Site Procedures

4.1.1 **Arson or vandalism** – Site security will be in operation during the working day and outside normal working hours, to ensure that unauthorised access to the site is not allowed. CCTV will also be installed and will be in operation at all times in order to prevent arson or vandalism. All visitors found on site will be challenged and asked to sign in or leave.

The site is also surrounded by security fencing and site entrances are protected by similar lockable gates which will be kept locked outside operating hours. The security fencing and gates will be inspected on a daily basis and repairs will be made as soon and practicable.

4.1.2 **Self-Combustion** – All staff will be vigilant with regards to potential for any stock piles to self-ignite and will be required to report any evidence of potential self-ignition to the site manager. Stockpiles will be managed in line with the dimensions outlined within the NRW's 'Fire Prevention and Mitigation Plan' guidance, dated May 2016 (Table 4 of this document). Good housekeeping practices will be in place to minimise the accumulation of dust, litter, fibre or paper on the site, which could pose a fire risk. Consideration will also be given to the use of temperature probes to monitor stockpiles of potentially combustible wastes. In the event that a stockpile is identified as being hot, the stockpile will either be turned or spread to dissipate the internal heat.

4.1.3 **Plant or equipment failure** – A documented regular maintenance and inspection programme will be operated for all site areas including site machinery. All plant and equipment will be subject to regular maintenance and will be operated in accordance with manufacturer's specification. All site vehicles will be equipped with fire extinguishers and site operatives/drivers will be trained in their use. Vehicles will not be left idling immediately adjacent to stockpiles of combustible materials to reduce the risk of auto ignition from hot exhaust gases.

4.1.4 **Electrical Faults** – All electrical equipment will be routinely checked by an approved competent person and will be replaced when and as required. The maintenance of electrical equipment will be incorporated in to the site's maintenance and inspection programme. In the event of an exposed wires or any plugs that appear to be shorting or not working, the site will call out a registered electrician who will investigate the cause of the problem and will repair any electrician system when and as needed.

4.1.5 **Naked lights** – All lights will be encased and therefore there will be no naked lighting on site.

4.1.6 **Discarded smoking materials –** The operator will enforce a 'No Smoking Policy' on the whole site and there will be a designated smoking area. Sources of ignition, such as heating pipes, naked flames, light bulbs, space heaters etc. will be kept at least 6m away from combustible or flammable materials.

4.1.7 **Hot works –** Staff and contractors will follow approved safe working practices when undertaking hot working (e.g. cutting and welding). Before being allowed to conduct any hot works on site, contractors must first be issued with a Permit to Work by the Site Manager/Supervisor. The Site Manager/Supervisor will only close the Permit to Work once they are satisfied the area is free of any heat sources. A fire check will be undertaken for a suitable period of time after works have been completed.

4.1.8 **Industrial heaters –** The site will not use industrial heaters within the building or around any processes.

4.1.9 **Hot exhausts –** All site vehicles will be fitted with fire extinguishers and operatives/drivers will be trained in their use. Vehicles will not be left idling immediately adjacent to stockpiles of combustible materials to reduce the risk of auto ignition from hot exhaust gases. At the end of the working day, all vehicles will be parked within a dedicated area away from treatment and storage areas. This will minimise the potential for fires from hot or overheated plant/vehicles. In addition, all processing machinery will be brushed clean to ensure that no loose waste falls onto hot exposed metalwork. A fire watch is undertaken at the end of each shift as a minimum.

4.1.10 **Open burning (on site or adjacent sites)** – Wastes will not be burnt within the site boundary or at adjacent sites.

4.1.12 **Damaged or exposed electrical cables** – All onsite electrics are installed and tested by a qualified engineer. As part of housekeeping and general maintenance, any exposed or damaged cables are reported to the site manager immediately and action is taken accordingly.

4.1.13 **Leaks and Spillages of oils and fuels –** All liquids, including oil and fuel, will be provided with appropriate secondary containment. All plant and equipment will also be subject to regular maintenance and will be operated in accordance with manufacturers specification.

4.1.14 **Build-up of loose combustible waste, dust and fluff -** Good housekeeping practices will be in place to minimise the accumulation of dust, litter, fibre or paper on the site, which could pose a fire risk. A record for monitoring of the site for accumulated materials will be

4.1.15 **Reactions between wastes –** There will be strict waste acceptance procedures in place to minimise the risk of non-compliant wastes being accepted. Details of the waste acceptance procedures are provided in the Operating Techniques.

4.1.16 All delivered wastes will report to the reception area upon entry to the site for inspection. Any wastes which are not appropriate to be accepted at the facility i.e. are not within the permitted waste list are either rejected before they are unloaded or are moved to a quarantine area for removal from the site. All combustible material will be stored in accordance with the NRW's guidance as outlined in Table 4 of this document.

4.1.17 **Sparks from loading buckets -** Care is taken when loading and unloading wastes to ensure that buckets do not spark in contact with the ground. The site is fully fitted with fire extinguishers as are all vehicles.

4.1.18 **Incompatible wastes** – All wastes are delivered to the reception area upon entry to the site for inspection, any wastes which are not appropriate to be accepted at the facility i.e. are not within the permitted waste list are either rejected before they are unloaded or are moved to the quarantine area for removal from the site. All combustible materials are stored in accordance with NRW's guidance as outlined in Table 4 of this report.

4.1.19 **Deposited hot loads** – A dedicated quarantine area shall be retained at all times in the event that a 'hot load' is delivered to site or if a 'hot spot' is identified in the stored waste. This area will have an impermeable surface with sealed drainage and will have a suitable separation distance around it (minimum of 6m as is consistent with NRW's guidance) to prevent the spread of fire to adjacent materials or structures and can be bunded in the event that fire-fighting water is required to ensure that any potentially contaminated run-off can be collected and appropriately disposed of.

A dedicated quarantine area shall be retained at all times to allow burning material to be moved to so as to extinguish and control fire spread. It will also be used to move piles of un-burnt material, adjacent to a fire, to prevent spread.

As set out in NRW's guidance, the size of the quarantine area is sufficient to accommodate the largest external waste pile and provide a minimum separation distance of 10m on all sides to the nearest pile, building or site boundary.

With reference to the pile size dimensions in Table 4, it is considered that paper, cardboard and unprocessed wood will comprise the largest potentially flammable waste piles and therefore the size of the quarantine area is in line with these requirements.

During any replacement of plant and infrastructure during the operation of the site, consideration will be given to the procurement of plant which benefits from fire and spark detection systems.

4.2 Waste Storage and Stock Management

4.2.1 An inventory of potentially flammable waste materials, and their storage locations, will be kept up to date on site. All storage areas and bays will be clearly marked so as to identify to staff what is contained within these areas so as to avoid incompatible wastes being placed in the wrong areas.

4.2.2 Staff involved in hot working will be notified of the location of all potentially flammable materials prior to the commencement of works. All raw materials will be managed and stored in accordance with the requirements of CIRIA C736. All raw materials which could cause pollution are bunded to provide 110% tank capacity of a single tank or 25% capacity of the largest tank if stored in multiple tanks.

4.2.3 In order to prevent spontaneous combustion of materials, care will be given to storage arrangements for all combustible waste types as detailed in the NRW's Fire Prevention Plan guidance. These materials will not be stored in large stockpiles and will not be stored no longer than the 3 months prior to processing in accordance with the storage capacity limits provided in Table 4.

4.2.4 Stockpiles will be identified within the site diary with a date of completion to aid stock management and ensure compliance with the storage periods.

4.2.5 Where relevant, waste will be stored in accordance with the NRW guidance whereby the following will be strictly adhered to:

Table 4: Waste Pile Size Dimensions

Material	Maximum Height (m)	Maximum Width/Length (m)	Maximum Volume (m^3)	Maximum Area (m^2)	Minimum Separation Distance (m)
Plastic, rubber and other materials	5	20	450	235	6
Processed wood including sawdust, shavings and chips	3	10	150	100	6
RDF and fragmentiser fluff	5	20	450	235	6
Unprocessed wood	5	20	750	235	6

4.2.6 Adherence with the maximum dimensions in Table 4 will be the responsibility of the Site Manager/Supervisor. Daily checks of stockpiles will be incorporated into the EMS. Any non-compliant stockpiles will be addressed immediately under the supervision of the Site Manager.

4.2.7 All waste will be stored within the confines of a building and therefore will be out of direct sunlight. Consideration will be given to the utilisation of appropriate equipment to monitor the moisture content and temperature of stockpiles to ensure that the materials do not overheat. Visual inspections of the stockpiles will also be incorporated in to the daily checks. Continual monitoring of the stockpiles will also be undertaken by all staff for signs of overheating or fire.

4.2.8 It is proposed to treat wastes within 5 days of receipt and not store materials on site in excess of 3 months. However, in the event that materials are stored longer than this period in the event of plant breakdown or routine maintenance, waste piles will be turned every two weeks to ensure that any localised heating is dissipated quickly. Furthermore, consideration will be given to the use of temperature probes to monitor stockpile temperatures and prevent self combustion.

4.2.9 Storage arrangements for all materials will be undertaken with due consideration given to access of fire fighting vehicles. The layout of the site will ensure that access is available to all areas of the site to fire appliances in the event of a fire. The site manager will be responsible for maintaining manageable stockpiles on site and ensuring that access is available to all areas of the site for emergency vehicles.

5.0 Containing and Mitigating the Effect of the Fire

5.1 Fire Response

5.1.1 Any fire on site will be treated as an emergency and will be extinguished at the earliest opportunity. If necessary, the Fire Brigade will be summoned. The local Fire Service has been contacted to ensure that the proposed fire prevention and response measures in place are adequate.

5.1.2 Fire fighting equipment will be located in the site office, in accordance with Fire Regulations. All fire extinguishers shall be clearly marked and tested at appropriate intervals to confirm their integrity. Site operatives will be made aware of their location and trained in their correct use.

5.2 Water Supplies

5.2.1 The water supply for fire fighting purposes will be mains water with an additional tank which will be appropriately sized in accordance with NRW's 'Fire Prevention and Mitigation Plan' guidance.

5.2.2 Details regarding the mains and tank were not available at the time of submission however it is the intention of DPS to provide these details prior to operations commencing. As such, DPS request that a pre-operational condition is provided in the environmental permit to cover this aspect of the application.

5.3 Site Procedures

5.3.1 In the event of a fire at the site, the following procedure will be implemented:

i) Raise the alarm;

ii) Cordon off the area, clearing employees to a safe area and prevent any further access to the site. Conduct a check to ensure that all persons present on the site are safe and accounted for using clock cards, staff and visitor signing in sheets.

iii) Attempt to control the fire using the appropriate appliances on site. If the fire is small use mobile plant and attempt to separate the burning material from other waste. Contact the Fire Brigade on 999;

iv) When practicable and safe to do so, inform NRW of the incident in accordance with the conditions of the Environmental Permit;

v) Report the situation to the Fire Brigade on their arrival;

vi) Close all surface water drainage outlets from the site;

vii) Collected fire water to be retained within the site boundary via the internal water retention bunds and other appropriate bunds as necessary. Any retained firewater will be removed from site by tanker.

viii) Once the fire has been extinguished, seek the advice of the Fire Brigade on future precautionary action; and

ix) Record all details in the site diary.

x) Site, operations will be temporarily suspended and no further waste will be accepted on site until the Local Fire Service have advise it is safe to do so. If necessary, waste will be transferred off site to an appropriately permitted facility.

5.3.2 The site manager will act upon the advice issued by the Local Fire Service in the event of a fire. The decision as to whether a controlled burn is suitable in any instance of an outbreak of a fire will be at the discretion of the Local Fire Service.

5.3.3 Following a fire, unburned material will separated from burnt material using on site plant. Any incidents of fire will result in the accumulation of fire residues. It will be the responsibility of the Site Manager to arrange for the disposal of the fire residues. This will then be treated as 'non-compliant waste' for disposal at an appropriately permitted facility.

5.3.4 The following table provides relevant contact details for individuals and relevant authorities in the event of a fire at the facility.

Table 5: Emergency Contact Details

Company	Position	Name	Telephone Number	Email
DPS Process Solutions Limited	Site Operator	Paul Wilson	01275 741074	Paul Wilson <Paul.Wilson@dps-ps.com>
DPS Process Solutions Limited	Site Manager/Technically Competent Manager	Kerry Henderson	01275 741074	Kerry Henderson <Kerry.Henderson@dps-ps.com>
Natural Resources Wales	Local Area Officer		0800 80 70 60 (24 hour line)	
Local Fire Service	Fire Service	Emergency	999	

5.4 Fire Water

5.4.1 Given that all wastes will be stored and treated within the confines of a building, measures such as sleeper bunds will be employed across all access points to ensure the containment of fire water in the event of a fire.

5.4.2 All areas where waste will be stored and treated will benefit from impermeable surfacing and an engineered drainage system. The drainage system will comprise shut off valves which will be closed in the event of a fire to ensure that water does not leave the site via the surface water drainage system.

5.4.3 Advice will be sought from the Local Fire Service as to the suitability of the use of inflatable bunds and booms to prevent the run off of potentially hazardous firewater.

5.4.4 Drain mats will be used where possible to block drains to prevent the ingress of fire water. This will be confirmed upon consultation with the local Fire Service.

5.5 Site Access and Neighbouring Properties

5.5.1 DPS will ensure that the site is accessible even when it is not operational. The site entrance will be kept clear, and machinery and plant will be parked in a secure parking area, not blocking the access to the site or areas around where waste is stored. The contact details for out of hours are provided in Table 5 to ensure that the site management staff are contactable at all times.

5.5.2 In the event of a fire, it is understood that the fire service can access any property as required to control and extinguish the fire.

5.5.3 The site is located within an industrial location with domestic properties located approximately 450m west beyond the industrial setting and approximately 80m east beyond a railway line. There is proposed to be 24-hour security at the site to ensure that the site is accessible at all times. It is not considered that there would be any issues with accessing the site or the neighbouring sites in the event of a fire.

5.6 Reporting and Communication

5.6.1 In the event of a fire, communication with local businesses and residents identified in Table 3 above will be undertaken in the event of a fire to reduce any environmental damage and risks to human health associated with smoke and dust.

5.6.2 The local Fire Service and NRW will be informed of the incident using the contact details provided in Table 5 above.

5.7 Recording

5.7.1 The incident would be recorded in the relevant section of the company's EMS and in the Site Diary.

5.8 Actions Following a Fire

5.8.1 Further to a fire on site, and upon safe re-commissioning of all plant and equipment, an investigation will be undertaken internally as to the cause of the fire and any future preventative measures to ensure that there is no re-occurrence.

5.8.2 This Fire Action Plan will be reviewed following this investigation to ensure that lessons learnt are documented and implemented in the future. Any new policies and procedures will be documented within this plan and the EMS.

5.8.3 Any new training requirements for site personnel will be implemented following this investigation however this is not intended to negate the requirement for ongoing training in how to reduce the risk of fire on site.

Drawings

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