

ENVIRONMENTAL RISK ASSESSMENT

Solvent Storage and Transfer Facility, Malvern

Prepared for:
Equilibrium Chemical Services Ltd

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Authors Name:		Claire Goddard	
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1. INTRODUCTION

As part of an application for an environmental permit Operators must assess the risk to the environment and human health from the activities they seek to permit. This Environmental Risk Assessment has been undertaken in accordance with the online guidance for undertaking environmental risk assessments. Environmental risks relevant to the proposed activities are:

- Emissions to Air;
- Emissions to Water;
- Emissions to Land;
- Odour;
- Noise;
- Fugitive Emissions (air);
- Litter;
- Pests;
- Vandalism;
- Fire/Explosion; and
- Incompatible Feedstock.

For each of the above environmental criteria the approach to the assessment has followed the following six stage process:

- Identify the risks;
- Identify the receptors;
- Identify the possible pathways from the sources of the risks to the receptors;
- Assess the risks (assuming those control measures proposed are in place);
- Choose appropriate further measures to control these (if required); and
- Present the assessment.

In completing the assessment prevention and control measures proposed by Equilibrium Chemical Services Ltd are assumed to be in place where relevant details of these measures are identified within the assessment.

2. SENSITIVE RECEPTORS

The site is located within Merebrook Business Park to the west of the village of Hanley Swan and is located in a predominantly agricultural area. The site forms part of Merebrook Business Park, utilising Units 4 and 5 for permitted activities. To the north lies the B4209, to the west Blackmore Park Road, to

the south Willow End Park (Commercial) and Mere Brook, to the east agricultural land and to the west unnamed industrial units.

Additionally, a railway line is located 407m to the south west. The closest watercourse to the site is the Mere Brook (a tributary to the River Severn) positioned 338m to the southeast, flowing in a west – east direction.

The nearest residential property is Newstead Farm located 145m northwest of the site.

All European and International ecologically designated sites and nationally designated sites have been considered within 10 km of the Installation boundary, as well as national and local non-statutory local wildlife sites within 2 km.

There are two Sites of Special Scientific Interest (SSSI) within 2 km of the facility¹ (nearest ecological SSSI is Brothendge Green Disused Railway Line which is 1,582m southeast).

There are no European/Internationally Designated sites (SPA, SAC, RAMSAR) within 10km of the site ¹.

There are no ancient woodland sites within 2km of the site¹.

EA pre-application conservation and heritage screening did not identify any local wildlife sites.

Further detail on the above information, including geology and surface water features are included in the Application Supporting Document PSOL2106EQ01 Annex D - Site Condition Report.

Key receptors (SSSI's and local nature sites within 2km and European Designated sites within 10km) are summarised in Table 1 below (and shown on Figure 1) which identifies the nearest human and ecological receptors that are potentially at risk from site.

Table 1: Location of Sensitive Receptors			
ID	Receptor	Type	Distance from facility (m) and direction
Ecological receptors (within 2km or for European/Internationally Designated Sites, 10km)			
R1	Mere Brook	Watercourse	338m SE
R2	St Wulstan's	Local Nature Reserve	1,268m SW
R3	Brothendge Green Disused Railway Line	SSSI	1,582m SE
R4	Malvern Common	SSSI	1,966m NNW
Residential / other receptors (within 1km)			
R5	Merebrook Business Park	Commercial / Industrial	On site
R6	Newstead Farm	Residential / Commercial	145m NW

¹ Magic Map Application (defra.gov.uk)

R7	Stable End / The Avenue Riding Centre	Leisure	175m NNW
R8	Unnamed industrial	Industrial / Commercial	202m W
R9	Willow End Park	Industrial / Commercial	227m S
R10	Unnamed residential	Residential	261m W
R11	Willow End Farm Cottage	Residential	298m SE
R12	Caravan Stuff 4 U	Commercial	336m NE
R13	Common Farm	Residential / Commercial	338m NE
R14	Veeda Glenta	Residential	369m SW
R15	Lumbar Tree Farm	Residential / Commercial	416m SE
R16	The Croft	Residential	537m S
R17	Berry Lodge Farm	Residential / Commercial	544m SW
R18	Merebrook Farm / Hanley Swan Village Stores	Residential / Commercial	552m E
R19	Wendover	Residential	565m NW
R20	Lombard Tree Cottage	Residential	577m SE
R21	Three Counties Showground	Leisure	613m NW
R22	Bank Farm	Residential / Commercial	656m SSW
R23	The Retreat	Residential	697m SSE
R24	Lombard Tree Farm	Residential / Commercial	702m SE
R25	Danecroft	Residential / Commercial	762m S
R26	Oakmere Caravan Site	Leisure	798m NE
R27	The Firs	Residential / Commercial	839m NW
R28	Danemoor Farm / Cotswold Farm Services	Residential / Commercial	924m S

Please refer to Figure 1 below which shows the location of the aforementioned receptors.

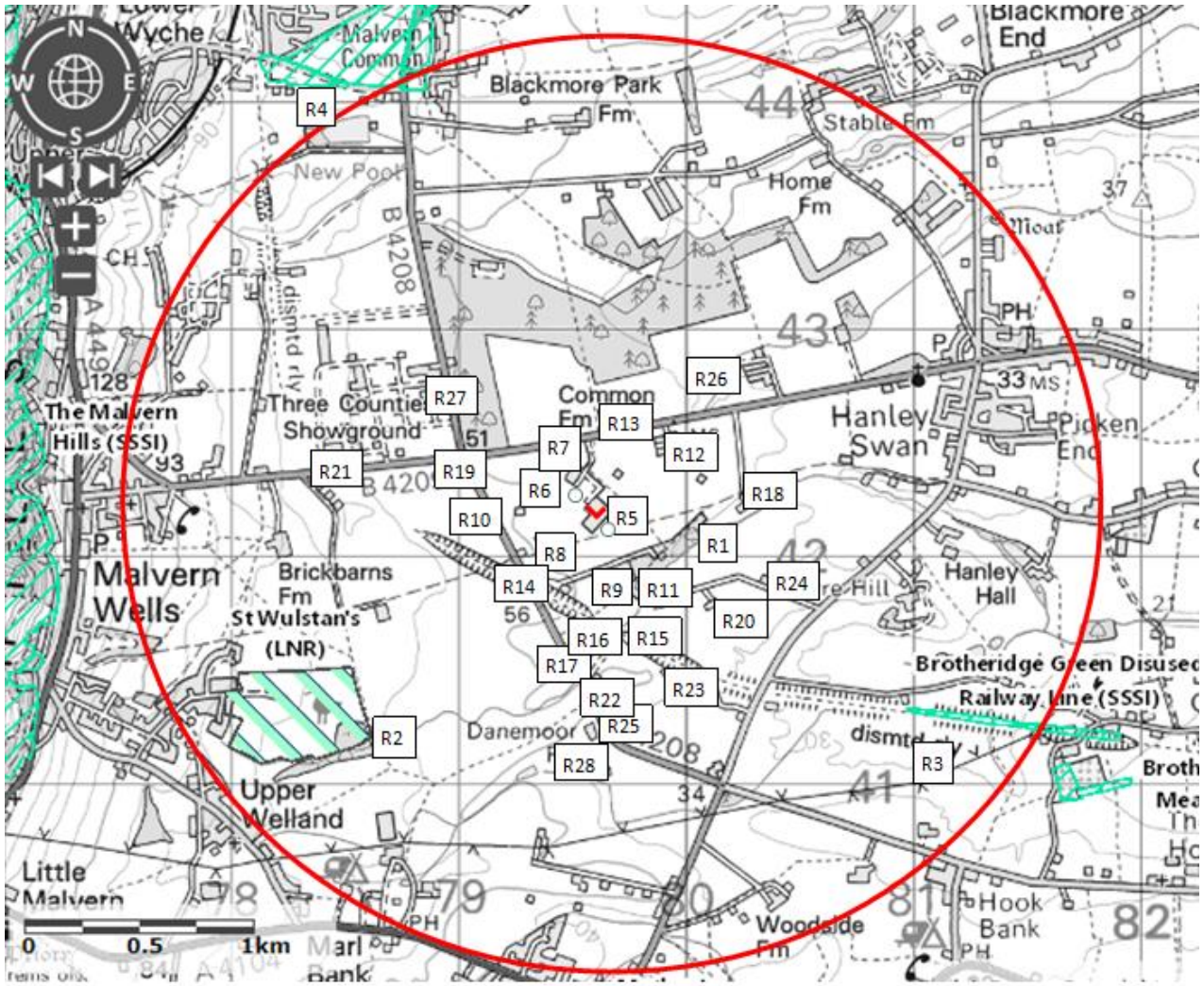


Figure 1: Site Receptor Plan (OS license Ref: 100022861)

Environmental Risk Assessment						
Hazard	Receptor	Pathway	Risk Management Techniques	Probability of Exposure	Consequence	Overall Risk (following Mitigation)
Emissions to Air	Atmosphere	Airborne	<ul style="list-style-type: none"> There are no point source emissions to air proposed at the site. The treatment of wastes onsite is a closed/sealed process. It is acknowledged that fugitive emissions of solvents may be released onsite due to the nature of the waste materials (see separate entry below) 	Low: offsite receptor impacts	Air Pollution	VERY LOW due to the proposed processes on site
Emissions to Water	Groundwater / Geology / Surface Water	Waterborne	<ul style="list-style-type: none"> There will be no direct process emissions to controlled water arising from the facility. The entire site is constructed on sealed concrete hardstanding with a sealed drainage system. The sites tanks/IBCs/barrels are located within a concrete bund. All filling / discharge points are also located within the bund. The sites tanks are fitted with level gauges All offloading / loading activities are supervised by the Site Manager; All infrastructure including hardstanding, tanks and bunds and containers are inspected on a daily basis for signs of damage / deterioration. In the event of a fire, all external site drainage systems can be isolated with drain covers, and all potentially contaminated fire water will be contained onsite. All fire water will then be tankered away to a suitable water treatment facility. 	Low: all runoff is controlled on site, therefore the probability of exposure is low.	Contamination	VERY LOW due to the proposed management techniques and drainage arrangements

			<ul style="list-style-type: none"> No routine external storage. 			
Emissions to Land	Groundwater / Geology	Spills / Leaks	<ul style="list-style-type: none"> There will be no emissions to land arising from the proposed facility. The entire site is covered by good quality re-enforced impermeable concrete hardstanding; Spill kits are strategically located around site. Minor spills to be cleaned up immediately, using spill kits. Resultant materials to be placed in container for off-site disposal to appropriate facility, if necessary. Immediate action to be taken in event of any major spills. Spillage to be cleared immediately and placed in containers for offsite disposal. The EA to be informed. There is no routine external storage of solvents on site. All storage takes placed within the reception and processing building benefitting from bunding. 	Low: spills / leaks could potentially contaminate the ground / groundwater underneath the site.	Contamination	VERY LOW due to the proposed risk management techniques
Noise	Local Residents / Leisure Users	Airborne	<ul style="list-style-type: none"> Vehicle deliveries will only take place during daytime; Appropriate preventative maintenance will be provided for the various elements of the facility. This will ensure no deterioration of plant or equipment that would give rise to increases in noise. The processing plant and associated equipment has been designed in accordance with best practice and to ensure that internal noise does not present an issue to the employees at the site under the Control of Noise at Work Regulations 2005 and to ensure 	Low: due to the nature of the activities and proximity of closest receptors	Nuisance	LOW due to the proposed risk management techniques

			<p>that noise breakout does not lead to noise nuisance at the identified sensitive receptors.</p> <ul style="list-style-type: none"> The facility will not give rise to reasonable cause for annoyance. In the unlikely event that complaints are received measures described in the environmental management system will be put in place. 			
Odour	Local Residents / Leisure Users	Airborne	<ul style="list-style-type: none"> Stringent pre-acceptance, acceptance and rejection procedures are in place to prevent any excessively malodorous materials ever arriving onsite. All storage and processing of waste onsite is within enclosed systems and containers, namely sealed IBC's, lidded drums or tanks. Solvents are managed in ways to minimise the production of odorous chemicals and the new distillation plant utilises automatic loading / unloading by means of vacuum. Distillation operated under vacuum with exhaust gas condenser which will suppress losses to air Transfer systems including valves and pipework are sealed to prevent emissions during delivery and collection of wastes. Monitoring of odour will be included within the daily perimeter walk around. Any issues will be recorded and enacted upon according to site procedures. Any complaints will be recorded and enacted upon according to the site management complaints procedure. 	Moderate: odorous material is accepted at the site	Nuisance	LOW due to the proposed risk management techniques

<p>Fugitive emissions (inc. VOCs) from distillation process</p>	<p>Atmosphere / Operator / Local Residents / Leisure Users</p>	<p>Airborne</p>	<ul style="list-style-type: none"> • The distillation process will be enclosed within a building and will operate under vacuum which reduces structural losses since joints and connections will draw in air • Automatic loading / unloading of the plant using the vacuum system is utilised • Distillation operated under vacuum with exhaust gas condenser which will suppress losses to air • Tanks will be inside buildings and the plant will benefit from active temperature controls • All tanks, drums and IBCs onsite are lidded and sealed. • All unloading / loading operations are overseen by the Site Manager. 	<p>Moderate: fugitive emissions are expected</p>	<p>Pollution</p>	<p>LOW – due to the proposed management techniques</p>
<p>Leaks / spillages from distillation process / waste storage / chemicals</p>	<p>Land, Groundwater & Surface Water</p>	<p>Waterborne</p>	<ul style="list-style-type: none"> • The site is surfaced in impermeable concrete hardstanding with a sealed drainage system. • All waste solvents and distilled solvents are accepted and stored in bunded tanks within buildings and bunds are checked on a daily basis. • All waste storage and transfer arrangements are in line with BAT. • The distillation process is undertaken inside a building within a bund. • The tanks are fitted with automatic level gauges and are alarmed. • All tank filling points are within the bund. • The distillation process is loaded and unloaded automatically using the vacuum process. • The distillation plant has an IBC sensor to prevent the unloading valve opening without IBC being in place (for waste residues). 	<p>Low</p>	<p>Contamination</p>	<p>VERY LOW due to the proposed management techniques</p>

			<ul style="list-style-type: none"> • Uncontaminated surface water run-off from the building roof is directed to the existing surface water drainage system. • Spill kits are strategically located around site. • Minor spills to be cleaned up immediately, using spill kits. Resultant materials to be placed in container for off-site disposal to appropriate facility, if necessary. • Immediate action to be taken in event of any major spills. Spillage to be cleared immediately and placed in containers for offsite disposal. EA to be informed. 				
Dust	Local Residents / Leisure Users	Airborne inhalation	&	<ul style="list-style-type: none"> • Permitted waste types do not include dusts, powders or loose fibres, and it is highly unlikely that any transfer activities will produce dust given the nature of the wastes (liquids). • Good housekeeping practices ensure cleanliness of site including potential dust issues. 	Low: Low potential for dust generation	Harm to human respiratory health – irritation & illness	VERY LOW due to proposed management techniques
Litter	Local Residents / Leisure Users	Airborne		<ul style="list-style-type: none"> • Permitted waste types do not include litter generating wastes, and it is highly unlikely that any storage or transfer activities will produce litter given the nature of the wastes (liquids). • Therefore, it is unlikely external litter will be generated. • All incoming and exporting waste vehicles will be covered. • The site access and site services shall be swept as necessary. • The site shall be inspected daily by the site manager and any litter or accumulated debris shall be dealt with immediately. 	Low: the occurrence of litter on site is highly unlikely therefore the probability of exposure is very low.	Nuisance	VERY LOW due to the proposed risk management techniques

Pests	Local Residents / Leisure Users	Airborne migration	&	<ul style="list-style-type: none"> • Pests are not likely to become a problem on site. • However, if a problem does develop, reasonable measures will be taken to use commercially available products and services to control pests. • If a particular waste is determined to be the cause of a problem it shall be removed from site at the earliest available opportunity and consideration given to mitigation measures that may be implemented before any more waste from that source is accepted on site. 	Low: the occurrence of pests on site is highly unlikely.	Nuisance	VERY LOW due to the proposed risk management techniques
Vandalism	Operator	The site could be subject to intentional vandalism and damage by intruders / trespassers who could cause damage or harm to the site or cause fires.		<ul style="list-style-type: none"> • The site has CCTV monitoring • Single entry gate controlling sole access point to site which will be closed and locked outside working hours • Storage and treatment activities carried out within locked and secure buildings which are manned during working hours and locked outside of working hours. • The site is well lit and secure. • All visitors to the site are required to register in the visitor's book and sign out again on exit, thereby minimising the risk of unauthorised visitors on the site. 	Low: the occurrence of vandalism taking place on site is highly unlikely.	Nuisance, Damage or Fire	VERY LOW due to the proposed risk management techniques
Fire / Explosion on site	Operator / Local Residents / Leisure Users	Windborne		<ul style="list-style-type: none"> • Arson by intruders is controlled via CCTV monitoring and site being manned during working hours and locked and secure outside of working hours. • The site is well lit and secure. • The site has been assessed in accordance with the Dangerous Substances and Explosive Atmosphere Regulations 2002 (DSEAR) and a 	Moderate: due to waste types and close proximity of some receptors	Fire	LOW due to the proposed risk management techniques

			<p>fire / emergency management plan is in place which will be updated in relation to the new distillation plant.</p> <ul style="list-style-type: none">• The new distillation plant has fire suppression in the form of a photocell AFN safety device for nitrocellulose. If any smoke is detected the AFN device immediately stops the plant and opens a water jet. The plant is also ATEX rated explosion proof.• Vent connections on the solvent storage tanks (waste solvents and distilled solvents) are fitted with flame arrestors• There will only ever be a maximum of 50 tonnes of wastes stored at any one time and waste will only be stored on site for a maximum of 28 days. This frequent turnover of stock significantly reduces the risk of 'older' material from self-heating and practically eliminates the potential of self combustion.• The site has a regular inspection and maintenance programme which identifies any electrical or mechanical machinery faults which could result in a machinery fire.• Machinery is regularly cleaned to remove any dust, etc.• A number of fire extinguishers are placed at strategic locations around the site including the reception and processing building.• Staff and visitors are only permitted to smoke within the designated smoking area.• There is no smoking permitted within the operational area of the site.			
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Incompatible Feedstock	Operator / Local Residents / Leisure Users	If incorrect waste is accepted on site it could result in adverse emissions	<p>The following methods are implemented to ensure that incompatible feedstocks do not compromise the safe operation of the site:</p> <ul style="list-style-type: none"> All waste accepted onto site have been subject to 'pre-acceptance' in accordance to established procedure <i>ECS-E01 Waste Pre-acceptance</i> All waste is accepted in accordance with established procedure <i>ECS-E03 Waste Acceptance</i> All waste is stored in accordance with established procedure <i>ECS-E05 Waste Storage</i> Any non-conforming waste will be removed prior to acceptance in accordance with established procedure <i>ECS-04 Waste Rejection</i> <p>New SOPs will be implemented when the new distillation plant is being commissioned to include procedures that ensure there are no accidental mixes or interactions in the distillation plant or its associated tanks.</p> <p>Records of incidents involving incompatible wastes will be kept on site together with a summary of the remedial action taken.</p>	Low: off-site receptor impacts	Nuisance / Adverse Emissions	LOW due to the proposed risk management techniques
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