

## **REPORT 3**

### **BESPOKE ENVIRONMENTAL PERMIT APPLICATION**

### **ENVIRONMENTAL RISK ASSESSMENT**

#### **King's Dock Swansea**

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# 1 INTRODUCTION

## 1.1 Background

Geotechnology has been commissioned by Glass Tech Recycling Limited (Glass Tech) to prepare a bespoke Environmental Permit application for submittal to Natural Resources Wales (NRW) for a proposed waste management facility at King's Docks, Swansea. The details of the application are summarised in Table 1-1 and the site location is shown on Figure 1 and Figure 2.

**Table 1-1 Application Details**

|                                                         |                                                   |
|---------------------------------------------------------|---------------------------------------------------|
| Name of the Applicant                                   | Glass Tech Recycling Limited                      |
| Activity Address                                        | Roberts Road<br>King's Dock<br>Swansea<br>SA1 8RU |
| National Grid Reference                                 | E 266878 N 192496                                 |
| Max Proposed Waste Throughput                           | 325,000tonnes                                     |
| Max Proposed Storage Capacity (Infeed and Output Waste) | 4,550 tonnes                                      |
| Max Proposed Storage Capacity (Finished Product)        | 10,365 tonnes                                     |

The development proposals seek to redevelop the existing vacant modern warehouses to provide for a modern Waste Management Facility. All proposed activities will be undertaken indoors. When operational, the site will recover glass products for a variety of markets.

As part of the bespoke Permit application Glass Tech is required to describe the environmental risk posed by the proposals. This must take the form of an environmental risk assessment which should follow the methodology set out by the EA Environmental Risk Assessment (EPR–H1) guidance or an alternate methodology with an equivalent level of detail.

The objective of this Environmental Risk Assessment (ERA) is to establish the impact, if any, the proposed waste activities will have on the environment, human health or amenity issues of concern.

## 1.2 Context of Proposed Activities

This assessment adopts the H1 Environmental Risk Assessment approach set out by NRW. In this context, the digital H1 software tool, which has been developed to help consistently quantify the impact of proposed releases from regulated activities, has been used as a method of quantifying potential impacts on human and ecological receptors. The impacts are also described using a series of risk matrices, similar to those used by NRW and EA for Standard Rules Permits. This latter approach is particularly valid at this site as the proposed operations and pollution control measures are similar to those considered acceptable by NRW under a range of Standard Rules Permits underpinned by generic risk assessments. Within this context, the proposed activities could be considered conventional and the associated environmental risks familiar to NRW as they are the same as those proposed in several Standard Rules. Similarly, the Local Planning Authority has recognised the context of the proposed operations and the existing B2 planning status at the site and has confirmed that the proposals are acceptable provided a Change of Use application is submitted, which is ongoing.

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## 2 PROPOSED ACTIVITIES

The development proposals seek to produce quality glass products from up to 325,000 tonnes of waste glass per year. The proposals will utilise the existing vacant warehouses which require very little preparation apart from construction of a sealed drainage system for and alteration to roller shutter door heights. The proposed layout of the site is provided in Figure 3.

### 2.1 Acceptable Wastes

The glass processing facility requires infeced materials that are principally glass and these will be sourced from waste. The plant will process plate glass and container glass separately, as shown on the processing flowcharts below. Small amounts of contraries are inevitable with certain glass wastes and therefore the production process includes a separation and cleaning step in order to completely remove any contraries from the glass to ensure a clean final product. The plant will therefore output its glass products and a small quantity (compared with the products) of other materials. The other materials separated from the glass at the plant will include upvc, timber, ferrous and non-ferrous metal, rubber as well as a residue of mixed waste. All but the mixed waste residue will be removed from the site for further recycling or recovery, such that only a very small quantity of waste for disposal will be produced during processing.

Glass Tech propose to only accept wastes with the EWC codes listed in Table 3-1, none of which contain dangerous substances. However, it is recognised that EWC codes alone do not properly define the waste types and certain codes (19 12 12 for example) can in fact represent a very broad range of waste. Accordingly, Glass Tech can more clearly define its acceptable waste input by placing a restrictive description alongside each of the EWC codes. It is proposed that after each code the following restrictive description is added to better define the acceptable waste:

“waste comprising glass or comprising principally glass with a small proportion of other materials or comprising framed glass only”

This definition more clearly shows Glass Tech's intent is to receive and process glass with other attached and mixed materials being of little interest. Restricting the description to glass only would risk the facility being unable to process a large proportion of the waste glass arisings from municipal and construction wastes.

In order that Glass Tech avoids the potential problem of certain wastes being coded by their ancillary materials (for example a upvc double glazed unit being coded by the producer as 17 02 03 plastic) the proposed list of acceptable wastes includes the codes for the ancillary materials that are commonly associated with glass wastes. In these cases the type of waste can be better defined by attaching the following restrictive description:

“waste that is bonded to or fixed to glass only”

Glass Tech will operate a rigorous documented management system that includes waste acceptance procedures and Factory Production Control for its products.

**Table 2-1 List of Wastes to be Accepted**

| Code                                                                | Description of Waste to be Accepted                                                                                                                                                                            | Entry Type |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|                                                                     | <b>Chapter 10 WASTES FROM THERMAL PROCESSES</b>                                                                                                                                                                |            |
|                                                                     | <b>10 11 Wastes from manufacture of glass and glass products</b>                                                                                                                                               |            |
| 10 11 12                                                            | Waste glass other than those mentioned in 10 11 11                                                                                                                                                             | MN         |
|                                                                     | <b>Chapter 15 WASTE PACKAGING: ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED</b>                                                                                 |            |
|                                                                     | <b>15 01 Packaging (including separately collected municipal packaging waste)</b>                                                                                                                              |            |
| 15 01 07                                                            | Glass packaging                                                                                                                                                                                                | AN         |
|                                                                     | <b>Chapter 16 WASTES NOT OTHERWISE SPECIFIED IN THE LIST</b>                                                                                                                                                   |            |
|                                                                     | <b>16 01 End-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance (except 13, 14, 6 06 and 16 08)</b> |            |
| 16 01 20                                                            | Glass                                                                                                                                                                                                          | AN         |
|                                                                     | <b>Chapter 17 CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)</b>                                                                                                        |            |
|                                                                     | <b>17 02 Wood, glass and plastic</b>                                                                                                                                                                           |            |
| 17 02 02                                                            | Glass                                                                                                                                                                                                          | MN         |
| 17 02 03                                                            | Plastic                                                                                                                                                                                                        | MN         |
|                                                                     | <b>17 04 Metals (including their alloys)</b>                                                                                                                                                                   |            |
| 17 04 02                                                            | Aluminium                                                                                                                                                                                                      | MN         |
| 17 04 03                                                            | Lead                                                                                                                                                                                                           | MN         |
| 17 04 05                                                            | Iron and steel                                                                                                                                                                                                 | MN         |
| 17 04 07                                                            | Mixed Metals                                                                                                                                                                                                   | MN         |
|                                                                     | <b>17 09 Other construction and demolition wastes</b>                                                                                                                                                          |            |
| 17 09 04                                                            | Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03                                                                                                         | MN         |
|                                                                     | <b>Chapter 19 WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE</b>                      |            |
|                                                                     | <b>19 12 Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified</b>                                                                    |            |
| 19 12 04                                                            | Plastic and rubber                                                                                                                                                                                             | AN         |
| 19 12 05                                                            | Glass                                                                                                                                                                                                          | AN         |
| 19 12 07                                                            | Wood other than that mentioned in 19 12 06                                                                                                                                                                     | AN         |
| 19 12 12                                                            | Other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11                                                                                      | AN         |
|                                                                     | <b>Chapter 20 MUNICIPAL WASTES (HOUSEHOLD WASTES AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS</b>                                                     |            |
|                                                                     | <b>20 01 Separately collected fractions (except 15 01)</b>                                                                                                                                                     |            |
| 20 01 02                                                            | Glass                                                                                                                                                                                                          | AN         |
| 20 01 38                                                            | Wood other than that mentioned in 20 01 37                                                                                                                                                                     | AN         |
| 20 01 39                                                            | Plastics                                                                                                                                                                                                       | AN         |
| 20 01 40                                                            | Metals                                                                                                                                                                                                         | AN         |
|                                                                     | <b>20 03 Other Municipal Wastes</b>                                                                                                                                                                            |            |
| 20 03 07                                                            | Bulky waste                                                                                                                                                                                                    | AN         |
| <b>NOTE:</b> AN – Absolute Non-Hazardous, MN – Mirror Non Hazardous |                                                                                                                                                                                                                |            |

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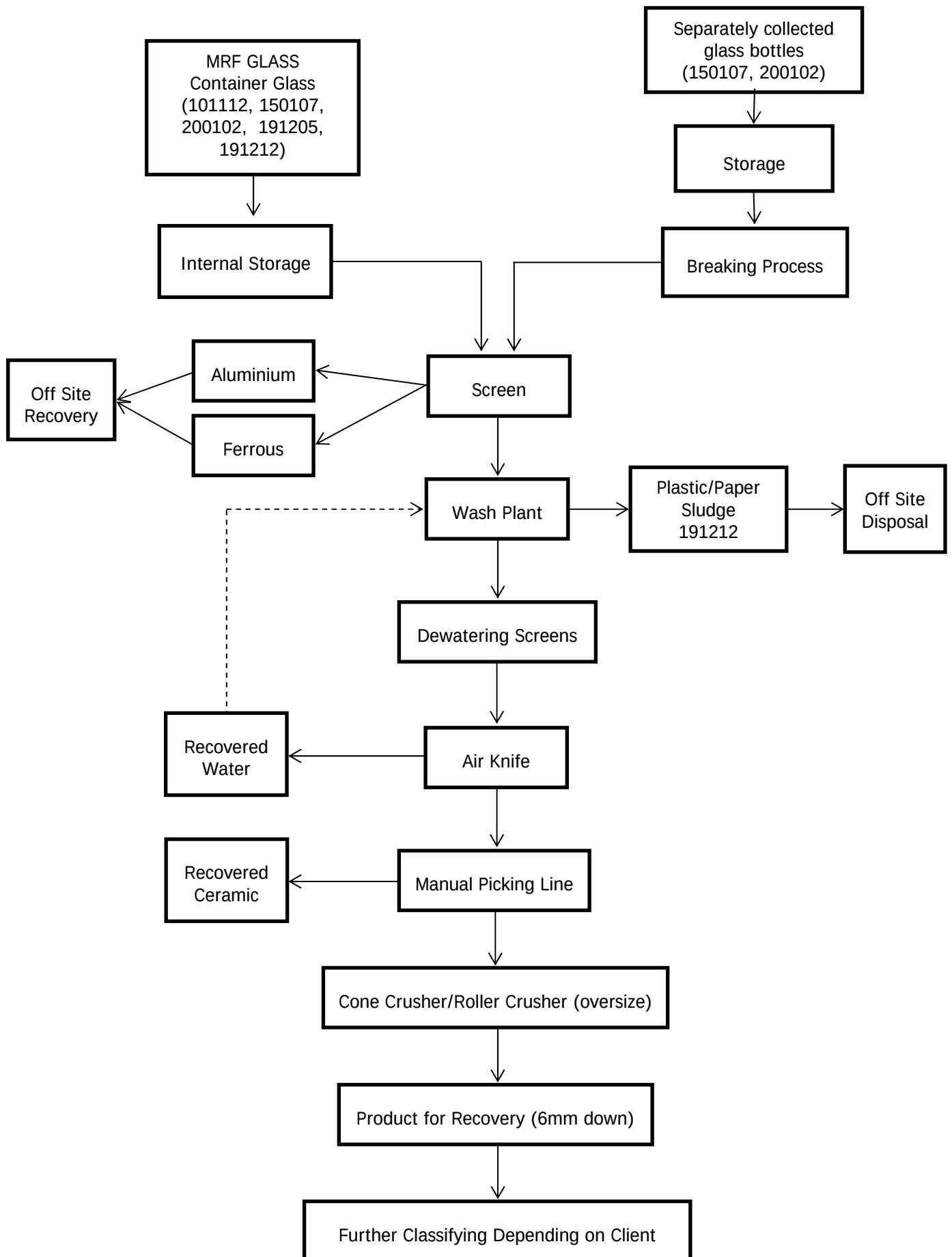
## 2.2 Operating Techniques

At the site, incoming waste will be temporarily stored and processed according to the techniques summarised in Table 3-2 and the process flow chart in Table 3-3.

**Table 2-2 Proposed Waste Processing Activities**  
**Proposed Recovery and Disposal Codes applicable at the Site**

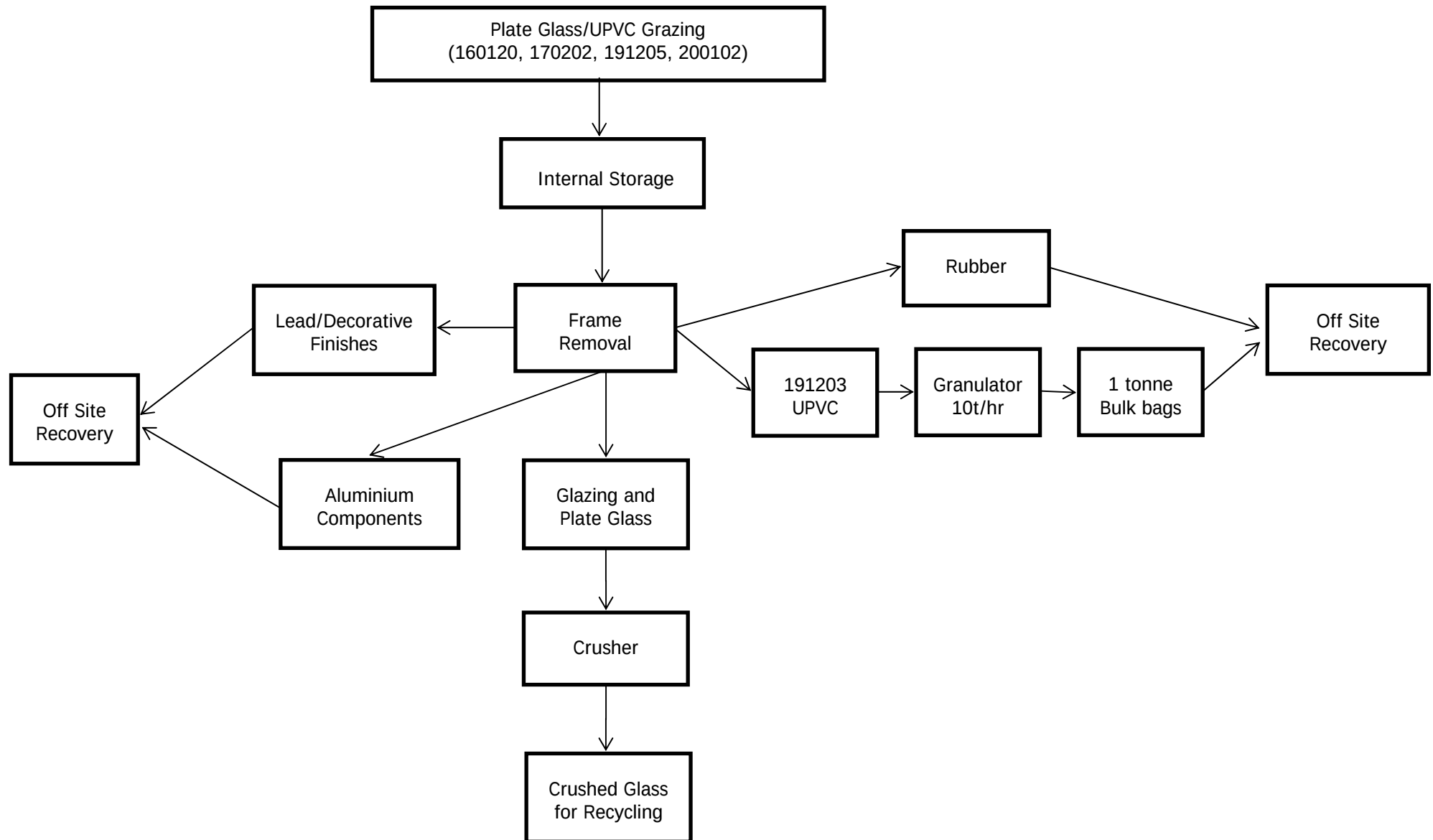
|                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| D15: Storage pending any of the disposal operations numbered D1 to D14                                                                                             |
| R13: Storage of wastes pending any of the recovery operations numbered R1 to R12                                                                                   |
| D14: Repackaging prior to submission to any of the operations numbered D1 to 13                                                                                    |
| D9: Physico-chemical treatment 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 |
| R4: Recycling/reclamation of metals and metal compounds                                                                                                            |
| R5: Recycling/reclamation of other inorganic materials                                                                                                             |

**Table 2-3 Process Flow Chart for MRF glass**





**Table 2-4 Process Flow Chart for Plate Glass and UPVC**



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### **2.2.1 Production of Aggregates**

Glass Tech intends to produce aggregates i.e. granular materials, in accordance with the *WRAP Quality Protocol for the Production of Aggregates from Inert Waste*. The aggregates will primarily be used in construction and water treatment. The production will be subject to Factory Production Control.

Container glass arriving at the facility is derived principally from two sources: segregated bottle collections and Material Recovery Facilities (MRFs). Segregated bottle collections include collection rounds to pubs, clubs etc. kerbside collections of glass, bottle banks and other glass collection methods that segregate glass containers from other wastes at source. Typically, this stream is quite clean, though steel and plastic bottle tops and paper labels are common contraries. An estimated 200,000 tonnes of container glass will be processed each year.

MRF glass is of variable quality and is a reflection of the processes at each individual MRF and the point within the processing at which the glass is removed. Such glass is often mixed with a small proportion of other wastes as the glass has been in intimate contact with other wastes and may even have been mechanically processed with intermixed wastes. Such glass may be relatively clean in which case it falls neatly into EWC code 19 12 05. However, there comes a point at which the glass contains sufficient contraries for it to be considered a mixed waste, more appropriately coded 19 12 12 and commonly referred to as dirty glass.

Both waste streams are principally glass, though the proportion of contraries in the MRF glass is greater. However, both streams are subjected to a proprietary processing system, to be patented, which removes the contraries completely from the glass before it is separated and screened to produce aggregate. After receipt at the plant the containers are mechanically broken and then passed via conveyor toward the separator. As part of this process ferrous and aluminium contraries are separated into dedicated bins for recovery.

The mechanical system used by Glass Tech to clean the glass prior to production is very effective and is the company's principal "unique selling point". Its ability to clean the glass to such a high degree before the aggregate is produced has allowed the glass to be used as a filter medium in water treatment applications. During the separation process wood and plastic contraries are collected for recycling whilst paper and dirt accumulate in a process water sludge for removal to off-site disposal.

After separation of contraries the container glass pass is further sorted to remove rogue ceramic before being crushed to size. Surprisingly, the crushing process produces sand and finer particles that are not sharp and behave and feel like natural sands. The particles produced in the crushing are then screened to meet the requirements of the specification provided by the customer. The factory production control system is able to ensure that the aggregates produced conform to the BS EN 933 Standard as well as any Specification provided by the client. A common specification is for a well graded fine pipe bedding to be used as a backfill around utilities in trench reinstatement.

### **1.2.1 Production of Re-melt Glass**

Glass to be used for the manufacture of glass products by re-melting is plate glass rather than container glass. Plate glass may be delivered as clean plates of glass from off-cuts or, more commonly may be in double glazing units or even complete windows/doors, including the frame. When the glass is delivered complete with the frame the first activity is the frame removal. This is done manually and results in the glazing unit which goes forward for further

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processing and the frame, which is also processed. An estimated 100,000 tonnes of plate glass will be processed each year.

Frames could be either uPVC or wood and once the door/window furniture has been manually removed the frames will be placed into two segregated areas. Timber will be placed into 35 cubic yard skips for removal to a wood processing specialist, but may be chipped prior to removal to improve the weight per load. uPVC will be granulated and the granules will be stored in “hippo” bags until sufficient is available for an articulated lorry to remove the material for recycling.

The double glazing units are manually stripped into their component parts. Any decorative lead is removed and placed into the lead bin and the rubber seals are removed and placed into the rubber bin. The foil backer is then removed and the aluminium or plastic glazing bars are separated and stored in the appropriate bin. Plastic bars go for granulation along with the uPVC components. Aluminium bars are stored in separate bins for export.

The plate glass that remains from deconstructing the double glazing units is combined with incoming plate glass where it is smashed to assist with processing. Broken glass is then fed into the crusher to reduce it to a size suitable for transportation to the end user. The end user is commonly abroad and therefore the processed glass will be shipped directly from the quayside. Accordingly, the storage capacity for the processed glass has to accommodate this export pattern, as no processed glass will be stockpiled externally apart from during loading of the ships.

The process of treating the plate glass stream results in glass and a number of other materials (uPVC, timber, aluminium, lead, rubber, ferrous door/window furniture) that are recycled. A tiny fraction of the infeed may become waste (such as mastic cut from the glass) and this will be kept in a small skip until ready for disposal.

### **1.2.2 Wood**

Glass Tech does not intend to process the wood into a finished form but will collect wood arising from frame removal and the removal of contraries. These will be bulked up for removal to a recycling specialist. Frame timber in particular may need to be size reduced to optimise load sizes and therefore shredding or chipping may be undertaken.

### **1.2.3 uPVC and Plastic**

uPVC will arise from frame removal and the removal of plastic glazing bars. The material will be mechanically granulated to await export to a plastics recovery specialist. Different types of plastic separated at different points of the process will be kept separate from the granulated uPVC as it is likely to contain soft plastics from container tops including PE, PVC and PP. This material will also be sent for recycling.

### **1.2.4 Metal**

Frames removed from the plate glass line will contain variable amounts of ferrous and non-ferrous metals within the door furniture and this will be manually removed and placed into the relevant skips to await export to recovery. Aluminium glazing bars will also be placed into the Aluminium bin. Aluminium and ferrous metals will also be recovered during the processing of the container glass. All skips containing these metals will be exported to a metal recycling facility for recovery.

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### **1.2.5 Process Wastes**

Much of the process waste will arise during the separation of the contrarires from the container glass through the use of water. The wastes will come off in the separation process and therefore will end up in the sludge sumps. The sludge sumps in the plant will be periodically emptied by a sludge tanker on contract. Sludges will be removed from site for treatment/disposal by the tankering contractor.

## **1.3 Waste Quantities**

Glass Tech wishes to process up to 325,000 tonnes/year at the facility.

## **2.3 Access and Egress**

The waste to be accepted at the site will come from civic amenity sites where glass containers and plate glass are placed by the public into separate storage containers and from other clients where the glass has been separated from other wastes. In many cases, Glass Tech will be involved with the provision of the collection vessels. On this basis, Glass Tech will have close control over waste classification and source segregation and the operatives involved with glass collection will be trained and experienced in recognising unacceptable levels of contamination and unacceptable wastes. As the Glass Tech Group also operates as a registered Waste Carrier, Glass Tech will also be able to control the way in which most of the wastes are handled and transported.

At present, the site benefits from unrestricted vehicular access off the secure docks roads 24 hours a day. As part of the proposed redevelopment of the site, vehicular access into the site would be typically limited to 8am to 5pm as this is time during which suppliers of waste glass operate. This will be achieved by vehicles using the docks road network and then passing onto the site weighbridge and then through the processing area (see Figure 3). In this way, there will be minimal two way on-site traffic movements. Wastes would typically be delivered to site using eight wheeler 20t lorries.

Products produced at the site and waste for recovery or disposal would either follow the same road transport route in reverse or be removed from site by ship from the adjacent quayside.

## **2.4 Site Infrastructure and Layout**

The site is currently occupied by large vacant warehouses maintained by ABP, the port operators. (see Figure 2). All of the existing infrastructure will be retained as part of the re-development but vehicular access points will be modified where necessary to accommodate safe and efficient transport.

To enable any spillage from the plant to be captured, this area will be provided with an impermeable sealed drainage system that will be enclosed by an upstand preventing run-off and served by a dedicated pumped recovery system. Any water collected in this area will be recirculated back into the processing plant. A similar system will also be used in the UPVC storage area but solely for emergency use i.e. the upstand would provide a facility to capture and control firefighting water.

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The layout of the site will take into consideration relevant input from the Fire Rescue Service (FRS) who have already been consulted.

## **2.5 Drainage**

All internal areas currently benefit from an impermeable concrete surfacing. All foul and surface drainage enters the local sewer. All of these systems will be retained.

As part of the separation process water is used. To avoid use of mains water, all water will be sourced from the harvesting of rainwater. To ensure there are no water losses, the plant area will be provided with an impermeable sealed drainage system to enable any water draining from the process to be collected and recirculated. This will be achieved by surrounding the plant with a 'sleeping policeman' upstand and dedicated pumped recovery system.

## **2.6 Technical Ability**

Glass Tech recognises that to operate under a Permit, trained and competent staff are required. On this basis, Glass Tech employees with relevant WAMITAB certification will be appointed as the Technically Competent Person (TCP). The TCP will coordinate compliance with the Permit, implementation of the EMS and coordinate new procedures when required.

## **2.7 Management Systems and Toolkit**

Glass Tech will operate the recycling facility in accordance with the 'How to comply' guidance and will continually review the site Environmental Management System and procedures to ensure the operation is based on sound current environmental practice. Most importantly, this Environmental Risk Assessment will be routinely reviewed to ensure the predictions are valid, control measures are adequate and current and the environment remains protected.

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## **3 ENVIRONMENTAL SETTING**

### **3.1 Planning Status**

The proposed glass product processing facility lies entirely within a large industrial warehouse directly adjacent to King's dock, Swansea. The site was developed in the early part of the twentieth century and has been used for storage of materials pending onwards movement from the docks. Correspondence with the Planning Authority confirms that the proposals will require a change of use planning application, which is ongoing.

### **3.2 Current Site Use and Access**

The site is located directly adjacent to King's Dock, Swansea. Its' location is clearly shown on site plans and the aerial photograph provided. The site currently comprises two vacant warehouses used historically for the storage of goods before onward movement by boat from the adjacent quayside. Both warehouses are in good condition with one only approximately 5 years old. Both warehouses benefit from vacant use, concrete hardstanding and secure boundaries.

### **3.3 Current Surrounding Land Use**

The site is located in Swansea Docks and is surrounded by King's dock to the east, Port offices to the south, Ferry terminal to the west and Prince of Wales Docks to the north.

The nearest residential dwelling to the site is some 350m west of the site.

### **3.4 Historical Land Use**

Examination has been made of old Ordnance Survey plans which cover the site area. Specifically, they include the old Glamorganshire 1:10,560 scale and 1:2,500 scale series dating from 1884 to 1975 and more recent National Grid and 10k Raster Mapping Series at 1:2,500 and 1:10,000 scale respectively.

The site history is relatively straightforward as the site has been recorded as docks from as early as 1921 and given its quayside location, the site has been used as warehouses for the storage of a wide range of goods over many years. Prior to this time, the site was on the shingle beach just off the Swansea coastline and earlier works associated with the Port Tennant Works and East Pier (1884). To aid transport of materials from the warehouse to the boats in the adjacent Kings's Dock, a railway line was constructed along the quayside in 1921. This remains today and is used by travelling cranes.

Given its location within the Docks, the surrounding area has been largely industrial until the 1970s when residential development commenced to the east. The historical works that occurred in the surrounding area included an Arsenic Works, Spelter Works, Wagon Works and Crymlyn Chemical Works, all of which were located to the northeast of the site.

The site layout does not appear to have significantly changed for several decades apart from the renewal of one of the warehouses within the footprint of the previous warehouse.

Further detail about the history is provided in the Site Condition Report.

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## **3.5 Environmental Setting**

An annotated aerial photograph showing the Permit boundary is provided in Figure 2.

### **3.5.1 Superficial Deposits and Geology**

Examination of geological plans in shows the site to be underlain by beach deposits overlying bedrock belonging to the Middle Coal Measures, Carboniferous in age. To construct the docks the ground has been made up, so the site is immediately underlain by made ground.

The area to the north of the site is indicated to lie within a fault bounded block between the Swansea Valley Fault to the west and the Pwll Mawr Fault to the east. The proven east-west trending Tormynydd coal seam crops some 800m north of the site which is shown to have been accessed via an adit. The strata in this area are dipping northwards at around 40° and the area to the north of this seam exhibits many coal seams, several of which are known to have been worked.

South of the Tormynydd coal seam and in the vicinity of the site there is very little information shown on the Geological Sheet with regard to the solid geology and mining. It is considered unlikely, however, that coal mining would have taken place beneath the site due to accessibility constraints, the large thicknesses of superficial cover and the historical site use as a port facility.

### **3.5.3 Surface Water**

The site lies between the catchments of the River Tawe to the west and the River Neath to the east. The site is southwest of Crymlyn Bog.

The Port Tennant Canal which traverses east-northeast to west-southwest terminates some 1km northeast of the site.

There are no River Quality Biology or Chemistry Sampling points within either of the above watercourses within 1km of the site although the River Quality in the Port Tennant Canal over 1km northeast of the site was recorded as GQA River Quality E in 2000.

### **3.5.4 Flood Potential**

Examination of the Envirocheck report and the Environment Agency Website shows the site to lie within Flood Zone 2 which means that the site is at risk of Extreme Flooding from Rivers or Sea without Defences.

### **3.5.5 Hydrogeology**

The Agency has defined Source Protection Zones (SPZs) for 2000 groundwater sources such as wells, boreholes and springs used for public drinking water supply. These zones show the risk of contamination from any activities that might cause pollution in the area. The closer the activity, the greater the risk. The maps on the Agency website include three main zones (inner, outer and total catchment). The Agency use the zones in conjunction with their Groundwater Protection Policy to set up pollution prevention measures in areas which are at

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a higher risk, and to monitor the activities of potential polluters nearby. The zones established are as follows:

- Zone 1 (Inner protection zone) - Any pollution that can travel to the borehole within 50 days from any point within the zone is classified as being inside zone 1.
- Zone 2 (Outer protection zone) - The outer zone covers pollution that takes up to 400 days to travel to the borehole, or 25% of the total catchment area – whichever area is the biggest. This travel time is the minimum amount of time that the Agency think pollutants need to be diluted, reduced in strength or delayed by the time they reach the borehole.
- Zone 3 (Total catchment) - this is the total catchment needed to support removal of water from the borehole, and to support any discharge from the borehole.

According to the Environment agency website and the Envirocheck Report the site is not located in any of the above zones.

The site is located in the Western Wales River Basin. Locally, the EA refers to the groundwater body as the Swansea Carboniferous Coal Measures (Waterbody ID GB41002G201000).

The area within which the site is located is considered to have poor groundwater quality and to be a minor aquifer. Unlike principal aquifers which offer significant groundwater resources and which need to be managed through abstraction licensing within a Catchment Abstraction Management Strategy (CAMS), minor aquifers also have significant resources but with hydraulic properties which limit over-exploitation. Minor secondary aquifers would not normally warrant special consideration for CAMS but may still support important abstractions and dependent ecosystems which may be subject to risks associated with pollution pressures.

On the basis of available geological records, and without site specific information, the Envirocheck vulnerability map indicates that the site soils overlying the aquifer beneath the site are classified as having a high leaching potential. Soils of high leaching potential are soils that readily transmit liquid discharges because they are either shallow or susceptible to rapid by-pass flow directly to rock, gravel or groundwater.

According to the Envirocheck report there are 4 water abstractions within 1km of the site. These are all located at JW Aquaculture Ltd. some 797m southwest of the site. Full details of all the abstractions can be seen on the Envirocheck data sheets in the Site Condition Report.

Groundwater beneath the site is likely to exist within the coal measures bedrock. This groundwater may be in continuity with groundwater that may exist within the overlying superficial deposits, although this will depend upon local geological controls. Given the proximity of Swansea Bay to the south, it is likely that a component of tidal influence will affect the groundwater flow beneath the site.

### **3.5.6 Sensitive Land Uses**

According to the Protected Sites and Landscapes map on the CCW website and the Sensitive Land Uses map in the Envirocheck Report, there are no sensitive ecological land uses within 1000m of the site.



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Beyond this distance is Crymlyn Bog Site of Special Scientific Interest (SSSI Ref: 47433wwp) which is some 1500m northeast of the centre of the site. The SSSI is designated on the basis of its biological significance. Crymlyn Bog is also classified as a Ramsar Site and a Special Area of Conservation.

### **3.5.7 Amenity Issues**

The site is located in an industrial area and close to other operations and offices. Residential properties are some 350m west of the site.

## **3.5 Receptors**

Based on the available information the key receptors identified are:

- Local residents and occupants of other industrial units
- Surface water in King's Dock

Some of these features are highlighted and shown in the aerial photograph in Figure 2.

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## 4 METHODOLOGY

In the following chapters the influence the proposed activities could have on the environment is evaluated.

### 4.1 Approach

Two approaches have been used to assess the impacts of the proposed activities. One is based on the EA H1 software tool, which enables a detailed evaluation of identified exposure pathways and the other using an approach based on identifying exposure pathways based on a source-pathway-receptor conceptual site model. This latter approach is semi-quantitative and based on the approach adopted by NRW in generic risk assessments that accompany Standard Permit applications. The conceptual site model, presented as a matrix, identifies plausible pollution linkages (source-pathway-receptor relationships) and potential impacts to the local environment which could arise as a result of the proposed activities.

This combined approach enables:

- screening out those linkages that are insignificant and don't need detailed assessment
- assessment of potentially significant risks in more detail if needed

The approach has three stages:

- identify risks from the proposed activities
- assess the risks and check that they are acceptable
- justify appropriate measures to control identified risks, if necessary

In the assessment the following aspects have been considered:

- Odour
- Noise and vibration
- Accidents
- Fugitive emissions to air and water – uncontrolled releases such as dust, run-off from operational areas, but not controlled releases from point-sources and problems with mud, pests or litter
- Controlled releases to air
- Controlled discharges to surface waters
- Controlled discharges to ground or groundwater
- Ozone and Global warming potential
- Site waste

### 4.2 Identification and Evaluation of Potential Risks

There are a number of methods and approaches available for assessing the environmental impacts of a project. To provide a structured framework for assessment across several topic areas, generic assessment criteria have been clearly defined. The assessment of potential impacts has been based on a tabulated conceptual model based upon the standard source (hazard)–pathway–receptor model. The approach enables hazards and receptors to be readily identified and evaluates the pathway via which the human and environmental receptors may be impacted. 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

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adopted as it should be acceptable to all stakeholders with the methodology and findings transparent, defensible and repeatable.

For each plausible impact identified, the potential impacts have been classified as positive or negative and 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.

### ***Probability 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 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<br>Extreme positive effect – Permanently off-sets consumption of natural resources                                                                 | 5     |
|                     |                                                                                                              | High             | Severe negative effect – Where environmental functions or processes are altered to the extent that they temporarily cease<br>Severe positive effect - Temporarily off-sets consumption of natural resources                               | 4     |
|                     |                                                                                                              | Moderate         | Moderate negative effect - the affected environment is altered, but functions continue, albeit in a modified way<br>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<br>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. local residential and industrial areas                                                                                                                                                                      | 2     |
|                     |                                                                                                              | Site-specific    | Localised, confined to Zone 2, Kenfig Industrial Estate                                                                                                                                                                                   | 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 recycling operations but not permanent                                                                                                                                                                                 | 4     |
|                     |                                                                                                              | Medium Term      | Throughout the recycling operation                                                                                                                                                                                                        | 3     |
|                     |                                                                                                              | Short Term       | Shorter than the recycling operations                                                                                                                                                                                                     | 2     |
|                     |                                                                                                              | Transient        | Very short duration                                                                                                                                                                                                                       | 1     |
|                     |                                                                                                              | Unknown          | Duration of impact unknown                                                                                                                                                                                                                | 5*    |

*\* Score of 3 assigned for positive impacts*

**Table 4-2 Criteria for evaluation of the likelihood of possible impacts**

| Exposure 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 |                 | <i>Discrete Event</i>                        | <i>Prolonged Exposure from a Single Activity or Event</i> |    |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------|-----------------------------------------------------------|----|
|                           |                                                                                                                                          | Very high       | Daily or continuous                          | Exposure in perpetuity                                    | 5  |
|                           |                                                                                                                                          | High            | Weekly/once per week                         | Continuous exposure but not permanent (<1 year)           | 4  |
|                           |                                                                                                                                          | Moderate        | Monthly/once per month                       | Continuous exposure for <1 month                          | 3  |
|                           |                                                                                                                                          | Low             | Bi-annually                                  | Continuous exposure for <1 week                           | 2  |
|                           |                                                                                                                                          | Very low        | Annually or less frequently                  | Prolonged exposure but for a very short duration (<1 day) | 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

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 10<sup>th</sup> percentile and 90<sup>th</sup> 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 Consequence | Sum of Magnitude + Scale + Duration | 3-4      | 5-7 | 8-11     | 12-14 | 15        |
|---------------------|-------------------------------------|----------|-----|----------|-------|-----------|
|                     |                                     | Very Low | Low | Moderate | High  | Very High |
| Overall Likelihood  | Sum of Exposure + Probability       | 2-3      | 4-5 | 6-7      | 8-9   | 10        |
|                     |                                     | 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<br>(Sum of Magnitude + Duration + Scale) |          |          |           |           |
|-------------------------------------------------------------------|-----------|------------------------------------------------------------------------|----------|----------|-----------|-----------|
|                                                                   |           | Very Low                                                               | Low      | Moderate | High      | Very High |
| OVERALL LIKELIHOOD OF IMPACT<br>(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                                                                     |                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Very high</b>                        | Extremely beneficial and enduring effect                                                     | An automatic fatal flaw. The screening and recovery scheme should not proceed unless the design is changed so that this impact is eliminated or its significance is reduced to acceptable levels. There is a high probability that severe harm could arise to a designated receptor from an identified hazard.                                                            |
| <b>High</b>                             | Very substantial improvement to existing resources                                           | Unacceptable effect. The screening and recovery scheme should not proceed unless the design is changed so that the significance of this impact is reduced to acceptable levels. Harm is likely to arise to a designated receptor from an identified hazard without intervention.                                                                                          |
| <b>Moderate</b>                         | Appreciable improvement to, or will sustain, existing resources                              | Effect is serious enough to cause concern. Changes to screening and recovery scheme 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. |
| <b>Low</b>                              | 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 measureable harm.                                                                                                                                                                                                       |
| <b>Very low</b>                         | Negligible effect - probable that impact could occur but the impact would not be measureable | Negligible effect - probable that impact could occur but the impact would not be measureable.                                                                                                                                                                                                                                                                             |

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#### **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.

#### **4.3 H1 Assessment**

The H1 assessment tool provided by NRW has been used to capture the results of the ERA in a systematic repeatable tool. The tool is fully programmed by the EA and the detail and guidance is not repeated here. The full output from the tool is provided in Appendix 1.

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## **5 IMPACT ASSESSMENT**

### **5.1 Site Context**

The scope of the Permit sought, the location of the site and the control measures that will be implemented will limit the potential risks posed to the environment. This is because :

- All activities will be undertaken indoors and in accordance with the Permit and documented management system,
- site is not in a groundwater Source Protection Zone.
- site is not in an Air Quality Management Area (AQMA).
- site is some 350 from nearest residential property.
- site is not within 50 metres of any spring or well, or of any borehole used to supply water for domestic or food production purposes.
- site is not within 50 meters of a site that has relevant species of habitats protected under the Biodiversity Action Plan.
- site is not within 50 metres of a National Nature Reserve (NNR), Local Nature Reserve (LNR), Local Wildlife Site (LWS), Ancient woodland or Scheduled Ancient Monument.
- site is not within 250 metres of any borehole used to supply water for domestic or food production.
- site is not within 250 metres of the presence of Great Crested Newts where it is linked to breeding ponds of the newts by good habitat.
- site is not within 500 metres of a European Site, Ramsar site or a Site of Special Scientific Interest (SSSI) designated for flora and fauna.

Within this context, the site location is very similar to sites where Natural Resources Wales (NRW) is able to issue Standard Rules permits based on generic risk assessments.

### **5.2 Evaluation of Impacts**

The output from the H1 assessment is presented in Appendix 1 and the impact assessment matrices in Tables 5-1 to 5-8. The assessments demonstrate that the proposed activities will not result in unacceptable environmental impacts provided the control measures identified are fully adopted. To minimise the opportunity of these measures not being fully implemented, the operation of the site will be in accordance with a documented management system which will specifically include measures aimed at protecting the environment. These will include:

- Processing of non-hazardous and inert waste will be undertaken in accordance with an Environmental Permit and a documented management system.
- Glass Tech hold ISO9001 certification.
- Site will be managed by personnel with relevant and current WAMITAB certification and waste management experience.
- All waste will be stored and processed indoors on an impermeable surface.
- Potentially combustible waste will be stored in accordance with the requirements of FRS and in accordance with prevailing NRW guidance to ensure stack heights and stack separation distances are appropriate.
- Waste will not be burned, either in the open, inside buildings or in any form of incinerator.
- Wastes will only be treated using processes identified in the Permit.



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- No dusts will be accepted.
  - Surface water from the roofs of buildings and from areas of the site will be harvested for use in the process.
  - Where disposal is necessary, this will be undertaken in a manner which minimises its impact on the environment.
  - The activities shall not extend beyond the Permit boundary.
  - The treatment facility will operate within the limitations imposed by the Planning regime.
  - All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container shall be used.
  - Preventative maintenance programme will be in place for all plant and infrastructure.
  - No sub-contractors will be used to operate the plant.
  - There are no point source emissions to air or land.

### **5.2.1 Air emissions**

There are no point source emissions from the proposed activities. All processing will be undertaken indoors where the control of particulate matter will need to meet the relevant Health and Safety and Fire Rescue Service requirements.

At all times, each item of plant will be fitted with dust suppression where relevant and additional misters will be deployed as required, using rainwater harvested from the clean roof run-off. As much of the dust arises from the way in which materials are handled and the size of stockpiles, care will be taken when loading and unloading vehicles and managing stockpiles. To ensure the activities are not impacting off-site receptors and the human health of site operatives is protected, daily site inspections will identify any additional measures required.

Should complaints be received, these will be managed through the procedures documented in the Environmental Management System. Following receipt of a complaint investigations aimed at identifying the root-cause will be undertaken.

### **5.2.2 Odour**

The type of waste to be accepted is not biodegradable or putrescible and has a low odour potential. On this basis, odours are not likely to be a problem provided the waste acceptance controls, documented in the EMS, are implemented.

Should odour issues arise, olfactory monitoring will be undertaken to identify the root cause and relevant management plans implemented.

### **5.2.3 Noise and Vibration**

Controls are already in place through the existing planning permission in relation to noise and vibration.

All vehicles used to deliver and remove waste / products from the site will be road worthy and subject to preventative maintenance programmes where operated by Glass Tech.

The treatment plant located indoors will comprise modular systems designed to meet current legislative controls relating to noise and vibration emissions. All plant will also be subject to a preventative maintenance programme.

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To ensure that noise and vibration emissions from the on-site activities are not likely to cause off-site pollution or impact site operatives, Glass Tech will prevent, or where that is not practicable minimise, noise migration. Measures that will be adopted will include the use of modern modular plant fitted with appropriate silencers, implementation of preventative maintenance programme, orientating site activities to minimise noise from reversing warning devices and use of broadband directional alarm to vehicles, where feasible.

#### **5.2.4 Emission to Water**

All wastes to be accepted at the site will be subject to stringent waste acceptance controls. None of the wastes have a significant leachate potential.

Constructing sealed drainage systems in the waste processing and storage area will provide a mechanism for controlling any seepage or spillage that may occur in these areas.

There will be no emissions to surface water from the waste operations.

#### **5.2.5 Flooding**

As shown by the predicted flood map the site is located in an area identified by the EA to be at risk of flooding. Given that the warehouse is existing and no additional buildings are proposed, the vulnerability status will not be altered. However, Glass Tech recognises the vulnerability of the site and that in undertaking the development, careful consideration needs to be given to the flood risk and planned management of potential associated consequences.

As the mechanism of flooding is related to overtopping of the adjacent docks, the rate of inundation at which the site would flood would be expected to be gradual with low velocities as the site boundary is long, open and relatively level along its length.

Within this context, the consequences of flooding can be managed and mitigated to a level which is acceptable for the type of development proposed. This will ensure that there is minimal risk to life, minimal disruption to people living and working in the area, minimal potential damage to property and minimal impact on the overall flood risk in the area. Management and mitigation measures that will be embedded in the design and Environmental Management system will include

- Emergency response plan identifying emergency access and egress routes
- Informing all staff and site visitors of the flood potential through site signage, training and induction.
- Using mobile plant which can be moved to safe areas for protection.
- Ensuring drainage systems can be isolated so that there is no knock-on effect elsewhere in the catchment.
- Ensuring that only small quantities of diesel are stored at the site.
- Ensuring that only non-hazardous wastes could be potentially mobilised by flood water.

#### **5.2.6 Sensitive Sites**

There are no sensitive ecological land uses within 1000m of the site.

#### **5.2.7 Energy Consumption and Emissions to Air**

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The plant used to process the wastes will be directly powered by electrical power, rather than diesel as it is quieter. Each item of plant will be subject to a preventative maintenance programme. All vehicles delivering waste and transporting products off-site will be diesel powered. Wherever possible, Glass Tech will optimise vehicle movements by linking the delivery of waste to the site with the delivery of products and recovered waste off-site to suitable sites.

The principle part of the process that will consume electricity is the processing plant. Based on an operational electrical consumption of 800 kW/week, an estimated 38 MWh/yr of electricity would be consumed. This will release carbon dioxide to the atmosphere per year (see H1 assessment). Carbon dioxide has a global warming potential factor of 1.

In addition to carbon dioxide, the diesel engines will also release NO<sub>x</sub>, hydrocarbons, carbon monoxide and PM<sub>10</sub> particulates. Ozone could potentially be produced at low level by photochemical reactions with these substances. The emissions of these substances, will however, be effectively controlled at the lowest level reasonably possible, by ensuring that the vehicles are subject to a preventative maintenance programme.

### **5.2.8 Raw Materials Usage**

The process will utilise rainwater harvested from the extensive roof of the warehouses. No other reagents are required in the process.

### **5.2.9 Production of Waste**

Much of the process waste will arise during the separation of the contraries from the glass. Light fractions will be floated off leaving the heavy dirt, the paper and the wet textile fluff whilst the metals will have been recovered. The wastes will come off in the separation process and will end up as a sludge. The sludge sumps in the processing plant will be periodically emptied by a sludge tanker on contract. Sludges will be removed from site for treatment/disposal by the tankering contractor.

All other materials separated during the process are intended to be recovered, as shown by the process flow charts in Section 2.

## **5.3 Amenity Issues**

Glass Tech recognises that the site, although within an established industrial area is close to other operations. There are also residential properties some 350m east of the site. Glass Tech will therefore operate the site in such a way that any potential nuisance is minimised.

In accordance with current good practice, planning controls, Permit requirements and other applicable legislation, all relevant parts of the plant will be fitted with modern equipment designed to limit, as far as practicable, the release of dust, noise and vibration.

## **5.4 Positive Impacts**

To satisfy the Permit requirements, this assessment has focussed on identifying the potential negative environmental risks potentially associated with the proposed waste management facility so that these can be managed and mitigated, as far as practicable, within the site

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management systems. In this context, the positive impacts associated with the development are not highlighted. Some of the positive impacts will include:

- Recovery of waste.
- Full time employment and associated personal and community benefits.
- Use of an existing facility which is currently vacant.

**Table 5-1 Evaluation of Potential Impacts from Particulate Matter**

| Data and information                                   |                                                                                                                                                                                      |                                                              |                                                                  | Judgement                          |                                                            |                                                   |                                                                                                                                                                                                                                                                                 | Controls                                                                                                                                                                                                                                                           |                                                                                                                              |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------|------------------------------------|------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Receptor                                               | Source                                                                                                                                                                               | Harm                                                         | Pathway                                                          | Probability of exposure            | Consequence                                                | Magnitude of risk                                 | Justification for magnitude                                                                                                                                                                                                                                                     | Risk management                                                                                                                                                                                                                                                    | Residual risk                                                                                                                |
| <b>What is at risk?<br/>What do I wish to protect?</b> | <b>What is the agent or process with potential to cause harm?</b>                                                                                                                    | <b>What are the harmful consequences if things go wrong?</b> | <b>How might the receptor come into contact with the source?</b> | <b>How likely is this contact?</b> | <b>How severe will the consequences be if this occurs?</b> | <b>What is the overall magnitude of the risk?</b> | <b>On what did I base my judgement?</b>                                                                                                                                                                                                                                         | <b>How can I best manage the risk to reduce the magnitude?</b>                                                                                                                                                                                                     | <b>What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).</b> |
| Local human population                                 | Releases of particulate matter (dusts) and micro-organisms (bioaerosols) associated with activities such as operation of processing plant, vehicle movements and materials handling, | Harm to human health - respiratory irritation and illness    | Off-site air transport then inhalation.                          | Very Low                           | Low                                                        | Low                                               | Permitted waste types are non-hazardous and inert and do not include dusts, powders or loose fibres and have a low potential to produce bioaerosols. All processing will be indoors and all plant fitted with dust suppressors. There are no residential receptors within 350m. | Ensure effective dust management plans are implemented. Undertake all processing indoors. Provide adequate dust suppression to all areas as required. Stop operations if control measures are not working effectively. Provide air-conditioning in relevant areas. | Very Low                                                                                                                     |
| Local human population                                 |                                                                                                                                                                                      | Nuisance - dust on cars, clothing etc.                       | Off-site air transport then deposition                           | Very Low                           | Low                                                        | Low                                               | As above. Local residents often sensitive to dust.                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                    | Very Low                                                                                                                     |

**Table 5-2 Evaluation of Potential Impacts from Litter and Pests**

| Data and information                                   |                                                                   |                                                                                              |                                                                  | Judgement                          |                                                            |                                                   |                                                                                                                                                                                    | Controls                                                                                                                                     |                                                                                                                              |
|--------------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------|------------------------------------------------------------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Receptor                                               | Source                                                            | Harm                                                                                         | Pathway                                                          | Probability of exposure            | Consequence                                                | Magnitude of risk                                 | Justification for magnitude                                                                                                                                                        | Risk management                                                                                                                              | Residual risk                                                                                                                |
| <b>What is at risk?<br/>What do I wish to protect?</b> | <b>What is the agent or process with potential to cause harm?</b> | <b>What are the harmful consequences if things go wrong?</b>                                 | <b>How might the receptor come into contact with the source?</b> | <b>How likely is this contact?</b> | <b>How severe will the consequences be if this occurs?</b> | <b>What is the overall magnitude of the risk?</b> | <b>On what did I base my judgement?</b>                                                                                                                                            | <b>How can I best manage the risk to reduce the magnitude?</b>                                                                               | <b>What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).</b> |
| Local human population and wildlife.                   | Litter from light fraction contraries entrained in waste          | Nuisance, loss of amenity and harm to animal health                                          | Off-site air transport then deposition                           | Very Low                           | Very Low                                                   | Very Low                                          | Local residents often sensitive to litter, however waste types have low litter potential, all processing will be undertaken indoors and there are no residents in close proximity. | Appropriate measures will include clearing litter arising from the activities from affected areas outside the site if required.              | Very low                                                                                                                     |
| Local human population                                 | Waste, litter and mud on local roads from vehicular movements     | Nuisance, loss of amenity, road traffic accidents.                                           | Vehicles entering and leaving site.                              | Very Low                           | Very Low                                                   | Very Low                                          | Road safety, local residents often sensitive to mud on roads. All deliveries of waste will be via existing road network and sheeted with no opportunity for wastes to escape.      | As above. Appropriate measures will include clearing waste, litter and mud arising from the activities from affected areas outside the site. | Very Low                                                                                                                     |
| Local human population                                 | Scavenging animals and scavenging birds                           | Harm to human health - from waste carried off site and faeces. Nuisance and loss of amenity. | Off-site air transport and over land deposition                  | Very Low                           | Very Low                                                   | Very Low                                          | As above. Permitted wastes unlikely to attract scavenging animals and birds.                                                                                                       | None specifically required provided waste acceptance controls are implemented. Develop and implement pest management plan if required.       | Very low                                                                                                                     |
| Local human population                                 | Pests (e.g. flies)                                                | Harm to human health, nuisance, loss of amenity                                              | Off-site air transport and over land transport                   | Very Low                           | Very Low                                                   | Very Low                                          | As above. Permitted waste types unlikely to attract pests.                                                                                                                         | None specifically required provided waste acceptance controls are implemented. Implement management plan if required.                        | Very low                                                                                                                     |

**Table 5-3 Evaluation of Potential Impacts from Odour, Noise and Vibration**

| Data and information                                   |                                                                                                           |                                                              |                                                                  | Judgement                          |                                                            |                                                   |                                                                                                                                                                                                          | Controls                                                                                                                                |                                                                                                                              |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------|------------------------------------|------------------------------------------------------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Receptor                                               | Source                                                                                                    | Harm                                                         | Pathway                                                          | Probability of exposure            | Consequence                                                | Magnitude of risk                                 | Justification for magnitude                                                                                                                                                                              | Risk management                                                                                                                         | Residual risk                                                                                                                |
| <b>What is at risk?<br/>What do I wish to protect?</b> | <b>What is the agent or process with potential to cause harm?</b>                                         | <b>What are the harmful consequences if things go wrong?</b> | <b>How might the receptor come into contact with the source?</b> | <b>How likely is this contact?</b> | <b>How severe will the consequences be if this occurs?</b> | <b>What is the overall magnitude of the risk?</b> | <b>On what did I base my judgement?</b>                                                                                                                                                                  | <b>How can I best manage the risk to reduce the magnitude?</b>                                                                          | <b>What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).</b> |
| Local human population                                 | Odour from waste processing and storage                                                                   | Nuisance, loss of amenity                                    | Off-site air transport then inhalation.                          | Very Low                           | Very Low                                                   | Very Low                                          | Local residents often sensitive to odour, however permitted waste types and process has low odour potential provided management systems are implemented. There are no residential receptors within 350m. | Implement effective waste acceptance control. If needed, undertake olfactory assessments and develop odour management plan as required. | Very low                                                                                                                     |
| Local human population                                 | Noise and vibration from activities such as processing operations, vehicle movements, materials handling, | Nuisance, loss of amenity, loss of sleep.                    | Noise through the air and vibration through the ground.          | Very Low                           | Very Low                                                   | Very Low                                          | Local residents often sensitive to noise and vibration. All recycling activities will utilise modern, well maintained machinery that will be operated only indoors.                                      | None specifically required.                                                                                                             | Very Low                                                                                                                     |

**Table 5-4 Evaluation of Potential Impacts from Vandalism and Fire**

| Data and information                                                 |                                                                                                           |                                                                                                                                                    |                                                                                                                        | Judgement                          |                                                            |                                                   |                                                                                                                                                                                                                                                      | Controls                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                              |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------------------------------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Receptor                                                             | Source                                                                                                    | Harm                                                                                                                                               | Pathway                                                                                                                | Probability of exposure            | Consequence                                                | Magnitude of risk                                 | Justification for magnitude                                                                                                                                                                                                                          | Risk management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Residual risk                                                                                                                |
| <b>What is at risk?<br/>What do I wish to protect?</b>               | <b>What is the agent or process with potential to cause harm?</b>                                         | <b>What are the harmful consequences if things go wrong?</b>                                                                                       | <b>How might the receptor come into contact with the source?</b>                                                       | <b>How likely is this contact?</b> | <b>How severe will the consequences be if this occurs?</b> | <b>What is the overall magnitude of the risk?</b> | <b>On what did I base my judgement?</b>                                                                                                                                                                                                              | <b>How can I best manage the risk to reduce the magnitude?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).</b> |
| Local human population after gaining unauthorised access to the site | Existing ground contamination related to site development                                                 | Health effects                                                                                                                                     | Direct physical contact, ingestion and inhalation                                                                      | Very Low                           | Very Low                                                   | Very Low                                          | Ground contamination may be present below site but material not exposed as site is covered with concrete.                                                                                                                                            | All activities shall be managed and operated in accordance with documented management system which includes site security measures to prevent unauthorised access.                                                                                                                                                                                                                                                                                                                                                  | Very Low                                                                                                                     |
| Local human population after gaining unauthorised access to the site | All on-site hazards including waste; plant and vehicles.                                                  | Bodily injury                                                                                                                                      | Direct physical contact                                                                                                | Moderate                           | Low                                                        | Low                                               | Permitted waste types are mostly inert and non-hazardous and not readily accessible therefore only a low magnitude risk is estimated. All plant and vehicles will be locked down and secured at the end of each day.                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Low                                                                                                                          |
| 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, fire fighters 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. | Low                                | Low                                                        | Low                                               | Permitted waste types are mainly non-flammable but combustible material will be present. Layout of storage and processing areas will involve continued consultation with Fire Rescue Service and be based on existing Pollution Prevention Guidance. | Glass Tech will implement a documented management system that identifies measures to minimise and manage fire. Smoking shall be forbidden throughout the site. Where required, appropriate heat detection apparatus shall be available to measure the temperature of stockpiles. Water, at sufficient pressure, shall also be available. Spark arrestors shall be installed at appropriate locations in consultation with FRS. Stockpile heights shall be controlled and appropriate fire breaks shall be in place. | Low                                                                                                                          |
| 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 fire fighters. Pollution of water or land.                    |                                                                                                                        | Low                                | Low                                                        | Low                                               | Appropriate fire breaks and stockpile sizes will be maintained. Relevant waste storage and processing areas will be impermeable and served by sealed drainage with upstand to enable capture of fire fighting water / foam.                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Low                                                                                                                          |



**Table 5-5 Evaluation of Potential Impacts of Flooding**

| Data and information                                   |                                                                              |                                                                                        |                                                                  | Judgement                          |                                                            |                                                   |                                                                                                                                                                                                                | Controls                                                                                                                                                                                                 |                                                                                                                              |
|--------------------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------|------------------------------------------------------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Receptor                                               | Source                                                                       | Harm                                                                                   | Pathway                                                          | Probability of exposure            | Consequence                                                | Magnitude of risk                                 | Justification for magnitude                                                                                                                                                                                    | Risk management                                                                                                                                                                                          | Residual risk                                                                                                                |
| <b>What is at risk?<br/>What do I wish to protect?</b> | <b>What is the agent or process with potential to cause harm?</b>            | <b>What are the harmful consequences if things go wrong?</b>                           | <b>How might the receptor come into contact with the source?</b> | <b>How likely is this contact?</b> | <b>How severe will the consequences be if this occurs?</b> | <b>What is the overall magnitude of the risk?</b> | <b>On what did I base my judgement?</b>                                                                                                                                                                        | <b>How can I best manage the risk to reduce the magnitude?</b>                                                                                                                                           | <b>What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).</b> |
| Local human population and local environment           | Gradual low velocity flooding of site to a predicted depth of less than 0.5m | If waste is washed off site it may contaminate buildings / natural habitats downstream | Flood waters                                                     | Moderate                           | Low                                                        | Low                                               | Site is located in flood zone. Permitted waste types are mostly inert and non-hazardous so any waste washed off site will add to the volume of the local post-flood clean-up workload, rather than the hazard. | Implement management system that details actions to be taken during flooding. Surface drains will be coloured blue and foul sewers red, both on site drainage plan and by painting drain covers on site. | Low                                                                                                                          |

**Table 5-6 Evaluation of Potential Impacts on Protected Sites**

| Data and information                           |                                                            |                                                       |                                                           | Judgement                        |                                                     |                                            |                                                   | Controls                                                |                                                                                                                          |
|------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------|-----------------------------------------------------------|----------------------------------|-----------------------------------------------------|--------------------------------------------|---------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Receptor                                       | Source                                                     | Harm                                                  | Pathway                                                   | Probability of exposure          | Consequence                                         | Magnitude of risk                          | Justification for magnitude                       | Risk management                                         | Residual risk                                                                                                            |
| What is at risk?<br>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?<br>(This residual risk will be controlled by Compliance Assessment). |
| Protected sites                                | No pathways considered plausible                           |                                                       |                                                           | No pathways considered plausible |                                                     |                                            | No protected sites within 1000m of site boundary. | None required                                           | Exposure pathway not considered plausible                                                                                |

**Table 5-7 Evaluation of Potential Impacts on Surface Water**

| Data and information                                   |                                                                                                                              |                                                                                                                              |                                                                                        | Judgement                          |                                                            |                                                   |                                                                                                                                                                                                                         | Controls                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                              |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------|------------------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Receptor                                               | Source                                                                                                                       | Harm                                                                                                                         | Pathway                                                                                | Probability of exposure            | Consequence                                                | Magnitude of risk                                 | Justification for magnitude                                                                                                                                                                                             | Risk management                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Residual risk                                                                                                                |
| <b>What is at risk?<br/>What do I wish to protect?</b> | <b>What is the agent or process with potential to cause harm?</b>                                                            | <b>What are the harmful consequences if things go wrong?</b>                                                                 | <b>How might the receptor come into contact with the source?</b>                       | <b>How likely is this contact?</b> | <b>How severe will the consequences be if this occurs?</b> | <b>What is the overall magnitude of the risk?</b> | <b>On what did I base my judgement?</b>                                                                                                                                                                                 | <b>How can I best manage the risk to reduce the magnitude?</b>                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).</b> |
| All surface waters close to and downstream of site.    | Made ground beneath site from site development                                                                               | Chronic effects: deterioration of water quality                                                                              | Leaching of existing made ground                                                       | Very Low                           | Low                                                        | Very Low                                          | Site is covered with concrete with limited or no leaching potential. Situation will not be altered by current proposals.                                                                                                | None required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Very Low                                                                                                                     |
| All surface waters close to and downstream of site.    | Spillage / leakage of liquids, leachate from waste, contaminated rainwater run-off from waste e.g. diesel, suspended solids. | Acute effects including: oxygen depletion, fish kill and algal blooms<br><br>Chronic effects: deterioration of water quality | Direct run-off from site across ground surface, via surface water drains, ditches etc. | Very Low                           | Low                                                        | Very Low                                          | Rainwater will be harvested from roof and used for process. Relevant waste storage and processing areas will be served by sealed drainage systems. Waste is mainly inert and non-hazardous with low leaching potential. | All liquids including relevant chemical reagents, fuel oils etc. will be stored in accordance with COSHH and where necessary provided with secondary containment in accordance with EA Pollution Prevention Guidance.. Surface drains will be coloured blue and foul sewers red, both on site drainage plan and by painting drain covers on site. Routinely inspect all aspects of drainage systems. Implement routine drainage and infrastructure inspection and maintenance. | Very Low                                                                                                                     |
| Local human population                                 | Contamination of surface waters used for recreational purposes following spillage or infiltration                            | Harm to human health - skin damage or gastro-intestinal illness.                                                             | Direct contact or ingestion                                                            | Very Low                           | Very Low                                                   | Very Low                                          | Few users would enter surface water in the dock. Site is covered by impermeable concrete with drainage from relevant waste storage and processing areas passing to sealed drainage system.                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Very Low                                                                                                                     |
| Abstraction from watercourse downstream of facility    | No pathway considered plausible.                                                                                             |                                                                                                                              |                                                                                        | No pathway considered plausible.   |                                                            |                                                   | No abstractions downstream                                                                                                                                                                                              | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | None                                                                                                                         |

**Table 5-8 Evaluation of Potential Impacts on Groundwater**

| Data and information                           |                                                            |                                                       |                                                                                  | Judgement                   |                                                     |                                            |                                                                                                                                   | Controls                                                                                                                                                                                                                                                                                              |                                                                                                                       |
|------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------|-----------------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Receptor                                       | Source                                                     | Harm                                                  | Pathway                                                                          | Probability of exposure     | Consequence                                         | Magnitude of risk                          | Justification for magnitude                                                                                                       | Risk management                                                                                                                                                                                                                                                                                       | Residual risk                                                                                                         |
| What is at risk?<br>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). |
| Groundwater                                    | Made ground beneath site from site development             | Chronic effects: deterioration of water quality       | Leaching and transport through soil / made ground to groundwater                 | Very Low                    | Very Low                                            | Very Low                                   | Made ground may be present below site but site is covered with concrete. Situation will not be altered by current proposals.      | Ensure effective management plans are implemented for future operations.                                                                                                                                                                                                                              | Very Low                                                                                                              |
| Groundwater                                    | Spillage / leakage of liquids.                             | Chronic effects: contamination of groundwater,        | Infiltration and transport through soil/groundwater then extraction at borehole. | Very Low                    | Very Low                                            | Very Low                                   | Site is covered by concrete limiting infiltration. Relevant waste storage and processing areas will be served by sealed drainage. | All liquids including fuel oils etc will be stored in accordance with COSHH and where necessary provided with secondary containment in accordance with EA Pollution Prevention Guidance. Surface drains will be coloured blue and foul sewers red. Routinely inspect all aspects of drainage systems. | Very Low                                                                                                              |

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## 5.5 Procedures and Controls

For each of the exposure pathways evaluated in the assessment, Glass Tech will ensure that a fully documented management system is in place by the time the site is operational. This will incorporate documented procedures and controls associated with the activities listed in Table 5-8.

**Table 5-8 Activities to be Included in EMS**

|                                                    |
|----------------------------------------------------|
| Operation of processing plant                      |
| Operation of vehicles and materials handling plant |
| Storage of chemicals (COSHH)                       |
| Noise from site activities                         |
| Fire                                               |
| Vehicle movements                                  |
| Materials handling                                 |
| Maintenance of plant, infrastructure and drainage  |
| Storage of liquids e.g. diesel                     |
| Fuel Delivery and offloading                       |
| Refuelling of site vehicles and plant              |
| Maintenance of vehicles and plant                  |
| Management of surface water run-off                |
| Waste acceptance, placement and inspection         |
| Non-compliant waste management                     |
| Management of Quarantine Area                      |
| Management of site drainage                        |
| Preventative Maintenance Programme - vehicles      |
| Preventative Maintenance Programme - plant         |
| Complaints Management                              |
| Product Management                                 |
| Waste Transportation                               |
| Coordinating Site Visitors                         |
| Manual Sorting                                     |
| Loading and Unloading Processing Plant             |
| Stockpiling Waste                                  |
| Stockpiling Products                               |
| Collecting Samples for Testing                     |
| Working around plant and vehicles                  |
| Personal Protective Equipment                      |
| Refuelling Plant and Vehicles                      |
| Site Security                                      |

## 5.6 Environmental Monitoring

As the processing of waste will be undertaken indoors and controls will be in place to prevent any impact on air, land or water, no specific environmental monitoring will be undertaken.

Should the predictions made in this risk assessment require re-evaluation or the process change then Glass Tech will review the need for environmental monitoring. As a minimum, Glass Tech will, however, maintain records to demonstrate that the operations have not polluted the site as required by the Site Condition Report.

As the site is in an industrial area and some of the surrounding activities are known to release dust and noise. Glass Tech will therefore undertake dust and noise monitoring to establish current baseline conditions and to better understand the source of off-site dust and noise.

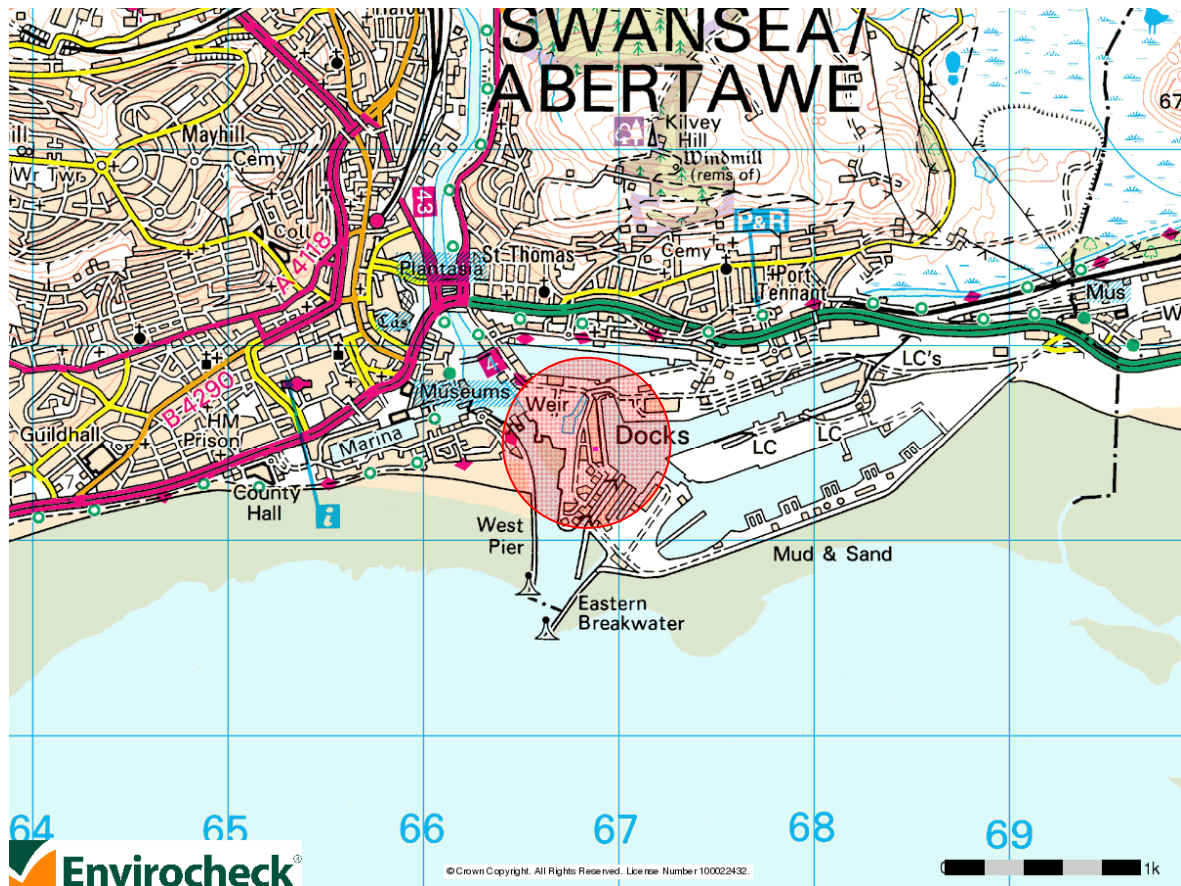
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## **6 SUMMARY AND CONCLUSIONS**

The assessment demonstrates that the operation of the waste management facility will not lead to any significant negative impacts to the environment or humans. The scheme does, however, provide many positive impacts.

This risk assessment will be need to be updated when necessary and directly linked to the Environmental Management System.

**Figure 1 Site Location Plan**



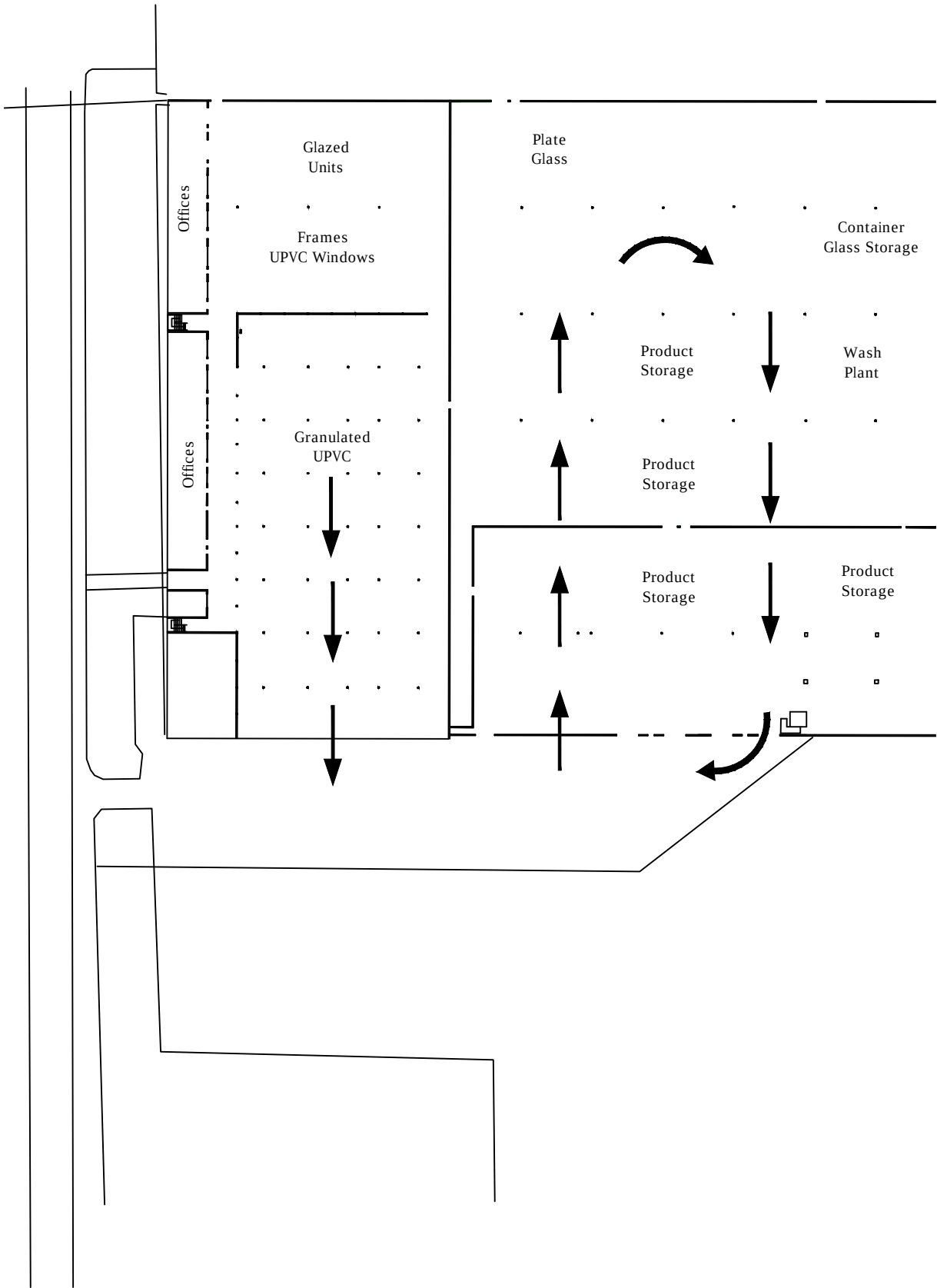
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**Figure 2 Annotated Aerial Photograph**





Figure 3 Proposed Site Layout



## **REPORT 3**

### **BESPOKE ENVIRONMENTAL PERMIT APPLICATION**

### **ENVIRONMENTAL RISK ASSESSMENT**

**Kings Dock  
Swansea**

### **Appendix 1 DIGITAL COPY OF H1 ASSESSMENT**