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Environmental risk assessment using H1 Methodology

ODOUR RISK ASSESSMENT

Chloros Environmental Ltd

Application for installation and waste permit

| Hazard                                 | Receptor  | Pathway                                 | Risk management   | Probability of exposure  | Consequence                         | Overall Risk   |
|--|---|---|---|--|-------------------------------------|--|
| What has the potential to cause odour? | What is at risk?<br>What do I wish to protect?  | How can the hazard get to the receptor? | What measures will you take to reduce the risk?<br>If it occurs - who is responsible?   | How likely is this contact?  | What is the harm that can be caused | What is the risk that still remains the balance of probability and |
| Delivery of raw materials and wastes   | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Air transport then inhalation.          | Some permitted types of waste accepted are potentially odourous. Waste delivered and stored in enclosed containers. A monitoring and complaints procedure are to be followed. | Minimal<br>Emergency procedures in place include actions to be taken in case of odour release.               | Odour annoyance                     | Not significant  |
| Stored wastes                          | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Air transport then inhalation.          | Some permitted types of waste accepted are potentially odourous. Waste stored in enclosed containers. A monitoring and complaints procedure are to be followed.               | Minimal<br>However emergency procedures in place which include actions to be taken in case of odour release. | Odour annoyance                     | Not significant  |

| Hazard                             | Receptor  | Pathway                        | Risk management  | Probability of exposure  | Consequence     | Overall Risk    |
|------------------------------------|---|--------------------------------|--|--|-----------------|-----------------|
| Transfer/<br>treatment of<br>waste | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Air transport then inhalation. | Some permitted types of waste accepted are potentially odourous. All waste treatment/transfer of potentially odorous material carried out within the building within enclosed areas served by LEV units with filtered discharge. A monitoring and complaints procedure are to be followed. | Minimal<br>Environmental Management System including odour management and maintenance procedures work on a preventative maintenance programme. Emergency procedures in place include actions to be taken in case of odour release. | Odour annoyance | Not significant |
| Movement of<br>waste               | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Air transport then inhalation. | Some permitted types of waste accepted are potentially odourous. All potentially odorous material held within enclosed containers. A monitoring and complaints procedure are to be followed.   | Minimal<br>Environmental Management System including odour management and maintenance procedures work on a preventative maintenance programme. Emergency procedures in place include actions to be taken in case of odour release. | Odour annoyance | Not significant |
| Removal of<br>waste from site      | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Air transport then inhalation. | Some permitted types of waste accepted are potentially odourous. All potentially odorous material held within enclosed containers. A monitoring and complaints procedure are to be followed.   | Minimal<br>However emergency procedures in place include actions to be taken in case of odour release.   | Odour annoyance | Not significant |
| Accidental<br>Release of<br>Wastes | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Air transport then inhalation. | Strict waste acceptance procedures in place and storage and handling procedures followed as detailed in the management system. Emergency spillage procedures in place and spill kits in place around the site to ensure ease of access.  | Minimal  | Odour annoyance | Not significant |

| Hazard                       | Receptor  | Pathway   | Risk management   | Probability of exposure   | Consequence  | Overall Risk    |
|------------------------------|---|---|---|---|--|-----------------|
| All identified Odour Sources | Nearest SSSI/Local nature reserve Hartlebury Common 2.8km distant | Air transport then inhalation. No impact on wildlife. Recreational users may be affected. | Strict waste acceptance procedures in place and storage and handling procedures followed as detailed in the management system. Emergency spillage procedures in place and spill kits in place around the site to ensure ease of access. Monitoring and complaints procedure are in place. | Minimal However emergency procedures in place include actions to be taken in case of odour release. | Odour annoyance for recreational users, no impact on wildlife. | Not significant |

NOISE AND VIBRATION RISK ASSESSMENT

Chloros Environmental Ltd

Application for installation and waste permit

| Hazard   | Receptor  | Pathway   | Risk management  | Probability of exposure  | Consequence                               | Overall Risk   |
|--|---|---|--|--|---|--|
| What has the potential to cause noise/vibration? | What is at risk? What do I wish to protect?   | How can the hazard get to the receptor?                 | What measures will you take to reduce the risk? If it occurs - who is responsible?   | How likely is this contact?  | What is the harm that can be caused       | What is the risk that still remains the balance of probability and consequence |
| Noise and vibration from all site operations     | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Noise through the air and vibration through the ground. | All vehicles and equipment operated and maintained in accordance with manufacturers recommendations for silencers vibration etc. Site rules include 10mph speed limit and other noise minimisation requirements.   | Minimal<br>No sensitive receptors within 400m<br>Less sensitive receptors within 50m | Nuisance, loss of amenity, loss of sleep. | Not significant  |
| Delivery vehicles manouvering                    | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Noise through the air and vibration through the ground. | All delivery vehicles will be silenced in accordance with manufacturers recommendations only white noise reversing alarms permitted. Deliveries restricted to daytime only. Site rules include 5mph speed limit and other noise minimisation requirements. | Minimal<br>No sensitive receptors within 400m<br>Less sensitive receptors within 50m | Nuisance, loss of amenity, loss of sleep. | Not significant  |

| Hazard   | Receptor  | Pathway   | Risk management  | Probability of exposure   | Consequence  | Overall Risk    |
|--|---|---|--|---|--|-----------------|
| Mobile plant moving on site                    | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Noise through the air and vibration through the ground.   | All mobile plant fitted with silencers and maintained according to manufacturer's recommendations. No night time working.          | Minimal<br>No sensitive receptors within 400m<br>Less sensitive receptors within 50m                      | Nuisance, loss of amenity, loss of sleep.  | Not significant |
| Fixed Plant pumps etc.                         | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Noise through the air and vibration through the ground.   | All fixed plant and pumps fitted with silencers and maintained according to manufacturer's recommendations. No night time working. | Minimal<br>No sensitive receptors within 400m<br>Less sensitive receptors within 50m                      | Nuisance, loss of amenity, loss of sleep.  | Not significant |
| All identified Noise/Vibration sources Sources | Nearest SSSI/Local nature reserve 2.8km distant   | Noise through the air and vibration through the ground. Due to distance from the site no possibility noise may disturb wildlife or recreational users of the site | As Above   | No Risk<br>However procedures in place include actions to be taken in case of excessive noise generation. | Nuisance, loss of amenity for recreational users. Disturbance of wildlife species. | Nil             |

DRAINAGE RISK ASSESSMENT

Chloros Environmental Ltd

Application for installation and waste permit

| Hazard   | Receptor   | Pathway  | Risk management   | Probability of exposure   | Consequence   | Overall Risk   |
|--|--|--|---|---|---|--|
| What has the potential to cause fugitive emission? | What is at risk?<br>What do I wish to protect?   | How can the hazard get to the receptor?  | What measures will you take to reduce the risk? If it occurs - who is responsible?  | How likely is this contact?   | What is the harm that can be caused   | What is the risk that still remains the balance of probability and consequence |
| Spillage of liquids, including oil.                | All surface waters close to and downstream of site.                                    | Direct run-off from waste storage and processing areas across ground surface                             | All loading/unloading treatment and storage areas have impermeable surface with sealed drainage. Quarantine area within impermeable areas with sealed drainage, any fire water used is contained. Oils and fuels stored in bunded containers meeting oil storage regulations standards. | Minimal<br>Strict waste acceptance procedures in place and storage and handling procedures followed as detailed in the management system.<br>Emergency spillage procedures in place and spill kits in place around the site to ensure ease of access. | Acute effects: severe impact on flora and fauna   | Not significant  |
| Spillage of liquids, including oil.                | All surface waters close to and downstream of site.                                    | As above. Indirect run-off via the soil layer  | As above  | Minimal As above  | Chronic effects: deterioration of water quality   | Not significant  |
| Spillage of liquids, including oil.                | Abstraction from watercourse downstream of facility (for agricultural or potable use). | Direct run-off from site across ground surface, via surface water drains, ditches etc. then abstraction. | As above  | Minimal<br>As above No abstractions downstream as ditch flows to soakaway immediately south east of the site.   | No Consequence  | Nil  |
| Spillage of liquids, including oil.                | Groundwater  | Transport through soil/groundwater then extraction at borehole.  | As above  | Minimal<br>As above<br>Nearest groundwater catchment Zone 3 over 1km distant nearest borehole at least 2.7 km distant from soakaway.  | Chronic effects: contamination of groundwater, requiring treatment of water or closure of borehole. | Not significant  |

| Hazard                             | Receptor  | Pathway  | Risk management | Probability of exposure | Consequence   | Overall Risk    |
|------------------------------------|---|--|-----------------|-------------------------|---|-----------------|
| Contamination of run off by wastes | All surface waters close to and downstream of site. | Run-off from installation area across ground surface or via surface water drains, ditches etc. | As above        | Minimal<br>As above     | Chronic effects: deterioration of water quality   | Not significant |
| Contamination of run off by wastes | Groundwater   | Transport through soil/groundwater then extraction at borehole.                                | As above.       | Minimal<br>As above     | Chronic effects: contamination of groundwater, requiring treatment of water or closure of borehole. | Not significant |

ACCIDENTS RISK ASSESSMENT

Chloros Environmental Ltd

Application for installation and waste permit

| Hazard  | Receptor  | Pathway  | Risk management  | Probability of exposure  | Consequence  | Overall Risk   |
|---|---|--|--|--|--|--|
| What has the potential to cause harm?   | What is at risk?<br>What do I wish to protect?  | How can the hazard get to the receptor?  | What measures will you take to reduce the risk?<br>If it occurs - who is responsible?  | How likely is this contact?                                    | What is the harm that can be caused  | What is the risk that still remains the balance of probability and consequence |
| All on-site hazards: machinery.   | Local human population and / or livestock after gaining unauthorised access to the installation   | Direct physical contact  | Activities shall be managed and operated in accordance with a management system (will include site security measures to prevent unauthorised access).  | Minimal<br>Site securely fenced and monitored 24 hours per day | Bodily injury  | Not significant  |
| Arson and / or vandalism causing the release of polluting materials to air (smoke or fumes), water or land. | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Air transport of smoke. Spillages and contaminated firewater by direct run-off from site and via surface water drains and ditches. Explosive release of debris and dangerous materials | The site will handle flammable and potentially explosive waste types. Accident and emergency management plans including Fire Prevention Plan in place which details procedures in case of fire and spillages. Personell regularly trained in procedures to ensure familiar with action to take. Site compliant with DSEAR and ATEX plans and procedures in place. (Quantities currently handled do not exceed limits for COMAH legislation)<br>Storage and treatment areas for flammable/explosive substatnces designed to minimise risk and mitigate impact of any likely incident. | Minimal<br>Site securely fenced and monitored 24 hours per day | Respiratory irritation, illness and nuisance to local population. Injury to staff, fire fighters or arsonists/vandals. Pollution of water or land. | Not significant  |

| Hazard   | Receptor  | Pathway  | Risk management  | Probability of exposure  | Consequence   | Overall Risk    |
|--|---|--|--|--|---|-----------------|
| Accidental fire causing an explosion or the release of polluting materials to air (smoke or fumes), water or land. | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Air transport of smoke. Spillages and contaminated firewater by direct run-off from site and via surface water drains and ditches. Explosive release of debris and dangerous materials | The site will handle flammable and potentially explosive waste types. Accident and emergency management plans including Fire Prevention Plan in place which details procedures for preventing fires and mitigate the impact of fire and spillages. Personell regularly trained in procedures to ensure familiar with action to take. Site compliant with DSEAR and ATEX plans and procedures in place. (Quantities currently handled do not exceed limits for COMAH legislation) Storage and treatment areas for flammable/explosive substatnces designed to minimise risk and mitigate impact of any likely incident. | Minimal Management systems include monitoring and maintenance programmes able to detect and deal with fires. | Respiratory irritation, illness and nuisance to local population. Injury to staff, fire fighters or local people. Pollution of water or land. | Not significant |
| Spillage of liquids, including oil.  | All surface waters close to and downstream of site.   | Percolation through site surfacing, soil and geology or escape to surface water drains or ditches.   | All loading/unloading treatment and storage areas have impermeable surface with sealed drainage. Quarantine area within impermeable areas with sealed drainage, any fire water used is contained. Oils and fuels stored in bunded containers meeting oil storage regulations standards.  | Minimal Activities will be managed and operated in accordance with the management system                     | Aquatic effects and ground contamination  | Not significant |

| Hazard                  | Receptor  | Pathway          | Risk management  | Probability of exposure  | Consequence   | Overall Risk    |
|-------------------------|---|------------------|------------------|--|---|-----------------|
| All potential incidents | Nearest SSSI/Local nature reserve Hartlebury Common 2.8km distant | All of the above | All of the above | Minimal Activities will be managed and operated in accordance with the management system | Minimal the site is too distant to be impacted by any potential incident. | Not significant |

DUST RISK ASSESSMENT

Chloros Environmental Ltd

Application for installation and waste permit

| Hazard                                | Receptor  | Pathway  | Risk management  | Probability of exposure  | Consequence                         | Overall Risk   |
|---------------------------------------|---|--|--|--|-------------------------------------|--|
| What has the potential to cause harm? | What is at risk?<br>What do I wish to protect?  | How can the hazard get to the receptor?                              | What measures will you take to reduce the risk? If it occurs - who is responsible?   | How likely is this contact?  | What is the harm that can be caused | What is the risk that still remains the balance of probability and consequence |
| Delivery of Solid raw materials       | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Air transport then deposit on ground cars etc. inhalation/ingestion. | No dusty raw materials envisaged to be required if were necessary in future would be delivered in sealed containers and used in a manner to prevent/minimise any release of dust during deposit.   | Minimal<br>EMS includes dust management procedures to prevent dust beyond the site boundary and include actions to be taken in case of dust release. | Dust annoyance inhalation/ingestion | Not significant  |
| Handling and storage of wastes        | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Air transport then deposit on ground cars etc. inhalation/ingestion. | EMS includes procedures for management of potentially dusty material to prevent/minimise any release of dust during handling and storage. Wastes delivered and removed in enclosed containers and handled within the building if opened for bulking/repackaging. | Minimal<br>EMS includes dust management procedures to prevent dust beyond the site boundary and include actions to be taken in case of dust release. | Dust annoyance inhalation/ingestion | Not significant  |
| Accidental Release of Wastes          | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Air transport then deposit on ground cars etc. inhalation/ingestion. | Strict waste storage and handling procedures followed as detailed in the management system. Include procedures for management of spillage of dusty material.   | Minimal<br>EMS includes dust management procedures to prevent dust beyond the site boundary and include actions to be taken in case of dust release. | Dust annoyance inhalation/ingestion | Not significant  |

| Hazard  | Receptor  | Pathway  | Risk management  | Probability of exposure  | Consequence                         | Overall Risk    |
|---|---|--|--|--|-------------------------------------|-----------------|
| Dust/Particulates- Site surfaces (dry weather), storage of potentially dusty wastes | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Air transport then deposit on ground cars etc. inhalation/ingestion. | Hose pipe available for dampening down operational areas and site roads. External areas kept clean and free from dust and debris.  | Minimal<br>EMS includes dust management procedures to prevent dust beyond the site boundary and include actions to be taken in case of dust release. | Dust annoyance inhalation/ingestion | Not significant |
| Dust -generated from loading, unloading, movement and treatment of wastes           | Adjacent site workers within 50m. Local residents (3 properties 400-450m distant. They have closer proximity to other factory units on the estate. 3 further properties within 900m). | Air transport then deposit on ground cars etc. inhalation/ingestion. | EMS includes procedures for management of potentially dusty material to prevent/minimise any release of dust during handling and storage. Wastes delivered and removed in enclosed containers and handled within the building if opened for bulking/repackaging. | Minimal<br>EMS includes dust management procedures to prevent dust beyond the site boundary and include actions to be taken in case of dust release. | Dust annoyance inhalation/ingestion | Not significant |

| Hazard                      | Receptor  | Pathway  | Risk management  | Probability of exposure   | Consequence  | Overall Risk    |
|-----------------------------|---|--|--|---|--|-----------------|
| All identified Dust Sources | Nearest SSSI/Local nature reserve Hartlebury Common 2.8km distant | Air transport then deposit on ground cars etc. inhalation/ingestion. | Strict waste storage and handling procedures followed as detailed in the management system. Include procedures for management of spillage of dusty material. | Minimal EMS includes dust management procedures to prevent dust beyond the site boundary and include actions to be taken in case of dust release. | Dust annoyance for recreational users, minimal impact on wildlife. The accepted UK position is that a dust deposition rate of 200mg.m <sup>-2</sup> .day <sup>-1</sup> is generally used as the threshold above which complaints are possible. Literature suggests that significant impacts on vegetation are not likely to occur at deposition rates of less than 1000mg.m <sup>-2</sup> .day <sup>-1</sup> . [1] | Not significant |

DESIGNATED CONSERVATION SITES IMPACT/RISK ASSESSMENT

Chloros Environmental Ltd

Application for installation and waste permit

| Hazard   | Receptor   | Pathway  | Risk management   | Probability of exposure            | Consequence                                | Overall Risk  |
|--|--|--|---|------------------------------------|--|---|
| <b>What has the potential to cause harm?</b>               | <b>What is at risk?<br/>What do I wish to protect?</b>   | <b>How can the hazard get to the receptor?</b> | <b>What measures will you take to reduce the risk? If it occurs - who is responsible?</b> | <b>How likely is this contact?</b> | <b>What is the harm that can be caused</b> | <b>What is the risk of impact that still remains the balance of probability and consequence</b> |
| No likleyhood of any emissions harming sensitive receptor. | Nearest SSSI/Local nature reserve Hartlebury Common 2.8km distant. EA pre-application Habitat Screening - no results identified. | No pathway                                     | Site procedures will not result in harm to site   | Nil                                | None                                       | Nil   |