

TD TYRE RECYCLING FACILITY, JOHNSTOWN, CARMARTHEN



ENVIRONMENTAL RISK ASSESSMENT

Report Number 2161r3v1d1021

Permit reference:

Waste returns reference:

Operator:

TD Tyre Recycling Ltd

Site Address:

Plot 7, Cillefwr Road West,
Alltynap Road,
Johnstown,
Carmarthenshire SA31 3RB

Prepared by:

Geotechnology Ltd
Ty Coed
Cefn-yr-Allt
Aberdulais
Neath
SA10 8HE

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1 INTRODUCTION

1.1 Background

TD Tyre Recycling Ltd (TD) proposes to operate an End of Life Vehicle tyre storage, baling and transfer operation at their site at Cillefwr Industrial Estate, Johnstown, Carmarthen (see Figure 1). The facility will also accept small quantities of agricultural plastic wrapping for storage and transfer following baling.

As part of the bespoke permit application to NRW, TD is required to describe the environmental risks potentially posed by the proposals.

This document evaluates these potential risks within a structured framework. The output is subsequently used to focus the management systems at the site. A separate noise assessment has also been prepared due to the proximity of residential properties.

2 OVERVIEW OF PROPOSALS

2.1 Site Layout

The site layout is shown in Figure 2. This shows that the operation will be essentially split between:

- a portacabin office
- an electrically powered baler
- external hardstanding used for temporary tyre storage

2.2 Waste Management

The proposed annual throughput will be up to 10000 tonnes of waste per annum with approximately 185,000 tyres (~1850 tonnes at 10kg / tyre) being on site at any one time. Agricultural plastics will form a tiny part of the operation with some 20t/yr being accepted.

Virtually all of the waste accepted for baling at the site are directly collected by TD tyres using a dedicated fleet of vehicles. This ensures that the waste is subject to a visual and handling pre-waste acceptance check and this limits the likelihood of non-conforming waste turning up at the site. Back at the site, each tyre is manually handled once more during offloading, providing another opportunity for visual checks.

The key stages of the waste management process are shown in Plates 2-1 to 2-3. As can be seen, the activity is relatively low key involving mechanical baling of approximately 120 tyres into a wire bound bale. These are then temporarily stored prior to off-site shipment which typically occurs using shipping containers, with each shipping container holding approximately 32 bales (3,840 tyres).



Plate 2-1 Loading of customer tyres into TD collection vehicle and transfer to site



Plate 2-2 Unloading and interlacing of tyres adjacent to baler



Plate 2-3 Placement of bales into temporary storage

2.3 Storage Management

Once baled, each bale is manoeuvred using telehandlers into dedicated storage areas in accordance with the configuration outlined in Figure 2. This comprises 24 stacks comprising approximately 1536 bales. Each stack measures ~5.6m x 5.6m and is up to ~3m high as each bale is approximately 1.4m long, 1.4m wide and 0.7m thick i.e. bales are stacked on top of each other in 4 layers of 16. Between each stack is a separation distance of 3m to allow for safe handling and emergency vehicular access. To ensure that tyres are stored for the shortest time feasible, the first-in-first-out principle is applied and managed by spraying a visible corner of each stack with the date (day/month) of baling.

2.4 Pollution Control Measures

As shown in Plate 2-4, the external yard comprises compact hardstanding. This is aimed at providing a level and stable storage platform and protecting the underlying ground.



Plate 2-4 External hardstanding

3 ENVIRONMENTAL SETTING

To understand the location and nature of receptors within the vicinity a review of the site location and environmental setting has been undertaken as part of the Site Condition Report. Extracts are repeated here for reference to ensure the ERA is focussed on the key aspects.

3.1 Site Setting

As shown on Figure 1, the proposed operation is located southwest of the town of Carmarthen between Johnstown and Llanllwch on Cillefwr Industrial Estate at Grid Reference 239050, 218890. Approximately 600m north of the site is the A40 running east-west and ~400m north is a main railway, also running east-west. Many of the key features of the area are visible and highlighted on the aerial image in Figure 3.

The site is located on Cillefwr Industrial Estate which provides serviced space for a range of mainly waste, mechanical, retail construction and light industrial uses. The TD site is at the furthest southwestern limit of the current industrial estate and the end of Cillefwr Road West, to the rear (south) of a Mechanical Garage known as Gordons Garage. Access to the hardstanding site is off Cillefwr Road West that forms a T-junction, with the southern arm providing access to TD Tyres and the opposite (northern) arm leading to CRES waste management. The main spine of the T-junction leads back into Cillefwr Industrial Estate.

Along the southern boundary of the site the densely vegetated ground slopes upwards to residential properties on the northern side of Alltynap Road. The northern facing gardens of these properties directly butt up against woodland that runs along the southern boundary of the site and which also extends part way around the western and eastern boundaries. Beyond the trees to the west is currently open farmland.

3.2 Previous Land Use

The site and immediate surrounding area remain largely unchanged until around 1983 with the construction of Cillefwr Industrial Estate. There does not appear to have been any previous recorded land uses at the site.

3.3 Geology

The site is underlain by sedimentary rocks overlain by sands and gravels.

3.4 Hydrology

The site lies within the catchment of the River Towy which flows northeast to southwest some 1.5km east of the site.

The nearest surface water feature is a stream 200m north, downslope of the site. The site is not considered to be susceptible to flooding.

3.5 Hydrogeology

The site is not located in any sensitive Source Protection Zones and the underlying bedrock and superficial deposits are classified as secondary aquifers. These provide some of the baseflow to the local surface water catchments and are considered to be of medium vulnerability.

3.6 Private Water Supplies

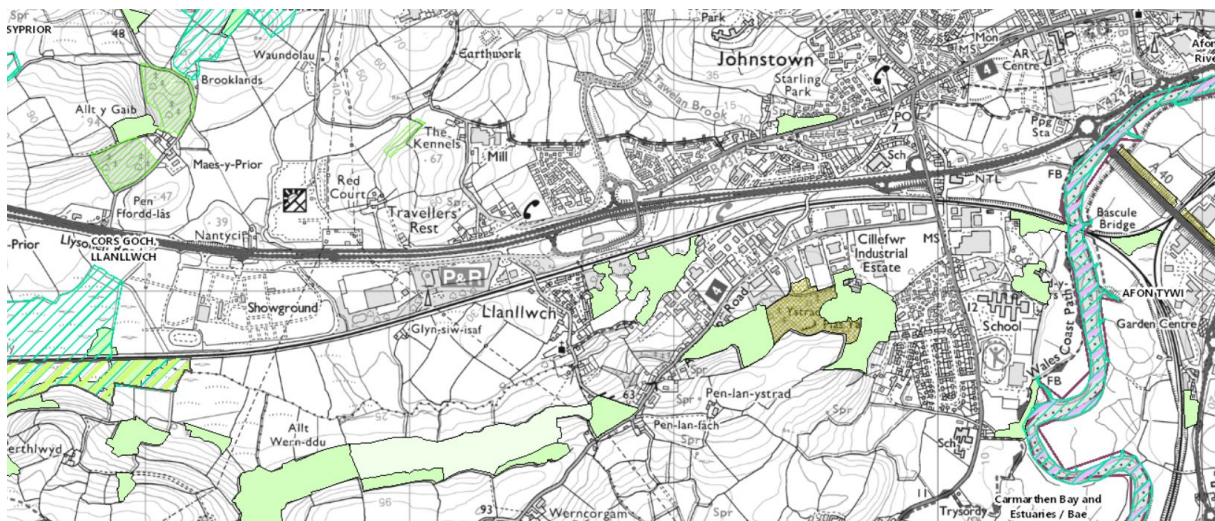
There are no known private water abstractions in close proximity to the site.

3.7 Protected Sites and Landscapes

There are 10 Protected Ancient Woodland Sites within 1km of the site, the nearest being some 90m southeast of the site. These are shown on Plate 3-1. There are no SSSI or SAC within 1km of the site but within 2km are the following designated sites:

- Gors Lach National Nature Reserve 1900m west
- 1300m east is the Afon Tywi, designated as a SSSI and SAC

These are also shown on Plate 3-1.



Note: grid squares shown are 1000m. Image captured from Magic mapping (www.defra.gov.uk)

Plate 3-1 Designated sites within the area.

3.8 Historical or Active Landfills

There are three Licensed Waste Management facilities within 1km of the site, the nearest being a Transfer station operated by CRES on the opposite side of the access road.

Potentially infilled land (non-water) is indicated some 217m and 904m north of the site at two old quarries. There are 9 entries for potentially infilled land (water) within the 1km buffer zone, the closest approximately 200m north at the site of an unknown pond.

There are two Registered Waste Transfer Sites located 279m and 342m northeast of the site. There are no known restrictions on waste sources at these sites.

Only one historical Landfill Site has been located within the buffer zone, some 734m west of the site. Here the specified waste included Inert, Industrial and Household waste.

3.9 Residential Properties

There are several residential properties and a care home immediately south of the site on Alltynap Road. These are identified on Figure 3.

There are no schools or hospitals within 500m of the site

3.10 Key Receptors

Based on the available information the key receptors to be included in the risk assessment are:

- Groundwater in the underlying secondary aquifers of medium vulnerability
- Surface water in stream to north
- Drainage within Industrial Estate
- Ancient woodland south of the site
- Gors Lach National Nature Reserve 1900m west
- Afon Tywi river designated as a SSSI and SAC 1300m east
- Residential properties and care home located on Alltynap Road
- Other uses of industrial estate
- Surrounding farmland

There are other similar receptors beyond those listed but the assessment of these groups and the controls developed will also protect the other receptors not listed but visible in Figure 3.

4 EVALUATION OF POTENTIAL IMPACTS

4.1 Methodology

Based on an understanding of the proposals and site setting, a tabulation of plausible exposure pathways has been compiled. This summarises the identified plausible pollution linkages using the conventional source-pathway-receptor relationships. Where these linkages are present and plausible an assessment of potential impacts has been made. This subsequently informs the need for site management and monitoring plans, the controls required in the EMS and the risk of pollution from the site.

The initial impact assessment has three stages:

1. identify risks from the proposed activities using conceptual site model (source – pathway – receptor)
2. characterise and assess the risks and mitigation measures in place
3. justify residual risk based on appropriate measures to control identified risks, if necessary

4.2 Identification and Evaluation of Potential Risks

To provide a structured transparent framework, generic assessment criteria have been clearly defined. The assessment of potential impacts is based on a tabulated risk assessment identifying the exposure pathways schematically shown in the conceptual model. The approach enables hazards and receptors to be readily identified. If a pathway exists that potentially connects the hazard to the receptor, then there is a risk of impact that requires evaluation, management and potentially mitigation. If a pathway does not exist there is no risk of impact. This approach has been adopted as it should be acceptable to all stakeholders with the methodology and findings transparent, defensible and repeatable.

For each plausible impact identified, the probability and consequence of the event occurring has been evaluated.

In accordance with the concept of risk assessment, each impact has been characterised in terms of the possible consequence and likelihood. These two terms are functions of five sets of criteria which are defined below:

Consequence of Impact

The consequences of a hazard being realised may be actual or potential harm and is a measure that combines the assessment of:

- Magnitude – the severity of the impact.
- Scale – the geographical extent of influence of the impact.
- Duration – the time period over which the impact will continue to be experienced.

In this assessment the overall consequence of an impact will be rated as very high, high, moderate, low or very low.

Likelihood of Impact

Probability of exposure is the likelihood of the receptors being exposed to the hazard. Example definitions:

- Very high – exposure is inevitable with no control measures between source and receptor
- High – exposure is probable: direct exposure likely with no/few barriers between hazard source and receptor
- Moderate – exposure is fairly probable: feasible exposure possible - barriers to exposure less controllable;
- Low – exposure is unlikely: several barriers exist between hazards source and receptors to mitigate against exposure
- Very Low – exposure is very unlikely: effective, multiple barriers in place to mitigate against exposure

For each of these criteria, a rating system has been developed. An explanation of the ratings associated with each of the above criteria are provided in Table 4-1 and Table 4-2. To facilitate a semi-quantitative evaluation of the potential impacts, each criteria has been given a numerical score between 1 and 5. Where there is insufficient data to categorise an impact against the criteria, the impact is assigned an appropriate default value and labelled 'unknown'. In these instances, a conservative approach is adopted and negative impacts are assigned a value of 5, reflecting the theoretical worst case scenario. Positive impacts that cannot be confidently rated against the criteria are assigned a value of 3, reflecting a theoretical mid case.

To obtain the overall **consequence** rating of the potential impact, the numerical values for each criteria (magnitude, scale and duration) are added together. Similarly, to obtain the overall **likelihood** of an impact, the exposure and probability scores are added together. The range of possible values for consequence is therefore 3-15, and the range for likelihood is 2-10.

Table 4-1 Criteria for evaluation of the likelihood of possible impacts

			Discrete Event	Prolonged Exposure from a Single Activity or Event	
		Very high	Daily or continuous	Exposure in perpetuity	5
Frequency to Impact	An indication of the frequency of the activity that may cause the impact, or the continuity of the exposure, either negative or positive	High	Weekly/once per week	Continuous exposure beyond the waste transfer operation but not in perpetuity	4
		Moderate	Monthly/once per month	Continuous exposure during waste transfer operation (for months/ years)	3
		Low	Bi-annually	Continuous exposure during waste transfer operation (for weeks)	2
		Very low	Annually or less frequently	Prolonged exposure but for a very short duration (for few days)	1
		Unknown	Frequency of activity unknown	Continuity of exposure unknown	5*
Probability of Occurrence	An assessment of the degree of certainty associated with a potential impact, either negative or positive	Highly Likely	Very likely or certain to occur		5
		Likely	Likely to occur		4
		Possible	May possibly occur		3
		Unlikely	Unlikely to occur		2
		Highly Unlikely	Very unlikely to occur, or almost impossible		1
		Unknown	Probability of occurrence unknown		5*

** Score of 3 assigned for positive impacts*

Table 4-2 Criteria for evaluation of the consequence of possible impacts

Criteria	Description	Possible Results		
		Term	Description	Score
Magnitude of Impact	An indication of the severity of the impact, either positive or negative	Very High	Extreme negative effect – Where environmental functions or processes permanently cease Extreme positive effect – Permanently off-sets consumption of natural	5
		High	Severe negative effect – Where environmental functions or processes are altered to the extent that they temporarily cease Severe positive effect - Temporarily off-sets consumption of natural	4
		Moderate	Moderate negative effect - the affected environment is altered, but functions continue, albeit in a modified way Moderate positive effect – Consumption of natural resources continues, but a significantly lower quantity is required	3
		Low	Minimal negative effect - affects the environment in such a way that functions and processes are not affected Minimal positive effect - Consumption of natural resources continues, but a large amount is still required	2
		Very low	Minimal or negligible effect	1
		Unknown	Magnitude of impact unknown	5*
Scale of Impact	An indication of the geographical extent of the impact, either negative or positive	National	Affects international resources	5
		Regional	Affects the resources of Wales and the UK	4
		District	Affects off-site resources within adjacent County Boroughs	3
		Local	Affects the project area e.g. Cillefwr industrial estate and immediate surrounding land & residential area	2
		Site specific	Localised, confined to site	1
		Unknown	Extent of impact unknown	5*
Duration of Impact	An indication of the duration or time over which the impact will be experienced, either negative or positive	Permanent	Will remain permanently	5
		Long Term	Extends beyond the waste transfer operations but not permanent	4
		Medium	Throughout the recycling operation	3
		Short	Shorter than the recycling operations	2
		Transient	Very short duration	1
		Unknown	Duration of impact unknown	5*

** Score of 3 assigned for positive impacts*

Based upon the overall aggregate scores for consequence and likelihood, each impact is assigned a qualitative term, ranging from 'very low' to 'very high'. The range of values equating to 'very low' and 'very high' have been chosen to approximate the 10th percentile and 90th percentile values of the overall ranges, for both consequence and likelihood. This system is summarised in Table 4-3.

Table 4-3 Overall consequence and likelihood ratings

Overall Likelihood	Sum of Exposure + Probability	2-3	4-5	6-7	8-9	10
		Very Low	Low	Moderate	High	Very High
Overall Consequence	Sum of Magnitude + Scale + Duration	3-4	5-7	8-11	12-14	15
		Very Low	Low	Moderate	High	Very High

Finally, the overall significance associated with the impact is determined by cross-referencing the overall consequence and likelihood ratings, as shown in Table 4-4. This determines the overall significance of the impact, which is assigned one of five qualitative terms, ranging from 'very low significance' to 'very high significance'. Each of the qualitative terms and implication of these levels of significance for the proposed screening and recovery activities are provided in Table 4-5.

Table 4-4 Matrix used to determine overall significance of potential impact

		OVERALL CONSEQUENCE OF IMPACT (Sum of Magnitude + Duration + Scale)				
		Very Low	Low	Moderate	High	Very High
OVERALL LIKELIHOOD OF IMPACT (Sum of Exposure and Probability)	Very Low	Very Low	Very Low	Low	Low	Moderate
	Low	Very Low	Low	Low	Moderate	High
	Moderate	Low	Low	Moderate	High	High
	High	Low	Moderate	High	High	Very High
	Very High	Moderate	High	High	Very High	Very High

Table 4-5 Explanation and interpretation of significance ratings for impacts remaining after mitigation

Significance of Impact After Mitigation	Implications for Project	
Very high	Extremely beneficial and enduring effect	Fatal flaw. There is a high probability that severe harm could arise to a designated receptor from an identified hazard.
High	Very substantial improvement to existing resources	Unacceptable effect. Harm is likely to arise to a designated receptor from an identified hazard without intervention.
Moderate	Appreciable improvement to, or will sustain, existing resources	Effect is serious enough to cause concern. Changes to waste operation should be considered. It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely, that the harm would be relatively mild.
Low	Some benefits	Acceptable effect - the possibility of the impact occurring is by no means certain and the consequence of exposure is such that there would be no measurable harm.
Very low	Negligible effect - probable that impact could occur but the impact would not be measurable	Negligible effect - probable that impact could occur but the impact would not be measurable.

4.2.1 Presentation of Impacts

In view of the large amount of data to be handled, matrices are used to present the potential impact ratings associated with the proposed activities in a clear, transparent and consistent manner.

Individual tables corresponding to each aspect (such as air quality, surface water) are used to assess the risks associated with the potential impacts.

5 IMPACT ASSESSMENT

5.1 Site Context

The scope and nature of the waste transfer operation and the control measures that will be implemented will influence the potential risks posed to the environment. These aspects are listed below:

- Non-hazardous tyres will typically be delivered to site during normal operating hours - 07:00 - 17:00 Monday to Friday during spring and summer and 08:00 to 17:00 during autumn and winter
- All tyres are under the control of TD prior to being brought to site allowing for pre-waste acceptance checks
- Waste operation only involves storage and mechanical baling of non-hazardous tyres
- Storage and baling activities will occur on an Industrial Estate at a secure site with hardstanding
- Quantity of waste accepted at the facility will be controlled by Permit and site layout requirements of approved fire plan
- There are no direct emissions to land, air or water

In addition:

- The activities are not within 1000m of a European Site (candidate or Special Area of Conservation, proposed or Special Protection Area or Ramsar site) or a Site of Special Scientific Interest (SSSI) – this limits the possibility of impact
- The site is outside of any Air Quality Management Areas

5.2 Evaluation of Impacts

The output of the assessment is summarised in the matrices presented in Table 5-1.

Table 5-1 Summary of Environmental Risk Assessment

Data and information				Judgement				Action		
Receptor	Source	Harm	Pathway	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk	Procedure No
What is at risk? What do I wish to protect?	What is the agent or process with potential to cause harm?	What are the harmful consequences if things go wrong?	How might the receptor come into contact with the source?	How likely is this contact?	How severe will the consequences be if this occurs?	What is the overall magnitude of the risk?	On what did I base my judgement?	How can I best manage the risk to reduce the magnitude?	What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).	
Immediate local human population on Alltynap Road including residential properties and Care Home owners and residents and neighbours on industrial estate	Releases of particulate matter (dusts) and micro-organisms (bioaerosols).	Harm to human health - respiratory irritation and illness.	Air transport then inhalation.	Very Low (1+1 = 2)	Very Low (1+2+1 = 4)	Very Low	Permitted waste types do not include dusts, powders, biodegradables or loose fibres.	Ensure waste acceptance identifies potentially problematic waste. Maintain good level of site housekeeping.	Very Low	P008
	As above	Nuisance - dust on cars, clothing etc.	Air transport then deposition	Very Low (1+1 = 2)	Very Low (1+2+1 = 4)	Very Low	Waste activity not a significant source of dust.	As above	Very low	P008
Local human population, livestock and wildlife.	Litter	Nuisance, loss of amenity and harm to animal health	Air transport then deposition	Very Low (1+1 = 2)	Very Low (1+2+1 = 4)	Very Low	Waste tyres under control of TD at all times and not a source of litter. Perimeter fencing prevents litter escape, in the unlikely event of occurring.	As above. Litter will be collected as necessary. Maintain good level of housekeeping.	Very low	P009

Table 5-1 Continued

Data and information				Judgement			Action			
Receptor	Source	Harm	Pathway	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk	Procedure No
What is at risk? What do I wish to protect?	What is the agent or process with potential to cause harm?	What are the harmful consequences if things go wrong?	How might the receptor come into contact with the source?	How likely is this contact?	How severe will the consequences be if this occurs?	What is the overall magnitude of the risk?	On what did I base my judgement?	How can I best manage the risk to reduce the magnitude?	What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).	
Immediate local human population on Alltynap Road including residential properties and Care Home owners and residents and neighbours on industrial estate	Waste, litter and mud on local roads	Nuisance, loss of amenity, road traffic accidents.	Vehicles entering and leaving site through Industrial Estate.	Very Low (1+1 = 2)	Very Low (1+2+1 = 4)	Very Low	TD vehicles are road-worthy clean LGVs. Tyres are covered during transport. Site can only be accessed through Industrial Estate and not through adjacent residential areas.	Litter will be collected as necessary.	Very low	P010
	Odour	Nuisance, loss of amenity	Air transport then inhalation.	Very Low (1+1 = 2)	Very Low (1+2+1 = 4)	Very Low	Low odour potential waste.	Ensure waste acceptance checks identify potentially problematic waste.	Very Low	P012
	Noise and vibration	Nuisance, loss of amenity, loss of sleep.	Noise through the air and vibration through the ground.	Low (1+3 = 4)	Low (2+2+2 = 6)	Low	Baling will be infrequent and short duration. Mechanically baler to be electrically powered. Broadband reversing devices to be used on telehandlers.	Ensure all plant subject to planned preventative maintenance. Subjectively monitor site noise levels during site inspections based on experience. Implement noise management plan.	Low (see findings of noise impact assessment)	P007
	Pests such as scavenging animals and scavenging birds	Harm to human health - from waste carried off site and faeces. Nuisance and loss of amenity.	Air transport and over land	Very Low (1+1 = 2)	Very Low (1+2+1 = 4)	Very Low	Waste tyres unlikely to attract scavenging animals and birds	Ensure waste acceptance identifies potentially problematic waste.	Very low	P011

Table 5-1 Continued

Data and information				Judgement				Action		
Receptor	Source	Harm	Pathway	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk	Procedure No
What is at risk? What do I wish to protect?	What is the agent or process with potential to cause harm?	What are the harmful consequences if things go wrong?	How might the receptor come into contact with the source?	How likely is this contact?	How severe will the consequences be if this occurs?	What is the overall magnitude of the risk?	On what did I base my judgement?	How can I best manage the risk to reduce the magnitude?	What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).	
Immediate local human population on Alltynap Road including residential properties and Care Home owners and residents and neighbours on industrial estate	Pests (e.g. flies)	Harm to human health, nuisance, loss of amenity	Air transport and over land	Very Low (1+1 = 2)	Very Low (1+2+1 = 4)	Very Low	Waste tyres unlikely to attract scavenging animals and birds due to lack of food source. Waste only in storage for short duration. Little standing water once tyres baled.	Ensure waste acceptance checks implemented and rapid waste turnover.	Very low	P001, P011
Local human population and / or livestock after gaining unauthorised access to the waste operation	All on-site hazards: wastes, machinery and vehicles.	Bodily injury	Direct physical contact	Very Low (1+1 = 2)	Very Low (2+1+1 = 4)	Very Low	Little high value assets on site. Site boundary is fenced and secure. Access to liquid wastes restricted. All liquids shall be provided with secondary containment.	Activities shall be managed and operated in accordance with a management system which will include site security measures to try and prevent unauthorised access.	Very low	PO14
Local human population and local environment.	Arson and / or vandalism causing the release of polluting materials to air (smoke or fumes), water or land.	Respiratory irritation, illness and nuisance to local population. Injury to staff, firefighters or arsonists/ vandals. Pollution of water or land.	Air transport of smoke. Spillages and contaminated firewater by direct run-off from site and via surface water drains and ditches.	Low (1+3 = 4)	Low (3+2+2 = 7)	Low	Site boundary is fenced and secure. Access to liquid wastes restricted. All liquids shall be provided with secondary containment.	As above. Tyre storage in dedicated stacks aimed at limiting potential fire spread.	Very Low	P001, P002, P003, FPMP
Local human population and local environment	Accidental fire causing the release of polluting materials to air (smoke or fumes), water or land.	Respiratory irritation, illness and nuisance to local population. Injury to staff or firefighters. Pollution of water or land.	As above.	Very Low (1+ 2 = 3)	Low (3+2+2 = 7)	Very Low	Site operated in accordance with EMS. Baling occurs away from main tyre storage stacks. Few ignition sources. No fires & no smoking in waste storage area.	Fire plan and strict waste acceptance and storage procedures to be implemented to minimise risk. Ensure 24/7 access to hydrant adjacent to site entrance.	Very Low	P001, P002, P003, FPMP

Table 5-1 Continued

Data and information					Judgement			Action		
Receptor	Source	Harm	Pathway	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk	Procedure No
What is at risk? What do I wish to protect?	What is the agent or process with potential to cause harm?	What are the harmful consequences if things go wrong?	How might the receptor come into contact with the source?	How likely is this contact?	How severe will the consequences be if this occurs?	What is the overall magnitude of the risk?	On what did I base my judgement?	How can I best manage the risk to reduce the magnitude?	What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).	
All surface waters close to and downstream of site including stream 200m north and surface water drainage on Industrial Estate	Spillage of liquids e.g. fuels / oils.	Acute and chronic effects	Direct run-off from site across hardstanding	Very Low (1+2 = 3)	Low (2+2+2 = 6)	Very Low	No surface water in direct proximity. All liquids shall be provided with secondary containment. All waste is non-hazardous and does not generate significant leachate.	Ensure EMS is implemented and all procedures routinely reviewed and improved as necessary. Ensure all plant subject to preventative maintenance plan.	Very Low	PO04
Groundwater in underlying secondary aquifers of medium vulnerability	Spillage of liquids e.g. fuels / oils.	Chronic or acute effects e.g. contamination of groundwater	Transport through soil/groundwater	Very Low (1+2 = 3)	Low (2+2+2 = 6)	Very Low	Site located on secondary aquifers of medium vulnerability. Unsaturated zone beneath site. All fluids stored in bunded containers. All infrastructure subject to preventative maintenance plan.	Ensure EMS is implemented.	Very Low	P001, P004, P005, P006

Table 5-1 Continued

Data and information				Judgement			Action			
Receptor	Source	Harm	Pathway	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk	Procedure No
What is at risk? What do I wish to protect?	What is the agent or process with potential to cause harm?	What are the harmful consequences if things go wrong?	How might the receptor come into contact with the source?	How likely is this contact?	How severe will the consequences be if this occurs?	What is the overall magnitude of the risk?	On what did I base my judgement?	How can I best manage the risk to reduce the magnitude?	What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).	
Designated sites (Ancient Woodland 90m south, Afon Tywi SSSI / SAC 1300m east & Nature Reserve 1900m west)	Releases of particulate matter (dusts) and micro-organisms (bioaerosols) and litter	Harm to protected site through particulate fall-out / smothering	Air transport then deposition	Very Low (1+1 = 2)	Very Low (1+2+1 = 4)	Very Low	Permitted waste types do not include dusts, powders, biodegradables, odorous wastes or loose fibres Wind direction typically westerly and southwesterly at the site, away from identified sites. Activity not likely to generate particulate matter beyond site boundary.	Ensure EMS implemented during day-to-day operations.	Very Low	
Designated sites (Ancient Woodland 90m south, Afon Tywi SSSI / SAC 1300m east & Nature Reserve 1900m west)	Odour	Nuisance and toxicity to wildlife	Air transport then inhalation.	Very Low (1+1 = 2)	Very Low (1+2+1 = 4)	Very Low	As above.	As above	Very Low	
Designated sites (Ancient Woodland 90m south, Afon Tywi SSSI / SAC 1300m east & Nature Reserve 1900m west)	Noise and vibration	Nuisance to wildlife	Noise through the air and vibration through the ground.	Very Low (1+1 = 2)	Very Low (1+2+1 = 4)	Very Low	Noise from site activities not likely to be detectable at designated sites (see noise impact assessment). Baling only undertaken for short periods intermittently.	Ensure EMS implemented.	Very Low	
Designated sites (Ancient Woodland 90m south, Afon Tywi SSSI / SAC 1300m east & Nature Reserve 1900m west)	Arson and / or vandalism causing the release of polluting materials to air (smoke or particulates), water or land.	Respiratory irritation to wildlife, modification / loss of habitat including particulate fall out and release of polluting substances to land and water	Air transport of smoke and particulates. Spillages and contaminated firewater by direct run-off from site as surface run-off or via land and groundwater	Very Low (1+1 = 2)	Very Low (1+2+1 = 4)	Very Low	SSSI / SAC and Nature reserve are >1000m east and west of the site and woodland is upgradient to the south. Prevailing wind direction typically blows from southwest.	Ensure waste acceptance and FPMP is fully implemented and risk of fire always minimised.	Very Low	P001, P002, P003, FPMP

Table 5-1 Continued

Data and information					Judgement			Action		
Receptor	Source	Harm	Pathway	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk	Procedure No
What is at risk? What do I wish to protect?	What is the agent or process with potential to cause harm?	What are the harmful consequences if things go wrong?	How might the receptor come into contact with the source?	How likely is this contact?	How severe will the consequences be if this occurs?	What is the overall magnitude of the risk?	On what did I base my judgement?	How can I best manage the risk to reduce the magnitude?	What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).	
Designated sites (Ancient Woodland 90m south, Afon Tywi SSSI / SAC 1300m east & Nature Reserve 1900m west)	Impact to controlled waters (surface water and groundwater)	Negative impact on water draining into sensitive habitats.	Direct run-off from site across ground surface, via surface water drains, ditches etc. Infiltration through soil to groundwater and movement towards identified habitats	Very Low (1+1 = 2)	Very Low (1+2+1 = 4)	Very Low	Site is over 1000m away from designated receptors and there is no direct connection. All liquids to be stored in bunded secure containers.	Ensure EMS is implemented.	Very Low	
Designated sites (Ancient Woodland 90m south, Afon Tywi SSSI / SAC 1300m east & Nature Reserve 1900m west)	Pests such as scavenging animals, birds and flies	Nuisance to wildlife, wildlife movement, predation and negative change of habitat	Pest at site and transfer of pests from site to designated sites	Very Low (1+1 = 2)	Very Low (1+2+1 = 4)	Very Low	Site is over 1000m away from designated receptors and there is no direct connection. All liquids to be stored in bunded secure containers. Waste is not attractive to pests due to lack of food source. Little ponded water on site once tyres baled.	Ensure waste acceptance & EMS is implemented.	Very Low	

5.3 Outcome of Impact Assessment

Provided that management plans are in place and fully adopted, the assessments demonstrate that the proposed activities will not result in unacceptable environmental impacts.

To ensure that the predictions made in the assessment are achieved will, however, require the control measures identified to be fully adopted. To minimise the opportunity of these measures not being fully implemented, the operation of the site will continue to be in accordance with a documented management system which will specifically include measures aimed at protecting the environment. These will include:

- Processing of waste in accordance with an Environmental Permit and a documented management system
- Management of site by personnel with relevant and current WAMITAB certification and waste management experience
- Ensuring areas used to store and process wastes will continue to be maintained and managed
- Maintaining site security
- Ensure separation distances between tyre bale stacks
- Separating potentially combustible waste in accordance with an approved Fire Prevention
- Not burning waste
- Only treating wastes in accordance with the Permit
- Not accepting dusts
- Ensuring where disposal is necessary, this will be undertaken in a manner which minimises its impact on the environment
- Preventing the activities extending beyond the Permit boundary
- Implementing preventative maintenance programme for all plant and infrastructure

5.4 Positive Impacts

To satisfy the Permit requirements, this assessment has focussed on identifying the potential negative environmental risks associated with the proposed waste management facility so that these can be managed and mitigated, as far as practicable, within the site management systems. In this context, the positive impacts associated with the development are not highlighted. Some of the direct positive impacts will include:

- Recovery of tyre waste – all too often tyres are fly-tipped or piled up in warehouses by unscrupulous operators. The operation proposed at TD tyres limits this happening, providing a significant benefit to society
- Full time employment and associated personal and community benefits within a semi-rural area

6 SUMMARY

The assessment predicts that the proposed operation will not significantly impact the environment or neighbours.

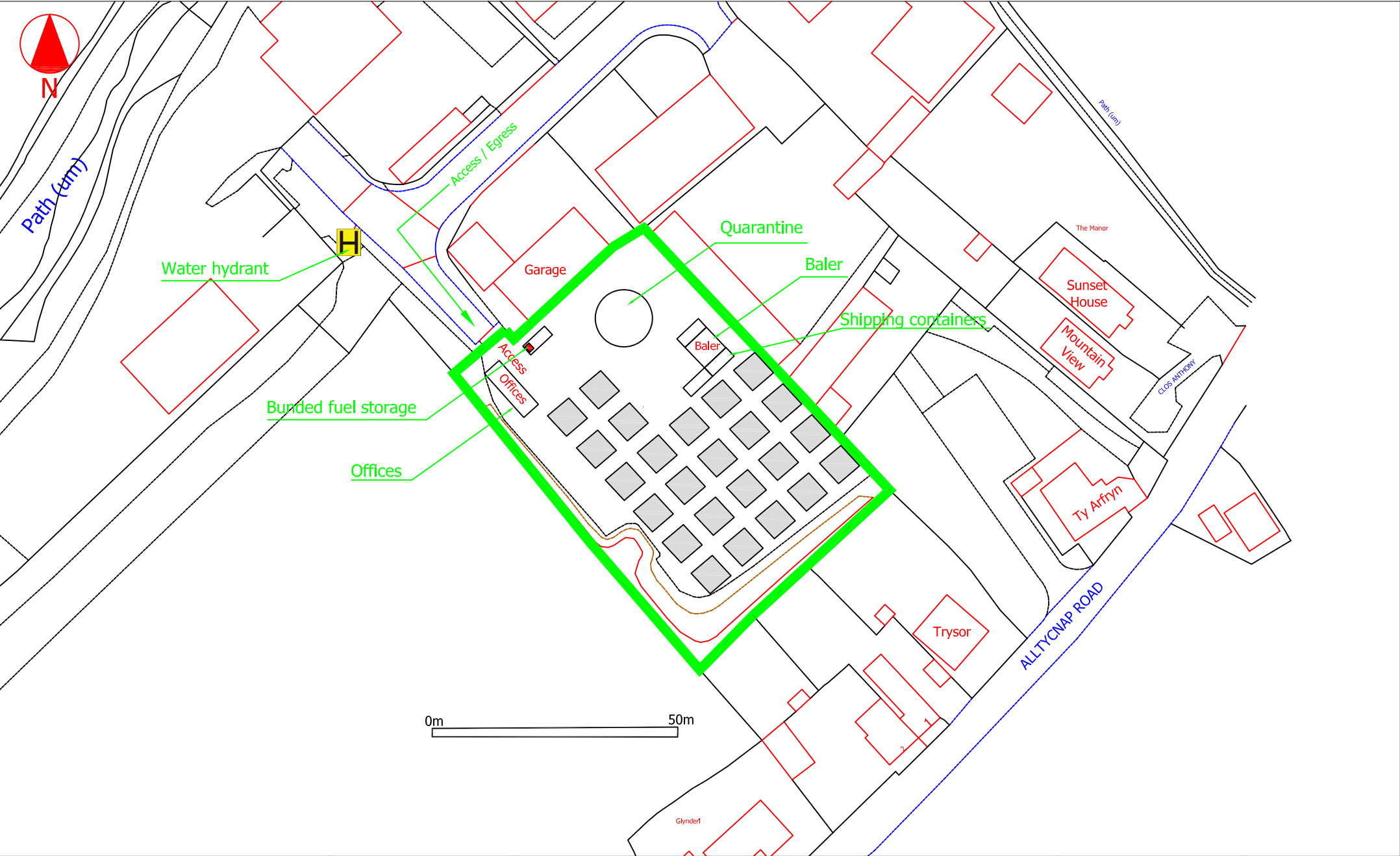
To ensure the pollution control system remains effective, the infrastructure will require regular inspection and preventative maintenance in accordance with the EMS. A dynamic monitoring programme has also been developed (see separate Monitoring Plan).

There are no point source emissions from the operation. The risk assessment has also considered potential emissions from odour, noise, dust, pests, mud and litter and found that such emissions should not give rise to pollution due to the nature of the proposals. A noise management plan and fire plan have, however, been prepared and require implementation. Management plan refinement and further risk assessment may be warranted if the position and type of receptors change and / or the operation does not perform as predicted.

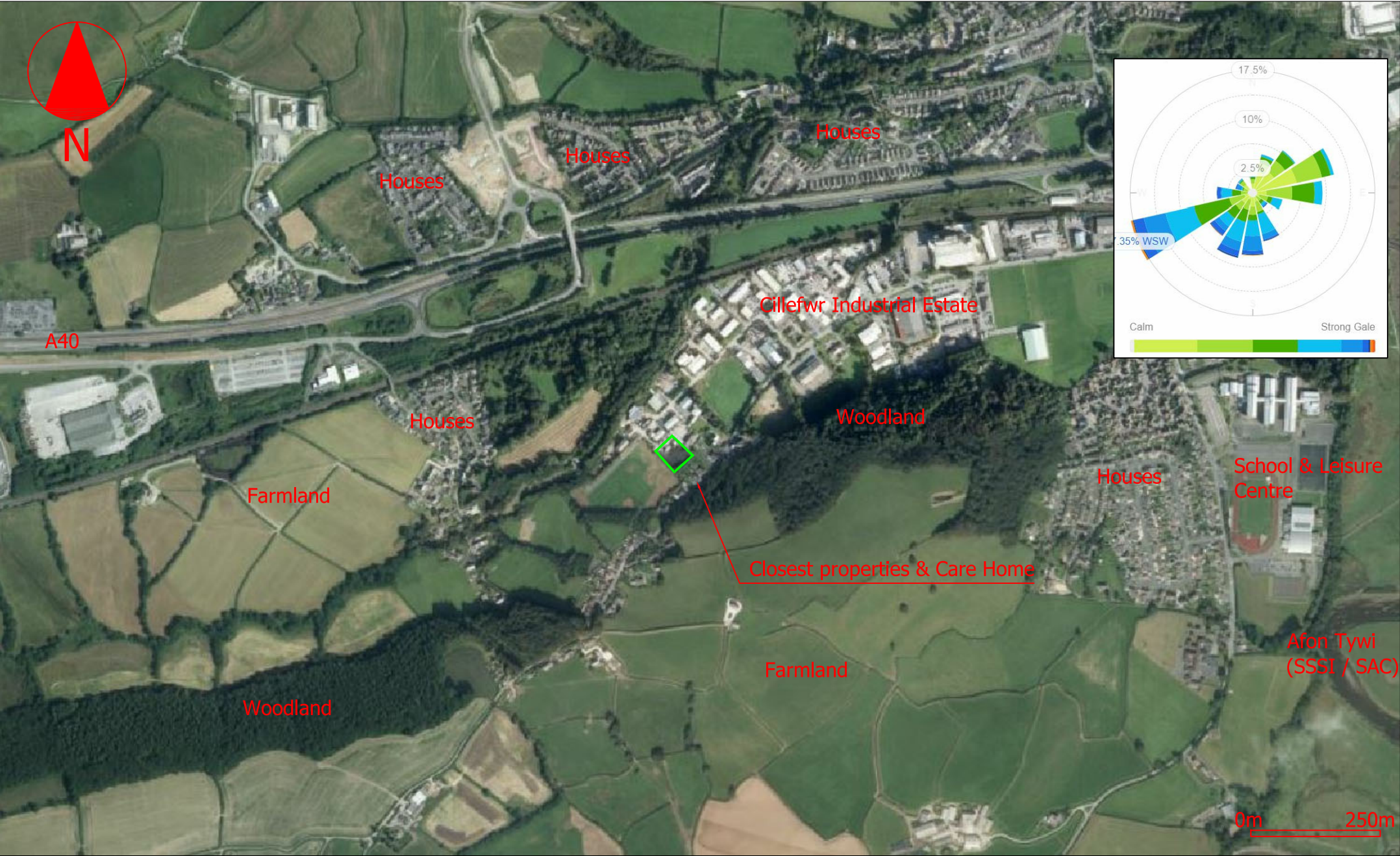
Figure 1 Site Location Plan



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Drawing Number 2161/2		NOTE		CLIENT TD Tyre Recycling Ltd		PROJECT TD Tyre Recycling Facility, Johnstown, Carmarthen		DRAWING NUMBER 2161/2		REVISION 0	
Legend						SCALE As Shown		DATE 11.21		DRAWN BR	
Permit boundary		Tyre stack (5.6m x 5.6m x 3m high)		Rev		Date		Status/Amendments		TITLE Site Layout and Access	
										Geotechnology Ty Coed, Cefn-y-n-Abi, Aberdâr, Neath SA10 8HE 01639 775293 www.geotechnology.net	



Drawing Number 2161/3		NOTE		CLIENT		PROJECT		DRAWING NUMBER		REVISION	
Legend				TD Tyre Recycling Ltd		TD Tyre Recycling Facility, Johnstown, Carmarthen		2161/3		0	
				Rev		Date		As Shown		DATE	
				Status/Amendments		TITLE		BR		CREATED	
TD Tyres site						Aerial Image of Key Features		Geotechnology Ty Coed, Cefn-y-nab Aberdare, Neath SA10 8HE 01639 775293 www.geotechnology.net			



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TECHNOLOGY

Geotechnical &
Environmental Services

Ty Coed
Cefn-yr-Allt
Aberdulais
Neath SA10 8HE

T 01639 775293
F 01639 779173

enquiries@geotechnology.net
www.geotechnology.net