

**Transport Assessment for a Proposed
Development on Hirwaun Industrial Estate**

**Enviroparks Hirwaun Ltd
Hirwaun Industrial Estate
Aberdare**

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EXECUTIVE SUMMARY

Enviroparks Hirwaun Ltd (Enviroparks) have commissioned a transport assessment to determine the likely impact of vehicle movements associated with a proposed development on the Hirwaun Industrial Estate in Hirwaun, Aberdare. The assessment has been prepared in support of a planning application and environmental impact assessment, and considers the likely changes in vehicle movements due to the development.

The proposed site will consist of a resource recovery and energy production facility, materials being segregated and recycled where possible, prior to the unrecyclable fraction undergoing various treatments to release oil and gases, which then fuel dedicated engines to release the energy potential. Vehicle movements will be created during construction, and then during operation of the development by day staff and shift workers, deliveries of feedstock and consumables to the site, and the removal of products and residual materials.

The Traffic Assessment will consider the impact of traffic flow and trip distribution, prior to assessing the environmental impact of the proposed development.

As each of the impacts considered can be described as neutral / negligible (impact barely perceptible) or minimal (a small negative impact on the highway or environment), there are no further mitigation measures proposed for the small residual impacts, and the proposal can be deemed acceptable.

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1. INTRODUCTION

Enviroparks Hirwaun Ltd (Enviroparks) propose to develop a site on the Hirwaun Industrial Estate in Hirwaun, Aberdare. The company plans to operate a resource recovery and energy production plant using the concept of integrated technologies to extract the full recyclable value from the incoming waste stream. The combination of technologies enables the residual fraction of material requiring disposal to be reduced to 2.5% of the original incoming resources.

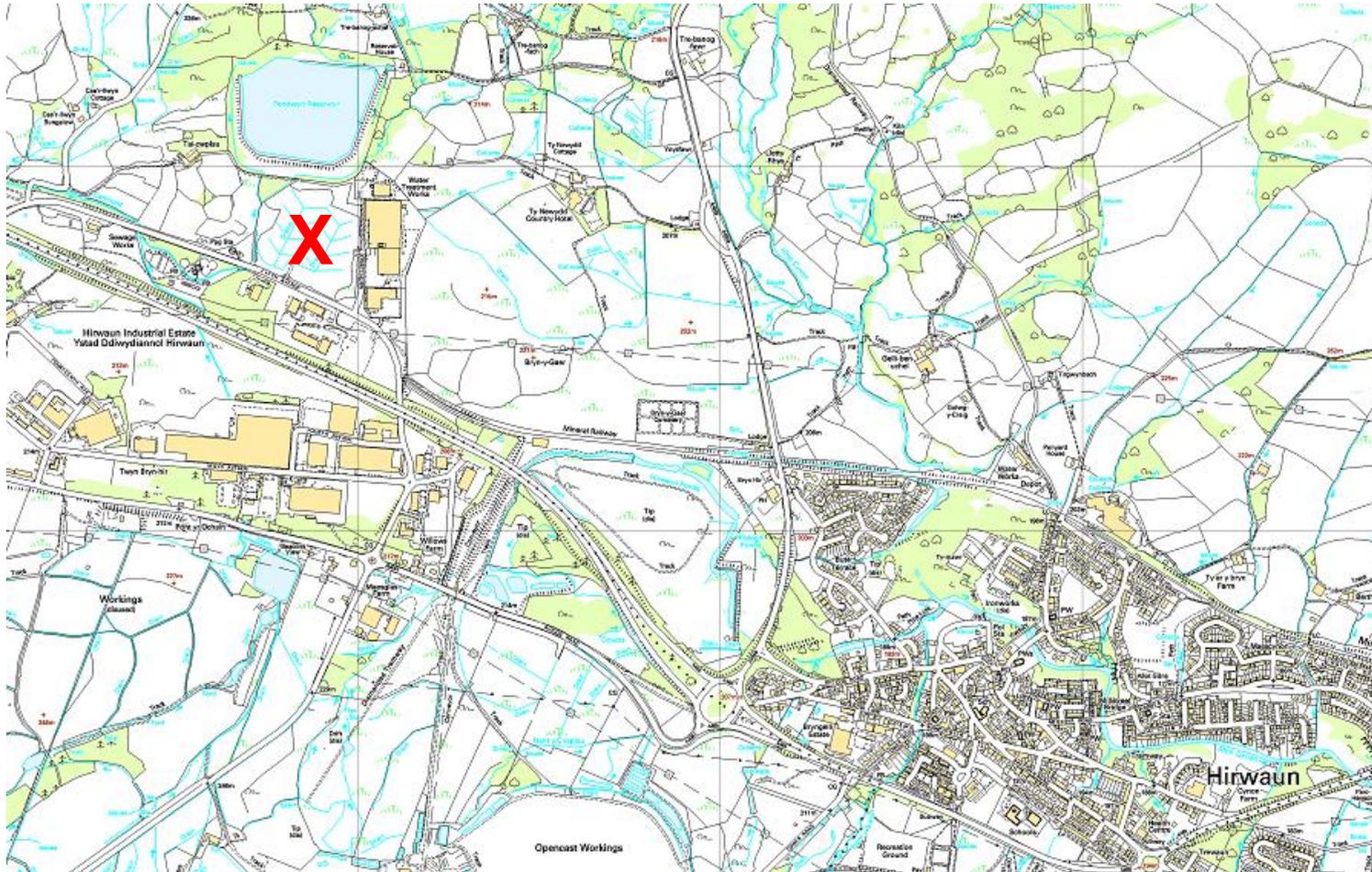
The proposed development is to be located on a brownfield but currently empty site, situated immediately north of Fifth Avenue, between the roadway and the Penderyn Reservoir, with Ninth Avenue immediately to the east. The site location is identified in Figure 1, and the proposed site layout plan is presented in Figure 2.

The basis for determining whether a Transport Assessment (TA) is required can initially be assessed by the size of the development. For General Industrial (B2) classifications, a development of more than 5,000 square metres would generally be expected to be considered for a full TA. The Enviroparks proposal considers a site of 70,000 square metres, with approximately 54,000 square metres being converted to buildings, roadway or hardstanding, and thus, it would be anticipated that a full TA would be required to be produced. Additionally, consultation with Rhondda Cynon Taf County Borough Council (RCT) identified their requirement that a full TA be submitted. This TA has been prepared using the Guidelines for Traffic Impact Assessment⁽¹⁾, although additional TA guidance documents have also been considered and are referred to throughout.

The TA will first describe the current site and its location in relation to the local transport network, before detailing the proposals by Enviroparks and identifying how this will effect the current position. Traffic count data has been obtained for the local area, with specific consideration to areas which have been identified through discussion with RCT to be of importance, due to their location to the development or due to congestion issues which are already apparent. This data has been applied to assess the percentage increase that the proposed development will have on the road network, and an estimated increase of 5 % or more at junctions has been modelled using the TRL ARCADY model to assess the likely impact on the flow of traffic at the junctions.

Finally, an assessment of the environmental impact of the traffic from the proposal has been prepared and considers issues such as noise, driver and pedestrian delays and safety, and air pollution.

Figure 1 Site Location



Site location marked by red X.

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2. EXISTING CONDITIONS

The proposed Enviroparks development will be located off Fifth Avenue on the Hirwaun Industrial Estate, Hirwaun, Aberdare. The estate is situated to the west of Hirwaun, and is located just off the A465 Heads of the Valleys Road, accessed by leaving the A465 at the junction with the A4061 Rhigos Road and turning right into the estate at the following roundabout, where the A4061 travels south. The Hirwaun Industrial Estate has seen the closure of the Tower Colliery during 2008, and generally appears to be under utilised at present. The nearest neighbour of the site is Eden Industries located to the east with Dwr Cymru Welsh Water located to the west across Fifth Avenue. Other units on Fifth Avenue largely appear vacant or are put to minimal use.

Historically an ordnance factory was located on the proposed site however this was demolished between the late 1960s and late 1970s, and the land has been vacant since. The site is located immediately south of the Penderyn Reservoir, and the land is split between two Local Authorities, with the boundary of Rhondda Cynon Taf and the Brecon Beacons National Park Authority running through the site. The site is not in or near an Air Quality Management Area, the nearest being in Aberdare.

Baseline Transport Data

As a currently undeveloped site, there are no existing trips or facilities to consider. The transport network in the area largely consists of the highway linkages, although other facilities are available as discussed below:

Highways

The road network in the area local to Hirwaun is generally good, with the A465 Heads of the Valleys road and the A470 as being routes for national through traffic across Wales. The A465 Heads of the Valleys Road provides the main east-west link for the area and is in the process of being extended from 3 lanes to a dual carriageway route between Abergavenny and Hirwaun. The road runs from Abergavenny to Neath and is therefore a priority route for the proposed development, enabling the movement of heavy goods vehicles to access the estate using trunk roads up until the point at which they enter the estate. The extension of the route is divided into six sections, and the first complete section, Tredegar to Dowlais Top, was opened in November 2004. Work began on the Abergavenny to Gilwern Section in February 2005.

The A470 is the major north-south trunk road through Wales and is essential to the Welsh economy. Other main routes in the area include the A4060 East of Dowlais Trunk Road serving the eastern side of Merthyr Tydfil, and the A4059 and B4275 serving Aberdare and Mountain Ash. The A4059 continues north of the A465 passing through Penderyn and joining the A470 at Gwaun Crew.

Count data for the main trunk roads in the area has been obtained from 2007 and is presented in Appendix 1. Additionally traffic counts were commissioned at five junctions which could be affected by the proposed development or were of concern to Rhondda Cynon Taf County Borough Council due to current congestion problems. The junctions assessed are detailed below:

- A The Estate Roads; Junction with Fifth Avenue and Main Avenue
- B A4061 and Hirwaun Industrial Estate Junction
- C A465 and A4061 Junction
- D A465 and A4059 Junction
- E A4059 and B4275 Junction

Counts were undertaken between 07:15 and 09:15 hours, and 16:00 to 18:00 hours on 30th September 2008. The results supplied by the count team (Capita Glamorgan Consultancy) are presented in Appendix 2, as are the results of a seven day automatic traffic count along Fifth Avenue which was undertaken between 30th September and 6th October 2008. A summary of the data is provided in Table 1 overpage.

Railways

The nearest railway station to Hirwaun is at Aberdare approximately 9 km from the proposed development although other stations are available at Treherbet and Merthyr Tydfil. Each of these lines originate in Cardiff. The Aberdare railway station is served by a bus to Rhigos which passes the Hirwaun Industrial Estate. Trains run to and from Cardiff and Aberdare or Treherbert half hourly during week days, and hourly to Merthyr Tydfil. It is understood that the infrastructure is in place for a railway station at Hirwaun, but no firm commitment has been identified to develop a station in the village.

Buses

Buses passing through the Industrial Estate are limited in their number and frequency. There is a half hourly service (the number 8) to Rhigos Road which starts its service at 07:10 and runs to the area until approximately 18:00. Return journeys leave Glynneath from 07:48 and again pass via Rhigos and Hirwaun until approximately 18:00. The number 7 bus travels from Glynhafod to Penderyn with the first two buses travelling via the Hirwaun Industrial Estate, the earliest bus only starting from Aberdare. A copy of the current timetable for these buses is presented in Appendix 3.

There are a limited number of contracted bus routes in the area during the evening and on Sundays. A small number of peak hour journeys are also available on the X6 route, running to Aberdare and Cardiff. This is a commercial service which starts and finishes in Rhigos.

There is also a rail link service serving a route from Aberdare to Rhigos. It is however noted that a valid rail ticket must be held for using this service and the times of the service are governed by the times of the trains at Aberdare rail station (half hourly).

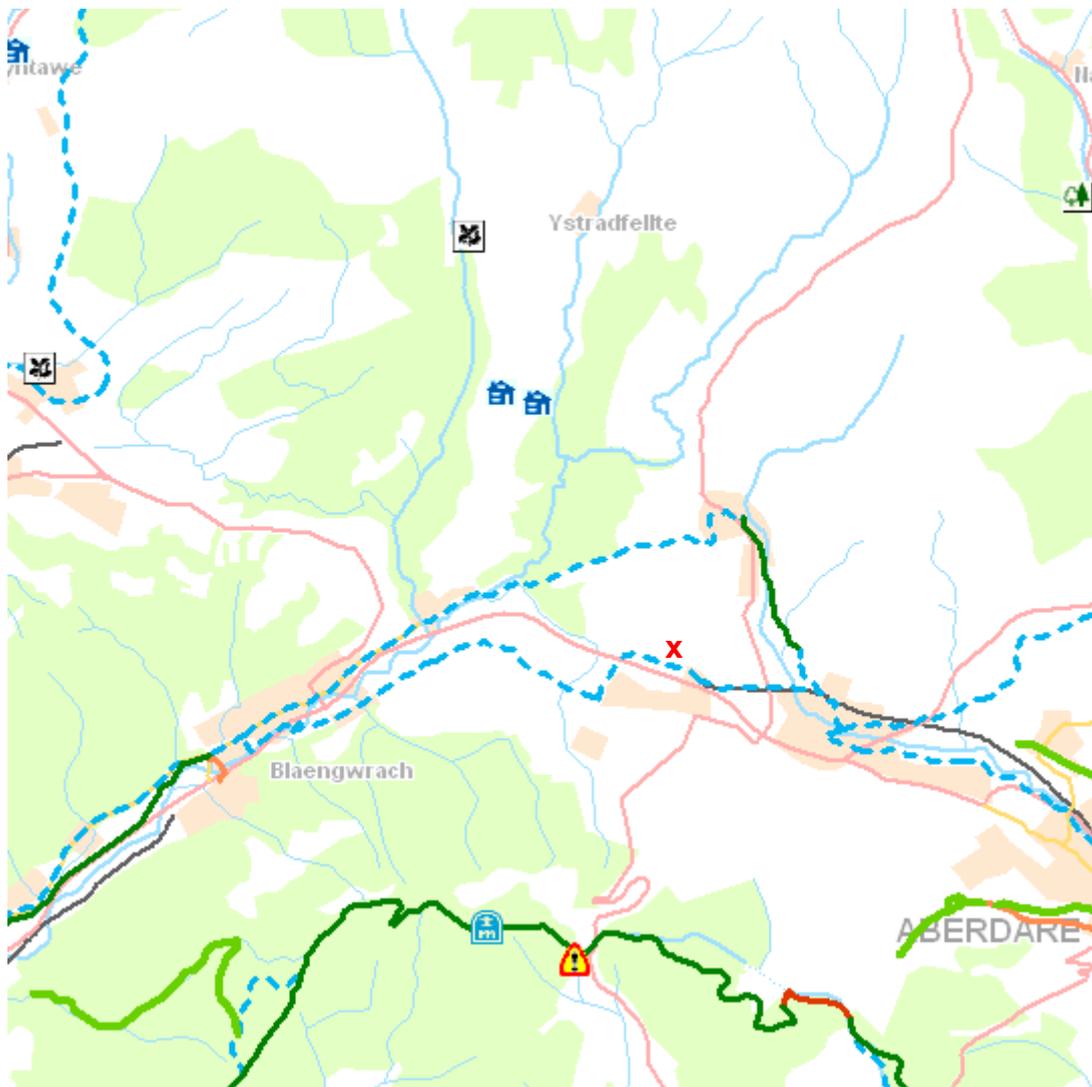
Walking and Cycling

The Hirwaun Industrial Estate is located to the west of Hirwaun and is actually nearer to the village of Rhigos. The roadways within the estate include pedestrian footpaths and the estate could be easily accessed from the Rhigos area on foot. The route from Hirwaun is less pedestrianised with an intermittent footpath around the main A465 / A4061 roundabout, and no defined footpath from the roundabout along Rhigos road to the estate entrance.

Street lighting is present in the estate and through the route to Rhigos, however this is not continued along Rhigos Road to Hirwaun.

Sustrans are working towards extending the Valleys Network cycle route, and the proposed route will include a section from Aberdare and through Hirwaun, onto Rhigos and beyond. Discussion with Sustrans has identified that European funding for this project has recently been granted and therefore although no fixed date had been considered at the time of writing, they would aim to have the route complete within 5 years (2013). The route passes through the Hirwaun Industrial Estate, and would provide an ideal cycle facility for the proposed Enviroparks development. A copy of the Sustrans map of available and proposed cycle routes is presented as Figure 3.

Figure 3 Copy of the Sustrans Cycle Rote Map



Site location marked by red X.

Key

- National Cycle Network on-road route
- Other signed on-road cycle route
- National Cycle Network traffic-free route
(including some forest tracks and paths alongside busy roads)
- Other traffic-free cycle route
- - - Proposed future National Cycle Network route
- Access points

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Table 1 Summary of Link and Junction Count Data

Link / Junction	Assessment Period	Count	Peak AM Time	Peak AM Count	Peak PM Time	Peak PM Count
A465 E of Dowlais Westbound	5 day AADT	13349	08:00	1180	16:00	1159
A465 E of Dowlais Eastbound	5 day AADT	13067	08:00	1003	17:00	1216
A465 Merthyr – Hirwaun Westbound	5 day AADT	8057	07:00	565	17:00	841
A465 Merthyr – Hirwaun Eastbound	5 day AADT	8551	08:00	907	16:00	708
Junction A (Arm 1; 2 way combined)	07:15 – 09:15 16:00 – 18:00	135 148	07:30 – 08:30	70	16:15 – 17:15	84
Junction B (Arm 1; 2 way combined)	07:15 – 09:15 16:00 – 18:00	303 280	07:30 – 08:30	159	16:00 – 17:00	148
Junction C (Arm 3; 2 way combined)	07:15 – 09:15 16:00 – 18:00	1350 1492	07:30 – 08:30	736	16:30 – 17:30	809
Junction D (Arm 4; 2 way combined)	07:15 – 09:15 16:00 – 18:00	3869 4038	07:45 – 08:45	2154	16:15 – 17:15	2110
Junction E (Arm 4; 2 way combined)	07:15 – 09:15 16:00 – 18:00	2764 2954	08:15 – 09:15	1618	16:00 – 17:00	1632

Count data from junctions represents the arm on which the site impact will be greatest. See Appendix 2 for full count data.
5 day AADT represents the Annual 5 day Average Daily Traffic (2007 data).

Collision Analysis

The Department for the Economy and Transport of the Welsh Assembly Government have provided information on the last five years worth of collision data for the A465 in the Hirwaun area. A significant factor in the current and on-going works on the A465 is the improvement of safety. An assessment of the data has been made and considers the number and nature of the accidents, the timing of the incidents, lighting and road surfacing conditions, the type of collision and any contributory factors, such as speed. A summary of the data follows, and charts of the data are also provided.

The assessment area stretched along the A465 from just south of Pontneddfechan in the west, to the western edge of Gellideg in the east. During the period from 2003 to 2007 inclusive, there were 74 accidents recorded on the road. Fortunately fifty eight of these resulted in only slight injury, although nine were serious and seven were fatal incidents. Most accidents occurred in December, a fact which may be associated with the weather and lighting conditions, or indeed with the rush and celebration of the festive period. That said, the assessment of lighting and road surface conditions, suggest that most accidents occur during daylight and dry conditions, a factor of increased traffic and perhaps less care and attention at these times.

Most incidents occurred on a Friday, although high rates of accidents also occurred on Tuesdays and Wednesdays. As the assessment area is a trunk road, day to day factors such as market days which may affect roads through towns, are unlikely to be a factor here, although the haste of finishing work for the weekend may contribute to the higher Friday figures. Most accidents occur between 06:00 and 18:00 hrs, as would be expected due to the heavier traffic levels on the roads at that time. Charts of the time analysis of collisions are presented as Figures 4-6.

The presence or otherwise of lighting does appear to contribute to collisions, although the bulk of accidents occur during daylight hours. Of the 74 incidents, 57 occurred during daylight hours, 10 occurred at night on an unlit stretch of road, and six were on lit sections of the A465. One report recorded the lighting as 'unknown'. Only one accident occurred during flooding and three in snowy conditions. Thirty accidents were reported as occurring on a wet road surface, and forty of the incidents occurred when the road was dry. Figures 7 and 8 plot these trends.

The reports of contributory factors often include more than one consideration, however an assessment of the main causes has been made. The biggest contributory factor recorded was that of poor assessment or not looking, with 37 incidents attributed to this. Speed, either excessive speed or sudden braking was listed as the main contributory factor in 12 cases. The influence of alcohol, and the factor which considers fatigue, distraction, illness or disability both contributed to 5 incidents, whilst poor manoeuvring, bad weather / slippery roads and pedestrians / animals contributed to four incidents each. Finally, aggressive driving was highlighted as the primary contributory cause to the accident in three cases. Additionally, the weather was considered as a contributory cause in seven accidents for which it was determined that another cause was the primary reason for the incident (e.g. speed on a wet road). The road layout was listed as a contributory cause in only three incidents, and for each of these incidents, another factor could be considered to be the primary contribution. A chart of the contributory factors is presented in Figure 9.

Finally, an assessment was made of the collision type. Side impact is most common and occurred in 25 incidents, although these include incidents where a vehicle front may collide with another vehicle's side. There were 21 shunt or rear impact collisions, and thirteen head on collisions. Fifteen of the incidents impacted one vehicle only. The spread of collision type is depicted in Figure 10.

The majority of the incidents assessed involved incidents with cars, although mini-buses, motorcycles and other motorised vehicles were also noted. Of 74 incidents, 10 involved a goods vehicle of one sort or another. Five incidents involved goods vehicles of less than 3.5 tonnes (6 goods vehicles in total), two involved good vehicles rated 3.5 to 7.5 tonnes, and three involved HGVs (4 goods vehicles in total). The number of incidents including goods vehicles generally was therefore 13.5 %, whilst collisions including HGVs accounted for 4 % of the incidents assessed.

When considering clusters of accidents, the majority occur on a 4 km stretch between the junction with the A470 and where the A465 passes over the Nant Hir Reservoir. Five out of seven fatalities over the five years assessed, occurred on this stretch of road, and four of these occurred during 2003 and 2004. That said, far more serious and slight injury accidents occurred in the three years from 2005, than in 2003 or 2004. Seventy one percent of the accidents on this stretch of road were caused by poor driving judgements such as improper overtaking, sudden or failure to brake, speeding, or failure to look or accurately judge. The remainder of the incidents included contributory factors such as fatigue, the weather, obstacles in the road or other distractions.

A cluster of incidents at the Hirwaun / Gelli-Tawr junction demonstrated a mixture of reasons for the accidents, with the additional hazards caused by the presence of the junctions being the only potential reason for a cluster. Over 80 % of the accidents occurring at the junction for Hirwaun and the A4059 and from here to the junction with the A4061, occurred due to poor driving judgements. Accidents at the junction of the A465 and the A4061 were predominantly (84 %) due to a failure to stop or to look. The remaining incidents at this junction were caused by speeding or impairment by alcohol.

Overall, the bulk of the collisions experienced on the studies section of the A465 over the last five years have been caused by poor assessment or a failure to look or see other traffic or hazards. The fact that the road conditions are generally dry when incidents occur and most collisions occur during daylight hours demonstrates that driver error is the primary cause of incidents. The fact that the road layout was only mentioned in three of seventy four cases, and only then as a secondary contribution to excessive speed, sudden breaking or loss of control, would suggest that the stretch of A465 considered has a suitable layout for the vehicular movements experienced presently.

Figure 4 Monthly Collision Analysis of the A465

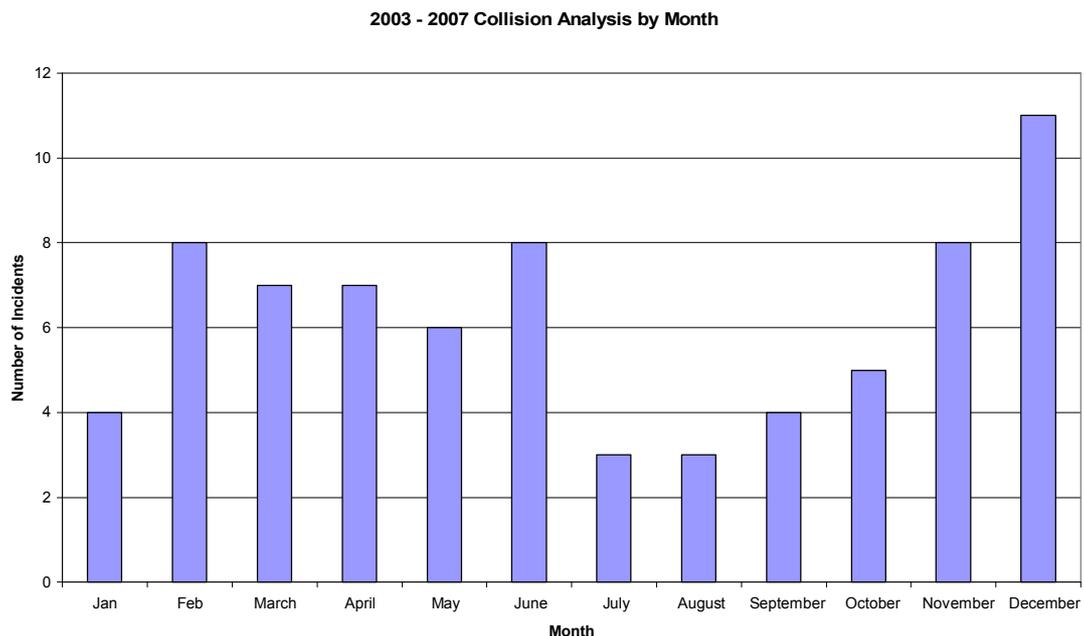


Figure 5 Daily Collision Analysis of the A465

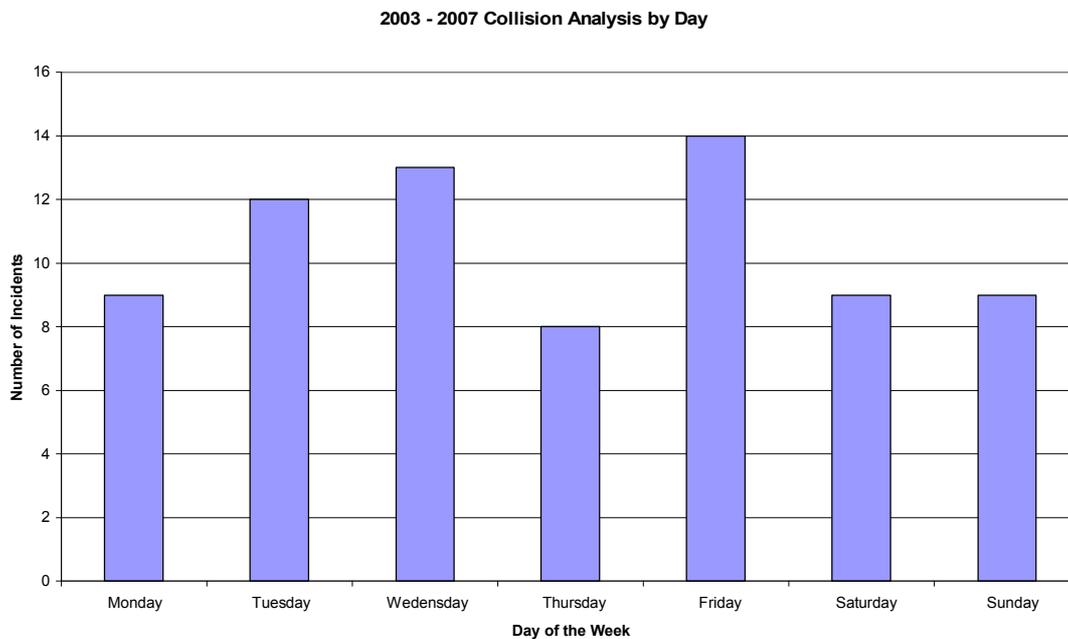


Figure 6 Period Collision Analysis of the A465

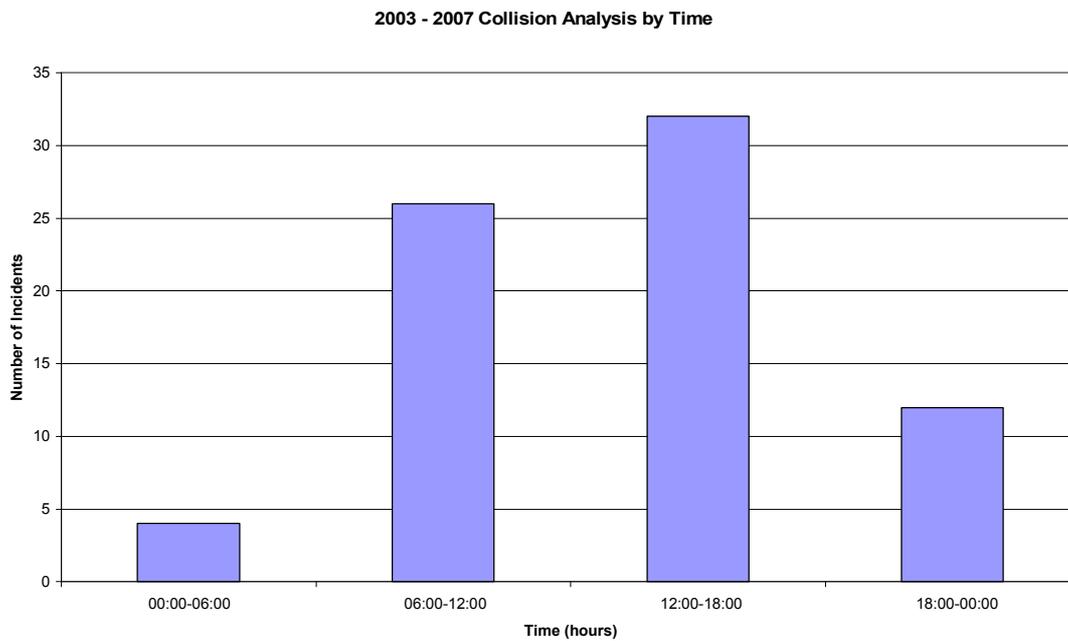


Figure 7 Lighting Collision Analysis of the A465

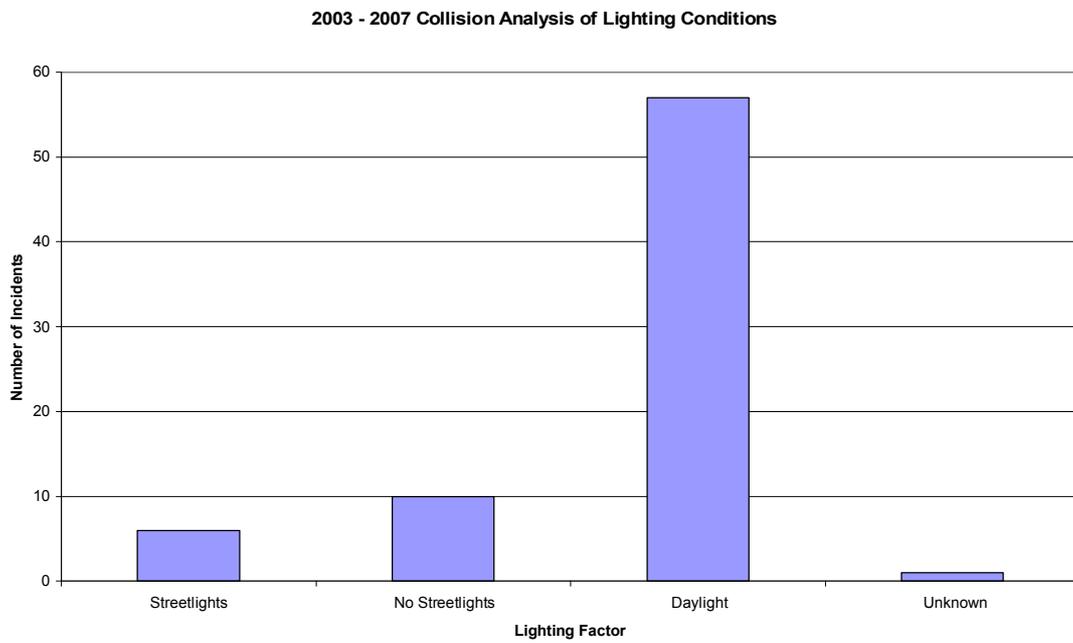


Figure 8 Road Condition Collision Analysis of the A465

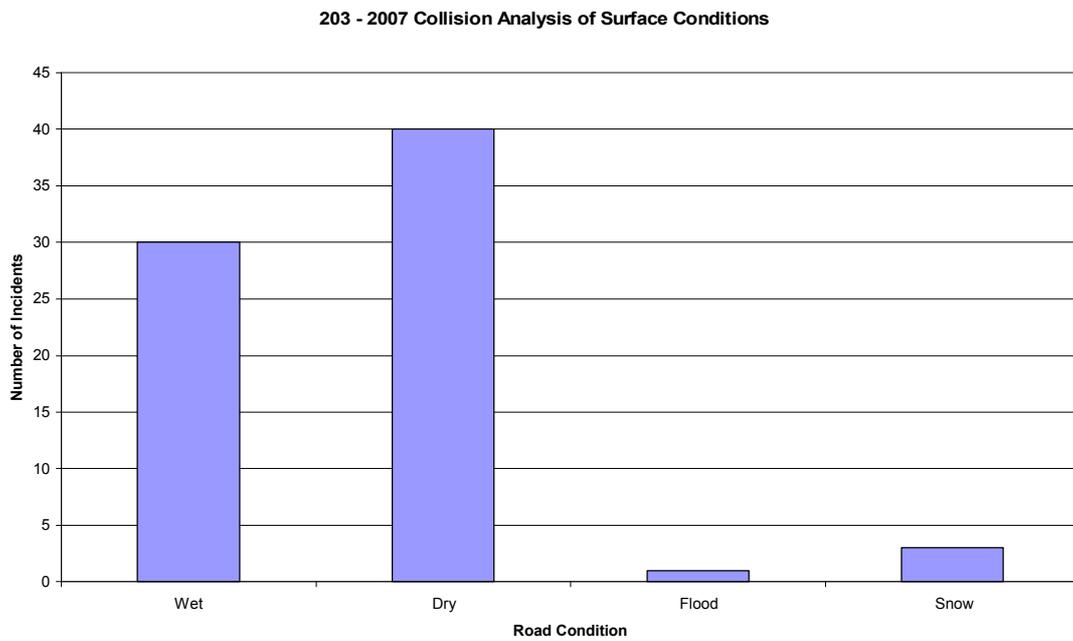


Figure 9 Contributory Factor Collision Analysis of the A465

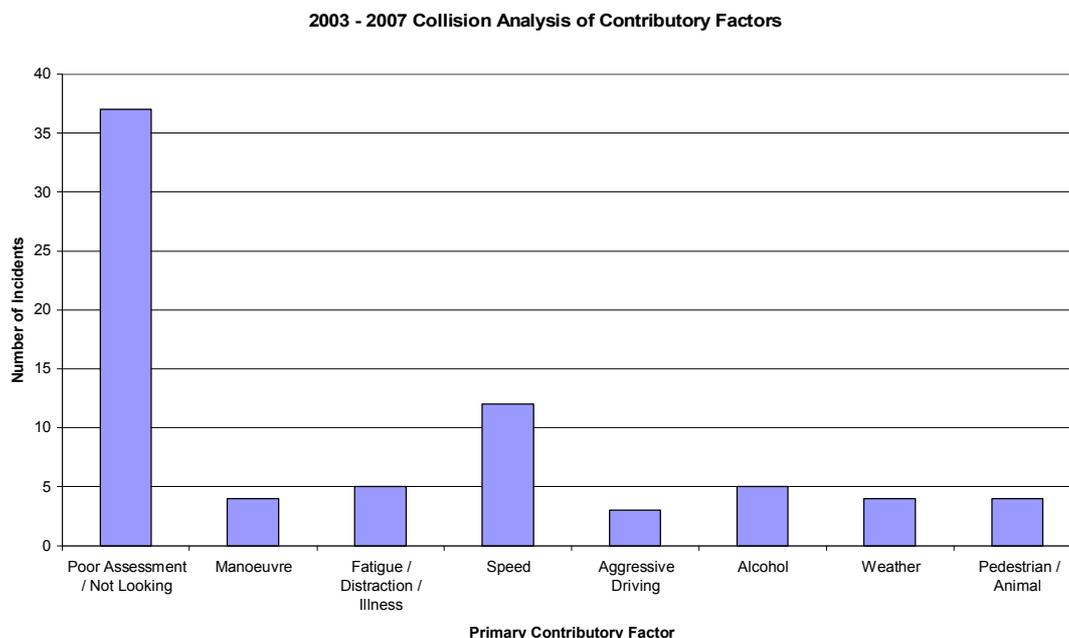
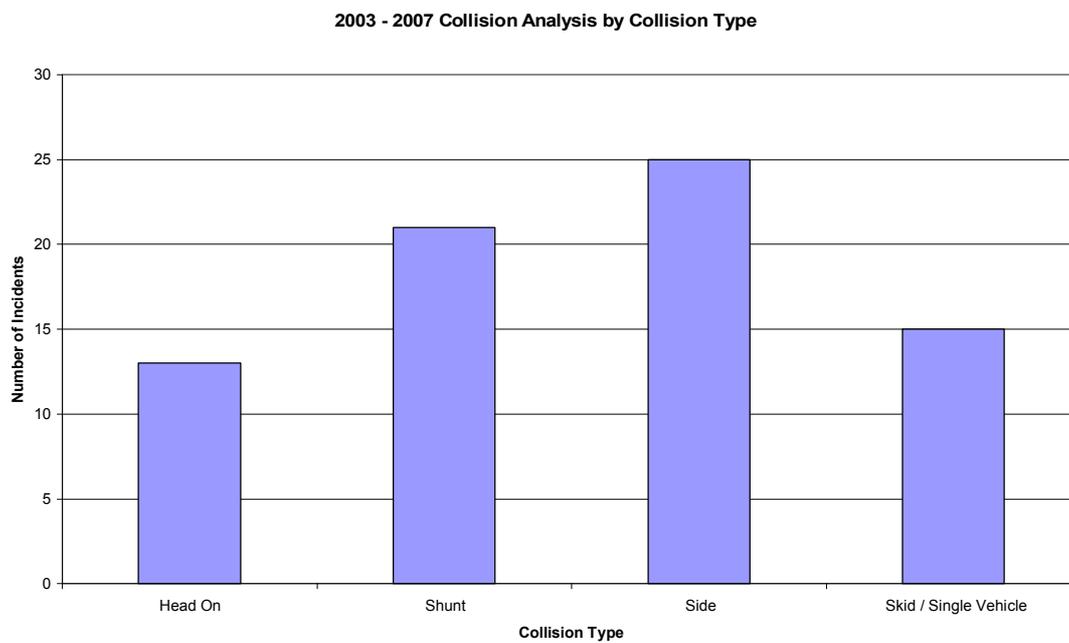


Figure 10 Collision Type Collision Analysis of the A465



3. THE PROPOSED DEVELOPMENT

Enviroparks Hirwaun Ltd propose to develop a site located off Fifth Avenue on the Hirwaun Industrial Estate in order to operate an Enviropark for resource recovery and recycling. The park will operate a series of advanced resource management processes which will enable 97.5 % of the incoming waste material (feedstock) to be recycled, or recovered as energy under closely-controlled environmental conditions.

The proposed development would do this by:

- sorting the waste materials that arrive at the site efficiently to extract recyclable materials, and preparing the feedstock for further processing. This takes place in what is called a 'fuel preparation area';
- using five technologies in an interlinked manner to process the residual wastes and recover energy resources.

These five processes are as follows:

- a 'Biomax' separator that extracts oil akin to a biodiesel from organic materials such as waste food, and other food industry products.
- anaerobic digestion, in which biomass waste is placed in sealed vessels and warmed and stirred in the absence of oxygen. This process removes most pathogens and odour from the waste and provides a useful energy source in the form of methane gas and a clean water effluent.
- pyrolysis, in which solid organic wastes are converted to a useful fuel gas under high temperatures and in the absence of oxygen.
- a plasma gasifier process in which any materials are converted to simple gases or an inert, glass-like solid material that can be used as an aggregate in construction.
- the liquid and gas-based fuels produced through the four initial processes are then used to fuel a range of reciprocating engines located in a proposed 'engine house'. Some of this recovered energy will then be used by a 'high energy user' – a manufacturing employer with high energy needs, occupying an industrial unit proposed in the northern part of the Enviroparks site.

The proposed Enviroparks development at Hirwaun is intended to be the first in a series of such projects across the UK and as such Enviroparks plan to use the site as a showcase for its resource management approach. Furthermore, the proposed development includes a visitor centre designed to accommodate visiting parties from organisations such as schools and colleges. The site design will allow these visitors and other interested parties to be given an educational tour of the facility, enabling them to see the various recovery and recycling processes at close quarters.

The site proposed has been identified as being suitable for such a development, and is located within an existing Industrial Estate. The Hirwaun Industrial Estate is currently under utilised, with potential for additional companies to accommodate other empty units on Fifth Avenue and in the wider estate.

Development work at the site will be comprehensive as the site is currently open land. The area of the site is approximately 7 hectares (70,000 m²), and approximately 5.4 hectares of this area (54,000 m²) will be converted to buildings or hardstanding. The gross floor area of the various buildings on site is presented in Table 2.

Table 2 Gross Floor Area of the Proposed Enviroparks Development

Building Name	Building Class	Gross Floor Area (m²)
Visitors Centre and Offices	B2 Offices	791
Gate House	B2 Offices	103
Fuel Preparation Area	B2 General Industry / Warehousing	7,717
Engine House	B2 General Industry / Warehousing	1,967
Biomax Building	B2 General Industry / Warehousing	2,944
Pyrolysis Building	B2 General Industry / Warehousing	2,490
High Energy User	B2 General Industry / Warehousing	10,420
	TOTAL	26,432

Subject to planning, construction works are planned to commence as quickly as possible and Enviroparks hope to be ready for commissioning 18 months from the start of the build. Information on the likely construction traffic for the development has been provided by Pell Frischmann and is presented in Appendix 4. Pell Frischmann anticipate a total number of materials movements of 10,387, and 16,250 staffing movements. Based on an 18 month (5 day week, 50 week year) building schedule, and assuming that deliveries and staffing to the site are constant across the build period, it is suggested that 28 materials deliveries will be received each day and 43 staff vehicles. This equates to a total of 71 vehicle trips per day, however as the actual spread of the trip rate is unknown, a small increase of 1 additional HGV and 2 additional staffing trips have been included, taking the total to 74 trips (or 148 movements) per day.

Although the details of the tenant proposed to occupy the high energy user building are not yet finalised, the Enviroparks operation will work on a 24 hour, seven day week basis, and it is assumed for the purpose of this TA that the high energy user will work similarly. Enviroparks will operate a continental 5 shift system, whereby two 12 hour shifts will work each day, with shift changes at 06:00 and 18:00 hours. The site will operate for 48 weeks of the year. For the purpose of this TA, it is assumed that the high energy user operations will be similar.

The site will have three main access and egress points. Two of these are located off Ninth Avenue. All HGVs visiting the Enviroparks facility will enter the site from the first entrance, nearest the junction of Fifth and Ninth Avenues. Most Enviroparks staff and all Enviroparks visitors will also use this entrance, the top entrance mainly serving the gatehouse and biomax operations. Cars and passenger vehicle movements will be restricted to entry to and exit from the car parks on site. HGVs will enter the site and will be subject to a main one way route through the site, exiting along the road to the west of the site which joins Fifth Avenue. This Fifth Avenue entrance is a two way junction and is also used by all staff, visitors and HGVs attending the high energy user site. A stage 1 road safety audit of the site entrances has been commissioned, although is not yet complete. The Enviroparks development will adopt any necessary layout schemes or recommendations that the audit raises. With the exception of the installation of the access junctions, there will be no modification to the public highway.

Access to each of the Enviroparks facility buildings will be via the main road route through the site, with full access to the fuel preparation area and biomax reception area directly off the main road. Access to the plasma plant, the pyrolysis building and engine house is via the roadway running off the main route and around the engine house. This road has been designed in order to enable access for maintenance and repair of plant as and when this becomes necessary, and a dedicated maintenance lane, which will not be used for general access or egress, is located to the south of the anaerobic digestion tanks. Access to the biomax unit for the removal of product is via the roadway which runs off the main road along the side of the biomax building, and this is a two way road.

Parking facilities will be provided at the site, and the requirement as to the number and nature of the parking facilities provided have given full consideration of the draft CSS Wales Parking Standards 2008⁽²⁾, which are due to be finalised in quarter 1 2009 and will replace the current South Wales Parking Guidelines. The standards identify that paragraph 8.4.2 of Planning Policy Wales 2002 states that *'Car Parking Provision is a major influence on the choice of means of transport and the pattern of development. Local authorities should ensure that new developments provide lower levels of parking than have generally been achieved in the past. Minimum parking standards are no longer appropriate. Local authorities should develop an integrated strategy on parking to support the overall transport and locational policies of the UDP.'* TAN 18⁽³⁾ supplements Planning Policy Wales and states that *'Maximum car parking standards should be used at regional and local level as a form of demand management'* and, that for new development, regard should be given to alternative transport modes, economic objectives, public and shared parking arrangements.

This new approach to transport which aims to better manage traffic and reduce car dependency, means a new role for parking provision and control, however the aim remains to ensure that sufficient parking space is provided for private cars and service vehicles to avoid the need for vehicles to park on street and thereby cause congestion, danger and visual intrusion. The new guide therefore introduces a system of zones for parking purposes, identifying six zones, each with differing designated levels of parking requirement for development control purposes. The new standards are therefore intended to cover all built up and rural areas in order to facilitate the application of appropriate and sufficient levels of parking requirement in all circumstances.

The parking calculations are presented in Appendix 5. The proposed Enviroparks development is situated away from any major built up area, with Rhigos being the nearest village. As such, its zone would be classed as 'countryside' or 'deep rural' and hence the area can be categorised as Zone 5 or 6. The site will be turned to a B2 'general industry' use, however within the development, the buildings are a mixture of office / visitor centre accommodation and large open plan industrial units, akin to industrial warehousing.

The visitor centre and office block could be compared against the offices criteria or that of a library (to represent the visitors centre). The office would require more individual parking, however the library type classification adds the requirement of a commercial vehicle space. Whilst the building will probably be used more frequently for its office space, there is also a requirement for larger vehicle parking (e.g. a mini-bus or coach), and thus the most appropriate design would combine the two requirements. Applying a worst case therefore the visitors centre and office block would require 36 car parking spaces and one commercial vehicle space.

The energy producing element of the Enviroparks development has a gross floor area of 15,118 m², and therefore requires an operational parking space of 1,512 m², plus 108 non-operational (staff and visitor) parking spaces. The development has 3,275 m² operational parking area, although this also includes some manoeuvring space, and a total of 149 parking spaces, which is sufficient to meet the requirements of the energy producer and the visitor centre and offices. There is also a coach parking space and a total of 7 marked disabled bays.

The high energy user has a gross floor area of 10,420 m² and thus has an operation parking space requirement of 1,042 m², plus 74 non-operational parking spaces. The unit has 2,190 m² operational area available for parking, although as for the energy producer, this incorporates manoeuvring areas also. There are 79 non-operational parking spaces and four of these are marked disabled bays.

The development can be considered to have some excess parking area and spaces. However as noted above, many of the operational areas are not long term parking facilities, and include manoeuvring and waiting facilities. These must be of a certain size and shape to facilitate the necessary vehicle movements and hence it is considered that the site has sufficient, operational parking capacity without promoting excessive waiting or parking times. There are also some additional non-operational parking spaces, however these are not at the expense of the promotion of other forms of transport, and will enable larger or multiple visiting groups to attend the visitors centre and site.

Although full parking facilities are provided for staff and visitors, and this is considered essential due to the site location and limited nature of the transport services currently available in the area, it is not the only form of transport that Enviroparks will promote. Enviroparks Hirwaun Ltd have prepared a Transport Plan and this is included as Appendix 6 of this document. Commitments made within the Transport Plan, and demonstrated by the site plans include the provision of 40 cycle store spaces (4 stores each capable of holding up to 10 cycles), a cycle lane into the site and the availability of showers and changing facilities for staff. Additionally, Enviroparks plan to promote buddying schemes for cyclists and pedestrians, and car share schemes.

The provision of public transport can contribute significantly to sustainability by reducing the need for individuals to travel by car, while improving accessibility. Enviroparks would like to promote the use of public transport by their staff, but are conscious of the fact that the current facilities do not necessarily cover the proposed shift pattern or a suitable commuting area. Discussions with Stephen Wren the Operations Director of Stagecoach Buses who operate service numbers 7 and 8, suggests that although the service does not currently coincide with the proposed shift patterns of the Enviroparks site or the anticipated pattern of the high energy user, an extension to the service could be provided. The cost of providing an additional early morning journey to a route would be in the region of £30 per day, and similarly for later alterations if the driver shift patterns were extended. Although day staff can travel from areas such as Glynhafod, Aberaman, Aberdare and Glynneath to work by bus, the current bus timetables do not make this facility available to shift workers who work 12 hour shifts with shift changes at 06:00 and 18:00. The minimum cost of providing an appropriate route for shift workers would be £30 per day Monday to Saturday. A very restricted service currently operates on a Sunday and the most local stop to the site on Sunday is in Hirwaun, with buses heading for Aberdare, Aberaman and Glynhafod. The nearest bus stop to the facility for the routes 7 and 8 between Monday and Saturday is approximately 700 m from Ninth Avenue, located on the Rhigos Road.

As an alternative, Enviroparks will consider the potential to provide a work or shift pick up scheme. Depending on the requirements and locations of staff when the site becomes operational, this could prove to be an effective service, which Enviroparks may subsequently offer to the wider Industrial Estate. Although the provision of such a service will require investment, collecting staff promotes punctuality, and encouraging staff to travel together promotes social interaction, which in turn provides an additional impetus for using the service. If the service is then offered to other industries on the estate, the cost of such a provision for the individual company will reduce.

4. IMPACT ON THE TRANSPORT NETWORK

Although additional transport choices are proposed by Enviroparks for their staff in the longer term, as a currently undeveloped site, all journeys associated with the site are assumed to be undertaken by motor vehicle on the highway network. Coupled with an assumption that staff will all travel in single occupancy vehicles, this approach is considered to represent a worst case scenario.

Trip Rate and Distribution

The trip rates, distribution and modal matrix for the development have been calculated with reference to the discussions already underway between Enviroparks and potential suppliers and sources of feedstocks. Information on the required staffing levels for the development have been included, although estimates must be made of the likely distribution of staff sourcing across the local area.

Materials Handling

Incoming feedstock and outgoing material movements have been calculated based on the maximum capacity of the plant. That is, the calculations assume that the plant is fully operational at 100 % capacity.

The site hopes to win a contract to receive the municipal solid waste material and kitchen waste from Rhondda Cynon Taf County Borough Council (RCT). RCT operate a maximum of 33 refuse collection vehicles (RCVs). These range in gross weight between 21 and 26 tonnes, and can carry 7 to 10 tonnes each. All waste is currently sent to Bryn Pica Landfill site which is situated off and accessed via the A4276 by all vehicles. RCT operate 3 RCV fleets, being the Rhondda, the Cynon and the Taf fleets, and a description of the vehicle numbers and routes follow.

The Rhondda Fleet; Rhondda operate 8 vehicles and they all travel north up the A4061 from the Rhondda Valley to the A465, which they join at the Hirwaun Industrial Estate roundabout. The vehicles travel east along the A465 to the A4276.

The Cynon Fleet; Cynon operate 8 vehicles and these travel up the A470 on Monday (all day) and a Tuesday morning. For the remainder of the week (Tuesday afternoon to Friday), the fleet will travel along the A4233, over Maerdy mountain, turning north west up the A4059 before heading east along the A465. The Team is not allowed to travel through Llwydcoed, and hence must join the A465 at the south eastern edge of Hirwaun, to then travel east and approach Bryn Pica from the north, heading south along the B4276.

The Taf Fleet; This is a 17 vehicle fleet, however the full 17 vehicles only work 3 days per week. On the remaining two days, only 12 vehicles run. All vehicles would approach Bryn Pica from the A470, turning west along the A465, before heading south at the B4276 for Bryn Pica.

Although no specific timings of refuse tips are readily available, discussion with Mr Keith Lewis of the Street Care Team of RCT indicated that the RCVs will each tip twice per day, and tipping is generally undertaken between 09:30 and 10:45, and 12:30 and 15:00 for all vehicles.

Although Enviroparks hope to win the contract to handle the local municipal solid and kitchen wastes from RCT, other contracts are also being discussed. As the site can receive a maximum of 160,000 tonnes of such waste each year, and this is assumed to be carried in 10 tonne loads, up to 16,000 trips by refuse collection vehicles could be anticipated if the site operates at 100 % capacity. Based on a 240 day working year (5 day deliveries for 48 weeks of the year) this would result in up to 67 vehicle trips to site per day. This is therefore comparable with the RCT RCV movements, which equate to a maximum of 66 trips on the days that all vehicles are operational. Current discussions indicate that should these additional contracts come to fruition, all of the MSW and kitchen waste to be received at the site would come from the east and would travel along the A465 to the junction with the A4061 before entering into the Hirwaun Industrial Estate. Assessment of this scenario will provide a worst case view of the impact on local roadways as it is necessary to assume that all traffic movement from these alternative sources would be new trips to the local network, and all 67 vehicles per day would travel along the Heads of the Valley's Road (A465). Hence this worst case scenario is carried forward through the remainder of this assessment. Should a contract be won to handle RCT's MSW and kitchen waste, the impact on the overall network would be less than assumed here, with some modification and reduction to the routes that the RCVs take presently along the A465. Movements would not change along any of the other roadways on the network, and thus no other roads have been considered for RCV impact. The Enviroparks site will not be open to the public for use as a waste facility and all waste will be delivered under contract, thereby restricting and controlling the number of vehicle movements associated with the site.

Other incoming feedstock consists of animal by-products waste and commercial and industrial waste. These deliveries would be received in 20 tonne loads and daily deliveries at maximum capacity could equate to 7 and 6 vehicles respectively. Again, contract discussions suggest that 70 % of the animal by-products waste is planned to be received from the east and would travel along the A465. All of this type of waste from the South Wales area is currently sent to England for processing at Widnes in the north west, and thus vehicles travelling from this region would likely travel along the A465 and then either north or south (to the M4 motorway) along the A470, or alternatively could travel east along the A465 before joining the A40 and on to the M50. As the current routes of these vehicles is unknown, it is assumed that all of the movements are new to the network, however five are assumed to travel west towards the facility along the A465, and two are assumed to travel east. Similarly, the current distribution of the commercial and industrial waste movements is not known, and hence the 6 deliveries are assumed to be split equally from the west and east along the A465, and are considered to be new trips.

The movement of products from the energy producing site consists of recyclates, plasma solids (secondary aggregate type material), Soil Conditioner and residual waste for landfill. These will all be removed in 20 tonne loads. Six lorries of recyclates are expected to be divided with four travelling east and two travelling west. The one lorry of plasma solids and two or residues for landfill are all expected to travel east, and soil conditioner is anticipated to be distributed with one lorry travelling east and one to the west. That said, removal routes are not clear at this stage, and it has been assumed that the vehicles will travel from the area that they will subsequently remove the waste to, which again is not certain.

Finally, as no high energy user has yet been confirmed for the site, HGV movement requirements are difficult to predict, however considering one of the interested parties, it is anticipated that their product could require up to 6 HGVs per day. Material delivery and ancillary deliveries to site have been considered to equate to 12 HGV movements per day. It has been assumed that all movements for the high energy user are from the east, which represents the best network links for incoming or outgoing material for wider area sourcing and distribution. Table 3 summarises the likely HGV movements to and from the site.

Table 3 Rate and Distribution of Heavy Goods Vehicles

	Vehicles Carrying Goods Moving East	Vehicles Carrying Goods Moving West	Total Number of Vehicles Per Day	Total Number of Daily Return Movements
Incoming Material				
MSW and Kitchen Waste	0	67	67	134
Animal By-Products	2	5	7	14
Commercial and Industrial	3	3	6	12
Outgoing Material				
Recyclates	4	2	6	12
Plasma Solids	1	0	1	2
Soil Conditioner	1	1	2	4
Residue to Landfill	2	0	2	4
High Energy User				
Incoming Material	12		12	24
Outgoing Material	6		6	12
TOTALS	31	78	109	218

Materials deliveries and removals are expected to be undertaken between the hours of 08:00 and 17:00. The actual timings of likely vehicle movements are unknown, as the only available data relates to the RCT RCV movements, and would therefore not provide a worst case. Therefore vehicle movements in the vicinity of the site have been spread throughout the day beginning between 07:00 and 08:00 in anticipation of the first delivery or collection potentially travelling on the network to arrive by 08:00, and completing by 17:00, as it is unlikely that vehicle drivers will aim to begin a journey so close to the rush hour period. Up to 13 materials deliveries might also occur at the weekends, resulting in 26 vehicle movements to and from the site.

It is anticipated that all HGV movement would naturally enter the Industrial Estate and thereby the site, using the main junction of the A465 and A4061, the exception being any deliveries from existing refuse collection vehicles using the A4061 as part of their route. That said, Enviroparks are willing to commit to enforcing this main route as the only acceptable HGV route to site, thereby avoiding larger vehicles entering the estate from the west, along Rhigos Road and possibly along Halt Road, which are considered less suitable routes for large numbers of heavier vehicles.

Staffing Movements

The Enviroparks energy production facility intends to operate a continental five shift system, with 16 staff on each shift. Daily shifts will be 12 hours long, and will run from 06:00 – 18:00 hours. Additionally the site will require up to 21 day staff and managers. It is assumed for the purpose of this traffic assessment that a similar staffing level will be required by the high energy user situated to the north west of the site, that is, a continental five shift system with 16 staff per shift, and 20 day staff and managers. The shifts and the day staff hours have been assumed to coincide in order to provide a worst case scenario.

The source of staff cannot be determined accurately at this stage, however Enviroparks intend to recruit locally and hope to provide local jobs for local people. As such, it has been assumed that all staff will be from the local area, and the distribution of likely recruitment has been based purely on the size and locality of the various residential areas. Table 4 demonstrates the chosen area distribution, and identifies the total number of staff trip rates.

All staff have been assumed to travel in a single occupancy car to provide a worst case scenario of the likely additions to the road network.

Table 4 Estimated Distribution of Staff Sources

Local Areas Assumed for Staff Sourcing	Energy Producer		High Energy User		TOTAL
	% staff likely to travel from this area	Number of staff travelling to site (Mon to Fri)	% staff likely to travel from this area	Number of staff travelling to site (Mon to Fri)	
Rhigos	5	3	5	3	6
Penderyn	5	3	5	3	6
Neath	10	5	10	5	10
Hirwaun	20	11	20	11	22
Pen-y-Waun	20	11	20	10	21
Aberdare / Mountain Ash	20	10	20	10	20
Merthyr Tydfil	20	10	20	10	20

Note; The process is 24 hour and thus shift staff will also travel on Saturday's and Sunday's, resulting in 64 staff trips per day.

Clearly any such judgements on availability of labour at this stage are speculative, however, it is considered that the application of such a spread of staff sourcing is the most appropriate method of incorporating staff movement data into the transport assessment, and thereby considering the potential impact of local labour sourcing.

A summary of the likely hourly vehicle movements to and from the site along the main link roads affected is presented in Table 5. Note, data for 05:00 – 19:00 hours is included as this represents the limit of the usual vehicle movement times. No regular vehicle movements associated with the site are anticipated outside of these hours.

Table 5 Proposed Hourly Contribution of Development to Main Links

A465 between B4276-A4059	Energy Producer				High Energy User			
	HGV		Staff		HGV		Staff	
	W	E	W	E	W	E	W	E
Hour								
05:00 - 06:00			5				5	
06:00 - 07:00				5				5
07:00 - 08:00					2			
08:00 - 09:00			7		2	2	6	
09:00 - 10:00	12				3	2		
10:00 - 11:00	14	12			2	3		
11:00 - 12:00	15	14			2	2		
12:00 - 13:00	2	15			3	2		
13:00 - 14:00	14	2			2	3		
14:00 - 15:00	14	14			2	2		
15:00 - 16:00	12	14				2		
16:00 - 17:00		12						
17:00 - 18:00	12		5	7			5	6
18:00 - 19:00	14	12		5				5

A465 between A4059–A4061	Energy Producer				High Energy User			
	HGV		Staff		HGV		Staff	
	W	E	W	E	W	E	W	E
Hour								
05:00 - 06:00			13				13	
06:00 - 07:00				13				13
07:00 - 08:00					2			
08:00 - 09:00			17		2	2	16	
09:00 - 10:00	12				3	2		
10:00 - 11:00	14	12			2	3		
11:00 - 12:00	15	14			2	2		
12:00 - 13:00	2	15			3	2		
13:00 - 14:00	14	2			2	3		
14:00 - 15:00	14	14			2	2		
15:00 - 16:00	12	14				2		
16:00 - 17:00		12						
17:00 - 18:00			13	17			13	16
18:00 - 19:00				13				13

Within the Estate	Energy Producer				High Energy User			
	HGV		Staff		HGV		Staff	
	N	S	N	S	N	S	N	S
Hour								
05:00 - 06:00			16				16	
06:00 - 07:00				16				16
07:00 - 08:00					2			
08:00 - 09:00			21		2	2	20	
09:00 - 10:00	12				3	2		
10:00 - 11:00	14	13			2	3		
11:00 - 12:00	16	16			2	2		
12:00 - 13:00	4	17			3	2		
13:00 - 14:00	16	3			2	3		
14:00 - 15:00	15	16			2	2		
15:00 - 16:00	14	14				2		
16:00 - 17:00		12						
17:00 - 18:00			16	21			16	20
18:00 - 19:00				16				16

The Enviroparks Visitor Centre will be in place for use by schools, colleges and other interested parties to visit the site and learn about the process. It is anticipated that the majority of these larger groups of guests will arrive by coach or minibus, and as only one visit per fortnight is currently planned, equating to 0.01 % of the total vehicle movements of the site, and these will likely be scheduled to avoid peak traffic movements, it is not considered that this traffic source need be assessed further.

Construction traffic movements expected at the site will mainly be from workers attending site as deliveries are expected to be spread throughout the course of the day, and are expected to equate to no more than 8 movements in any one hour. The large number of construction staff required for the build however will result in up to 45 staff vehicles attending site for 08:00 hours and leaving the site from 18:00 hours.

The percentage increase in vehicle movements created by the proposed development has been assessed against currently available AADT data for the link roads and the traffic count data obtained in September 2008. The data has been applied as a base to assess the development movements against, with data from or factored to 2008 being used as a basis for the construction effects and consideration of the development traffic movements against the opening year of the development (2010), and an operational year projected 15 years into the future (2025). Growth rates for traffic flows were calculated using the National Road Traffic Forecasts (NRTF) and applying these to the TEMpro programme to adjust for local factors. The NRTF provides data on the estimated growth of traffic levels across the country, factoring in natural growth and development.

The TEMpro 5.4 dataset was applied. Table 6 details the growth rate calculations:

Table 6 Traffic Flow Growth Rates

Dataset	NRTF	Production Rate	Attraction Rate	Localised TEMpro	Growth Rate NRTF * TEMpro
GB 2007-2008	1.015	1.013	1.013	0.998519	1.0135
RCT 2007-2008		1.014	1.009		
GB 2008-2010	1.030	1.026	1.026	0.996589	1.0261
RCT 2008-2010		1.028	1.017		
GB 2010-2025	1.07	1.14	1.14	0.955702	1.122
RCT 2010-2025		1.128	1.051		

The central (medium) traffic flow rate was applied from TEMpro and this was discussed in advance with Rhondda Cynon Taf County Borough Council. However a sensitivity check was also run to determine the difference between the central and high growth rate figures. Applying the higher growth rate resulted in an increased growth of 0.0036 % per year, and would therefore result in NRTF factors prior to localisation of 2007 - 2008: 1.0186; 2008 – 2010: 1.0372; and 2010 – 2025: 1.124 (+ 0.054 %). As the growth rate applied over 15 years would vary by less than 0.1 % of the higher growth rate proposed, it is considered reasonable to retain the central growth rate. That said, should capacity issues become apparent for the growth rates applied, further study would be recommended considering both higher and lower growth rates.

Details of the likely traffic movements during the peak period were then applied to the count and projected data, in order to determine the percentage increase in vehicle movements caused by the development. Development vehicles were not subject to growth rate calculations as the plant has been assumed to operate at full capacity in all calculations, and thus no growth is anticipated. Network diagrams of the traffic flows are presented graphically in Appendix 7.

Consideration has also been given to committed development in the area, through a review of available planning files. Both the Brecon Beacons National Park Authority (BBNPA) and Rhondda Cynon Taf County Borough Council (RCT) were approached to provide information on committed development in their area, local to the site which may have an impact on the traffic movements in the area. BBNPA identified no such committed development. RCT provided a list of planning cases spanning from 2003 to 2008, to account for developments which may have received planning several years ago but which may still be live. The list was reviewed and a summary of those developments which could potentially have an impact on the development, either in the immediate or wider area is presented in Appendix 8. The criteria applied for developments to be considered for review was that any industrial, office, or similar development which could impact on traffic movements: e.g. developments which could affect staff flows rather than the erection of a sign or addition of a window; or similar operations would be considered, as would residential developments of more than 5 units. Additionally, the planning had to have been granted.

A summary of the percentage impact assessment is presented in Tables 7 to 10.

Table 7 Results of the Percentage Impact Assessment for Links

Base Year 2007 – 5 Day AADT						
Construction	West Bound			East Bound		
Link	Traffic Flow	Devel. Traffic	% Increase	Traffic Flow	Devel. Traffic	% Increase
A465 East of Dowlais	13529	37	0.27	13243	37	0.28
A465 Merthyr to Hirwaun	8166	37	0.45	8666	37	0.43
Opening Year 2010 – 5 Day AADT						
Operation	West Bound			East Bound		
Link	Traffic Flow	Devel. Traffic	% Increase	Traffic Flow	Devel. Traffic	% Increase
A465 East of Dowlais	13882	121	0.87	13589	121	0.89
A465 Merthyr to Hirwaun	8379	186	2.22	8893	186	2.09
Operational Year 2025 – 5 Day AADT						
Operation	West Bound			East Bound		
Link	Traffic Flow	Devel. Traffic	% Increase	Traffic Flow	Devel. Traffic	% Increase
A465 East of Dowlais	15576	121	0.78	15247	121	0.79
A465 Merthyr to Hirwaun	9401	186	1.98	9978	186	1.86

As the percentage increase of vehicle movements on the two main links to be affected by the estate is less than 5 %, no further assessment of the development contribution to the links is necessary. However, when considering the hourly movements, along the A465, the increase in movements both west bound and east bound between Merthyr Tydfil and Hirwaun, between 05:00 and 07:00 hours is calculated at more than 5 % due to the lighter vehicle movements. In the west bound direction between 05:00 and 06:00 the traffic flow predicted for 2010 is 107 vehicles. Therefore the contribution of the development (26 vehicles) to the traffic loading is 24 %. Similarly eastbound on the same stretch between 06:00 and 07:00 hours the traffic flow in 2010 is calculated to be 332 vehicles, and the contribution of the development (26 vehicles) to the traffic loading is therefore 8 %. Although percentage increases of more than 5 % where congestion is an issue and 10 % in all other areas is deemed to constitute the criteria for further assessment, the traffic loading on the roadway at the hours concerned is so much lower than the peak (841 and 907 vehicles respectively) that no further assessment is considered necessary. The percentage of HGV movement along the link was also obtained, and showed a modal split of Car; 73.1 %, HGV; 9.2 % and LGV; 17 %. When applying the transport data from the development, the change in this modal split is negligible, recording percentages of Car; 72.8 %, HGV; 9.9 % and LGV; 16.3 %.

Discussion with Richard Blagg, a Route Engineer for the Welsh Assembly Government identified that consideration should be given to the effect of alternative shift patterns within the assessment. Therefore, Table 8 demonstrates the percentage increase at peak hours with all possible staff, that is day and shift staff, moving simultaneously. In order to provide an absolute worst case, potential HGV movements around the peak period have also been included. Table 8 demonstrates that the percentage increase on the links, even when considering this worst case scenario, which in reality will never occur due to the 12 hour shift patterns, increases in the link traffic movements are generally still less than 5 %, although on 4 occasions, this is exceeded. However the 10 % threshold is only exceeded twice, and then the maximum increase on the route is 10.6 %. As this situation is unlikely ever to occur and the potential impact from it can almost be considered insignificant, no further study of this case will be undertaken.

Table 8 Results of the Percentage Impact Assessment for Links Assuming Worst Case Traffic Movements

A465 East of Dowlais; Westbound								
	5 Day Peaks	Development	Total	% increase	7 Day Peaks	Development	Total	% increase
AM Peak Time	08:00	08:00			08:00	08:00		
Volume	1227	17	1244	1.4	973	14	987	1.4
PM Peak Time	16:00	16:00			16:00	16:00		
Volume	1205	6	1211	0.5	1049	6	1055	0.6
A465 East of Dowlais; Eastbound								
	5 Day Peaks	Development	Total	% increase	7 Day Peaks	Development	Total	% increase
AM Peak Time	08:00	08:00			08:00	08:00		
Volume	1043	8	1051	0.8	816	8	824	1.0
PM Peak Time	17:00	17:00			16:00	16:00		
Volume	1265	27	1292	2.1	1126	21	1147	1.9
A465 Merthyr Tydfil to Hirwaun; Westbound								
	5 Day Peaks	Development	Total	% increase	7 Day Peaks	Development	Total	% increase
AM Peak Time	07:00	07:00			11:00	11:00		
Volume	588	62	650	10.6	489	52	541	10.6
PM Peak Time	17:00	17:00			17:00	17:00		
Volume	875	24	899	2.7	743	24	767	3.2
A465 Merthyr Tydfil to Hirwaun; Eastbound								
	5 Day Peaks	Development	Total	% increase	7 Day Peaks	Development	Total	% increase
AM Peak Time	08:00	08:00			08:00	08:00		
Volume	943	26	969	2.8	738	26	764	3.5
PM Peak Time	16:00	16:00			16:00	16:00		
Volume	736	72	808	9.8	667	59	726	8.9

Five day and 7 day AADT figures have been taken from the 2007 data, factored up for likely flows in 2010, the opening year. Further increases to the base traffic will occur into the future, however the development flows will remain unchanged as they have been included as worst case, 100 % capacity figures. Therefore future years would see a reduction in the percentage increase caused by the development.

Table 9 Results of the Percentage Impact Assessment for AM Peak Flows at Junctions

Base Year 2008					
Construction	AM			Current	With Devel.
Junction	Traffic Flow	Development	% Increase	% HGV	% HGV
A	70	50	71.43	13	12
B	159	50	31.45	9	9
C	736	50	6.79	16	16
D	No Predictable Effect				
E	No Predictable Effect				
Opening Year 2010					
Operation	AM			Current	With Devel.
Junction	Traffic Flow	Development	% Increase	% HGV	% HGV
A	72	47	65.44	13	13
B	163	47	28.81	9	10
C	755	45	5.96	16	16
D	2210	39	1.76	9	9
E	1660	8	0.48	8	8
Operational Year 2025					
Operation	AM			Current	With Devel.
Junction	Traffic Flow	Development	%	% HGV	% HGV
A	81	47	58.32	13	13
B	183	47	25.68	9	10
C	847	45	5.31	16	16
D	2480	39	1.57	9	9
E	1863	8	0.43	8	8

Bracketed junction number denotes the arm experiencing the highest impact

Table 10 Results of the Percentage Impact Assessment for PM Peak Flows At Junctions

Base Year 2008					
Construction	PM			Current	With Devel.
Junction	Traffic Flow	Development	% Increase	% HGV	% HGV
A (1)	84	5	5.95	12	17
B (1)	148	5	3.38	12	15
C (3)	809	5	0.62	11	11
D (4)	No Predictable Effect				
E (4)	No Predictable Effect				
Opening Year 2010					
Operation	PM			Current	With Devel.
Junction	Traffic Flow	Development	% Increase	% HGV	% HGV
A (1)	86	55	63.81	12	16
B (1)	152	55	36.22	12	15
C (3)	830	81	9.76	11	11
D (4)	2165	71	3.28	5	5
E (4)	1675	8	0.48	5	5
Operational Year 2025					
Operation	PM			Current	With Devel.
Junction	Traffic Flow	Development	% Increase	% HGV	% HGV
A (1)	97	55	56.87	12	16
B (1)	170	55	32.28	12	15
C (3)	931	81	8.70	11	11
D (4)	2429	71	2.92	5	5
E (4)	1879	8	0.43	5	5

Bracketed junction number denotes the arm experiencing the highest impact

All data is input as two way combined traffic. The following assumptions have been made regarding the flow of the development traffic:

- Shift staff, for both the Energy producer and the high energy user, work a continental 5 shift system, working 12 hour shifts from 06:00 to 18:00 and 18:00 to 06:00. This results in the main shift staff movements occurring around 06:00 and 18:00, thereby missing the peak periods.
- Full shift staff movements have been included at Junctions C, D and E, which are located slightly further away from those in the immediate vicinity of the site and thus staff travel times will extend further from the shift change over.
- Where full shift staff have not been included in the calculations, that is at Junctions A and B located in the immediate vicinity of the site and where the peak periods were determined to be at least 45 minutes from the shift change over, two additional staff have been assumed to travel to site within the peak pm period. This is to take consideration of night shift staff who may need to attend the site early in order to liaise with day staff.
- Finally, the data incorporated is considered to represent a worst case, as the estimated development movements have been taken from the two hours which include the peak period that is, 07:00-09:00 and 16:00-18:00 hours. In reality therefore, the traffic flow during the peak periods is likely to be lower.

As three of the junctions studies (A-C) demonstrate the potential for an increase in vehicle movements of more than 5 %, these junctions have been assessed for the impact of the development on the traffic flow at these junctions.

The results of the assessment are presented in Appendix 9, however in summary, the three junctions were considered to have sufficient spare capacity for current traffic flows to continue, and for the inclusion of the proposed development in 2010 and 2025. In reality, due to an error in the initial growth rate calculations, which resulted in an increased volume in projected traffic being supplied to Capita Glamorgan Consultancy who undertook the modelling work, the results for 2010 and 2025 were based on much higher likely traffic movements than are actually predicted. This can be demonstrated by the difference in the information provided in the network diagrams in Appendix 7 against the modelling report presented in Appendix 9. As the volumes of traffic modelled were increased rather than reduced, this error can be seen to have provided a more robust assessment of the junctions, and in reality the ratio to flow capacity will be even less than reported. The spare capacity available suggests that the proposed development will not prevent the further use or development of the units around the Industrial Estate, due to highway capacity issues.

5. ENVIRONMENTAL IMPACT ASSESSMENT

The checklist of environmental effects as detailed in the Guidelines for the Environmental Assessment of Road Traffic⁽⁴⁾ are as follows:

- Noise and Vibration
- Visual Impact
- Community Severance
- Driver Delay
- Pedestrian Delay
- Pedestrian Amenity
- Accidents and Safety
- Hazardous Loads
- Air Pollution
- Dust and Dirt
- Ecological Impact
- Heritage and Conservation

From the checklist, the following items are not considered relevant to this assessment:

- Visual Impact; there is no proposed modification to the highway with the exception of the entrance points to the site and thus this element is not considered further within this TA.
- Community Severance; again, a lack of modification to routes removes the chance of severance occurring due to the proposed development and hence removes the requirement to consider this subject further.
- Hazardous Loads; there will be no requirement to transport hazardous loads to or from the facility and thus this element is not considered further within this TA.
- Dust and Dirt; the routes used by the vehicles attending the site will be fully metalled as will the roadways within the site. Therefore there is no likely addition to the general creation of dust and dirt from the transport requirements of the site. Although there is the potential for dust and dirt nuisance during the construction of the site, this will be mitigated through the use of a Site Management Plan, which considers all sources of dust and dirt.
- Ecological Impact; as the development does not require modifications to the highway which may interfere with sensitive ecological areas, this element is not considered further. Any indirect impacts will be considered within the Air Pollution section.
- Heritage and Conservation; as the development does not require modifications to the highway which may interfere with sensitive conservation areas, this element is not considered further.

The remaining elements will now be considered.

Noise and Vibration

As part of the wider Environmental Impact Assessment (EIA) for the development, the likelihood of noise nuisance from the transportation associated with the proposal has been considered and is summarised below:

Increased noise may result on the local road network due to an increased volume of HGVs travelling to and from the site during the construction programme, or the operational phase. The assessment of construction generated vehicle movements is based upon either 18hr supplied data where the flows are sufficiently high to allow the use of CRTN or peak hour traffic levels where BS5228 was required (where flows were too low for the methodology of CRTN). All data used is from the base year of 2008.

The impacts of the construction phase traffic, based upon the impact assessment were concluded to be of a Neutral nature based upon High receptor sensitivities. The development of the site at Hirwaun Industrial Estate will result in changes in road traffic flow patterns and volumes in the vicinity of the site. Overall, these traffic flow changes are predicted to result in noise level increases within the vicinity of these major routes of a maximum of 0.6dB(A). The assessment has demonstrated that the increase in noise associated with the proposed scheme based upon the traffic flow information supplied will have Neutral impact significance on the existing traffic noise levels of the area.

Driver Delay

The modelling work undertaken by Capita Glamorgan Consultancy identified that the junctions which the development will impact on most significantly, those within the Industrial Estate and adjoining the A465, demonstrate significant spare capacity in the Opening Year 2010 and Design Year 2025 with the development traffic in place. Maximum queues were identified as 2 vehicles on the A465 roundabout, on the A465 arms, with all other modelled junction arms queuing for 1 car. Therefore driver delay will have negligible impact and is not considered further in this assessment.

Pedestrians

Pedestrians can be affected by transportation issues in various ways:

- Delay
- Amenity
- Fear and Intimidation / Safety

The driver delay assessment has identified that there will be a maximum of two cars queuing on the A465 arms of the trunk road roundabout by 2010 with the development in place. This suggests minimal increase in driver delay, the 2008 figures suggesting a one car queue in these locations, although it will perhaps present an opportunity for pedestrians crossing the busy road.

As there is no proposed change to the highway layout, pedestrian amenity will not be affected, although as noted earlier in the TA, not all areas are served with pedestrian walkways to and from the proposed development.

Fear and Intimidation / Safety

The identified increases in traffic movements associated with the proposed development are generally small, with the main links showing very small percentage increases. Junction increases within the Industrial Estate were more significant, however this has been demonstrated by the modelling to be due to the under utilisation of the estate roads presently. Coupled with the insignificant change to the modal split of traffic, the increases are unlikely to cause pedestrian fear or intimidation.

As there is no proposed change to the highway layout, the impact on pedestrian safety will be minimised. However not all areas are served with pedestrian walkways to and from the proposed development, and the increase in vehicle movement close to the development site, may mean that pedestrians have to take additional care to consider vehicles on the roadways. Therefore the impact on pedestrian safety will be negative but minimal.

Accidents and Safety

The collision statistics from the A465 identified some key black spots for collisions to occur and also identified that the majority of accidents occurred during daylight and dry conditions. Heavy Goods Vehicles, which will form the bulk of any daily movements for the proposed development, were involved in 4 % of accidents. The proposed development will result in an increased traffic loading on the local highway network, and the majority of the movements will be undertaken between 06:00 and 19:00 hours. Therefore the potential does exist for an increase in collisions, based purely on the additional volume of traffic. However the upgrading of the A465 which will run to the Hirwaun area is designed in part to improve on safety along the trunk road, and thus the possibility exists for any increased potential through additional traffic flows to be mitigated through better design. The Enviroparks development will not have any other impact on the incidents of accidents and provision of safety, as no changes to the highway are proposed. The site access points will be assessed by way of a Stage 1 road safety audit, and any recommendations will be implemented. As such the residual effect can be considered minimal. The current site design has already considered suitable turning radii at the site entrances for HGV vehicles turning in and out of the site. There is also suitable space in the verges to fit appropriate visibility splays, although these have not been specified in the design at this stage.

Air Pollution

Air Quality

Eight locations across RCT have been declared Air Quality Management Areas for Nitrogen Dioxide. These areas are as follows:

Aberdare Town Centre, Aberdare;
Broadway, Treforest;
Clifynydd, Pontypridd;
Mwyndy (A4119), Llantrisant;
Nantgarw;
Pontypridd Town Centre, Pontypridd;
Tonteg, Church Village and Llantwit Fardre;
Tylorstown.

Three other locations in the Borough remain under close observation and these are:

Llewellyn Street, Pontygwaith;
Porth Town Centre, Porth;
Oxford Street, Mountain Ash.

The Local Authority is in the process of producing a Fourth Stage Further Assessment of Nitrogen Dioxide. It is expected that this report will be completed in late 2008. Once the Fourth Stage Further Assessment of Nitrogen Dioxide has been completed the Local Authority will be able to work towards producing site specific Air Quality Action Plans for the existing and any new Air Quality Management Areas. It is hoped that all necessary Air Quality Management Areas will be published for consultation in mid 2009.

Of the eleven locations detailed above, vehicle movements associated with the proposed development could pass most locally to the AQMAs of Aberdare and Tylorstown, and the observation sites at Pontygwaith and Porth. The vehicle movements which could pass locally to these sites are associated with the refuse collection vehicle movements of Rhondda Cynon Taf Street Care Department, the Cynon Fleet of which travels along the A4233 on Tuesday afternoons, and twice per day between Wednesday and Friday. Clearly all areas of Rhondda Cynon Taf have refuse collections, and the associated vehicle movements, however these vehicles are already on the roadways, and thus there would be no additional contribution to pollution levels whether or not the development takes place. The deviation to the current main routes of the vehicles will not impact on any of the AQMAs or observation areas.

The only other potential vehicle movements from this direction, are considered to possibly be staffing movements. Clearly, it is not possible to determine at this stage, where staff will be recruited from and thus it is not possible to accurately determine the likely impact on road traffic movements, however for the purpose of this assessment, and considering the Enviroparks desire to recruit locally, it has been assumed that up to 20 % of the total workforce required by the development may come from the Aberdare / Mountain Ash location, and may therefore use the A4233 and / or the A4059 to travel to work. This equates to 20 staff, and thus 20 trips to work, or 40 return vehicle movements per day, assuming that all staff travel by car and travel alone, and these staff may therefore travel close to or even through the AQMA of Aberdare, or the observation area on Oxford Street in Mountain Ash. The actual residential location of staff resources for this proposed development are of course unknown, and, although for the purpose of identifying the impact on the roads in the immediate vicinity of the site all vehicle movements are considered to be new movements, trips through towns and on the wider road network will include at least some re-distributed movements. These will come about for example through staff who currently travel to work by car to one location, altering their journey to attend their new job with Enviroparks on the Hirwaun Industrial Estate. That said, the two sites detailed as potentially being impacted by such movements, do have links to the main trunk roads through the area, and are therefore used at key times during the day by commuters wishing to access the A4233 and the A4059.

Staffing for the whole Enviroparks development at Hirwaun consists of 64 shift staff per day, who work 12 hour shifts between the hours of 06:00 and 18:00. If 20 % of these staff were travelling from the Aberdare / Mountain Ash region, this would equate to 6 – 7 staff travelling to attend work for 06:00 and 18:00, returning at some time between 06:00 - 07:00 and 18:00 - 19:00. As these movements are undertaken outside of the peak traffic times, it is considered that any impact from shift staff will be minimal. Day staff at the sites amount to 41 people, and thus this has been assumed to represent eight staff travelling to attend work for 09:00, returning between 17:00-18:00. As these traffic movements are likely to be undertaken during the peak hours, an assessment of the percentage impact of these potential movements has been made.

Air Quality Effects

The effects of traffic increases on local air quality can be significant and each of the Air Quality Management Areas identified by the Rhondda Cynon Taf County Borough Council have been assigned AQMAs for Nitrogen Dioxide as a direct result of vehicle movements and congestion. Any proposed development must therefore consider the likely implications that the traffic loading attributed to their operation will have for the local air quality, and the assessment tool provided within the Design Manual for Roads and Bridges⁽⁵⁾ (DMRB) has been applied as the most appropriate initial assessment method.

The DMRB considers the Annual Average Daily Traffic along roads and at junctions and, in conjunction with the current or likely future background concentration of pollutants, predicts the combined concentration of pollutants at a named receptor. Although peak am and pm traffic counts were obtained for five junctions on which it was deemed the proposed development could have an impact, the DMRB requires annual input and provides annual concentration output. Therefore, the main route to be affected by the development, the A465, has been considered in isolation. This is considered appropriate as the A465 has significantly higher traffic flows than the roads within the Industrial Estate, which are the only roadways experiencing a marginally higher level of development traffic movements. Other junctions subject to recent counts (junctions D and E), are only marginally affected by the proposed development, with a percentage increase in vehicle movements of less than 5.

Annual Average Daily Traffic data was available for three key locations along the A465:

A465 Merthyr Tydfil to Hirwaun
A465 East of Dowlais
A4060 to the A465

As a result, three scenarios have been considered as follows:

Table 11 Input into DMRB, Enviroparks Hirwaun Ltd

Assessment 1		A465 Merthyr Tydfil to Hirwaun				
Receptor		Hotel to the north of B4276 junction (Grid Ref: 300550 207375)				
Link 1	AADT	Development	Total	Speed (kmph)	% Cars / LGV	% HGV / Buses
2008	16824	74	16898	96	90.3	9.7
2010	17263	372	17635	96	90.3	9.7
2025	19369	372	19741	96	90.3	9.7
NOTE; Additionally, due to the proximity of this road to the development, the background concentrations of CO, NO _x , NO ₂ and PM ₁₀ were adjusted to represent the predicted ground level concentrations of pollution in the local area once the development is operational, that is, applying the results of the ADMS modelling exercise as the background. This therefore takes account of the likely traffic effects in addition to the process contribution.						
Assessment 2		A465 East of Dowlais				
Receptor		Building to the east of the roundabout (Grid Ref: 307900 208300)				
Link 1	AADT	Development	Total	Speed (kmph)	% Cars / LGV	% HGV / Buses
2008	26773	74	26847	96	90.3	9.7
2010	27471	242	27713	96	90.3	9.7
2025	30823	242	31065	96	90.3	9.7
Assessment 3		A465 Junction with the A4060				
Receptor		Building to the east of the roundabout (Grid Ref: 307900 208300)				
Link 1	AADT	Development	Total	Speed (kmph)	% Cars / LGV	% HGV / Buses
2008	26773	74	26847	24	90.3	9.7
2010	27471	242	27713	24	90.3	9.7
2025	30823	242	31065	24	90.3	9.7
Link 2	AADT	Development	Total	Speed (kmph)	% Cars / LGV	% HGV / Buses
2008	16435	0	16435	24	92.7	7.3
2010	16864	0	16864	24	92.7	7.3
2025	18321	0	18321	24	92.7	7.3

Development traffic in 2008 is construction traffic only, of which, 50 % is assumed to travel along this route.

All traffic data is presented as 2 way combined data.

Traffic was included as available, however may not necessarily include all links: for example, no AADT data was available for the B4276 which joins the A465 in the vicinity of the first receptor, and similarly the junction assessment of the A465 and A4060 applied available data for the two trunk roads only.

Table 12 DMRB Assessment 1 Results

All receptors			Pollutant concentrations at receptor						
Receptor number	Name	Year	CO *	Benzene	1,3-butadiene	NO _x	NO ₂ *	PM ₁₀	
			Annual mean mg/m ³	Annual mean µg/m ³	Annual mean µg/m ³	Annual mean µg/m ³	Annual mean µg/m ³	Annual mean µg/m ³	Days >50µg/m ³
1	A465 Merthyr to Hirwaun	2008	0.14	0.22	0.10	23.74	11.88	15.52	0.19
2	A465 Merthyr to Hirwaun + Construction	2008	0.14	0.22	0.10	23.76	11.89	15.52	0.19
3	A465 Merthyr to Hirwaun	2010	0.13	0.20	0.10	20.53	10.79	14.67	0.00
4	A465 Merthyr to Hirwaun + Development	2010	0.13	0.20	0.10	20.64	10.82	14.68	0.00
5	A465 Merthyr to Hirwaun + Development; ADMS Background	2010	0.15	0.20	0.10	24.70	14.80	21.81	5.99
6	A465 Merthyr to Hirwaun	2025	0.11	0.20	0.10	16.56	9.90	14.37	0.00
7	A465 Merthyr to Hirwaun + Development	2025	0.11	0.21	0.10	16.63	9.91	14.37	0.00
8	A465 Merthyr to Hirwaun + Development; ADMS Background	2025	0.13	0.21	0.10	19.14	12.69	21.50	5.49

Table 13 DMRB Assessment 2 Results

All receptors			Pollutant concentrations at receptor						
Receptor number	Name	Year	CO *	Benzene	1,3-butadiene	NO _x	NO ₂ *	PM ₁₀	
			Annual mean mg/m ³	Annual mean µg/m ³	Annual mean µg/m ³	Annual mean µg/m ³	Annual mean µg/m ³	Annual mean µg/m ³	Days >50µg/m ³
1	A465 East of Dowlais	2008	0.16	0.26	0.14	35.52	16.81	17.43	1.00
2	A465 East of Dowlais + Construction	2008	0.16	0.26	0.14	35.55	16.81	17.43	1.00
3	A465 East of Dowlais	2010	0.14	0.25	0.14	30.68	15.29	16.40	0.45
4	A465 East of Dowlais + Development	2010	0.14	0.25	0.14	30.74	15.30	16.40	0.46
5	A465 East of Dowlais	2025	0.14	0.25	0.14	23.06	12.85	15.91	0.29
6	A465 East of Dowlais + Development	2025	0.14	0.25	0.14	23.10	12.86	15.91	0.29

Table 14 DMRB Assessment 3 Results

All receptors			Pollutant concentrations at receptor						
Receptor number	Name	Year	CO *	Benzene	1,3-butadiene	NO _x	NO ₂ *	PM ₁₀	
			Annual mean mg/m ³	Annual mean µg/m ³	Annual mean µg/m ³	Annual mean µg/m ³	Annual mean µg/m ³	Annual mean µg/m ³	Days >50µg/m ³
1	Junction A465 and A4060	2008	0.28	0.42	0.35	58.47	21.80	20.50	4.04
2	Junction A465 and A4060 + Construction	2008	0.28	0.42	0.35	58.50	21.81	20.50	4.04
3	Junction A465 and A4060	2010	0.25	0.40	0.33	49.60	19.63	18.75	2.04
4	Junction A465 and A4060 + Development	2010	0.25	0.40	0.33	49.70	19.65	18.76	2.05
5	Junction A465 and A4060	2025	0.25	0.41	0.32	34.83	15.86	17.21	0.86
6	Junction A465 and A4060 + Development	2025	0.25	0.41	0.33	34.89	15.87	17.22	0.87

The annual Air Quality Objectives for the protection of human health are as follows:

Relevant Air Quality Objectives

Substance	Air Quality Objective Levels	Air Quality Objective Dates
Carbon monoxide	11.6 milligrams per cubic metre or less, when expressed as a maximum daily running 8 hour mean	31st December 2003
Benzene	16.25 micrograms per cubic metre or less, when expressed as a running annual mean	31st December 2003
Benzene	5 micrograms per cubic metre or less, when expressed as an annual mean	31 December 2010
1,3 - Butadiene	2.25 micrograms per cubic metre or less, when expressed as a running annual mean	31st December 2003
Nitrogen dioxide	40 micrograms per cubic metre or less, when expressed as an annual mean	31st December 2005
PM ₁₀	40 micrograms per cubic metre or less, when expressed as an annual mean	31st December 2004

Additionally, there is an annual limit of 30 $\mu\text{g m}^{-3}$ Oxides of Nitrogen (NO_x) for the protection of vegetation.

The results of the study are presented in Tables 12 to 14 and demonstrate that, with the exception of NO_x concentrations along the A465 to the east of Dowlais, pollutants are well within the Air Quality Objectives both for current traffic levels, and when considering the potential traffic and operational pollution increases caused by the development. Although the annual NO_x limit is predicted to be exceeded along the A465 to the east of Dowlais and at the junction with the A4060, this objective specifically considers the protection of vegetation rather than human health, and as such is designed to protect sensitive ecological receptors such as Special Areas of Conservation or Special Protection Areas. The predicted emissions can be seen to decrease over the projected time frame of the assessment, as a result of improvements in background air quality and emissions from transport, despite increased traffic rates.

Of particular concern to this assessment is the predicted contribution of the development traffic flows to the 'no change' situation of the current road loadings and their potential growth rates. The contribution of the development is demonstrated by the increase in pollutant concentrations for each year assessed. This often shows no change in the pollutant concentrations, with any increase being consistently less than 1 $\mu\text{g m}^{-3}$. As such, the impact of the proposed development traffic on the local air quality can be considered insignificant and hence no further modelling or assessment is proposed. Therefore no further assessment or proposed mitigation measures are considered necessary.

6. CONCLUSIONS

An assessment has been undertaken on the effects of a proposed development to be located off Fifth Avenue within the Hirwaun Industrial Estate, Hirwaun, Aberdare.

Public transport facilities are currently limited, and options for pedestrians and cyclists could be improved. Enviroparks propose to implement a Travel Plan as part of the site development which would include the option of introducing walking and cycling buddies amongst other things. Additionally, it is understood that the Valleys Network cycle path is due to be extended and will pass through the Industrial Estate. This should be complete within five years.

The likely traffic flows of the proposed development have been assessed, and as a worst case, all vehicle trips are considered to be new, despite the aim that some will be diverted. Additionally, all trips are assumed to be by motor vehicle along the public highway, whereas in reality, the promotion of other transport options could reduce this. There are no proposed modifications to the current highways, although three junctions from the public highway will be constructed into the development site and the site will have its own road system.

Growth rates have been applied to identify the projected vehicle flows around the network in the proposed opening year (2010) and a future operational year (2025). The largest percentage increase of vehicle movements has been calculated to be within the Industrial Estate network, however modelling has demonstrated that this is due to current under use, and the road network will not suffer capacity issues if the development is to proceed. Therefore, the available highway network is considered to be suitable and sufficient for the needs of the proposed development and the impact of the development on the traffic flows in the area will be minimal.

The environmental effects of the proposed additions to traffic flows have been assessed with consideration to the potential for noise and vibration, driver and pedestrian delay, safety and air pollution. The additional traffic will have a neutral impact on the current noise levels. Contributions to driver and pedestrian delays were considered negligible, although increased traffic flows could have an impact on driver or pedestrian safety. That said, Enviroparks propose no change to the public highway with the exception of the three entrance points into the site for which a stage 1 road safety audit will be undertaken and any recommendations will be incorporated. Therefore the only additional risk will come from the increased traffic volume, which for the most part is less than 5 % of the current levels. Where the percentage increase is more than 5 %, this mainly applies to the estate roads, which are currently under used. Additionally, the widening of the A465 is aimed, in part, at improving road safety along the link.

The potential for increased air pollution from the traffic movements of the proposed development have been considered through the application of the DMRB model to assess the local effects of traffic loadings. The model has been run applying current or projected 'no change' data, before the incorporation of the development traffic loadings. The increase in pollution from all substances through the addition of the development traffic is very low and can be considered negligible.

As each of the impacts considered can be described as neutral / negligible (impact barely perceptible) or minimal (a small negative impact on the highway or environment) effect, there are no further mitigation measures proposed for the small residual impacts, and the proposal can be deemed acceptable.

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GLOSSARY

Traffic Flow - The number of motor vehicles in a given period of time, expressed as a two-way total.

Vehicle Trips – a one way journey.

Vehicle movements – a two way journey.

AADT - Annual Average Daily Traffic (the average flow on an average day). This can be expressed as AADT, 5 day AADT (Monday to Friday) or 7 day AADT (Monday to Sunday)

ATC - Automatic Traffic Counters. Battery powered wire loop detectors operating from permanent loops cut into the road.

Vehicle Classifications

Motor Cycles - Motor cycles, mopeds, scooters and motor cycle combinations.

Cars - Cars, taxis, estate cars, light goods vans with side windows to the rear of the driver's seat, three wheeled cars and motor invalid carriages.

LGV - Light Goods Vehicles are goods vehicles up to 3.5 tonnes gross vehicle weight. This category includes all transit style vans, and small pickup vans.

HGV - Heavy Goods Vehicles are goods vehicles over 3.5 tonnes gross vehicle weight. This category includes both rigid and articulated vehicles.

Buses - All buses and coaches, including works buses.

All Vehicles - All motor vehicles.

Route Classifications

Motorways - National routes with restricted access for which the Department for Transport is the Highway Authority.

Trunk Roads - National routes for which the Department for Transport is the Highway Authority.

Primary Roads - Important through routes of regional significance, including all trunk roads and a number of strategic routes for which the County Council is the Highway Authority.

Distributor Roads - County roads which link major settlements with primary routes.

Access Roads - All other county roads.

Principal Roads - All non trunk 'A class' roads.

Rural Roads - Those with a speed limit of more than 40 mph.

Urban Roads - Those with a speed limit of 40 mph or less.