

# INTRODUCTION 1

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## 1.0 INTRODUCTION

Peakman Limited submitted a planning application (ref: 03/P/09336) in October 2003 seeking permission for the “*Proposed Recovery of Secondary Aggregates and Land Reclamation*” for its landholding at Tir Pentwys, Hafodyrynys. The application was accompanied by a full Environmental Statement (referred to hereafter as the original ES) that had been prepared following the undertaking of an Environmental Impact Assessment.

The proposal identified that the former opencast coal waste tips at Tir Pentwys Cut contain a substantial proportion of Pennant Sandstone, a gritstone capable of producing high specification aggregate for use in the wearing courses of road construction, a material which is acknowledged to be an important national resource.

This document is submitted as a Supplementary Volume to the original ES in order to consider the implications of the revised highway access to the scheme and to provide a description of the new access proposals and a description of the environmental impact assessment that has been carried out in relation to the new access proposals. It should be read in conjunction with the original ES which was submitted pursuant to application 03/P/09336. It should be noted that, in order to avoid any confusion, drawings in the original ES are referred to with a TP prefix whereas those in this document have a TPS prefix.

As discussed above, it is the amendment to the access that constitutes the change to the development proposals such that the reclamation site development proposals remain unchanged. The previous scheme intended that a route northwards from the site, via The British to the A4043 at Abersychan would be used. Following the submission of the October 2003 application, the mineral planning authority, Torfaen County Borough Council, indicated that it would be minded to refuse the application due to concerns over the suitability of this proposed access route. The council invited the applicant to consider a wider range of alternatives to those considered in the original ES. A series of additional alternatives were assessed and that process has led to the decision to promote a south-bound route from the site to the A472 at Cwm y Glyn.

It was agreed with the mineral planning authority, that the details of the new access would be submitted as part of the active planning application and that the development proposals would be subject to environmental impact assessment.

The scope of work for the impact assessment of the revised access arrangements was subject to a scoping exercise carried out with Torfaen County Borough Council and the council’s Scoping Opinion is attached at Appendix 1/1.

The structure of the document is as follows:

- **Part 1:** Sections 1-4 provide a description of the revised highways layout and examines the planning context for the development.

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- **Part 2:** Sections 5-12 contain a series of impact assessments in respect of relevant environmental topics. These have been produced in accordance with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.
- **Part 3:** The final section (No 13) presents a non-technical summary of the Environmental Statement. The non-technical summary is also available as a separate document.

In addition, this document contains additional information regarding the assessment of the impact of the aggregate recovery proposals that has been prepared in accordance with the requirements of the mineral planning authority, Torfaen County Borough Council.

In particular these issues related to the potential for acid rock drainage (see section 5) and impacts on cultural heritage (see Section 11).

# SITE DESCRIPTION & SETTING 2

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## 2.0 SITE DESCRIPTION AND SETTING

### 2.1 The Site

Tir Pentwys Cut straddles the administrative boundary separating Blaenau Gwent Borough and Torfaen Borough. It is positioned approximately 2.5 km north of the A472, Crumlin to Pontypool Road, some 4 kilometres west of Pontypool.

The proposals regarding the recovery and recycling operations are identical to those previously described in Section 3 of the original ES and the setting and description of this part of the development site is not reconsidered as part of this Volume.

The location of the reclamation site and the proposed access road are illustrated on Drawings TPS2/1 and TPS2/2 which show the site location and application site respectively. They involve the construction of a dedicated access road that would travel from Blaen-y-Cwm Road, across part of The Common, to cross Cefn-Crib Road to the west of Cefn-Crib Farmhouse. Thereafter a new private access road would be constructed, following the route of some existing farm tracks, to traverse the valley side of Cwm y Glyn. Access to the A472 would be gained via a section of Crumlin Road which joins the A472 at a T-junction some 800 metres to the west of the proposed point of egress onto the highways network.

### 2.2 Topography

The landform over which the proposed alternative access would pass starts at a high point adjacent to the site entrance at 382 metres above Ordnance Datum (mAOD). This represents the top of a convex, rounded moorland landform which forms a ridge between two small valleys to the east and west the floors of which descend to the south-east and south-west respectively. In this area, the landform is gently undulating with gradients between 1:15 and 1:20. As the landform drops into the two small valleys the gradients of the valley sides increase to around 1:6. The ridge leads to the side of the major valley of Cwm y Glyn in the south, which separates the upland Mynydd Llanhilleth area, within which the main part of the development site is located, from the upland Mynydd Llwyd area which lies to the south of the Cwm y Glyn valley.

The Cwm y Glyn valley separates these upland areas which have elevations to the north and south of the valley of in excess of 400 mAOD with a valley floor elevation of around 220 mAOD. In the development site the land drops from 360m AOD at the crest of the Cwm y Glyn valley side at a gradient of around 1:6 before increasing to gradients of 1:3 on the main valley flank.

At the foot of this south-east facing slope, the Old Crumlin Road lies at an elevation of c 210 mAOD about 10 m above the valley floor which contains a water course in a channel that flows to the Afon Ebwy to the west.

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## 2.3 Vegetation

The vegetation cover of the local area is strongly related to landform. The upper ridge is exposed and has been left un-cultivated, to become common and moorland. The slightly lower land around the crest of the major Cwm y Glyn valley has been settled and enclosed and is used for grazing. The steeper valley sides tend to support woodland, with the section around the alternative access being semi-natural oak woodland with some beech plantation woodland. The range of vegetation is shown in Drawing TPS7/1 and further information is provided in Sections 7 and 8 on landscape and ecology respectively.

## 2.4 Cultural and Social Factors

Blaen-y-cwm Road runs down from the proposed site access and forms a sharp T junction with Cefn-crib Road. These two roads form the main communication route for a number of isolated dwellings and farmsteads within the local area.

A fringe of farmland occurs to the east and south, between these roads and the steeper valley sides. The field units are generally small rectilinear and hedged. Open moorland occurs to the west and north of these roads.

The section of the new access road that would cross the land at the crest of the valley slope crosses some small fields which are not in agricultural use where there is evidence of land being used for motorcycle scrambling. Thereafter, the road route passes Tir Shon Shenkin farm along what are currently unmade farm tracks before the route turns eastwards across field that are used for grazing before the route enters the wooded part of the valley side. The woodland does not appear to be managed at present but may have some recreational use in that it is traversed by a public footpath.

# DEVELOPMENT PROPOSALS 3

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## 3.0 DEVELOPMENT PROPOSALS

### 3.1 Introduction

The extraction, recovery and restoration proposals would remain unchanged to those previously described in the original ES. This section of the document therefore describes only the construction of the various elements of the road layout.

### 3.2 Road Development Details

Drawings TPS 3/1-3/3 illustrate the layout and sections of the proposed road network from the reclamation site to the A472. This can be sub-divided into two distinct elements, which are described below:

#### *3.2.1 Reclamation Site Entrance to 100m south of Cefn-y-Crib Farm Access*

This section of the road system runs from the reclamation site entrance, across The Common for a distance of approximately 930 metres using Blaen-y-Cwm Road, an existing public highway. The egress from the reclamation site would be configured to encourage left-turn movements and would be located to ensure that the maximum visibility to the right is achieved. It is not intended to construct the junction in such a way that all right-turn movements would be prohibited. This would allow for occasional local deliveries to the north, subject to approval from the planning authority, although the nature of the reclaimed material is such that this market would be very limited.

The existing road would be widened to 4.5 metres minimum width. The extra width would not allow for two-way traffic but would ensure that lorry wheels would not impinge on the pavement edge which could result in its degradation. As shown on Drawing TPS 3/1, all widening of the carriageway would be undertaken on the side of the road open to the Common (south-west). The road would not be increased to a width greater than 6.0 metres in order to avoid creating a length of highway along which speeds would be significantly increased.

In terms of lining, edge of carriageway line markings would be provided to mark a 3m lane centrally along the road. At particular locations along the route the land falls away from the road sharply. At these locations the road would be widened to 5.5m minimum and a ribbed white edge line would be provided 2m from the edge of the carriageway on the side of the drop to encourage vehicles to keep away from the edge.

One formal passing place would be provided approximately half way between the reclamation site access and the turn off to the private haul route. The location of this is shown on the central section of the layout shown on Drawing TPS3-/1. The passing place would be 7.3 m wide x 15m long. In addition to this, a paved surface would be provided at the junction of Blaen-y-Cwm Road with the unsurfaced Pen-yr-heol Road. This would allow vehicles to pass if necessary.

A minimum one metre verge would be provided on both sides of the road with widening on the bends to achieve 90m forward visibility. At the locations where the

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common is at the same level as the road or lower, the verge would not be built up. Where the common is higher than the road it would be lowered to create the verge with cutting slopes at 1 in 2.

The road would not be fenced off from The Common to avoid any restriction on the movement of livestock.

### ***3.2.2 100m south of Cefn-y-Crib Farm Access to Crumlin Road.***

This element of the road would consist predominantly of a new section of private highway measuring in total some 2.1 kilometres in length which would traverse the valley side of Cwm y Glyn. This section would be constructed to adoptable standards but would remain as a private road. Accordingly, gating provision would be made to ensure that it would only be used by vehicles associated with the reclamation proposal. In addition, the access route would pass along Cefn-Crib Road, past the farmhouse of the same name, for a distance of approximately 200 metres.

The layout of this section of the route is shown on Drawing TPS 3/2.

### **3.3 Construction in Cwm y Glyn**

The initial element of this part of the haul road would be the surveying and setting-out on the ground of the proposed route. Work would commence on its construction at the highest point on the land adjacent to Tir-Shon Shenkin farm, following the alignment of existing unmarked farm tracks towards Crumlin Road.

In order to facilitate construction, sections of approximately 100 metres in length would be cleared of all vegetation including trees. This would be undertaken manually with brush cutters and chain saws along with mini-excavators following the completion of any ecological surveys that may be required (see section 8.0). The extent of tree felling would be kept to a minimum in accordance with the strictly defined extent of the road alignment. It is anticipated that a corridor width of c15-20m would be cleared.

Excavation works would take place within this corridor with vehicle movements taking place along the road alignment rather than on the open hillside. This would be for both operational reasons and to limit the clearance of vegetation.

All topsoil would be removed by hydraulic excavator and articulated dump trucks and stored within the reclamation site. The subsoils and rock fill would be excavated using a 15-tonne excavator loading two 25 tonne articulated dumptrucks, creating a nominal 6.0m wide roadway. The surplus excavated materials from the haul road would be transported to the Tir Pentwys Cut reclamation site for further processing when the reclamation scheme commences. It would not be used as fill material to ensure maximum stability of the haul road.

The earthwork slope to be cut when forming the roadway would be created at a 1:1 slope and stabilised with a retaining wall system (crib-wall or similar). Associated with this would be a drainage channel to carry surface run-off water. This channel

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would run parallel with the haul road with drainage gullies crossing beneath the road at 100m intervals to drain run-off from the hillside above the road down the hillside in a diffuse, rather than concentrated, manner such that the road would have the minimum impact on the run-off characteristics of the hillside. Further details are given in Section 6 on Hydrology

Edge protection during the construction phase would consist of large boulders interfilled with granular material derived from the construction works or from the reclamation site.

The road surface itself would be constructed to sub-base standard using a compacted capping layer placed to a depth appropriate to the varying sub-soils along the route of the road. A granular sub-base would be placed over the capping layer to provide additional strength and to regulate any surface irregularities prior to the application of the bituminous binder and surface courses. The completed carriageway width would be a minimum of 4.0m, with certain sections at 7.3m.

Upon completion of the surfacing, a steel safety barrier (Armco or similar) would be erected as edge protection on all tight bends and where there is significant risk to vehicles that may leave the haul road.

The junction of the haul road with Crumlin Road would be set out with visibility splays of 4.5m x 130m westwards and 4.5 x 215m eastwards. The junction layout includes appropriate fencing, gates, signage and drainage arrangements, which would be agreed in detail with the local highways authority. In addition an 'Escape Lane' has been incorporated within the layout which has been designed for an entry speed of 85kph. Traffic signs to prevent unauthorised use of the road along with gates would be provided at all public road accesses. All gates would be closed during non-operational hours.

The maximum gradient of this section would be 12%, but more typically would be 10%. The carriageway would be a combination of one-way sections (at 4m width) and two-way (7.5m), with the narrower elements being controlled with traffic signals operated by means of vehicle detection.

Drawing TPS3/3 includes details of typical cross-sections along the route, as well as a longitudinal section through its entirety.

Upon the final restoration of the Tir Pentwys Cut, the length of road that would link Blaen-y-Cwm Road with Cefn-crib Road across the common land would be reinstated to agricultural land as existing. The soils from the adjoining bund would be used to achieve this.

The lower part of the route includes a number of statutory public rights of way and unofficial paths. The latter would be diverted along earthworks as shown with steps to be provided in the event that a slope exceeds 1 in 3.

The public footpaths that cross the line of the road would not be diverted. However steps would be provided on earthworks slopes to provide a safe route for pedestrians

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along the existing line. All pedestrian crossings of the surfaced haul road would be marked out at right angles to the road line and suitable signs would be installed to warn footpath and road users of the presence of the crossing points and the users of the road and rights of way.

The new section of private road that traverses the slopes of Cwm y Glyn may be of use for agricultural or forestry operations and it is proposed that the use of the road, and the possible need to re-instate the route of the road, would be assessed once the reclamation operations had been completed and that, if it is deemed appropriate, the road would be retained for an alternative use.

## **3.4 Routing Arrangements**

In order to minimise the potential for conflict between vehicles associated with the reclamation project, and other road users and communities, a series of measures are proposed that would prevent HGVs from using local public roads. In order to prevent vehicles passing through Pantygasseg to the east, it is suggested that weight restrictions would be imposed by the Highways Authority at the junctions of the access road with Cefn-Crib Road and Blaen-y-Cwm Road. The Applicant has given consideration to the option of closing off one arm of the fork in the vicinity of the Old School House and Bwthyn-tr-ysgol, but in the interests of residential amenity proposes that weight restrictions should be imposed.

It is also proposed that similar weight restrictions would be implemented on Cefn-Crib Road to the west of the access road in order to protect the amenity of the properties at Cefn-y-crib and Hafodyrynys. These restrictions would be imposed by the Highways Authority.

To the east of the main access point at Crumlin Road, lies Old Furnace, beyond which is Pontypool and surrounding settlements. All HGV drivers would be instructed to make a right-hand turn when exiting the access road, in order to ensure that they were directed towards the A472. The applicant proposes a comprehensive signing programme, to be agreed in detail with the Highway Authority, to ensure compliance, allied with appropriate weight restrictions.

In order to ensure that all mitigation measures are complied with, the Applicant would enforce a Code of Conduct with all hauliers that use the site, as well as entering into a binding legal agreement regarding vehicle routing prior to the issue of any planning permission. This would ensure that the signage and weight restriction measures were implemented and enforced, and also that any routing agreement deemed necessary by the Authority could be formalised through the planning system.

## **3.5 Road Landscaping**

To reduce the potential impacts of the proposed road, particularly in its upper valley section, it is proposed that a series of new beech hedgerows and an extension to the existing woodland would be created.

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This would include a significant area of woodland planting adjacent to the western-most section of private road. The planting would extend the area of existing native woodland up the valley slope and enclose the tight curve at the western most section of the road. This woodland would over 5-10 years to develop sufficiently to begin screening the traffic using this section of road from some of the footpaths on the south valley side of Cwm y Glyn. The woodland would be extended out to existing field boundaries or new beech hedgerows planted along its edge to form new field boundaries where required.

These planting proposals are illustrated in Drawing TPS 3/4.

Similar hedgerow and woodland planting would be carried out to sections of the private road adjacent to Cefn-Crib Road to re-enforce existing vegetation and would replace vegetation lost during the road construction.

These issues are considered in greater detail at Sections 7 (landscape) and 8 (ecology) within this Supplementary Volume.

# PLANNING CONTEXT 4

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## 4.0 PLANNING CONTEXT

### 4.1 Introduction

The planning principles for the amended access proposals are similar to those affecting the original scheme. Furthermore, the Development Plan, as previously described in the original ES, remains in place. However, the Welsh Assembly has now issued Minerals Technical Advice Note 1: Aggregates (MTAN 1) which was only in draft form at the time of the original application.

This new guidance has been reviewed to determine the policy setting for the amended application and other relevant policies have also been reviewed.

### 4.2 Planning History

There are no known applications or permission for development which affect the amended application site boundary.

### 4.3 National Planning Policy

#### 4.3.1 *Planning Policy Wales 2002*

The general policy framework for the exercise of planning functions in Wales is set out in Planning Policy Wales 2002 (PPW). It establishes the key policy objectives, based upon a sustainable development agenda, that are to be taken into account in the preparation of Unitary Development Plans and the control of development in Wales.

#### 4.3.2 *Mineral Technical Advice Note 1*

With regard to resources of hard rock aggregates MTAN1 notes that “*Wales has a plentiful supply of hard rock resources but it is still a fundamental objective to conserve natural resources for their intrinsic qualities and possibly for future generations to exploit, particularly those in relatively short supply. These include resources suitable for use as road surfacing materials with high skid resistance*”. This implies recognition that resources of material suitable for skid resistance aggregates are in relatively short supply.

In relation to the use of secondary aggregate resources, MTAN 1 states at paragraph 34 that “*The Wales Waste Strategy<sup>27</sup> and the Assembly’s Sustainable Development Scheme both stress the need for waste minimisation and the prudent use of natural resources. Accordingly, there must be a concomitant change in the pattern of supply of aggregates. It is of course acknowledged that it will take time to change current patterns to ensure an increase in the proportion of supply from recycled, secondary and waste materials and a proportional reduction in the amount of primary resources extracted*”.

Paragraph 34 of MTAN1 goes on to state that the “*need for change in the pattern of supply through increased use of secondary and recycled materials is particularly important in Wales where recycling for use as aggregates has not been as advanced*”.

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*as in other parts of the UK” and paragraph 34 of the MTAN states that “The Assembly, with the support of the RAWPs, will take every practicable opportunity to promote recycling”.*

It is concluded, therefore, that in recognition of the short supplies of skid resistant aggregates, which the application site would produce, and the support for the use of secondary aggregates, that there are strong policy presumptions at national level in Wales for the development of the Tir Pentwys reclamation site.

## **4.4 The Development Plan**

Pending the adoption of a Unitary Development Plan for Torfaen Borough the current development plan applicable to the site comprises:

- (i) Gwent Structure Plan (1991-2006)
- (ii) Torfaen Borough Local Plan, July 2000

### **4.4.1 Gwent Structure Plan (1991-2006)**

The Gwent Structure Plan was formally adopted in 1996. On the Key Diagram, which is an integral part of the Plan, the application site is shown to be within a Special Landscape Area to which Policy C5 applies. Special Landscape Areas represent areas judged to be of importance at a local level, and they are sub-ordinate to national designations (ie National Parks and Areas of Outstanding Natural Beauty). Therefore, they do not signify a presumption against development, but it is required that proposals *“need to be given careful consideration”*. When development is permitted, it is normally required to be complementary to the landscape, to have no significant impacts or to provide for an enhancement.

The site is not shown to be subject to any other strategic planning constraints or proposals.

The Structure Plan sets out a number of minerals policies, the most relevant of which in respect of the revised access proposal is Policy M1 which states:

#### **Policy M1**

*“Proposals for mineral development will be considered against the following criteria as appropriate:*

- i. The acceptability of the impact upon neighbouring communities of the operations and associated works, paying particular attention to noise, vibration, dust and safety.*
- ii. The consequences of traffic movements likely to be generated by the proposal.*
- iii. The effect on the landscape of the area in both the near and long term.*
- iv. The effect on surface and sub-surface drainage and water supplies in both the near and long term.*

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- v. *The effect on the nature conservation interests of the site and adjoining areas in both the near and long term, paying particular regard to areas designated for nature conservation purposes.*
- vi. *The effect on agricultural interests in the area in both the near and long term.*
- vii. *The effect on archaeological interests in the area in both the near and long term.*
- viii. *The duration of the operations, restoration and after-care works.*
- ix. *The economic contribution of the proposals including the need for the mineral alternative sources of supply, alternative materials and the employment opportunities likely to be provided.*
- x. *The existing nature and condition of the proposed site and extent and nature of any improvements that will result from the operations.*
- xi. *The likelihood of minerals being sterilised by other forms of development.*
- xii. *The extent of damage to or interference with, or improvement to and enhancement of other existing or proposed uses and amenities.”*

From the circumstances at the application site it is considered that criteria (ii), (iii), (x) and (xii) are worthy of closer examination in the context of the site.

It is clear that the original access proposal at the site was considered, by the minerals planning authority, to be potentially in conflict with the aims of criterion (ii). Following an assessment of alternatives, that currently being considered has been the subject of a detailed assessment. The results of this exercise are presented in Section 11.

Criteria (iii), (x) and (xii) are related insofar as they deal with landscape and enhancements to the local environment and amenity and these are reviewed in Section 7 of this document.

Other general policies of the Structure Plan may also have some relevance. None are considered to have any particular relevance save for Policy T10 which establishes a presumption against development that generates substantial volumes of heavy goods vehicle traffic and for which there is no acceptable connection to designated strategic and county routes. Arrangements for the distribution of products from the site, and an assessment of the local highway network to accommodate the HGV traffic that would be generated, are set out in section 11. The rationale of the revised access proposals are to accord with this criterion in that the revised access would provide good access directly to the A 472.

## **4.4.2 Torfaen Borough Local Plan**

The Local Plan was formally adopted on 27 July 2000. Consistent with the Structure Plan, the Proposals Map within the Local Plan shows the site to be within a Special Landscape Area to which Policy E2/1 is applicable.

Policy E2 requires that developments within the Special Landscape Area should satisfy criteria which require that the site can be serviced without requiring visually intrusive infrastructure and that the scale, design and character of the development is appropriate to the area. Furthermore Policy E2 requires that development proposals

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minimise visual intrusion into the landscape and have no detriment on highway safety. These issues are assessed in Sections 7 and 11 of the Supplementary ES.

## 4.5 Other Considerations

### 4.5.1 Alternatives

Within the planning process applicants are not normally required to discuss the merits of alternative sites. The exception is where an Environmental Statement is required.

Welsh Office circular 11/99 explains that the EIA Directive and the Town and Country Planning (Environmental Impact Assessment England and Wales) Regulations 1999 “do not expressly require the developer to study alternatives” (paragraph 83). However, it adds that “the nature of certain developments and their location may make the consideration of alternative sites a material consideration”

Part II of Schedule 4 to the Regulations specifies the information that must be included within the Environmental Statement. This includes:

*“An outline of the main alternatives studied by the applicant of appellant and an indication of the main reasons for his choices, taking into account the environmental effects”.*

In the case of this amended scheme, alternatives have been examined following the consideration of the northern access route, and other alternative access routes, as part of the original application. This is reviewed in Section 11 of this Statement.

### 4.5.2 Features of Recognised Importance or Interest

From the investigations carried out during the preparation of the Environmental Statement there is no evidence that the site is important due to any natural or historical interest. Further, the development would not result in any significant, adverse environmental effects, and the working and restoration schemes have been specifically development to minimize impacts on local amenity.

## 4.6 Conclusions

In the light of the circumstances, it is concluded that it is considered there are no overriding planning constraints specific to the site, and the project would not conflict with development plan policies. Indeed, given the proposed restoration treatment and the ability of the site to supply high specification aggregates, and strong support for the supply of such aggregates from secondary, rather than primary, sources in MTANI: Aggregates, it is considered that there is high level policy support for the proposals.

## 5.0 GEOLOGY

### 5.1 Introduction

This section outlines the geological setting of the proposed access road. The geological setting of the reclamation site was described in detail in the original Environmental Statement.

In addition, this section includes information on ground conditions at the reclamation site with regard to the potential for that site to be contaminated and for contamination from that site to impact surrounding sensitive receptors.

### 5.2 Geology of Access Road Route

The following sources of geological information have been consulted as part of this review:

British Geological Survey Sheets

1:50,000 scale, No. 232 (Solid & Drift) -Abergavenny

1:50,000 scale, No. 249 (Solid & Drift) -Newport

The regional geological setting is shown on Drawing No. TPS 5/1 which is an extract from the published solid and drift geological map.

#### 5.2.1 *Drift Geology*

The geological map shows that the proposed road alignment is not underlain by any significant superficial deposits. Site inspection reveals that thick vegetation and a “head” deposit of clay-rich weathered mudstone and angular sandstone rock fragments obscures exposures of solid geology.

#### 5.2.2 *Solid Geology*

A sequence of gritty sandstones, together with minor occurrences of mudstone, siltstone and coal are present within the immediate vicinity of the application site, representing the Upper Coal Measures or “Pennant Measures” of Carboniferous age. The Pennant Measures are themselves underlain by the more productive coal bearing sequences of the Middle and Lower Coal Measures.

The open cast mining waste deposits at the main reclamation site include a mixture of Pennant Sandstone and mudstone, as described in the original ES.

In the vicinity of the proposed access road, the strata dip to the north-west as indicated by a dip arrow of 10° shown on the geological sheet, in the immediate vicinity of the junction of the proposed access road with the A472 (Pontypool to Crumlin Road). A number of small WNW – ESE orientated faults cross the proposed road alignment, including the Cefn Crib Fault.

### **5.2.3 Geological Conditions for Road Construction**

The flanks of the Cwm y Glyn valley are mapped as exposing the thick Upper Pennant Measures sandstones that lie above the Cefn Glas coal seam as shown in Drawing TPS 5/1. These sandstones are typically massive or thickly bedded and would be expected to allow the formation of steep, stable slopes as required in the lower sections of the access road where it would run in a cutting.

Accordingly, it is considered that, following removal of head deposits, the solid strata that would be encountered along the route of the proposed access road would provide good foundation and excavated slope conditions for road construction.

### **5.3 Ground Conditions**

The Scoping Response from Torfaen County Borough requests that the applicants should consider the potential for the development of the reclamation site to give rise to acid rock drainage (ARD) which could lead to downstream water contamination. Such contamination occurs most commonly as a result of the oxidation of sulphide minerals such as pyrite ( $\text{FeS}_2$ ), if they are exposed to air by mining or by re-working of spoil heaps. Pyrite oxidises in the presence of oxygen and water to produce dissolved ferrous iron and sulphuric acid. The term acid rock drainage (ARD) has been adopted to describe water affected by this and related processes.

In addition, it is possible that previous land uses could have led to contamination of the site and to determine whether this is likely a desk study exercise has been carried out as is routine when considering the development of previously used land.

#### **5.3.1 Desk Study**

A desk study has been carried out to supplement site inspections in order to determine whether there is any evidence of contaminative land uses that may have affected the application site and, in particular, the reclamation site.

Site inspections carried out by SLR's engineers have not revealed any evidence of contaminative materials or activities, other than coal extraction, that could have led to contaminated materials being present at the site.

It is good practice to consider historic mapping when considering the potential of a site to be contaminated and a series of historic Ordnance Survey maps have been obtained and reviewed and are presented as Appendix 5/1. The information contained in the maps is summarised in Table 5/1 below.

**TABLE 5/1-  
LAND USE HISTORY**

DATE	DESCRIPTION	SOURCE
1880	The site is open common land with a number of footpaths running through the site area. Blaen y Cwm Colliery is shown approximately 300m south east of the site.	Monmouthshire County Series Map sheet 018-13 Scale 1:2,500
1885 - 1886	No significant changes to either the site or surround area since 1880 other than the development of Blaen y Cwm Colliery	Monmouthshire County Series Map sheets 017-00, 018-00, 022-00, and 023-00 Scale 1:10,560
1901 - 1902	No significant changes to either the site or surround area since 1880 other than the development of Blaen y Cwm Colliery	Monmouthshire County Series Map Sheet 018-013 Scale 1:2,500 and Map Sheets 017-SE, 018-SW, 022-NE and 023-NW Scale 1:10,560
1920 - 1922	No significant changes to either the site or surround area since 1880 other than the development of Blaen y Cwm Colliery	Monmouthshire County Series Map Sheet 018-013 Scale 1:2,500 and Map Sheets 017-SE, 018-SW, 022-NE and 023-NW Scale 1:10,560
1953	No significant changes to either the site or surround area since 1880 other than the development of Blaen y Cwm Colliery	Monmouthshire County Series Map Sheets 017-SE, 018-SW, 022-NE and 023-NW Scale 1:10,560
1965	The site is shown as part of the Mynydd Llanhilleth opencast workings	Ordnance Survey Plan Map Sheets SO20SE, SO20SW, ST29NE and ST29NW Scale 1:10,000
1972 - 1983	Opencast workings are shown as complete with the site area now comprising an area of conifer planted colliery spoil heap and a remaining opencast area used to excavate coal at a lower level a spring and a pond are shown in the base of the excavation. A small set of sheep pens are shown to the west of the site.	Ordnance Survey Plan Map Sheets SO20SE SO20SW, ST29NE and ST29NW Scale 1:10,000 and Map Sheets SO2301 and SO2401 Scale 1:2,500
1985 - 1990	No change to the site since 1983	Ordnance Survey Plan Map Sheets SO20SE SO20SW, ST29NE and ST29NW Scale 1:10,000
1993	No change to the site since 1983	Ordnance Survey Plan Map Sheets SO2301 and SO2401 Scale 1:2,500
1999	No change to the site since 1983	Ordnance Survey Plan Map Sheets SO20SE SO20SW, ST29NE and ST29NW Scale 1:10,000

The historical map data confirm the main historical activities on the site and the immediate surroundings. The reclamation site was open common land until the development of the Mynydd Llanhilleth opencast works which is shown as being in operation in 1965. By 1972 the site is shown as being partly backfilled with colliery spoil and an area of deeper open-cast works used to extract coal from a lower coal seam.

The site has not changed since the mapping works conducted in 1972. There is very little development activity shown within 500m of the site and there are no signs of any potentially contaminating activities shown occurring around the site.

Enquiries have also been made to the Coal Authority to determine the possible presence of any mining related features in the valley side of Cwm y Glyn. The applicants were aware of a former adit, or tunnel, portal close to the junction of Crumlin Road and the A472. The Coal Authority has confirmed that this portal is probably the former entrance to Adit No 4 of the Tirpentwys Colliery. The Coal Authority records show that the tunnel heads north for between 50 to 100m and that it then joined another tunnel which headed to the north-east in the direction N025<sup>0</sup>. It is apparent that these tunnels are at significant depth and that they would not affect the new access road or vice versa.

Accordingly, it is concluded that there is no evidence of potentially contaminative or mining related activities that could have affected the application site, including the access road, with the exception of the open cast coal extraction and there is no evidence based on site inspections of any contamination arising from these activities.

### 5.3.2 ARD Assessment

An assessment of the potential for the site to produce acid rock drainage which could have a deleterious effect on downstream water courses has been made by collecting samples of the matrix from the tip and subjecting them to a series of laboratory tests.

The samples were collected by excavating trial pits in the tipped material to a depth of c 2m in order to obtain samples of material that would not have been affected by near surface weathering or leaching. The sample locations are shown in Drawing TPS 5/2.

The samples were tested by Alcontrol Laboratories and total concentrations of metals and common anions were determined as set out in Table 5/2.

**TABLE 5/2  
TOTAL CONCENTRATIONS IN TIP MATRIX**

Contaminant	Sample			Detection limit
	1	2	3	
Total Sulphate	960	384	559	<50 mg/kg
Boron Water Soluble	<1	<1	1	<1 mg/kg
Arsenic	19	19	19	<1 mg/kg
Cadmium	<1	<1	<1	<1 mg/kg
Chromium	19	17	16	<1 mg/kg
Copper	24	18	15	<1 mg/kg
Lead	25	24	18	<1 mg/kg
Mercury	<1	<1	<1	<1 mg/kg
Nickel	36	31	25	<1 mg/kg

**TABLE 5/2 continued**

Contaminant	Sample			Detection limit
	1	2	3	
Selenium	<3	<3	<3	<3 mg/kg
Zinc	117	122	95	<1 mg/kg
Acid Soluble Sulphide	<50	<50	<50	<50 mg/kg
Hexavalent Chromium	0.5	<24.0	<24.0	<0.3 mg/kg
Phenols Total Monohydric	<0.01	<0.01	<0.01	<0.01 mg/kg
Thiocyanate	<1	<1	<1	<1 mg/kg
Total Cyanide	<1	<1	<1	<1 mg/kg
Free Cyanide	<1	<1	<1	<1 mg/kg
pH Value	5.58	7.60	5.32	<1.00 pH Units
Total Sulphur	0.13	0.04	0.06	<0.01 %

The results in Table 5/2 indicate that the tip matrix has low levels of acid soluble sulphides and low levels of contaminants of concern such as cyanide, thiocyanates and selenium.

The leachable concentrations of metals and common anions were determined as set out in Table 5/3.

**TABLE 5/3  
LEACHABLE COMPONENTS IN TIP MATRIX**

Leachable Components	Sample			Detection limit
	1	2	3	
Arsenic Dissolved (NRA) (ICP-MS)	<1	<1	<1	<1 ug/l
Cadmium Dissolved (NRA) (ICP-MS)	<0.4	<0.4	<0.4	<0.4 ug/l
Chromium Dissolved (NRA) (ICP-MS)	<1	<1	<1	<1 ug/l
Copper Dissolved (NRA) (ICP-MS)	<1	2	6	<1 ug/l
Iron Dissolved (NRA) (ICP-MS)	62	40	29	<5 ug/l
Lead Dissolved (NRA) (ICP-MS)	<1	2	<1	<1 ug/l
Nickel Dissolved (NRA) (ICP-MS)	23	3	5	<1 ug/l
Selenium Dissolved (NRA) (ICP-MS)	1	<1	<1	<1 ug/l
Zinc Dissolved (NRA) (ICP-MS)	35	82	3	<3 ug/l
Mercury Dissolved (NRA) (CVAA)	<0.05	<0.05	<0.05	<0.05 ug/l
Conductivity (NRA) (at 25 deg.C)	0.062	0.436	0.052	<0.014 mS/cm
Total Ammonium as NH <sub>4</sub> (NRA)	<0.2	<0.2	<0.2	<0.2 mg/l
Total Organic Carbon (NRA)	<1	8	2	<1 mg/l
Resorcinol (NRA)	<0.01	<0.01	<0.01	<0.01 mg/l

**TABLE 5/3 continued**

Leachable Components	Sample			Detection limit
	1	2	3	
Catechol (NRA)	<0.01	<0.01	<0.01	<0.01 mg/l
Phenol (NRA)	<0.01	<0.01	<0.01	<0.01 mg/l
Total Cresols (NRA)	0.01	0.01	0.03	<0.01 mg/l
Total Xylenols (NRA)	<0.01	<0.01	<0.01	<0.01 mg/l
1 Naphthol (NRA)	<0.01	<0.01	<0.01	<0.01 mg/l
2,3,5 Trimethyl-Phenol (NRA)	<0.01	<0.01	<0.01	<0.01 mg/l
2-Isopropyl Phenol (NRA)	<0.01	<0.01	<0.01	<0.01 mg/l
Phenols Total of 8 Speciated (NRA)	0.01	0.01	0.03	<0.01 mg/l
Thiocyanate (NRA)	<0.05	<0.05	<0.05	<0.05 mg/l
Total Cyanide (NRA)	<0.5	<0.5	<0.5	<0.5 mg/l
Easily Liberatable Cyanide (NRA)	<0.5	<0.5	<0.5	<0.5 mg/l
Complex Cyanide (NRA)	<0.5	<0.5	<0.5	<0.5 mg/l
Sulphate (NRA)	15.5	6.5	6.0	<0.1 mg/l
pH (NRA)	6.61	7.56	7.34	<1.00 pH Units

The leaching tests indicate that the matrix would produce a neutral run off when it is exposed to leaching through incident rainfall, as pH of the leachate produced from the testing of the three samples was in the range 6.61 to 7.56.

The concentration of key contaminants in the leachate produced during the tests is below that of the relevant Environmental Quality Standards for both surface and ground waters.

It is concluded, therefore, that the recovery of aggregates from the reclamation site should not result in Acid Rock Drainage or contamination of surface or ground water. Potential impacts would be minimised by minimising the extent of the working area, and by progressive restoration of areas from which aggregates had been reclaimed, as shown in the development plans in the original Environmental Statement, TP 3/1 to TP 3/4.

However, the quality of discharge from the site's surface water management system would be governed by a discharge consent issued by the Environment Agency and this would be used to regulate the quality of the discharge to the receiving watercourse. The discharge would be sampled at regular intervals to ensure that the discharge criteria, including pH, were being met.

## 6.0 WATER

### 6.1 Introduction

This section assesses the potential impact of the proposed access road development on the groundwater and surface water environments. An assessment has been undertaken of the potential environmental impacts, and mitigation measures proposed, as necessary, based on a description of the local geology (see Section 5) and the hydrogeological and hydrological regimes.

### 6.2 Methodology

The methodology applied to the assessment of the potential impacts adopts a qualitative system in which the probability of an event occurring, and the magnitude of any consequences of such an occurrence, are considered such that overall impact can be assessed. This approach provides a method for identifying mitigation measures appropriate to the risk, and therefore allows effort to be focused on reducing risk where they may enable the greatest potential safeguard to the environment. The assessment of risk is outlined in Table 6/1 below.

**TABLE 6/1: MATRIX USED TO ESTIMATE RISK FROM CONSIDERATION OF THE MAGNITUDE OF POTENTIAL IMPACTS AND THE PROBABILITY OF OCCURRENCE**

Probability of Occurrence	Magnitude of Potential Impacts			
	Severe	Moderate	Mild	Negligible
High	High	High	Medium/Low	Near Zero
Medium	High	Medium	Low	Near Zero
Low	Medium	Low	Low	Near Zero
Negligible	Low	Near Zero	Near Zero	Near Zero

#### 6.2.1 Sources of Information

- British Geological Survey 1:50,000 scale, No. 232 (Solid & Drift) -Abergavenny;
- British Geological Survey 1:50,000 scale, No. 249 (Solid & Drift) –Newport;
- Ordnance Survey 1:25,000 scale mapping;
- Environment Agency Wales Public Register Information; and
- Envirocheck <sup>TM</sup> report.

## 6.3 Baseline Conditions

In order to assess the potential impacts of the proposed development it is necessary to examine the existing hydrogeological and hydrological setting of the site. This has been carried out with reference to the information available from the sources set out above.

### 6.3.1 Hydrogeology

#### *Recharge Mechanisms*

The long term-average rainfall (1961-1990), recorded at Cardiff, is 1047mm. The application site is within the former Ministry of Agriculture, Food and Farming Agroclimate Area 51 indicating an average annual potential evapotranspiration of approximately 500mm.

As discussed in Section 5, the proposed road alignment is underlain by a sequence of sandstones, from the Upper Coal Measures or “Pennant Measures” of Carboniferous age. These sandstone strata have a low primary permeability, given that they are well cemented and therefore some surface runoff may be expected. However, where these strata are also extensively fractured and faulted, the associated secondary porosity and permeability permits rainfall infiltration and groundwater flow.

#### *Aquifer Characteristics*

The Carboniferous strata underlying the application site have a low primary porosity and permeability, but extensive fracturing has resulted in a significant degree of secondary porosity and permeability. In addition coal and ironstone working in the region has led to the development of large scale drainage features (adits and mines) and associated anthropogenic fracturing due to induced instability. The Coal Measures are classified as a Minor Aquifer by the Environment Agency<sup>1</sup> and the predominant flow mechanism is considered to be fracture flow.

#### *Groundwater Levels and Flow*

Examination of the 1:25,000 scale Ordnance Survey map indicates a concentration of groundwater-fed springs in the vicinity of the hamlet of Cefn Crib in the gentle valley feature to the west of the common land. These appear to be related to the arcuate outcrop of a low permeability mudstone horizon which causes localised perching of groundwater within the sandstone that overlies the mudstone. This concentration of springs lies to the north of the proposed access route as they emerge on the west facing slope of the Cwm Llwynau valley and would be unaffected by the development proposals.

These features are illustrated in Drawing TPS6/1.

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<sup>1</sup> National Rivers Authority (now Environment Agency) Policy and Practice for the Protection of Groundwater: Regional Appendix, Welsh Region.

## *Groundwater Quality*

No groundwater quality data are available in the vicinity of the proposed road alignment. However, it is noted that groundwater quality in the Coal Measures is typically of poor quality with elevated concentrations, particularly of chloride, sulphate and heavy metals.

## *Abstractions and Source Protection Zones*

Available information indicates that there are no licensed groundwater abstractions within 3km of the application site centre and that the application site is not within any groundwater Source Protection Zones. The application site is not within a licence exempt zone.

A well is shown to the immediate east of the Blaen-y-Cwm section of the proposed access road, in the immediate vicinity of Tir-ysgubor-ddu, as shown on Drawing TPS6/1. Although there is no available information for this well it is likely to be associated with a perched groundwater system in the sandstone bedrock, given its elevated location, and its position within the natural gully that crosses the Blaen-y-Cwm Road at this location. Inspection of Drawing TPS5/1 shows that a low permeability mudstone horizon outcrops in the valley side at this location and this may explain why a well was excavated here.

## *Conceptualised Hydrogeological Site Setting*

The geological, topographical and hydrogeological information described above indicates that the proposed road alignment lies on the upper slopes of a localised groundwater system within the sandstone strata, in which fracture-flow mechanisms dominate and where groundwater perches on low permeability horizons in the Coal Measures sequence creating spring lines where these horizons crop out.

The access road would be constructed across a valley side where there are no observed springs, wells or other surface water features which is consistent with the geological setting of the valley side where there are no mapped outcrops of low permeability horizons.

### **6.3.2 Hydrology**

#### *Rainfall*

Climatic conditions in the area are discussed in Section 6.3.1 above.

## *Surface Water Features*

The site water features survey has confirmed that the proposed access road alignment does not cross any permanent surface water features and that there are no visible springs or water courses present on the steep flanks of the Cwm y Glyn valley as confirmed in Drawing TPS 6/1.

In addition, the following surface water related features have been noted in the vicinity of the proposed route:

- A small pond is located approximately 40m to the north-west of the road alignment at its closest point, to the immediate south of Cefn-Crib, as shown on Drawing TPS6/1. This pond is likely to be artificial, and lined, given its elevated position well above the valley floor of Cwm-y-Glyn.
- Two surface water drains cross under the route of the Blawen-y-Cwm Road in culverts. The first is located near Tir-ysgubor-ddu, while the second is located to the south of the access road to the Old Black Barn Farm (see Drawing TPS6/1 for both locations). These carry surface water runoff draining from the area of common land to the west of the existing Blaen-y-Cwm Road section of the proposed access road alignment and these culverts would have to be extended as part of the road improvements.

## *Surface Water Quality*

The Environment Agency does not monitor surface water quality at any locations within 500m of the proposed access road alignment.

## *Surface Water Abstractions*

There are no licensed surface water abstractions within 500m of the proposed access road alignment.

## *Surface Water Flooding*

The Environment Agency website does not identify any indicative flood zones within 500m of the proposed access road alignment.

## **6.4 Assessment of Impacts**

This section examines the potential hazards to groundwater and surface water presented by the proposed development, and discusses the probability of such an impact occurring in order that mitigation measures can be identified, as necessary.

## **6.4.1 Potential Impacts**

The potential impacts on the groundwater environment, in terms of impacts on groundwater quality and on groundwater flow and recharge, are discussed below.

## **6.4.2 Groundwater and Surface Water Quality**

### *Road Construction Operations and Plant*

The road construction operations would utilise diesel powered plant including excavators, dumptrucks and road surfacing equipment. The use of this plant would present a potential hazard to both groundwater and surface water quality in the event of a spill, leak or other accident as fuels and oils may escape to these receptors. The likelihood of occurrence is considered to be 'low' to 'medium' and the magnitude of impact 'mild' to 'moderate', therefore the risk is assessed to be 'low' to 'medium' and some mitigation measures are required. Such measures are routine at construction sites where such mobile plant is used.

During road construction, there would be the potential for mobilisation of suspended solids during wet weather, particularly during the winter months. These solids could be discharged into local drainage systems off-site if they were not managed. It is considered that the likelihood of occurrence without mitigation would be 'high', and the magnitude of impact is 'moderate' resulting in an overall risk assessment of 'high'. Accordingly, mitigation measures are therefore required.

### *Storage of Polluting Liquids*

During road construction it may be necessary to store fuels, oils or other potentially polluting substances on site. These substances may have a significant impact on both groundwater and surface water quality in the event of a leak, and therefore the magnitude of impact is assessed as 'severe'. The likelihood of occurrence is considered to be 'medium' and therefore the overall risk is considered to be 'high'.

### *Long Term Operations*

Runoff from the road surface, which could be contaminated by mud or spoil carried by vehicle tyres has the potential to cause pollution of groundwater and surface water if disposed of without adequate mitigation measures. The likelihood of occurrence is considered to be 'high' and the magnitude of impact is considered to be 'mild' leading to an overall risk assessment of 'medium' to 'low'. Therefore, it is concluded that mitigation measures are required.

## **6.4.3 Groundwater Recharge and Flow**

Major developments that alter surface gradients or the permeability of the ground surface have the potential to disturb the groundwater flow pattern by reducing the recharge entering the groundwater system. However, in this case, it is considered that, given the very limited additional surface area of the proposed access road where new construction is required, in comparison to the extensive outcrop area of the Pennant

Sandstone across the flank of the Cwm y Glyn valley, there would be no significant negative impacts on the groundwater regime as a result of the construction of the access road.

#### 6.4.4 Surface Water Flow

The alignment of the new sections of the proposed access road has the potential to alter the flow of surface water. The potential hazard is that flow rates would be increased through the increased area of hardstanding, and that this may either increase the likelihood of a flood event occurring downstream or increase the magnitude of such an event. The likelihood of occurrence is considered to be ‘high’ and the magnitude of impact is considered to be ‘mild’, leading to an overall risk assessment of ‘medium/low’. Therefore, it is concluded that mitigation measures are required.

#### 6.4.5 Summary of Assessment of Impacts

Table 6/2 summarises the assessment discussed above.

**TABLE 6/2: SUMMARY OF POTENTIAL IMPACTS**

Potential Impact	Spatial and Temporal Impact	Probability of Occurrence	Magnitude of Impact	Significance of Impact	Mitigation Required?
<b>Groundwater and Surface Water Quality</b>					
Road Construction Operations (Runoff)	Local, Short term	High	Moderate	High	Yes
Road Construction Plant	Local, Short term	Low to Medium	Mild to Moderate	Low to Medium	Yes
Storage of Polluting Liquids	Local, Short Term	Medium	Severe	High	Yes
Long Term Operations	Regional, Long term	High	Mild	Medium to Low	Yes
<b>Groundwater Flow and Recharge</b>	Regional, Long term	Negligible	Negligible	Near Zero	No
<b>Surface Water Flow &amp; Flooding</b>	Local, Long term	High	Mild	Medium/low	Yes

#### 6.5 Mitigation Measures

Table 6/2 identifies the potential hazards to the water environment for which mitigation measures are required. In the interests of brevity, the mitigation measures will be discussed in terms of pollution prevention and water management together.

In addition, there are a number of general pollution prevention measures that would be employed to ensure that both ground and surface waters are not contaminated at any stage of the development. These measures are outlined in the relevant Pollution Prevention Guidelines (not to be confused with Planning Policy Guidelines which also use the PPG acronym) and other codes of best practice, the most relevant being:

- PPG2 – Above Ground Oil Storage Tanks;

- PPG3 – Use and Design of Oil Separators in Surface Water Drainage Systems;
- PPG5 – Works In, Near or Liable to Affect Watercourses;
- PPG6 – Working at Construction and Demolition Sites;
- PPG21 – Pollution Incident Response Planning;
- PPG22 – Dealing with Spillages on Highways; and

All of the above PPG Notes are produced by the Environment Agency and are available via the Agency's website ([www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)).

The Welsh Assembly has published Technical Advice Note (TAN) 15: Development and Flood Risk and this suggests that sustainable urban drainage systems (SUDS) should be incorporated in developments where appropriate in order to mitigate run off during storm events.

In addition, the other codes of best practice include:

- Code of Practice for Site Investigations, BS5930<sup>2</sup>;
- Control of Water Pollution from Construction Sites<sup>3</sup>; and
- Environmental Good Practice on Site<sup>4</sup>.

The following mitigation measures are considered to be appropriate and would be followed as part of the development proposals:

### **6.5.1 Road Construction Operations and Plant**

In order to minimise the risk to the water environment presented by the use of mobile plant, a traffic management system would be instigated to reduce the potential for accidents that could lead to spillage of potentially polluting fluids. This scheme would include the mandatory use of visual and audible warning devices as appropriate. In addition, all vehicles would be inspected on a regular basis for leaks and would be fully serviced. Suitable pollution control equipment and materials would be stored on-site to deal with any leaks. This could include sand and proprietary absorbents. It is considered that these measures would reduce the probability of a significant leakage of polluting liquid to low levels and therefore reducing the overall risk to 'low'.

In order to minimise the potential impact of suspended solids on local water courses during the construction of the access road, straw bales would be placed at appropriate locations to prevent potentially contaminated surface water runoff from discharging off site. Surface water runoff accumulating within the southern part of the proposed access road would be discharged via a silt trap and oil interceptor to the existing sewer system. In addition, works would be minimised during adverse weather conditions. These measures would remove the potential for silt contamination and would

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<sup>2</sup> British Standards Institute, 1999, Code of Practice for Site Investigations

<sup>3</sup> CIRIA, 2001, Report C532, Control of Water Pollution from Construction Sites.

<sup>4</sup> CIRIA, 1999, Report C502, Environmental Good Practice on Site.

therefore reduce the likelihood of occurrence to ‘low’ and the overall risk to ‘negligible’.

### **6.5.2 Storage of Fuels**

Any potentially polluting liquids required to be stored on site during road construction would be stored so as to minimise the risk they present to the water environment. Bulk storage tanks, such as those used to store fuels, would be bunded in line with the requirements of the Control of Pollution (Oil Storage) (England) Regulations 2001. All such tanks would be supplied with an impermeable bund capable of storing 110% of the volume of the tank and all valves, sight-glasses and take-off points would be within the bunded area. Regular inspections would be carried out to ensure the efficacy of the system. Smaller volumes of potentially polluting liquids, for example lubricants, would be stored on suitable spill trays and would be located so as to be protected from collision and accidental damage. These measures remove the pathway by which polluting liquids may reach the water environment and would therefore reduce the likelihood of occurrence to ‘near zero’ and the overall risk is ‘negligible’.

### **6.5.3 Long Term Operations**

In order to reduce the risk of run-off from paved areas affecting groundwater or surface water quality and disruption of existing surface drainage conditions, runoff would be directed to shallow grassed verges constructed alongside the access road wherever feasible. As described in Section 3, run off from the steep slopes of Cwm y Glyn, that was intercepted by the road, would be channelled beneath the road at regular intervals to maintain diffuse, rather than concentrated overland flow down this valley side.

Shallow grassed verges encourage the absorption of any hydrocarbon contamination and the settlement of silts. Infiltration through the base of the verge would be encouraged where the underlying material is sufficiently permeable. The natural flow of surface water drainage down the topographic gradient would not therefore be disrupted. These features would provide three surface water treatment/management stages as recommended for industrial sites<sup>5</sup> and therefore the risk presented to ground and surface water is considered ‘negligible’. In addition, these features would negate any potential impact of the development on increased surface water runoff rates by providing compensatory infiltration.

Surface water accumulating within the southern part of the proposed access road, where the road is engineered within Cwm-y-Glyn valley, would be drained via filter drains with discharge via a silt trap and oil interceptor to the existing sewer system. Drainage from the escape lanes and hair-pin corners would be discharged to ground on the down-gradient side of the access road. To prevent potential erosion or structural instability, the outfall locations for these discharges would incorporate features incorporated to dissipate the flow. Where present, existing culverts would be maintained in order to maintain current surface water drainage conditions.

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<sup>5</sup> CIRIA, 2000. Sustainable Urban Drainage Systems: Design manual for England and Wales. CIRIA Report C522/Environment Agency R&D Report W230. CIRIA, London.

## 6.6 Residual Impacts

Table 6/3, overleaf, summarises the mitigation measures proposed and details the residual impacts identified after consideration of these measures.

Examination of Table 6/3 confirms that there are no significant residual impacts after mitigation and that the proposed development, when mitigated, would have a negligible impact on the water environment.

# WATER 6

TABLE 6/3 ASSESSMENT OF RESIDUAL IMPACTS

Potential Impact	Spatial and Temporal Impact	Probability of Occurrence	Magnitude of Impact	Significance of Impact	Mitigation Required?	Mitigation Measures	Mitigated probability of occurrence	Magnitude of Impact	Residual Significance of Impact
<b>Groundwater and Surface Water Quality</b>									
Road Construction Operations (Runoff)	Local, Short term	High	Moderate	High	Yes	Good site practices, straw bales across receiving drainage channels	Negligible to Low	Moderate	Near Zero to Low
Road Construction Plant	Local, Short term	Low to Medium	Mild to Moderate	Low to Medium	Yes	Traffic management, maintenance	Negligible	Mild to Moderate	Near Zero
Storage of Polluting Liquids	Local, Short Term	Medium	Severe	High	Yes	Bunding of tanks	Negligible	Severe	Low
Long Term Operations	Regional, Long term	High	Mild	Medium to Low	Yes	SUDS – filter strips and discharge via oil/silt interceptor where appropriate	Negligible	Mild	Near Zero
<b>Groundwater Flow and Recharge</b>	Regional, Long term	Negligible	Negligible	Near Zero	No	Not Required	N/A	N/A	N/A
<b>Surface Water Flow &amp; Flooding</b>	Local, Long term	High	Mild	Medium/Low	Yes	SUDS – filter strips	Negligible	Mild	Near Zero

In order to reduce the potential impact of the development to acceptable levels the following mitigation measures would be utilised:

- A traffic management system to reduce the risk as accidents that may lead to spills. Further, there would be regular maintenance and inspection of vehicles for leaks.
- A water management scheme that would ensure that no silty water was discharged directly into off-site surface water receptors.
- All oil tanks would be bunded in accordance with Environment Agency guidelines to prevent leaks affecting water quality.
- Road runoff would be directed via filter strips (areas of long grass) to provide time for natural process to remove contaminants prior to entry into the water environment.

### ***6.6.1 Assessment of Residual Impacts***

The mitigation measured detailed above are such that the residual impacts of the proposed development on the local water environment are considered to be 'negligible'.

# LANDSCAPE & VISUAL EFFECTS 7

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## 7.0 LANDSCAPE AND VISUAL EFFECTS OF ACCESS PROPOSALS

### 7.1 Introduction

#### 7.1.1 Outline

This section assesses the potential landscape and visual implications of the proposed alternative access route for the proposed recovery of secondary aggregates at Tir Pentwys.

The report follows the same format and methodology as the Environmental Assessment submitted in support of the original planning application.

#### 7.1.2 Methodology

The format of this assessment is based on the principles produced by the Countryside Agency (“Landscape Assessment Guidance”, 2002) and the Landscape Institute and Institute of Environmental Management and Assessment (“Guidelines for Landscape and Visual Impact Assessment”, Second Edition, 2002). The assessment is also in accordance with the requirements of the Town and Country Planning (Environmental Impact Assessment) Regulations (1999).

#### 7.1.3 Field Observations

Use was made of desktop study, computer analysis, and consultation to identify potential viewpoints. These viewpoints and any others identified during the fieldwork were then visited and assessed for their sensitivity to the proposed development. Photographs were taken to record the existing views and are included in this report. Site visits were carried out on 14<sup>th</sup> May 2003 and 31<sup>st</sup> March 2005. The weather conditions were overcast and misty for the latter data and additional photographs were recorded on 8<sup>th</sup> November 2005.

Photographs illustrating views from a selected series of 10 viewpoints were taken using a Canon Powershot S50 digital camera. Where viewpoints consisted of more than one frame, the relevant frames were merged together using Photovista software (version 1.3.2).

#### 7.1.4 Consultations

No specific consultation has been undertaken with respect to the landscape aspects of the alternative access route other than the general scoping opinion sought from Torfaen Borough Council (see Appendix 1/1).

#### 7.1.5 Technical Difficulties

No technical difficulties were encountered in assessing the landscape and visual impacts of the proposed development.

# LANDSCAPE & VISUAL EFFECTS 7

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## 7.2 Planning Context

Full details of the planning context of the application area were described in Sections 4 and 7 of the original ES and are updated in Section 4 of this document. The following section is a basic summary of those documents.

### 7.2.1 *Planning Policies and Designations*

The area of the application site does not form part any national landscape designations such as an Area of Outstanding Natural Beauty or National Parks.

Within the Torfaen Local Plan (July 2000) the application site is identified as being within a Special Landscape Area (SLA). This designation does not preclude development, but requires that careful consideration is given to avoid significant impacts and provide enhancement.

## 7.3 Landscape Assessment

### 7.3.1 *Introduction*

A detailed baseline study of the Tir Pentwys site and surrounding landscape was undertaken as part of the baseline assessment in Section 7 of the original ES. This baseline study included the area of the proposed alternative access. Therefore, a summary of the original baseline is included below, with additional data included were relevant.

### 7.3.2 *Existing Landscape Appraisals of the Application Site and its Surroundings*

Torfaen County Borough Council has undertaken a LANDMAP assessment of the whole of the County Borough. The results of study are now available and the Visual and Sensory aspect of the study is shown in Drawing TPS7/2.

### 7.3.3 *Landscape Appraisal of the Application Site and its Surroundings*

The Countryside Agency guidance on landscape appraisal recommends that landscapes are initially characterised, and that judgements about the nature and sensitivity of these landscapes are then based on this characterisation process. The Agency's guidance recommends that the characterisation process should be based on an assessment of natural factors, cultural social factors and aesthetic and perceptual factors. Each of these factors is assessed below.

The type of landscape across which the proposed access route would run is shown in Drawing TPS7/1. This figure contains a plan view of the road path, an aerial photograph with the road extent marked, and a computer generated view with the aerial photograph draped over a digital terrain model.

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## *(a) Natural Characteristics*

The local topography of the area was fully described in the original ES. The topography of the area of the proposed alternative access is described in greater detail in Section 2 of this supplementary statement. The topography is illustrated in the 3D View in Drawing TPS7/1.

The vegetation cover of the local area is strongly related to landform. The upper ridge is exposed and has been left un-cultivated, to become common and moorland. The slightly lower land around and at land at the top of the major valley has been settled, enclosed and is used for grazing. The steeper valley sides tend to support woodland, with the section around the alternative access being semi-natural oak woodland with some beech plantation woodland. The range of vegetation is shown in Drawing TPS7/1.

## *(b) Cultural and Social Factors*

Blaen-y-cwm Road runs down from the proposed reclamation site access and forms a sharp T junction with Cefn-crib Road. These two roads form the main communication route for a number of isolated dwellings and farmsteads within the local area.

A fringe of farmland occurs to the east and south, between these roads and the steeper valley sides. The field units are generally small rectilinear and hedged. Open moorland occurs to the west and north of these roads.

## *(c) Aesthetic and Perceptual Aspects*

A strong transition occurs from the open moorland and common on the ridge top, down through the settled farmland edge and onto the steep wooded slopes of the main valley.

The moorland is open and exposed with distant views. It has a smooth rounded form with few vertical elements.

The agricultural land in contrast tends to be enclosed with hedgerows and hedgerow tress forming a defined field pattern of small regular fields. The landform is sloping with some open views.

The steep wooded valley character is one of tight enclosure and steep slopes. The terrain is difficult to traverse due to the slope and undergrowth, giving the interior a remote feeling notwithstanding the major traffic corridor in the floor of the valley.

## *(d) Landscape Dynamics*

The various landscape types of moorland/common, farmland and wooded valley side are clearly defined by exposure and slope gradients. Little overall change would be likely to occur without the proposed new access. However, without the proposed reworking of Tir Pentwys cut, an opportunity to restore a disturbed and coniferous clad landscape would not occur.

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## *(e) Classification and Evaluation*

A classification of the existing landscape was carried out within the original ES. Since that time the Landmap data for the area have been published. The Landmap data correlate with that original assessment, but further divides the 'Valley Side' character type into the Landmap designations of 'Hillside and Scarp Slopes' and 'Wooded Upland Valley'.

The path of the proposed alternative access cuts across parts of the following Landmap assessment areas as shown on Figure S7/2:

- Upland Grazing (TRFNVS019);
- Hillside and Scarp Slopes (TRFNVS018); and
- Wooded Upland Valleys (TRFNVS017).

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## *(f) Landscape Sensitivity*

The sensitivity of the existing landscape resource is based on the following factors<sup>1</sup>:

- The value placed on the landscape;
- Compatibility of the proposed development with the existing land-uses and landscape character;
- Condition of the landscape;
- Contribution of the landscape within the site to the overall landscape character;
- The scope for mitigation of the proposed development; and
- Degree to which landscape elements and characteristics can be replaced or substituted.

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The sensitivity of a landscape is categorised as high, medium, low or negligible.

The route of the proposed alternative access cuts across three distinct types of landscape, as identified in the Landmap study, these being:

- Upland Grazing (moorland);
- Hill side and scarp slopes (farmland); and
- Wooded Upland Valley.

These relate directly to the landscape areas shown in Drawings TPS7/1 and TPS7/2.

The moorland/common area is in good condition, valuable for its conservation benefits, and not particularly compatible with the building of new roads due to its open nature. Most of the land lost would be replaced by a hard road surface with no scope for replacing the lost habitat in the short term. However, the area of moorland is large and the proposed road would mostly use existing roads: only a short section

<sup>1</sup> Guidelines for Landscape and Visual Impact Assessment (Second Edition), paragraphs 7.16 and 7.17

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would cross the actual moorland. Thus, the sensitivity is thus rated as medium to the proposed alternative access.

The farmland areas are the most compatible with the access proposals due to the presence of existing farm tracks, and screening hedgerows and trees. Most land lost within this area would be likely to be low value pasture land. The sensitivity of this area is regarded as low.

The wooded valley side would be the most sensitive to the type of proposals put forward due to its value as deciduous woodland (as oppose to coniferous plantation) and its good condition. In addition, the steep gradients on the valley side would require steep batters and cut slopes to accommodate the road. The sensitivity of this area is thus regarded as high.

The above factors have been considered, and it has been concluded that the **Sensitivity** of the area overall to the proposed alternative access is rated as **High** due to the wooded valley in particular.

## ***7.3.4 Potential for Landscape Enhancement***

The potential exists for landscape enhancement within the landscape by extending the woodland cover further north to include some of the steeper grazing land. In addition, planting would help to diversify the woodland age and improve its long term health. Opportunities also exist for undertaking additional management within the woodland to diversify its value and undertake some replanting.

## ***7.3.5 Conclusions on the Landscape Appraisal of the Existing Site***

The path of the proposed access crosses a number of different landscape types. Some of these would have a **High Sensitivity** to the proposed type of development due to their inherent value and condition, others would be less sensitive.

A significant potential exists to restore the semi-derelict site and recreate a more natural landform supporting agriculture and heathland. This would meet the aims of the SLA designation by enhancing the landscape character. However, to achieve this access needs to be provided to the site.

## **7.4 Visual Assessment**

### ***7.4.1 Introduction***

Visual Impact Assessment relates to “changes that arise in the composition of the available views as a result of changes to the landscape, to peoples’ responses to the changes and to the overall effects with respect to visual amenity”, (“Guidelines for Landscape and Visual Impact Assessment”, Second Edition, *op.cit*). Initially, it is necessary to define the extent of visibility both within and outside the site. Principal and Secondary Viewpoints are then selected to represent views from the most commonly used locations in and around the site, and the existing views from each of these points are briefly described with the aid of photographs.

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## 7.4.2 *General Visibility of the Proposed Access Route*

The general visibility of the proposed access route is restricted by two factors, firstly the hill top location of most of the proposed access route, and secondly the existing woodland on the steep valley side.

The first factor minimises visual impacts to adjacent areas and areas of higher elevation. This factor is most important for the first section of the route from the site access to Cefn Crib Farm in the south. The adjacent moorland of Cefn Crib prevents views from the west, with most views of the road itself being limited to the minor valley side opposite and to the east. Traffic using the route would be slightly more visible due to the height of the potential traffic. However, the ZVI (Zone of Visual Influence) maps shown in Drawing TPS7/3 illustrate the limited extent of such increases (i.e. Maps 1 and 2).

The second factor to consider is the woodland cover on the Cwm y Glyn valley side. Although some of this woodland would be lost, the remaining woodland would still screen the majority of the road and associated traffic from the southern valley side of Cwm y Glyn. This reduction can be seen in Drawing TPS7/3, as the difference between Maps 2 and 3.

The main area of sensitivity from a visual point of view is the upper flank of the valley side. Here the road would be visible from the adjacent land and southern valley side before it entered the woodland.

## 7.4.3 *Sensitivity of Viewpoints*

The list of the identified viewpoints set out below also includes a brief assessment of their sensitivity. Sensitivity depends on the following factors<sup>2</sup>:

- **The location and context of the viewpoint.** For example, viewpoints which are closer to the site are generally more sensitive.
- **The number of viewers who commonly use the viewpoint.** Some viewpoints are commonly used by the public, such as formal viewing platforms, picnic areas or recreational rights of way. Other viewpoints may be difficult to gain access to.
- **The nature of the viewpoint.** Residential properties are sensitive to visual impacts as the residents experience the impacts on a regular and prolonged basis. Public footpaths can also be sensitive, since the users' attention is often focused on the landscape. By contrast, views from outdoor sport facilities, transport routes or places of work are less sensitive.
- **Movement of viewers at the viewpoint.** More transitory views, for example from a motorway, are generally less sensitive than views experienced from residential properties and footpaths.

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<sup>2</sup> Guidelines for Landscape and Visual Impact Assessment (Second Edition) Paragraphs 7.31 and 7.35

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- **The cultural significance of the viewpoint**, including its appearance in guidebooks and tourist maps, or cultural and historical associations.

The sensitivity of viewpoints is categorised as high, medium, low or negligible.

## 7.4.4 *Principal and Secondary Viewpoints*

Principal Viewpoints<sup>3</sup> are selected on the basis of which points provide the clearest views of the site and are also the most accessible to the public. Secondary Viewpoints represent views from areas which are not commonly used by the public, or which would provide less clear views of the proposed development. Secondary Viewpoints also represent areas which may be perceived to be sensitive to the visual impact of the proposed development due to proximity, but which in reality have restricted views of the site. The location of the viewpoints, a photograph of each existing view, and a description, are included on Drawings TPS 7/4-7/12.

### a) **Principal Viewpoints**

#### **Viewpoint A – Cefn Crib Moorland**

This viewpoint is located close to the proposed site access, and looks out across open moorland. The width of the full panorama takes in the complete length of the proposed access route, although virtually all the route is hidden from view by the convex landform of the moorland. Due to the context of this natural screening the viewpoint has a **Low Sensitivity**.

#### **Viewpoint B – Blaen-y-cwm Road**

This viewpoint is located on a public road that would be used as part of the alternative access route. It is an existing public road and is assessed as having a **Medium Sensitivity** due to its use as a local road and the low level of existing traffic.

#### **Viewpoint C - Blaen-y-cwm Road**

This viewpoint is located on the same public road as viewpoint B but looks southwards. It would also be used as part of the alternative access route, but the start of the northern most private section of the proposed access would be visible as it branched off the public road. It is also assessed as having a **Medium Sensitivity**.

#### **Viewpoint D – Cefn-crib Road**

This viewpoint is similar to the Viewpoint C above. It is from a public section of road on the proposed alternative access route and has a view of a junction between the public road and the proposed private access road. It is assessed as having a **Medium Sensitivity** to the proposals.

#### **Viewpoint E – Near Coetgae hen**

This viewpoint is from the southern valley side of Cwm y Glyn and looks out across the valley. The viewpoint is on a path through the mainly coniferous woodland on that side of the valley. Views from that area are not common and tend to be glimpsed views as shown in Viewpoints 3 and 4. However, at this particular location the more

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<sup>3</sup> Guidelines for Landscape and Visual Impact Assessment (Second Edition) Paragraph 6.29

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widely spaced natural scrub cover allows open views. The viewpoint is thus assessed as having a **High Sensitivity** to the proposals.

## **Viewpoint F – Cwm y Glyn**

This viewpoint is on a path exiting the coniferous forestry on the south side of Cwm y Glyn. It has a view across the base of the valley to the semi-natural woodland on the northern valley side. The view is glimpsed, but the semi-natural woodland is an essential component of the view and susceptible to change from the proposed private road section that would cut down through the woodland. It is thus assessed as having a **Medium Sensitivity**.

## **b) Secondary Viewpoints**

### **Viewpoints 1 - Cefn-crib Road**

This section of public road is further west than Viewpoint D, the proposed junction would be screened and traffic would be screened from view by the brow of the hill and adjacent vegetation. The view is assessed as having a **Negligible Sensitivity** to the proposals due to potential views of traffic across the fields to the south of the public road.

### **Viewpoint 2 – Local Road**

This viewpoint is included to assess the potential impacts of the proposed access on the local road that connects to the A 472 in the base of the Cwm y Glyn valley. This road is reasonably busy and is used as a local feeder road. The end of the private road and its junction with this public road would be seen in the mid distance. The context of the viewpoint and likely speed of the viewer are such that the viewpoint is assessed as having a **Low Sensitivity** to the proposed development.

### **Viewpoint 3 – Cwm y Glyn**

This viewpoint illustrates the type of glimpsed view possible from within the coniferous woodland on the south valley side of Cwm y Glyn. The view is a transient view and doesn't possess sufficient attraction or clarity of view to encourage the viewer to pause (as at Viewpoint E). The viewpoint is assessed as having a **Low Sensitivity** to the proposals due to these factors.

### **Viewpoint 4 – Cwm y Glyn**

This viewpoint is similar to Viewpoint 3 and illustrates the same points. These two views are entirely indicative of the type of views possible from the coniferous woodland. A **Low Sensitivity** is also given to this viewpoint.

## **7.4.5 Potential for Visual Enhancement**

Great potential exists within the development site to treat the rock faces and steep un-vegetated slopes that are visible from many of the viewpoints.

With regard to the proposed alternative access road and the general improvement of the landscape through which it passes; some potential exists for additional planting, woodland management and general improvement works. However, overall the need for enhancement is low.

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## *7.4.6 Conclusions of the Visual Assessment of the Existing Site*

The general visual sensitivity of the area to the proposed alternative access route is low or medium. Increased sensitivity is related to one identified view from the southern valley side of Cwm y Glyn (Viewpoint E). This viewpoint is particularly sensitive due to the open view it possesses.

## **7.5 Potential Landscape and Visual Implications of the Proposed Development**

### *7.5.1 The Extent of the Proposed Development*

The extent of the proposed development is described in Section 3 and on the drawings that relate to the road design (Drawings TPS3/1, TPS3/2 and TPS3/3). However, aspects of particular relevance to landscape and visual impact are discussed below.

### *7.5.2 Potential Landscape and Visual Elements of the Proposed Development*

The alternative access would start at the reclamation site entrance at a height of approximately 378m AOD and would run south following an existing public road, dropping to a level of approximately 360m AOD, the existing road skirts around the eastern edge of open moorland and common. The alternative access would then bear west to cut across the corner of the common (on a private section of road at approximately 363m AOD) and link to the Cefn-crib Road and alternative access would then run west along Cefn-crib Road (approximately 358m AOD) for 200m. The route would then turn south onto another section of private road. This would run down the upper section of the Cwm y Glyn valley which has gradients of around 1:6 dropping to a height of around 335m AOD.

As the road reaches the steeper section of the upper valley (gradients around 1:3) it would bear west to achieve a suitable road gradient and would drop to around 300m AOD. As the valley side gradients increased further the private road would turn sharply eastwards running along the valley side. In this section the proposed road would drop from 300m to around 210m AOD in the valley base.

The potential impact generators for the road can be summarised as:

- Construction and earth moving to achieve road formation;
- New road surfaces; and
- Associated signage and traffic control.

The sections of the proposed access on the public road would require minimum alteration in the form of minor widening, passing places and drainage works. After construction of these items had occurred it is not anticipated that any noticeable landscape or visual impacts would be perceived with regard to the road itself.

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The proposed new sections have the potential to create more disturbance as they would include the construction work itself, including any cuttings or embankments that would be required to achieve suitable gradients.

The section of proposed private road cutting across the moorland of Cefn Crib would be constructed within a shallow cutting to help screen it and the associated traffic.

The main section of private road that would extend down into the valley would cut across the natural slope in a variety of places. The proposed road would thus involve a number of sections of cut and fill to achieve suitable long and cross gradients. This would result in cut and fill batters to either side of the road, in particular where it passes down the valley side, although the road would be constructed by cutting, rather than filling, whenever possible.

The proposed road construction would involve the removal of some trees and hedgerows within the farmland adjacent to Cefn-crib Road, but this would be minimal. The main loss of vegetation would be within the woodland on the valley side along the route of the road. Here cut slopes would be excavated at maximum gradients to minimise the area taken up by the road. On average, the width of the road and any cuttings would be 15m. However, to achieve the construction it is possible that a wider section of woodland would need to be removed. This would be in order to access the road path and to preserve tree stability and avoid damage to trees during the construction period. This additional width would be minimised to avoid tree loss where ever possible, but a conservative estimate would be an additional 5m width. Thus, the assessment has assumed that a path with a width of 20m would need to be cut through the woodland to construct the road down the valley side although this should be regarded as a worst case rather than the norm.

The impact of the final road surface would be minimal as in most places as it would be screened in cuttings or hidden by retained vegetation. It would also be noticeable at its junctions with the existing public roads as a new road section. However, on the open valley side above the tree-line, it be likely to create a greater impacts within the local landscape, given its line and open aspect.

### 7.5.3 Timescales of Potential Impacts

The proposed recovery of secondary aggregates would last for a period of approximately 20 years. All traffic lights and signage would be removed after the development period and the private road sections gated or blocked off. The proposed access road would be retained for farm access after this period, as the removal of the road would be likely to create more impact than its retention.

### 7.5.4 Potential Indirect Impacts

The main indirect impact would be the traffic using the proposed alternative access route. This impact would be less on the existing road sections due to the existing presence of traffic. However, impacts would be higher on the new private road sections where traffic is limited to farm machinery at present.

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Additional impacts would be created by the associated signage and traffic signals that would be used as part of the traffic control process. The impact from these would relate to their prominence within the rural environment, especially in the upland moorland setting. It is proposed that agreement is made with the relevant authorities to minimize the size and number of these elements within the landscape.

## **7.5.5 Lighting**

No lighting scheme is proposed for the existing road or proposed private sections. However, some visual impact would be caused by the use of traffic lights and vehicles using headlights on the new private road sections. This would be particularly applicable to the winter period when shorter daylight hours would result in working during periods of darkness. To minimise these impacts and save power the traffic lights would be switched off outside operating hours. In addition, they would be fitted with blinkers to narrow the direction in which they would be visible.

## **7.6 Proposed Mitigation Measures**

### **7.6.1 Mitigation Measures**

Mitigation measures have been built into the proposals as they have been developed to minimise landscape and visual impacts. Given this iterative approach, the impacts before and after mitigation have not been assessed separately.

### **7.6.2 Landscaping Proposals**

To reduce the potential impacts of the proposed road, particularly in its upper valley section, it is proposed that a series of new beech hedgerows and an extension to the existing woodland would be created.

This would include a significant area of woodland planting adjacent to the western-most section of private road. The planting would extend the area of existing native woodland up the valley slope and would enclose the tight curve at the western most section of the road. This woodland would, over 5-10 years, develop sufficiently to begin screening the traffic using this section of road which would be visible from some of the footpaths on the south valley side of Cwm y Glyn. The woodland would be extended out to existing field boundaries or new beech hedgerows planted along its edge to form new field boundaries where required.

Similar hedgerow and woodland planting would be carried out adjacent to sections of the private road adjacent to Cefn-crib Road to reinforce existing vegetation and to replace vegetation lost during the road construction.

## **7.7 Predicted Residual Landscape Impacts**

The baseline landscape assessment identified the important elements of the local landscape and their sensitivity to the proposals. The following section assesses the likely change to that base line due to the proposed alternative access.

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## 7.7.1 *Magnitude of Landscape Impacts*

The magnitude of landscape impacts depends upon the following factors<sup>4</sup>:

- The scale or degree of change to the existing landscape resource
- The nature of the change caused by the proposed development (for example, beneficial or adverse?)
- The timescale, or phasing, of the proposed development

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The scale of the changes caused can be classified as negligible, low, medium or high.

## 7.7.2 *Changes in Natural Characteristics*

There would be some change caused to the topography of the area through the proposed cuttings and embankments required to accommodate suitable road gradients. These changes would be limited in extent, although some would be significant at the location of their creation. However, given the existing steep valley gradients and small change within the local landscape as a whole these impacts are regarded as a Low Magnitude of change.

Of greater impact would be the loss of vegetation, particularly the semi-natural woodland on the steep valley side. An approximate 900m length of road would pass through this woodland, with the potential for a 20m width of clearance. This amounts to a worse case of 1.8ha of woodland lost out of a total of over 50ha for that area of woodland. Cleared vegetation would be retained within the woodland as dead wood habitat; this would aid conservation value within the wood. Some lost woodland would be compensated for by the proposed extension of woodland to the north around the western-most end of the private access road. In addition, the edges of the road would be replanted as the earliest opportunity with either similar species or a woodland edge mix. This would allow for the diversification of woodland age and could increase the conservation value of the woodland. However, a **Medium Magnitude** of change would occur to this landscape component due to the proposals.

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## 7.7.3 *Changes in Cultural and Social Factors*

Little or no change is anticipated in terms of the cultural and social factors of the local area, although some new field boundaries would be created around the edges of the proposed planting and private road.

Two footpaths that cross the line of the road would be affected along limited sections to aid the safe crossing of the proposed private road. This would include the provision of steps and crossing points as indicated on the detailed road design drawings. A **Low Magnitude** of change would occur to this landscape component due to the proposals.

<sup>4</sup> Guidelines for Landscape and Visual Impact Assessment (Second Edition) Paragraphs 7.18 and 7.23

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## 7.7.4 *Changes in Aesthetic and Perceptual Aspects*

A change would occur to the perception and aesthetic aspects of the area due to the proposed new access road. Insensitive use of road signs could bring discordant features to the moorland areas, at odds with their generally open, wild nature. The private road would be better absorbed by the agricultural areas due to their hedgerow vegetation providing screening and hiding uncharacteristic elements. The steep, almost impenetrable woodland would be affected by the creation of a straight diagonal line through its linear form, although, due to the restricted width of the road, this change would not be easily perceived. A **Medium Magnitude** of change would occur to this landscape component due to the proposals.

## 7.7.5 *Changes in Character*

The character of the local landscape as defined by the Landmap study and explored above would be subject to a **Medium Magnitude** of change due to the effects on aesthetics and natural characteristics.

## 7.7.6 *Summary of Residual Landscape Change*

The most significant landscape change would be the physical loss of semi-natural oak woodland and beech plantation woodland on the steep valley side. This in turn would have an impact on the local character of the wooded valley.

The next most significant change would be the introduction of urban signs and traffic lights into a rural setting, impacting upon the character of the moorland area.

Overall a **Medium Magnitude** has been given to the potential landscape changes that the proposals would introduce to reflect these effects.

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## 7.8 **Predicted Residual Visual Impacts**

### 7.8.1 *Introduction*

The potential visual effects of the proposed development on the surrounding landscape, and in particular the views from Principal and Secondary Viewpoints, have been assessed with the aid of plans and computer models, and are described in detail below.

### 7.8.2 *General Visibility of the Proposed Development*

A computer model of the local topography and proposed road was used to assess the levels of impact from the various viewpoints, as detailed below.

In general terms the ZVI (Zone of Visual Influence) maps shown on Drawing TPS7/3 illustrate the likely level of visual impact for the whole of the adjacent areas. Map 1 is based on the visibility of the road surface alone, and shows how the topography confines potential views of the road to the opposite side of Cwm y Glyn and the

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opposite side of the small valley leading up to the mineral recovery site. Map 2 illustrates how traffic using the proposed road would be visible over a slightly greater, but still limited area. The most likely area to suffer impact would be the southern side of Cwm y Glyn.

However, once the existing woodland is added to the computer model, the views are much more restricted on the opposite valley side as most of the proposed route would be hidden within the retained woodland either side. The most significant visual aspect of the proposals would be views of the traffic adjacent to proposed route, and views of the hairpin bend on the edge of the valley which would be visually prominent until the associated planting matured.

### 7.8.3 Magnitude of Visual Impacts

For each of the viewpoints the potential magnitude of the residual visual impacts, taking into account the proposed mitigation, is assessed. The magnitude of visual impacts is mainly dependent upon the following factors<sup>5</sup>:

- What proportion of the existing view would change as a result of the development proposals; Formatted: Bullets and Numbering
- How many features or elements within the view would be changed; Formatted: Bullets and Numbering
- How appropriate is the proposed development in the context of the existing views; Formatted: Bullets and Numbering
- How many viewers would be affected by the changes in the view; Formatted: Bullets and Numbering
- What is the timescale of the proposed development? Also, is it continuous or intermittent; and Formatted: Bullets and Numbering
- What is the angle of the view in relation the main activity of the receptor? Formatted: Bullets and Numbering

The scale of the changes caused can be classified as negligible, low, medium or high.

### 7.8.4 Magnitude of Residual Visual Change for Viewpoints

The magnitude of change for all the viewpoints was assessed and conclusions drawn on the potential visual changes throughout the area affected. The limit of the area likely to be affected visually is shown in Map 3 on Drawing TPS7/3.

#### a) Principal Viewpoints

##### Viewpoint A – Cefn Crib Moorland

This viewpoint would see no more than a glimpse of the top of traffic associated with the proposals as it left the site access. The traffic would then be hidden by the natural

<sup>5</sup> Guidelines for Landscape and Visual Impact Assessment (Second Edition) Paragraph 6.29

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rounded landform of the moorland. It would become visible again at a distance of approximately 1km, just north of the section of private road which crosses the moorland. Traffic would be seen for approximately 100m approaching this point as the landform rises. Traffic would also be seen turning onto and out off the private road. Traffic on the private road would be quickly screened by the landform and proposed cutting. Only a small proportion of the view would be affected and visual impact would be intermittent, thus a **Low Magnitude** of change has been assessed for this viewpoint.

## **Viewpoint B – Blaen-y-cwm Road**

Changes to views from this viewpoint would include some of the road improvement works required as part of the proposals. These would be permanent but after construction small and minor in nature leading to little impact. The main changes would be the increase in traffic and the type of traffic associated with the proposals which are assessed as leading to a **Medium Magnitude** of change.

## **Viewpoint C - Blaen-y-cwm Road**

Changes to views from this viewpoint would be similar to the Viewpoint B but looking south and would include road improvement works and the start of the private road section across the moorland. These would be permanent changes and in addition the signage and traffic lights at the start of the private road section would be visible. However, the main changes would be the increase in traffic and the type of traffic associated with the proposals. This would be intermittent and would lead to a **Medium Magnitude** of change.

## **Viewpoint D – Cefn-crib Road**

Changes to views from this viewpoint would include some of the road improvement works required as part of the proposals. These would be permanent but after construction small and minor in nature leading to little impact. The main changes would be the increase in traffic and the type of traffic associated with the proposals. This would be intermittent and would lead to a **Medium Magnitude** of change.

## **Viewpoint E – Near Coetgae hen**

This viewpoint would see the private road as it ran down from Cefn-crib Road to the edge of the Cwm y Glyn valley. The northern sections of road would be partly obscured by hedgerows and trees with little of the actual road surface being visible. However, as the road turned westwards towards the sharp bend at its westernmost point it would become progressively more visible. At the westernmost bend the road would be on an embankment to retain its gradient, the slopes of this embankment would add to the visual change experienced. It is proposed that the woodland just below this section is extended northwards to include these embankments and the adjacent areas.

This woodland planting would be implemented at the earliest opportunity and with good maintenance would help integrate the road works visually. In the longer term, the tree growth would begin to screen the road after approximately five years of good sustained growth. Visual changes caused by traffic using the road would begin with glimpses of the traffic as it followed the road down slope. These would culminate with clear views of the traffic on the road at the position of the bend.

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Traffic would need to slow down at that section which would increase the time that the traffic was visible. It is unlikely that the planted woodland would ever screen the traffic entirely with views through the planting being likely as it increased in height.

Once the road and traffic entered the straight section descending through the existing woodland it would be screened from view. However, the line of the road would be noticeable as a step in the line of trees, with sections of trunk and the edges of the canopy being visible instead of an unbroken canopy top, as at present.

In the construction period a High Magnitude of change would be likely due to the use of construction equipment, soil movements and felling of the road line through the woodland. This would fade once the construction period was finished to a **Medium Magnitude** of change, with the distance of the view limiting the extent of change.

## **Viewpoint F – Cwm y Glyn**

Sections of the cut face above the road would be visible from this viewpoint as the road passes up through the woodland on the side of Cwm y Glyn. The exit of the private road, traffic waiting to exit, and the tops of vehicles travelling on the road would all be visible amongst the retained woodland cover. However the edge of the cleared woodland would likely to be the most noticeable change to the view. Initially this might appear as a harsh line, but with the proposed replanting and seeding to the cut slopes this would quickly fade, although a change would remain. The level of visual change as been assessed as being a Medium Magnitude initially, but fading to a **Low Magnitude** with successful replanting and seeding.

## **b) Secondary Viewpoints**

### **Viewpoints 1 - Cefn-crib Road**

No views of the proposed road route would be visible from this viewpoint. However, the top of traffic would be visible on a short section of the private road adjacent to Cefn-crib Road, as the private road branched off. These views would be partly screened by existing vegetation and would cause a **Low Magnitude** of change to the existing view.

### **Viewpoint 2 – Local Road**

The exit of the proposed private road would be seen as a junction on the existing public road. Traffic waiting to emerge would be visible but little else. A **Low Magnitude** of change has been assigned to this viewpoint. The degree of change would be likely to increase to a medium level as the exit was passed, especially during the construction phase, although the transient nature of such a view would maintain the low magnitude of change.

### **Viewpoint 3 – Cwm y Glyn**

The existing glimpsed view from this viewpoint would see the sharp bend of the proposed private road, before its descent through the wooded valley. A **Low Magnitude** of change is assigned to this viewpoint, due to the short section of path with a view and the existing partial screening.

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## **Viewpoint 4 – Cwm y Glyn**

The existing glimpsed view from this viewpoint would see the sharp bend of the proposed private road, before its descent through the wooded valley. A **Low Magnitude** of change is assigned to this viewpoint, due to the short section of path with a view and the existing partial screening.

### **7.8.5 Summary of Residual Visual Impacts**

The residual visual impacts can be split into two types;

- Direct impacts from the road development itself.
- Secondary impacts from the associated traffic.

Impacts from the road development and associated traffic would be mainly restricted to the local landscape adjacent to the northern section of the route and to the Cwm y Glyn valley. The northern section of the route would be affected by the traffic, signage and traffic lights proposed. After the completion of the development these items would be removed and only the section of private road across the moorland left.

The southern section of the route would be reasonably well screened at both ends of the route, but the middle section around the sharp bend would be much more visible due to its position on the open flank of the valley. The main area for viewing this would be from the opposite valley side (i.e. Viewpoints E, 3 and 4). Given current woodland cover, the number of clear views is greatly restricted. However, if sections of the existing woodland were felled, then similar views as seen from Viewpoint E could occur.

Thus, views are likely to appear and disappear regularly as the woodland is managed, with the position of open views and glimpsed views changing throughout the life of the project.

## **7.9 Potential Significance of Landscape and Visual Impacts**

### **7.9.1 Assessment of the Significance of Impacts**

The potential significance of landscape and visual impacts is determined by a combination of the magnitude of the potential impact and the sensitivity of the landscape setting to change. These two variables can be correlated as illustrated in Table 7/1, below. Thus, a landscape impact of low magnitude may nevertheless be assessed to have a moderate impact in a highly sensitive landscape such as an AONB or a National Park.

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**TABLE 7/1: PRINIPLES OF ASSESSING SIGNIFICANCE OF LANDSCAPE AND VISUAL IMPACTS**

SENSITIVITY MAGNITUDE	SENSITIVITY			
	NEGLIGIBLE	LOW	MEDIUM	HIGH
NEGLIGIBLE	Negligible Impact	Negligible/ Slight Impact	Slight Impact	Slight/Moderate Impact
LOW	Negligible/ Slight Impact	Slight Impact	Slight/ Moderate Impact	Moderate Impact
MEDIUM	Slight Impact	Slight/ Moderate Impact	Moderate Impact	Moderate/ Substantial Impact
HIGH	Slight/ Moderate Impact	Moderate Impact	Moderate/ Substantial Impact	Substantial Impact

The above consideration of the sensitivity of the receptors with the magnitude of the potential impacts provides an overall assessment of the potential significance of impacts. However, this process is not a quantitative process; there is not an absolute scoring system. Instead, the correlation of the two factors, although reflecting recognised features and methods of working outlined in this report, is in the end a matter of professional judgement.

Table 7/2, below, provides a brief definition of the full range of significance criteria. It must be emphasised that both landscape and visual impacts can be either adverse or beneficial in nature.

**TABLE 7/2 - SIGNIFICANCE CRITERIA FOR LANDSCAPE AND VISUAL IMPACT**

Significance	Definition
Negligible	The proposed scheme is appropriate in its context. It may be difficult to differentiate from its surroundings and would affect very few or no receptors
Slight	The proposed scheme would cause a barely perceptible impact, and would affect few receptors.
Moderate	The proposed scheme would cause a noticeable difference to the landscape, and would affect several receptors.
Substantial	The proposed scheme would completely change the character and/or appearance of the landscape for a long period of time or permanently. It would affect many receptors

## 7.9.2 Potential Significance of Landscape Impacts of the Proposed Development

The landscape sensitivity of the site was assessed earlier as being high for the proposed road development. Combining this with the assessed high magnitude of change gives a significance level of **Moderate/Substantial**. This is considered to be

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the worst case for the proposed road development. The proposed planting works would help to off set some of this impact and reduce the changes in character for the valley side and agricultural areas. Very careful design and detailing of the road and its construction method would also help to reduce this level of impact.

### 7.9.3 Potential Significance of Visual Impacts of the Proposed Development

The significance of the visual impacts in respect of each viewpoint is summarised in Table 7/3 below.

**TABLE 7/3 - SIGNIFICANCE OF VISUAL IMPACT ON VIEWPOINTS**

Viewpoint	Sensitivity	Magnitude of Change	Significance of Impact	Description of Impact
A	Low	Low	Moderate	Glimpses of the top of traffic.
B	Medium	Medium	Moderate	Passing traffic.
C	Medium	Medium	Moderate	Passing traffic, private road and signage.
D	Medium	Medium	Moderate	Passing traffic
E	High	Medium to High	Moderate/ Substantial to Substantial	Open view of road construction, early views of finished road and views of traffic using road.
F	Medium	Low	Slight/ Moderate	View of road exit and new woodland edge.
1	Negligible	Low	Negligible/ Slight	Glimpses of the top of traffic.
2	Low	Low	Slight	View of private road exit.
3	Low	Low	Slight	Partly screened transient view of traffic and road.
4	Low	Low	Slight	Partly screened transient view of traffic and road.

The proposed scheme would be visible from a restricted area of the adjacent landscape, but the potential exists for moderate to high visual impact adjacent to the road line and from the opposite valley side of Cwm y Glyn.

### 7.10 Summary and Conclusions

A landscape and visual assessment of the proposed access road for the development at Tir Pentwys Cut has been completed in accordance with accepted guidance.

A study of the landscape and visual components of the site and the local area were undertaken through desktop study and fieldwork. This identified the main landscape and visual receptors and resulted in a baseline appraisal, against which landscape and visual impacts could be assessed. The main landscape and visual implications of the development and their potential impacts were identified, and mitigation developed to minimise these impacts.

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## *7.10.1 Landscape Impact*

The potential landscape impact would be moderate/substantial due to the loss of part of the existing deciduous woodland and changes to the local character types. Some long term benefit would occur through the proposed planting and mitigation measures and the potential exists to reduce the level of impact with careful implementation of the proposals.

## *7.10.2 Visual Impact*

Visual impact would be greatly limited by the natural landform and significant areas of deciduous and coniferous woodland. Views would mainly occur adjacent to the route or from opposite valley sides. Views adjacent to the route would be mainly affected by visual intrusion from the passing traffic and proposed signage. The sharp bend on the westernmost section of road would cause most impact to the opposite side of the Cwm y Glyn valley, due to its elevation and associated slopes. These impacts would be gradually reduced as the planting which would be carried out to mitigate visual impacts matured.

Note- Paul

The estimate of the corridor width by our landscape architect seems rather excessive. Do you or your engineers have any comments/ suggestions to make with regard to the width of vegetation that would be removed?

## **8.0 ECOLOGY**

### **8.1 Introduction**

This section provides information relating to ecological baseline surveys of the proposed access route, undertaken in 2004 and 2005.

This section presents the results of these further ecological surveys and provides additional assessment of the potential impacts of the proposed access route and their significance together with mitigation offered by the applicant to reduce or avoid those impacts identified, where possible, within the operational requirements of the proposed scheme. This section does not re-assess the significance of ecological effects associated with the extraction of secondary aggregates from Tir Pentwys Cut as these have been adequately assessed in the original ES and in supplementary information presented to Torfaen Borough Council.

### **8.2 Ecological Impact Assessment**

An ecological impact assessment (EcIA) can be considered as having three purposes:

- to provide an objective and transparent assessment of the ecological effects of a proposed development or activity;
- to permit objective and transparent determination of the consequences of the proposals in terms of national, regional and local policies relevant to nature conservation; and
- to demonstrate that a proposed development or activity will meet the legal requirements relating to species and habitats.

In assessing the effects of any such proposal it is necessary to define the spatial and temporal area of study and to focus the assessment upon those features or resources that are of ecological value in the context of that proposal. The scope of this assessment has been determined through the consideration of the possible direct and indirect impacts associated with the proposal by a preliminary assessment of ecological receptors that may be affected.

### **8.3 Application Site Description and Setting**

The revised application site and its setting, together with the development proposals are described in Sections 2 and 3.

### **8.4 Methodology**

The scope of this assessment, collection of baseline data, evaluation of ecological resources, description and assessment of the significance of impacts follows

guidelines set out by the Institute of Ecology and Environmental Management<sup>1</sup> and references therein.

## 8.5 Scoping

A formal scoping response was requested from TBC prior to commencement.

A walk-over survey of the proposed access route was undertaken by an ecologist from SLR Consulting Ltd. in October 2004. This survey was used to inform discussions regarding the scope of proposed ecological survey and assessment. Consultations regarding the ecological scope of this assessment and recommended survey methods were undertaken with Kris Roberts of TBC and Erica Colkett of CCW and included a site meeting in November 2004 and subsequent written<sup>2</sup> and telephone correspondence. Following extensive consultation, the scope of ecological baseline survey and assessments were agreed with these organisations.

Consultation with the above organisations has been undertaken throughout the preparation of this EcIA. Specifically, regarding:

- the scope of ecological surveys and baseline data collection;
- the potential zone of influence of the proposed development;
- the ecological value of species and habitats in a local context; and
- the provision of locally appropriate mitigation, compensation and enhancement measures proposed in this document.

## 8.6 Area of Study

The area of study was initially defined as a 150m wide corridor around the proposed access route. In practice, habitat survey extended to field or habitat boundaries which were crossed by the proposed route. The area of study is shown as the extent of the Phase I habitat survey, as shown on Drawing TPS8/1.

## 8.7 Collection of Baseline Data – Field Survey

The scope and detail of the surveys undertaken for this assessment follow those recommendations made by the former Institute of Environmental Assessment<sup>3</sup>. The methods used for ecological survey are in accordance with those established and generally accepted methodologies for field survey, as published by the IEEM<sup>4</sup>.

Following the scoping exercise; the following groups have been the subject of specialist surveys:

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<sup>1</sup> Institute of Ecology and Environmental Management (May 2005) Guidelines for Ecological Impact Assessment. *Final Draft for Agency Approval*.

<sup>2</sup> *Ecological Scoping Request* Letter to CCW and TBC (16<sup>th</sup> March 2005) Ref: BE/4D/542/002

<sup>3</sup> Institute of Environmental Assessment (1995) *Guidelines for Baseline Ecological Assessment*. E. & F.N. Spons.

<sup>4</sup> Institute of Ecology and Environmental Management (2005) *Guidance on Survey Methodology*. [www.ieem.org.uk](http://www.ieem.org.uk)

- general habitats, i.e. extended Phase I survey;
- detailed botanical survey (Phase II: NVC) for woodland, heathland, acid and circum-neutral grassland habitats;
- bat survey to identify trees with potential to support bat roosts along the preferred access route;
- bat activity survey in habitats with potential to act as foraging or commuting routes for bats;
- dormouse nest tube survey;
- and reptiles.

A description of the survey methods applied for each group is presented below.

### **8.7.1 Habitat Survey**

On 21<sup>st</sup> and 22<sup>nd</sup> June 2005 an ecologist from SLR Consulting Ltd. undertook an extended Phase I survey of the proposed access route. This survey was extended to include an inspection for its potential to support notable, protected or rare species of both flora and fauna. Additional general habitat and species information was also recorded during subsequent site visits between June and October 2005.

The habitat survey was conducted on clear warm days and it is considered that its timing was suitable for assessing the botanical and general faunal interest of the site.

### **8.7.2 Phase II Habitat Survey**

On 21<sup>st</sup>, 22<sup>nd</sup> and 23<sup>rd</sup> June 2005 an ecologist from SLR undertook a botanical survey of areas which were identified as habitats that may qualify as Wildlife Sites under published guidelines: e.g. common land, grassland, heath and woodland habitats identified in the Phase I habitat survey. These habitats are shown on Drawing TPS8/1. The approach used was that of a National Vegetation Classification (NVC) assessment following Rodwell (1991-2000)<sup>5</sup>.

Habitats were surveyed using a series of a minimum of 5 standard sized quadrats within each stand of distinctive vegetation. In accordance with published guidelines (Rodwell, 1991-2000) 2x2m quadrats were used to survey heathland, grassland and woodland understory; 5x5m quadrats were used to survey woodland shrub layer and 10x10m quadrats were used to survey woodland canopy.

The quadrat data from each vegetation stand was then assessed using both a version of Tablefit<sup>6</sup> and cross-referencing to the NVC *British Plant Communities*<sup>5</sup> in order to determine which community of the NVC was most like that of those recorded.

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<sup>5</sup> Rodwell, J.S. (editor) 1991-2000 *British Plant Communities* Cambridge University Press. Volumes 2- Mires and Heaths (1991) and volume 3 - Grassland and Montane Communities (1992) were used.

<sup>6</sup> Computer programme MAVIS Plot Analyser version 1 (2000), available from the Centre for Ecology and Hydrology. [http://www.ceh.ac.uk/products\\_services/software/mavis.htm](http://www.ceh.ac.uk/products_services/software/mavis.htm).

Habitat surveys were undertaken by Bob Edmonds of SLR Consulting.

### **8.7.3 Bat Survey**

The survey comprised a tree check and assessment, evening emergence check, activity survey and assessment of flight lines. The survey was undertaken on 22<sup>nd</sup> and 23<sup>rd</sup> June 2005. Additional evening and dawn emergence and activity survey was undertaken on 7<sup>th</sup> and 8<sup>th</sup> October 2005.

Woodland and hedge lines were assessed for their potential to support roosting bats. Suitable trees within the proposed access route corridor were inspected using binoculars, endoscopes, inspection mirrors and high powered torches for signs of bats such as droppings, scratch marks, urine staining, oily marks, feeding signs and actual encounters with bats.

Evening emergence surveys focused upon mature hedge lines that would be crossed by the proposed access road. Subsequent activity survey followed a transect along the northern woodland edge of Craig Sion Siencyn and selected mature hedge lines. At the junction of the proposed access route and the Old Crumlin Road a transect was walked along the road in both directions, i.e. east - west and west - east along the woodland boundary of Craig Major. The evening session was a check to establish if bats were using the area for roosting foraging and gleaning activities. On each night, two surveyors were positioned around the site to try and locate roosting bats, examine flight lines and locate foraging and feeding areas by walking a set transect.

The surveys were undertaken using specialist equipment such as binoculars, high powered torches, endoscopes, inspection mirrors and both Pettersson heterodyne (D-200) and Pettersson (D-240x) Time Expansion detectors.

The June 2005 surveys were undertaken by a licensed bat worker, Roger Martindale, (CCW licence number OTH:CSAB:21:2005), assisted by Bob Edmonds. Both surveyors are Senior Ecologists and full Members of the Institute of Ecology and Environmental Management. October emergence and activity survey was undertaken by Bob Edmonds and Nick Masters, also of SLR Consulting.

### **8.7.4 Dormouse Survey**

Dormouse has been recorded in similar woodland habitats to those within the study area elsewhere in South Wales. Therefore a survey was designed to identify the presence of this species. Survey comprised checking hazel nuts for evidence of characteristically chewed nuts and placing dormouse nesting tubes in suitable habitats within the woodland and checking them for evidence of dormouse use.

The survey area for dormouse was extended to include all suitable habitats connected to those habitats that are crossed by the route of the proposed access road, i.e. valleyside woodland and hedgerows from Craig Sion Siencyn to Craig Gwent.

Nest tubes comprise a black oblong correx tube that houses a wooden base with an end barrier. This enables the dormouse to enter through the open end and create a nest inside the tube, protected from the elements by the correx tube. The tubes recreate typical holes used naturally in trees by dormice. They are placed approximately 1.0m-2.0m up trees and are then secured in position with plastic or wire ties. Any nests found inside the tubes throughout the monitoring period can then be confirmed or rejected as dormouse by a licensed and experienced ecologist. Dormouse nests are typically woven grasses or shredded bark of honeysuckle (*Lonicera periclyamen*) or green leaves collected from trees made into a ball shape. Other small mammals tend to use fallen brown leaves in a more haphazard manner to construct a nest.

An assessment was also made of the suitability of the woodland habitat surveyed, Craig Major and Craig Sion Siencyn, based on three criteria:

- Interconnectedness of stands of vegetation;
- Species composition in relation to food items; and
- Suitability of potential nest sites.

The survey was undertaken by Roger Martindale (CCW license no.OTH:SRA:04:2005) assisted by Karen Rosier, Project Ecologist at SLR Consulting. The survey comprised a walk-over survey of the woodland and hedgerows checking for field signs of dormouse, e.g. discarded hazel cobs and fruit stones eaten in the distinctive manner characteristic of dormice; presence of woven nests and shredding of honeysuckle.

### **8.7.5 Reptile Survey**

The survey undertaken was based upon guidelines provided by the Herpetofauna Worker's Manual<sup>7</sup> and English Nature (EN) Species Conservation Handbook<sup>8</sup>, following well accepted techniques. Survey methods and techniques follow similar methods to those applied at the application site in 2004 and were agreed with CCW and TBC prior to the start of the survey.

In September 2005, a series of clusters of artificial refugia (~0.5m<sup>2</sup> roofing sheets/felt) were established within the most likely areas for reptile activity within the application site. A total of 80 such refugia were installed in clusters or linear patterns of 3-10 refugia in the vicinity of the proposed access route in areas of suitable habitat. This amounts to between 10-20 refugia/Ha in suitable habitats along the proposed route; and as such far exceeds the suggestion set out by EN guidelines of 3-8 refugia/Ha. Search effort at the site was therefore significantly higher than published recommendations.

Licenses are not required to undertake reptile surveys of those species that are distributed in this region. The survey was undertaken by Nick Masters from SLR

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<sup>7</sup> Herpetofauna's Workers' Manual. Gent and Gibson (1998) JNCC

<sup>8</sup> Species Conservation Handbook. English Nature

Consulting, an ecologist with experience in reptile biology and the survey techniques used.

During the first site visit and all subsequent visits, reptiles were searched for using direct observation, with particular effort made to observe species around the edges of tall/short vegetation or likely basking spots such as piles of stones, old timber and small sheltered pockets of sunlight.

Following installation, the refugia were allowed to 'bed-in' and become more attractive to reptiles for a period of two weeks. The site was then visited in suitable weather conditions a further three times between 22<sup>nd</sup> September and 7<sup>th</sup> October 2005 in the afternoon when refugia were more likely to be used by reptiles.

## **8.8 Amphibian Survey**

Two consecutive nights torch survey were undertaken at a small, man-made pond located approximately 50m from the route of the proposed access road to assess the likelihood of the presence of amphibian species. Surveys were undertaken after dark on the 22<sup>nd</sup> and 23<sup>rd</sup> June 2005. All pond margins were accessible by foot and it is considered that torch survey was a suitable method for assessing the presence of amphibian species. The pond was also netted on the 23<sup>rd</sup> June 2005 to assist with the identification of newts within the pond.

Amphibian survey was undertaken by Bob Edmonds (CCW licence:OTH:SA:65:2005) and Roger Martindale of SLR Consulting.

## **8.9 Constraints to Current Surveys**

Access to the central part of the Craig Major woodland was restricted at the time of survey (June 2005) due to dense and impenetrable woody vegetation and scrub. Therefore, it was not possible to survey the exact line of the proposed route for the possible presence of notable flora or fauna. An assessment of the habitat and the likely presence of notable species along this section of the route has been inferred through survey of adjacent accessible woodland habitats; inspection of habitats using binoculars from the southern side of the valley and aerial photographs.

Low population numbers of dormice may not use or be located in areas covered by the nest tube survey. Also, if sufficient natural holes and fissures are provided in the woodland it may take longer than one season for the tubes to be used or they may not be used at all. Therefore the absence of low populations of dormice can not be ruled out.

Bat survey was undertaken over three nights and one dawn survey throughout the active season. The species observed do not necessarily represent the total number of species present within the study area, but provide guidance as to the potential of the area to support bats and the likely species that are present.

Reptile survey was undertaken over four survey visits and established the presence of two reptile species within the study area. It is likely that these species are more

widely distributed than the survey results suggest, as the survey focussed upon the most suitable habitats for reptiles and was curtailed once the presence of reptiles had been established. The possible presence of other species of reptile should not be ruled out.

## **8.10 Collection of Baseline Data – Background Data and Biological Records**

The area of study of the proposed access route has been established through consultation and a consideration of the type of development proposed. Information relating to sites and species occurring within this area of study has been sought through consultation with CCW and TBC. The Gwent Wildlife Trust has also been contacted to provide specific records and information relating to species and sites surveyed under the Wildlife Sites Project.

Information relating to statutory and non-statutory wildlife sites and on the presence of notable, rare and legally protected species within the vicinity of the proposed access route has been sought from TBC and CCW. Phase I habitat survey of the study area was supplied by TBC in 2003.

## **8.11 Evaluation**

The baseline information obtained has been used in undertaking an assessment of the value of ecological features within the study area. Ecological features are defined as:

- statutorily protected (Natura 2000 sites, SSSI, NNR) or locally designated (e.g. SINC, Wildlife Sites) sites and features;
- sites and features of biodiversity value not designated in this way, e.g. areas listed on published inventory of priority biodiversity habitats (e.g. Ancient Woodland Inventory, lowland grassland inventory) or areas of habitats subject to UK or Local BAP targets; and
- species of biodiversity value or significance, including those protected and controlled by law.

Different criteria have been used to evaluate each type of ecological feature, based upon the IEEM guidelines<sup>1</sup> and the Guidelines for the Selection of Wildlife Sites in South Wales<sup>9</sup>. These criteria are presented in Appendix 8/1.

In addition, an assessment of the socio-economic value of features and species has also been made.

## **8.12 Impact Assessment**

The assessment of ecological impacts follows the process described by the IEEM, which can be summarised as:

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<sup>9</sup> South Wales Wildlife Sites Partnership (2005) Guidelines for the Selection of Wildlife Sites in South Wales

- identification of the range of potential impacts that may arise resulting from the proposed development;
- consideration of the systems and processes in place to avoid, reduce or mitigate the possible effects of these impacts;
- identification of the opportunity for ecological enhancement associated with the proposals;
- assessment of the residual impacts, following consideration of the success of avoidance, mitigation and enhancement measures; and
- where necessary, identification of compensation required to offset any significant residual effects.

As highlighted in the first section of this document, the significance of residual impacts is assessed on three separate levels. These can be summarised as:

- impacts upon biodiversity resources;
- consequences in terms of national and local nature conservation planning policy; and
- legal requirements relating to species and habitats.

### **8.13 Contextual Information-Protected Sites**

The proposed access route crosses a typical South Wales valleys landscape of upland common, extensive pastoral permanent grazing land surrounded by hedgerows and dry stone walls and mature wooded valley sides.

No statutory protected sites (SSSI, NNR, SAC, SPA or Ramsar) have been identified during the consultation process or baseline information collection as being vulnerable to any impacts resulting from the proposed development.

The access route does not cross any sites that have been identified by TBC or GWT as non-statutory protected “Wildlife Sites”. The Wildlife Sites project is still in progress and both TBC and GWT were asked to identify any potential sites within the vicinity of the proposed access route that had been identified through this process and may be designated in the future. No such sites were identified as being within the proposed access route corridor or in its vicinity. Field survey records for potential “Wildlife Sites” surveyed in the vicinity of the proposed access route are appended (Appendix 8/2).

### **8.14 Habitats**

The proposed access route crosses a range of different habitat types. These habitats have been mapped, using the Phase I methodology, shown on a Habitat Map (Drawing TPS8/1). The main habitat types crossed by the route are:

- upland acidic grassland;
- heathland;
- woodland;
- pastoral grassland; and
- disturbed and modified habitats.

A brief description of these habitats is presented below.

### **8.14.1 Upland Acidic Grassland**

Unenclosed, sheep grazed moorland habitats are the main habitat type occurring at elevations above 350mAOD. These grasslands are typified by a short sward dominated by mat-grass (*Nardus stricta*), sheep's fescue (*Festuca ovina*), common bent (*Agrostis capillaris*) with occasional heath bed straw (*Gallium saxatile*), tormentil (*Potentilla erecta*), sheep's sorrel (*Rumex acetosella*) and mosses, including *Polytrichum commune*; *Rydiadelphus squarrosus*, *Hypnum cupressiforme* and *Schleropodium purum*. Occasional tufts and tussocks of soft-rush (*Juncus effuses*), heath-rush (*Juncus squarrosus*) and scattered gorse (*Ulex europaeus*) scrub also occur; with soft-rush locally dominating wetter patches and hollows.

A walkover survey of the common land, undertaken in September 2005, highlighted the presence of a small number of fungi species, including a species of waxcap, tentatively identified as meadow waxcap (*Hygrocybe pratensis*) and a puff ball species, tentatively identified as common earthball (*Scleroderma citrinum*).

The areas adjacent to the road have been preferentially grazed, and therefore constitute a low sward of acidic grassland with the moss *Rydiadelphus squarrosus*, heath bedstraw, occasional mat-grass (*Nardus stricta*), common bent and meadow grass (*Poa pratensis*).

### **8.14.2 Heathland**

Patchy remnants of heathland habitat occurs on the south facing slopes of the upper valley between approximately 300mAOD and 330mAOD. At lower elevations, heathland is encroached upon by secondary birch, hazel and beech woodland spreading from Cwm y Glyn woods and elsewhere historic grazing and agricultural improvements may have led to the conversion of heath to grassland habitats. The remnant patches have a similar structure and composition, being dominated by ling heather (*Calluna vulgaris*) and bilberry (*Vaccinium myrtillus*), with wavy hair grass (*Deschampsia flexuosa*), tormentil frequent and occasional sheep's sorrel and heath bedstraw and rare foxglove (*Digitalis purpurea*). Bracken (*Pteridium aquilinum*)

cover varies between and within heathland patches, from 5% to 70% cover, forming a canopy over dwarf shrubs during the summer. Influence from surrounding habitats is marked, with encroaching oak, beech, hazel, birch and rowan on woodland edges and grasses, such as false oat grass and sweet vernal grass becoming more abundant near to pastures. Heathland habitats are presently unmanaged, although a reasonable structure and age range of dwarf shrubs was observed.

Phase II survey suggests that the heathland habitats are most closely affined with NVC H12 *Calluna vulgaris* – *Vaccinium myrtillus* heathland in mosaic with U2b *Deschampsia flexuosa* grassland *Vaccinium myrtillus* sub-community. These habitat types are fairly widespread at moderate elevations in the west and north of the British Isles.

### 8.14.3 Woodland

An extensive area of mixed broad leaved woodland occurs across the valley sides of Cwm-y-Glyn. This woodland, which is quite variable in character, is bisected by the proposed access route.

Woodland habitats at Craig Shon Shenkin comprise an open canopy of mature beech (*Fagus sylvatica*) plantation and English oak (*Quercus robur*) dominated woodland, with a canopy height of 20-30m. The shrub layer is moderately dense with frequent hawthorn (*Crataegus monogyna*), beech and hazel (*Corylus avellana*). The ground layer is typically sparse; with lop grass (*Holcus mollis*), bramble (*Rubus fruticosus*) and ferns, predominantly broad butler fern and male fern (*Dryopteris sp*; *D. filix-mas*) and occasional patches of bilberry.

This plantation could be described as NVC W12 *Fagus sylvatica* – *Rubus fruticosus* woodland, although this woodland type is not native to the west of the British Isles, beech plantations of this type on base-poor soils fit most closely with this NVC community.

To the east, young secondary woodland with a dense closed canopy at approximately 4m height of silver birch (*Betula pendula*), rowan (*Sorbus aucuparia*), hazel and beech. No shrub layer has clearly developed underneath the canopy and the understory is dominated by bracken, bramble with rosebay willowherb and creeping cinquefoil. Similar structured secondary woodland occurs on the lower slopes of the valley, perhaps in areas of more recent clearance.

In places more recent management, notably hazel coppice, has produced a more varied ground flora, including dog's mercury (*Mercurialis perennis*), herb-Robert (*Geranium robertianum*), wood sorrel (*Oxalis acetosella*), bluebell (*Hyacinthodius non-scripta*), lords-and-ladies (*Arum maculatum*), tufted hair-grass (*Deschampsia cespitosa*), dog-violet (*Viola sp.*), male-fern, ivy (*Hedera helix*), occasional nettle (*Urtica dioica*), wood millet and bramble; with bracken very common in open glades. Bracken-dominated glades are often species-poor, supporting bramble, occasional herb Robert, nettle and dandelion (*Taraxacum* agg.).

Phase II (NVC) survey of the woodland areas indicates that the woodland has the closest affinity with NVC W10 *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland. This is the typical semi-natural woodland type on circum-neutral soils in the British Isles and is very widely distributed. The woodland areas surveyed showed very few characteristics of upland oak woods (NVC W11) or wet woodlands (W1-W7), which are identified as higher conservation priorities in South Wales<sup>9</sup>.

#### **8.14.4 Pastoral Grassland**

The proposed access route crosses fields of agricultural pastoral grassland. These grasslands are not currently grazed and or subject to only light grazing. Typically, the grasslands are moderately species-poor, semi-improved, circum-neutral to slightly acidic permanent pastures. The habitats are dominated by sweet vernal grass (*Anthoxanthum odoratum*), crested dog's tail (*Cynosurus cristatus*), Yorkshire-fog (*Holcus lanatus*), creeping thistle (*Cirsium arvense*), heath bed straw, occasional creeping buttercup (*Ranunculus repens*), white clover, sheep's sorrel (*Rumex acetosella*), bird's-foot trefoil (*Lotus corniculatus*), and common bent (*Agrostis capillaries*).

Phase II (NVC) survey of the grassland habitats indicated that the surveyed stands were transitional between U4b *Festuca ovina-Agrostis capillaris-Galium saxatile* and MG6b *Lolium perenne-Cynosurus cristatus* grassland *Anthoxanthum odoratum* sub-community. This is a typical transitional community from calcifugous, i.e. sandy or acidic, grassland, to mesotrophic grassland as a result of agricultural improvements, such as liming and manuring.

#### **8.14.5 Disturbed and Modified Habitats**

A small man-made pond occurs within the confines of the Tir Shon Shenkin farm, which has been extended and deepened in the past few years. The pond is surrounded by bare ground and scattered ruderal species, e.g. stinging nettle, broad-leaved dock and Yorkshire fog. Disturbed ground surrounds this area, created and maintained in its present state by the action of regular off-road motorbike access. Disturbed trackside field edges support ruderal species such as colt's foot (*Tussilago farfara*), foxglove (*Digitalis purpurea*) and scattered young hawthorn scrub.

A small fly-tip of rubble and household waste occurs on the edge of the common land, outside the proposed access route.

### **8.15 Flora**

No plant species protected under Section 13 of the Wildlife and Countryside Act 1981 (as amended) were observed during the present survey, with the exception of bluebell, which is protected from sale (Section 13(2)) only.

The current survey identified the following species which are typical of semi-natural woodlands and may be indicative of long-established or ancient woodland sites<sup>9</sup>: field

maple, heather, wavy hair grass, bluebell, wood millet, wood sorrel, wych elm and wood melick.

## 8.16 Fauna

A range of native fauna species have been recorded during the present surveys and are discussed in the following section.

### 8.16.1 Bats

#### *Habitat Assessment*

Craig Shon Shenkin and Craig Major comprise broadleaved woodland habitats on a steep, south-facing valley side above the Pontypool to Crumlin road (A472) and the old Crumlin Road, which follow the valley floor. Woodland comprises stands of predominantly broadleaved tree, including beech (*Fagus sylvatica*) silver birch (*Betula pendula*), with occasional sporadic stands of hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*) hazel (*Corylus avellana*), ash (*Fraxinus excelsior*) and bramble (*Rubus fruticosus agg.*). The ground flora was not assessed in detail, although a good mix of species typical of woodland edge, sunny rides and glades were observed.

The woodland contained mature tree species suitable for bats and a matrix of open canopy areas with low covering of bramble and silver birch seeding providing suitable sheltered areas for foraging bat species. The features contained within the woodland for bat species include: rot holes, woodpecker holes, splits, cracked limbs, lifted bark and fractured limbs. Although no obvious signs of bats were evident it is considered that the woodland as a whole provides suitable roosting sites for bats.

The site contains well established over mature hedges lines containing predominantly beech trees. These hedge lines provide connectivity between farmland and broadleaved woodland. The trees within the hedges provide opportunities for roosting bats and exhibit features such as rot holes, woodpecker holes, splits, cracked limbs, lifted bark and fractured limbs which are commonly used by bats.

#### *Results - Session 1*

**TABLE 8/1 – 22ND JUNE 2005 ENVIRONMENTAL DATA TIR SHON SHENKIN FARM- EVENING**

<b>Environmental Variables</b>	<b>Recording and Units</b>
Temperature - Start	20.2°C
Temperature - End	13.8°C
Cloud Cover - Start	0%
Cloud Cover - End	0%
Wind Speed Maximum	0.3 Knots
Wind Speed Average	0.0 Knots
Precipitation	None
Humidity	56%

During the first evening emergence survey of a mature beech hedge line (Target Notes 17) it was confirmed that bats are roosting within this area. A total of four common pipistrelle (*Pipistrellus pipistrellus*) bats were observed emerging from the tree line and entering the woodland on the western side. Bats were only weakly echolocating close to the roosts, although one was recorded feeding when flying towards the woodland.

During this survey it is also considered likely that bats are using features within the woodland as roosting areas. Whilst the location of bat roosts within the woodland cannot be confirmed, three other bat species were recorded close to the woodland edge at their approximate emergence time. The other species recorded included noctule (*Nyctalus noctula*), brown long eared bat (*Plecotus auritus*) and whiskered (*Myotis mystacinus*)/Brandt's bat (*Myotis brandtii*). A single Barbastelle bat (*Barbastella barbastellus*) was observed flying on the woodland edge (Craig Sion Siencyn) but was not recorded on the detector.

Species recorded flying and foraging in and around the broadleaved Craig Sion Siencyn woodland and Tir Shon Shenkin Farm during Session One were:

- Noctule (*Nyctalus noctula*)
- Brown long eared bat (*Plecotus auritus*)
- Common pipistrelle (*Pipistrellus pipistrellus*)
- Whiskered bat (*Myotis mystacinus*)/Brandt's bat (*Myotis brandtii*)
- Barbastelle (*Barbastella barbastellus*) observed flying only not recorded on detector.

## Results - Session 2

**TABLE 8/2 – 23RD JUNE 2005 ENVIRONMENTAL DATA TIR SHON SHENKIN FARM AND THE OLD CRUMLIN ROAD- EVENING**

Environmental Variables	Recording and Units
Temperature - Start	22.7°C
Temperature - End	16.6°C
Cloud Cover - Start	0%
Cloud Cover - End	0%
Wind Speed Maximum	0.1 Knots
Wind Speed Average	0.0 Knots
Precipitation	None
Humidity	49%

The survey had two components:

1. An emergence check along a mature beech hedge line close to the woodland along the proposed access route and;
2. An activity survey of bat usage across the site.

The survey concentrated on the top edge of the woodland close to Tir Shon Shenkin Farm and interconnecting hedge lines and the bottom edge of the woodland along the Old Crumlin Road near the proposed public highway access.

During the emergence check it appeared that two common pipistrelle bats emerged from the hedge line and flew towards the woodland boundary western edge of Craig Sion Siencyn. A subsequent transect followed the northern woodland edge of Craig Sion Siencyn into the western edge of Craig Major before turning northwards along a mature beech hedge line to the motorcycle scramble track to the east of Tir Shon Shenkin Farm. During this transect, brown long eared bats, common pipistrelle, whiskered bat/Brandt's bat were recorded flying and feeding in low numbers. At the pond (TN4, Drawing TPS8/1) in the centre of the scramble track, Daubenton's bats (*Myotis daubentonii*) were consistently recorded and observed by torchlight gaffing over the pond.

Species recorded flying and foraging in and around the broadleaved Craig Sion Siencyn woodland and around Tir Shon Shenkin Farm:

- Noctule (*Nyctalus noctula*)
- Brown long eared bat (*Plecotus auritus*)
- Common pipistrelle (*Pipistrellus pipistrellus*)
- Whiskered bat (*Myotis mystacinus*)/Brandt's bat (*Myotis brandtii*)
- Daubenton's Bat (*Myotis daubentonii*)

A transect was walked along the southern edge of Craig Major broadleaved woodland and involved a west-east and east-west transect along the Old Crumlin Road. Species recorded during this transect were noctule consistently feeding along the woodland edge, whiskered/Brandt's bats in the darker areas and common pipistrelle bats foraging along the woodland edge. Although three species of bat were recorded, only noctule bats provided consistent records along the transect route.

Species recorded flying and foraging in and around the southern section of the broadleaved Craig Major woodland on the Old Crumlin Road.

- Noctule (*Nyctalus noctula*)
- Common pipistrelle (*Pipistrellus pipistrellus*)
- Whiskered bat (*Myotis mystacinus*)/Brandt's bat (*Myotis brandtii*)

*Results - Session 3*

**TABLE 8/3 – 7<sup>TH</sup> OCTOBER 2005 ENVIRONMENTAL DATA TIR SHON SHENKIN FARM AND THE OLD CRUMLIN ROAD- EVENING**

<b>Environmental Variables</b>	<b>Recordings</b>
Temperature	10°C
Cloud Cover	Low cloud 40%
Wind	Light to moderate
Survey start	6pm
Survey finish	8.30pm

**TABLE 8/4 – 8<sup>TH</sup> OCTOBER 2005 ENVIRONMENTAL DATA TIR SHON SHENKIN FARM AND THE OLD CRUMLIN ROAD- DAWN**

<b>Environmental Variables</b>	<b>Recordings</b>
Temperature	10-12°C
Cloud Cover	Light cloud 40%
Wind	Moderate wind
Survey start	6am
Survey finish	7.30am

The third survey session observed bat usage of beech hedgerows in the upper part of Tir Shon Shenkin Farm, initially staking out a suitable hedge line before dusk to observe any emergence and then conducting transects of the farm, observing bat activity, including commuting and foraging. A single common pipistrelle was observed commuting along the tree line towards the farm and past the north side of the barn. It did not appear that the bat had emerged from hedgerows on site. Species observed during activity survey were noctule, common pipistrelle and whiskered/Brandt's bats. Up to four individuals of the latter two species were observed foraging over pig pens below the farmhouse of Tir Shon Shenkin, which were sheltered from the moderate winds on the eastern side by mature beech trees.

*Evaluation of Results*

A total of seven species of bat were recorded during the present surveys. However, due to the size of the study area, it is considered that only a proportion of the potential bat species have been identified during the current surveys.

It is considered that the study area has potential to support an assemblage of bat species throughout the year by providing roosting opportunities for seasonal, permanent, hibernation and maternity sites. The presence and status of roosts within the route of the proposed road corridor, which crosses a number of hedgerow lines and cuts through mature and secondary woodland, would be determined by additional targeted surveys to inform proposed mitigation measures.

Survey suggests that bats roost within beech trees which occur within the route of the proposed access road. In the event that these trees or other trees that support roosting bats, regardless of whether they are present or not, are required to be felled, a Welsh

Assembly licence would be required. Anecdotal reports from the occupier of Tir Shon Shenkin Farm suggest that small numbers of bats may also be present in farm buildings, although these are outside the proposed access route.

In summary, the following three areas surveyed are considered to be of particular importance for bat species:

- Broadleaved woodland Craig Major (mature trees) - potential roosting and foraging areas;
- Broadleaved woodland Craig Sion Siencyn (mature trees) - potential roosting and foraging areas; and
- Mature beech hedge lines - roosting potential.

## 8.16.2 Dormouse

### Habitat Assessment

The survey area, i.e. valleyside woodland and hedgerows from Craig Sion Siencyn to Craig Gwent, scored moderately well for its provision of interconnected stands of suitable vegetation and the species composition in relation to food items and therefore the site has the ability and resources to support dormouse populations. However, historically, it appears that the study area has been isolated from other similar woodland sites which may have limited migration of species such as dormouse.

Table 8/5 provides an assessment of the habitats and resources available within Craig Shon Shenkin – Craig Gwent woodland for dormouse.

**TABLE 8/5 – HABITAT AND RESOURCES FOR DORMOUSE**

Species	Scientific Name	Use by Dormouse	Present?
Hazel	<i>Corylus avellana</i>	Insects, nuts	Y
Oak	<i>Quercus sp.</i>	Insects and possibly flowers	Y
Honeysuckle	<i>Lonicera periclymenon</i>	Bedding material, flowers and berries.	Y
Bramble	<i>Rubus fruticosus agg</i>	Flower, fruits, seeds.	Y
Sycamore	<i>Acer pseudoplatanus</i>	Insects, pollen.	Y
Ash	<i>Fraxinus excelsior</i>	Seeds.	Y
Wayfaring Tree	<i>Viburnum lantana</i>	Fruits, seeds and flowers	N
Yew	<i>Taxus baccata</i>	Fruits but not the seed.	N
Hornbeam	<i>Carpinus betula</i>	Seeds if plentiful.	N
Conifers	<i>Various</i>	Small numbers will provide seeds and insects.	N
Alder	<i>Ulmus glutinosa</i>	Insects	N
Broom	<i>Bromus erectus</i>	Flowers.	N
Goat Willow	<i>Salix caprea</i>	Insects and seeds.	N
Birch	<i>Betula sp.</i>	Seeds if nothing else available.	Y
Sweet chestnut	<i>Castanea sativa</i>	Fruits and flowers.	N
Blackthorn	<i>Prunus spinosa</i>	Only fruits, flowers are too early in the season.	Y
Hawthorn	<i>Crataegus monogyna</i>	Flowers and fruits.	Y
Fruit trees	<i>Various</i>	Pollen and fruits.	N

It should be noted that a negative recording does not mean the species is not present on site, only that it was not found during the walkover assessment.

### *Nest Tube Survey Results*

A total of 50 nest tubes were deployed in suitable locations around interconnecting coppice stools, throughout the woodland in July 2005. The site was then revisited on a monthly basis to monitor the tubes for dormouse habitation. The four subsequent visits showed no evidence of dormice inhabiting the tubes and so provided a negative result – no dormice or evidence of dormice such as feeding remains or nests were observed or recorded during the visits. Although parts of the woodland did show signs of shredding on interconnecting honeysuckle which could point to dormouse activity, nesting birds may also utilise this resource throughout the nesting season. All 50 tubes were returned to their positions after inspection; none showed any evidence of dormice, although four tubes had evidence of wood mouse (*Apodemus sylvaticus*) nesting material and droppings. Dormice do not defecate in their nesting area.

### *Evaluation of Results*

The results of the survey found no current or historical evidence of dormice using the site for living, feeding, sheltering or nesting.

The site although suitable in terms of interconnectivity of stands of vegetation, species composition and potential nesting sites suffers from a number of problems. It appears that in recent history the woodland was more fragmented which may have restricted spread of dormouse into the area, or led to localised extinctions and prevented re-colonisation.

Survey undertaken has not confirmed the presence of dormouse within the study area. However, due to the presence of suitable habitats within the woodlands surveyed, it is recommended that in the event that dormice are encountered during on site clearance work should stop immediately and an appropriately qualified and licensed ecologist should be contacted.

### **8.16.3 Other Mammals**

Deer have been anecdotally reported by the farmer as occasionally passing through the woodlands.

Small rodents, including field vole (*Microtus agrestis*) and a single shrew, likely to be common shrew (*Sorex araneus*), were observed under reptile refugia in tall grass and heathland habitats. Wood mouse (*Apodemus sylvaticus*) was observed using dormouse nest tubes.

Badgers (*Meles meles*) have anecdotally been reported as road kill on the A472<sup>10</sup>, but no evidence of badgers was observed during the present surveys. The farmer reported that he has not seen badgers on his farmland or in the woods for many years and it is unlikely that badgers are resident within the vicinity of the proposed access route.

## 8.16.4 Reptiles

### Habitat Assessment

Phase I Habitat Survey undertaken in June 2005 identified areas of suitable habitat for reptiles. During this survey, a single slow worm (*Anguis fragilis*) was observed on the stone-faced embankment of the Crumlin Road. Specialist survey was subsequently undertaken at the site in September and October 2005 to assess for the presence of other reptile species and populations.

Common land is characterised as heavily sheep-grazed open grass moorland habitat were omitted from the survey. This habitat comprises short grazed grassland and is very exposed with little natural or artificial shelter for reptiles and as such is considered largely unsuitable for them.

Below the Cefn Crib road crossing, the proposed access route crosses permanent pasture and small areas of heathland with areas of disturbed ground and rubble along the edges of informal tracks. Reptile survey was focused in these areas. Bracken and broadleaved woodland habitats are considered to be less suitable for reptiles and search effort was reduced in these habitats.

### Field Survey Results

**TABLE 8/6 - WEATHER CONDITIONS DURING SURVEY**

Survey No.	Survey Date in 2005	Survey Time	Temp (°C) Start - finish	Wind	Cloud Start – finish	Weather Notes
1	5 <sup>th</sup> September	11:00-14:00	17 – 19	Light breeze	100%-100%	Generally overcast
2	22 <sup>nd</sup> September	15:30-19:20	19.5 – 17.0	Light breeze	25%-25%	Largely clear and sunny; wind noticeable in exposed areas
3	5 <sup>th</sup> October	14:45-17:10	13.5 – 13.0	Breeze in exposed areas	100% - 90%	Cloud v light; conditions fairly bright
4	7 <sup>th</sup> October	17:00-18:00	14-12	Light to moderate breeze	100%	Dull and overcast, with a cool breeze.

<sup>10</sup> Kris Roberts, TBC, *pers comm.*

**TABLE 8/7 – REPTILE OBSERVATIONS**

Date in 2005	Time	Species	Position	Activity
23 <sup>rd</sup> June	13:30	<i>Anguis fragilis</i>	Adjacent to road at bottom of site	Hiding in rubble
22 <sup>nd</sup> September	17:05	<i>Anguis fragilis</i>	200m East of mast, beside track	Under rock; it left when disturbed but returned within 45mins.
22 <sup>nd</sup> September	17:45	<i>Lacerta vivipara</i>	10m downhill from eastern mast	Within rubble along wall-line; tail had been lost.
5 <sup>th</sup> October	15:14	<i>Lacerta vivipara</i>	Next to small pile of rocks where slow-worm found on 22/9	Found under refuge

Two species of native reptile were discovered in the current survey; slow-worm and common lizard. Two individuals of each of these species were found, and were all within or adjacent to small rubble piles, probably created during informal track construction on the farm. No other reptile species were found during the present survey. The landowner of Tir Shon Shenkin Farm has previously observed slow worms within his land.

### *Population Size Class Estimate*

A scoring system for categorising the size of reptile populations<sup>11</sup> has been used to estimate the population size of common lizard and slow worm present within the site. This scoring system describes the population as low, good or exceptional, based on “the maximum numbers of animals seen by observation and/or under tins at a density of up to 10/ha, by one person in one day”. This approach has been applied to the results of the surveys undertaken for the proposed access route.

Low numbers of both species were observed, with a max count of one reptile per visit. Using the scoring system outlined above this equates to Low populations of both slow worm and common lizard.

### **8.16.5 Amphibians**

The proposed access route is within 50m of a small, recently excavated man-made pond in the garden of Tir Shon Shenkin Farm. This pond does not support either marginal or aquatic plant species.

<sup>11</sup> Foster, S & Gent, T (1996) *Reptile Survey Methods*: Proceedings of a seminar held on 7th November 1995 at the Zoological Society of London’s Meeting Rooms, Regent’s Park, London. English Nature Science Series No. 27. Cited in Froglife (1999) *Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10. Froglife, Halesworth.

A maximum count of 25 smooth/palmate newts was made on 23<sup>rd</sup> June 2005, following two nights of torch surveys. Five newts were checked in the hand and were identified as palmate newts (*Triturus helveticus*). In addition, a single common frog (*Rana temporaria*) was observed under stones and refugia during the reptile survey.

A total of four torch and bottle trap surveys were undertaken in ponds at the application site<sup>12</sup> in 2004, which is approximately 2km north of the pond in Tir Shon Shenkin Farm. These surveys observed palmate newts, common frog and common toad.

### *Population Size Class Estimate*

Following the scoring system set out in the Herpetofauna Workers' Manual<sup>13</sup> the highest number of a species recorded on any one survey event (e.g. torch survey count or trap survey) is that which is used to assess the population of amphibians. This would suggest that the pond supports a Good population of palmate newts and a Low population of common frog.

### **8.16.6 Birds**

No specific bird surveys have been undertaken along the route of the proposed access road. Anecdotal records of birds were made during other specialist surveys and are presented below. Previous surveys undertaken at the application site in 2004 identified the presence of a number of species on the common land, adjacent to the application site, which is contiguous with the common land within the study area.

Song thrush, swallow, house martin, buzzard and kestrel have all been observed foraging on the common land, in the vicinity of the access route. It is unlikely that these birds would breed in this area. Red grouse, skylark and meadow pipit have also been observed on the common land and these species may breed on the common. Landowner of Tir Shon Shenkin has reported that snipe, lapwing and curlew are also regularly seen on the common land and these three species were recorded in 2004 surveys. It is also possible that typical "farmland" birds such as linnet and bullfinch, which were recorded in 2004, could forage and/or nest within hedgerows and trees in the study area.

A pair of tawny owls was observed on the edge woodland habitats, within 100m of the proposed access route, initially in June 2005 and again in September and October. The male owl was observed making territorial calls in October and it is possible that this pair was breeding on the edge of this woodland.

## **8.17 Ecological Processes and Trends**

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<sup>12</sup> SLR Consulting Ltd (March 2005) *PROPOSED RECLAMATION OF FORMER OPENCAST WORKINGS & RECOVERY OF SECONDARY AGGREGATES, TIR PENTWYS, HAFODYRYNYS Supplementary Ecological Survey and Assessment*. Ref: 4D-542-002

<sup>13</sup> Gent, T. & Gibson, S. (1998). *Herpetofauna Workers' Manual*. Joint Nature Conservation Committee, Peterborough, England.

The route of the proposed access road crosses common land, which is currently managed by sheep grazing. It is unlikely that the management of this area would change in the short or medium-term and there was no evidence of any other trends. The area is considered to be over-grazed at present, which has led to the dominance of grassland sward with mat-grass. A reduction of the grazing pressure may have a positive effect upon the ecological value of this habitat.

Pastoral farmland within Tir Shon Shenkin includes permanent pasture, hedgerows and dry stone walls. In the absence of the proposed route construction, these will continue to be managed in the same way as the current baseline. It is likely that the recent reduction of grazing in pasture would ultimately lead to a reduction of ecological value as rank grass species become more dominant.

Woodland habitats are managed on an ad-hoc basis, with little evidence of recent management in the areas surveyed. There was no evidence to suggest any significant changes to the baseline described, with the exception of the gradual spread of secondary birch and beech woodland into neighbouring grassland and heathland habitats. Old oak and beech pollards are likely to become more susceptible to wind damage in the absence of any arboricultural management or through unplanned woodland clearance.

Heathland habitats are currently unmanaged and are been invaded by bracken and woodland, including birch. In the absence of management to maintain as heathland, it is likely that these habitats would gradually become scrubbed up and revert to secondary woodland.

## 8.18 Geographic Frame of Reference

Recent IEM guidelines suggest that to ensure a consistency of approach, ecological features are valued in accordance with the following scale:

- International;
- UK;
- National (i.e. England, Wales);
- Regional (e.g. South Wales);
- County or Metropolitan (e.g. London, Yorkshire);
- District (or Unitary Authority, City or Borough);
- Local or Parish; and/or
- within immediate zone of influence only.

These categories have been applied to the features identified in base lines surveys described previously. Further explanations of these criteria are provided in IEM (2005)<sup>1</sup> and Appendix 8/3.

Separate valuations are provided for designated sites, non-designated sites and features and species.

## 8.19 Designated Sites

No designated statutory or non-statutory sites have been identified within the corridor of the proposed access route. No designated sites have been identified as potentially vulnerable to any impacts that may result from the construction of the proposed road.

## 8.20 Biodiversity Valuation of Habitats and Features

The biodiversity of habitats and features within the access road area is summarised in Table 8/8.

**TABLE 8/8 - BIODIVERSITY VALUATION OF HABITATS AND FEATURES**

Assessment of Ecological Value – Non Designated Habitats and Features		
Geographic frame of reference	Habitat/Feature at this value	Ecological value
Torfaen County Borough (District)	Woodland habitats between Craig Sion Siencyn and Craig Gwent.	Long-established woodland habitats with varied structure. Includes long-established beech plantation and lowland mixed broadleaved woodland with a number of indicators of ancient woodland habitats.
Torfaen County Borough (District)	Fragmented heathland habitats within Tir Shon Shenkin Farm, target note 10, 11, 12.	Remnant patches of dwarf shrub heath supporting a high percentage cover of ericoid shrubs. Typical lowland heath habitats. Habitats surveyed could meet Wildlife Site selection criteria.
Pontypool area (Local)	Acid grassland on common land, target note 1.	Heavily grazed, semi-improved grassland, typical of NVC U5, a typical upland grazing grassland community.
Pontypool area (Local)	Semi-improved acid-neutral pasture grassland, target notes 12, 9	Relatively species-rich semi-improved transitional grassland, between NVC MG6-U4. Habitats surveyed could meet Wildlife Site selection criteria.
Pontypool area (Local)	Beech hedgerows, throughout Tir Sion Shenkin farmland.	Mature beech trees, previously laid as hedgerows, often associated with dry stone walls as field boundaries. Hedgerows potentially support a nesting bird assemblage, foraging, roosting and navigational resource for bats.

## 8.21 Biodiversity Valuation of Species

The criteria used to determine the biodiversity value of a species or features that may support a species include the following general considerations:

- rarity at a geographical level (international, national or local);
- endemism and locally distinct varieties or sub-species;
- species on the edge of geographic range;

- size of populations in the local geographical context;
- species-rich assemblages of a larger taxonomic grouping, e.g. herpetofauna or wintering birds;
- plant communities, ecosystems or habitat mosaics/associations that provide habitat for any of the above species or assemblages; and
- populations of species considered as significant under the Guidelines for the Selection of Wildlife Sites in South Wales.

**TABLE 8/9 - BIODIVERSITY VALUATION OF SPECIES**

Assessment of Ecological Value – Species		
Geographic frame of reference	Species population/community at this value	Ecological value
Gwent (County)	Bat community assemblage within mature tree and woodland habitats between Craig Sion Siencyn and Craig Gwent and beech hedgerows and pond of Tir Sion Shenkin Farm.	The woodland habitats identified have potential to provide roosting opportunities for seasonal, permanent, hibernation and maternity sites. Species within assemblage include noctule, brown long eared, common pipistrelle, whiskered, Brandt's, Daubenton's and Barbastelle. On the basis of the current information, this assemblage is likely to be significant under the criteria of the Wildlife Site Guidelines.
Torfaen County Borough (District)	Breeding, passage and wintering bird assemblage associated with common land habitats.	Bird species associated with common land habitats include snipe, lapwing, curlew, red grouse and sky lark. Presence of breeding populations of these species on common land may meet the criteria of the Wildlife Site Guidelines.
Torfaen County Borough (District)	Reptile assemblage (slow worm and common lizard) associated with heathland, grassland and rubble piles in Tir Sion Shenkin Farm; slow worm population on roadside embankment of old Crumlin Road.	Reptile populations identified in the current survey do not meet the Wildlife Site Guidelines, although the identified small populations slow worm and common lizard are of nature conservation value at the sub-county level.
Pontypool area (Local)	Amphibian assemblage (palmate newt and common frog) associated with Tir Sion Shenkin Farm pond.	Good population of palmate newts occur in the pond; small numbers of frogs also recorded. The populations identified in the current survey do not currently meet the Wildlife Site Guidelines. Pond habitat likely to become better established and increase in value in the short term (2-5 years) assuming no further disturbance, which may lead to an increase in value in the future.

**TABLE 8/9 - BIODIVERSITY VALUATION OF SPECIES continued**

Assessment of Ecological Value – Species		
Geographic frame of reference	Species population/community at this value	Ecological value
Pontypool area (Local)	Bird assemblage associated with woodland and hedgerow habitats.	These habitats are likely to support bird populations typically found in farmland and woodland habitats, with potential to support species of conservation value. Species identified in the current surveys do not include any designating species listed under the Wildlife Site Guidelines, although the presence of any of these species cannot be ruled out. The assemblage is considered to be of nature conservation value at the sub-county level

## 8.22 Social and Community Value

Common land habitats which are crossed by the proposed route have a local social and community value for the commoners who have rights, including grazing rights, on that land. The land is also likely to be classified as “open access land” under the Countryside and Rights of Way Act 2000, and therefore a right of access may be exercised on this land under certain conditions.

The woodland habitats are privately owned and there is no direct public access to them. A footpath does cross the proposed access route, but this is indistinct on the ground and has a very low usage.

## 8.23 Identification of Features of Ecological Significance

The following features of ecological significance that occur on, or have the potential to be affected by, the construction or operation of the proposed access road have been identified:

- Woodland habitats between Craig Sion Siencyn and Craig Gwent;
- Fragmented heathland habitats within Tir Shon Shenkin Farm;
- Acid grassland on common land;
- Species-rich fields of semi-improved neutral grassland;
- Beech hedgerows;
- Bat assemblage;
- Breeding, passage and wintering bird assemblage associated with common land habitats;
- Slow worm and common lizard populations associated with Tir Sion Shenkin Farm;
- Slow worm population on roadside embankment of old Crumlin Road;
- Palmate newt and common frog populations associated with Tir Sion Shenkin Farm pond;

- Bird assemblage associated with woodland and hedgerow habitats. The following assessment of potential impacts will consider only effects upon these features that have been identified as of ecological significance.

## **8.24 Assessment Methodology**

To assess the effects of a proposed development it is essential that the impacts that could arise are identified and characterised. The range of impacts that require consideration in the ecological impact assessment are based upon knowledge of the proposed development and knowledge of the receptors (features of ecological significance). This can only be undertaken with a thorough understanding of ecological processes and how flora and fauna react to the range of impacts that could occur.

### ***8.24.1 Potential Impacts***

Potential impacts are characterised in terms of their direction, permanence, certainty and reversibility. An assessment is also made of the likely significance of the impact prior to mitigation, and the significance of the residual impact, i.e. after all agreed mitigation is implemented. The degree of confidence in the likely success of mitigation, based upon published studies and the experience of the assessor, is also made and any uncertainties are clearly expressed. This impact assessment is summarized in Table 8/12.

### ***8.24.2 Mitigation, Enhancement and Additional Compensation***

This section provides details of the mitigation measures that have been incorporated into the scheme to offset identified impacts and it also describes those ecological enhancements that have been incorporated into the scheme design.

In addition, where appropriate, further recommendations for additional compensation are also suggested. These measures may reduce the identified impacts further, or provide a higher degree of certainty of an impact being mitigated, but have not been committed to by the applicant and their effects have not been considered in the residual impact assessment.

### ***8.24.3 Assessment of Significance, Legal and Policy Implications***

The final section analyses the magnitude and significance of the residual effects of this scheme following mitigation in terms of their significance from an ecological perspective and also the implications of those effects from a legal and policy perspective.

## 8.25 Characterisation of Potential Impacts

### 8.25.1 Description of the Proposed Scheme

The proposed scheme for access road design and construction has been designed on the basis of a 3.5m wide carriageway with cuttings and embankments to allow for the traverse of the steep wooded slopes of Craig Major. It is only proposed to clear vegetation, including trees, from the minimum width of this working corridor to minimise the possible effects of wind-throw or de-stabilising slopes during construction and operation of the road.

### 8.25.2 Potential Construction Impacts

The following predicted construction impacts have been identified and are discussed in the following section:

- Habitat loss, fragmentation and isolation through land-take;
- Indirect effects upon fauna through habitat loss, fragmentation and isolation;
- Alterations to surface water flow and quality;
- Noise and visual disturbance;
- Pollution;
- Dust; and
- Landscape planting.

### 8.25.3 Potential Operational Impacts

The following predicted operational impacts have been identified and are discussed in the following section:

- Alterations to surface water flow and quality;
- Noise and visual disturbance;
- Pollution; and
- Dust.

### 8.25.4 Characterisation of Potential Impacts

#### *Habitat Loss, Fragmentation and Isolation through Land-Take*

Habitat loss involves the direct destruction or physical take-up of vegetation, or other structures of conservation interest, such as dead wood or bare ground. Habitat loss may also occur as a result of a change in land or water management, for instance the drying-up of ponds or successional events leading to a change in habitat type.

Habitat loss can result in the direct loss of individuals or populations of plant or animal species. It may also cause other populations to become demographically unstable or unsustainable, due to loss of prey species or habitat niches.

The area subjected to habitat loss or disturbance is split into the broad habitat types summarised in Table 8/10.

**TABLE 8/10 – CHARACTERISATION OF HABITAT LOSS**

Habitats	Geographic scale that habitat is valuable at	Area lost (ha)
Woodland (Craig Shon Shenkin – Craig Major).	District	Approximately 1.8 hectares (assuming a 20m wide vegetation clearance corridor)
Common land (Cefn-y-Crib)	District	Approximately 0.6 hectares
Farmland (Tir Shon Shenkin Farm) including neutral grassland, hedgerow and heathland	Parish – District	Approximately 3.9 hectares

Following the construction of the proposed access road, habitats would be fragmented by a road corridor of up to 20m in width. This road corridor may represent a barrier to movement of wildlife, including both flora and fauna.

Fragmentation and isolation of woodland and common land habitats is considered the most likely to lead to significant effects, as these habitats are unfragmented at the current time.

Fragmented and isolated habitats are likely to be more vulnerable to external factors that may have a negative affect upon them; e.g. disturbance, and may be less resilient to change, including climate and management change; than connected habitats because colonising species may be unable to reach the habitat. Due to the complexities of ecological systems, it is not possible to quantify the potential effects that may occur to isolated habitats. The potential effects upon fauna associated with fragmented habitats are considered in the next section.

#### *Indirect Effects upon Fauna through Habitat Loss, Fragmentation and Isolation*

The loss of 6.3ha of the existing semi-natural and man-modified habitat resource within the route of the proposed access road would result in an overall reduction in the species carrying capacity of the site and is likely to have an effect upon the movement of those species remaining. It is therefore likely that the loss of feeding, breeding and cover habitat would have a negative effect upon the numbers and diversity of animal species currently associated with the study area.

It is difficult to quantify the effects of habitat loss and fragmentation in terms of species loss. However, on the basis of current data the loss of habitat is potentially significant for those species associated with woodland, upland acidic and neutral grassland and heathland habitats. This could include populations of bats, reptiles, birds and amphibian species.

The loss and/or disturbance of approximately 6.3 ha of the existing semi-natural habitats would be likely to have a direct effect on the ecological habitat resource of

the study area and would have an indirect effect upon the faunal species these and surrounding habitats support.

### *Alterations to Surface Water Flow and Quality*

In the absence of the mitigation measures described in Section 6, impacts relating to changes to surface water flow and quality could have an effect upon woodland, acidic grassland and heathland habitats, identified as ecological receptors of District importance. However, the mitigation measures described in Section 6 would prevent these impacts.

### *Noise and Visual Disturbance*

Increased levels of noise during construction and traffic during operation have the potential to have a negative effect on the existing wildlife value of the site. This is likely to be most significant for disturbance to sensitive species, notably birds and bats.

Some species of bird are likely to be more vulnerable to noise and visual disturbance than others. For example, an analysis of the responses of certain bird species to disturbance found that a passive, low-level and continuous disturbance is likely to lead to habituation and active, high level and continuous disturbance is likely to lead to the displacement of many bird species from the disturbed area, leaving only very tolerant species (Hill et al., 1997).

During construction, birds will be most sensitive to noise and habitat destruction (scrub and rank grassland) during the breeding season (1st March-31st August inclusive). However, for birds that continue to breed in habitats that remain un-cleared, it is likely that many species would habituate to most construction activity. The construction of the road would only be undertaken during daylight hours and no permanent artificial lighting is proposed for the road. Therefore visual and noise disturbance would be limited would daytime disturbance.

Post-construction, it is possible that the density of breeding birds may be reduced in the immediate vicinity of the road corridor, as a result of noise disturbance in combination with other effects, e.g. habitat change. Research undertaken on Dutch roads<sup>14</sup> suggests that traffic noise disturbance could be a major factor in the observed reduction of breeding bird density, although the authors highlight pollution and habitat change as other, potentially contributory, factors.

No lighting scheme is proposed for the existing road or proposed private sections. However some visual disturbance would be caused by the use of traffic lights and an increase in the volume of traffic of vehicles using headlights. This would be

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<sup>14</sup> Reijnen, Rien; Foppen, Ruud; Ter Braak, Cajo; Thissen, Johan. 1995. *The effects of car traffic on breeding bird populations in woodland: III. Reduction of density in relation to the proximity of main roads*. Journal of Applied Ecology 32: 187-202.

particularly applicable to the winter period when shorter daylight hours would result in working during periods of darkness.

For other fauna, direct and indirect disturbance, e.g. through noise, vibration and artificial lighting may also occur during construction and operation. The increase in traffic usage of the site would increase the potential risk of road-kill of fauna, including foxes, bats, birds and reptiles. Faunal species can be particularly susceptible to road kill where a road crosses traditional foraging or migratory routes.

Disturbance during operation and construction could have a negative effect upon ecological receptors of County to Parish importance.

The creation of a new corridor along the new road may potentially have a positive effect upon commuting and migratory species and may provide additional foraging opportunities.

### *Pollution*

During construction, there is potential that stored materials, plant and construction-associated transport could lead to an increased risk of accidental pollution events, which could have an effect upon habitats and species. During operation, there is a very small risk of accidental pollution, e.g. fuel spill or loss of load resulting from a traffic collision on the proposed road. Impacts relating to pollution could have an effect upon woodland, acidic grassland and heathland habitats, identified as ecological receptors of District importance.

### *Dust*

Dust is most likely to be generated when areas of vegetation are removed to expose soils and these soils are stripped and handled. The movement of vehicles transporting minerals from the reclamation site may also generate dust during operation. Impacts relating to dust deposition could have a negative effect upon woodland, heathland and acidic grassland habitats; identified as ecological receptors of District importance.

### *Landscape Planting*

To reduce the potential impacts of the proposed road particularly in its upper valley section, it is proposed that a series of new beech hedgerows and an extension to the existing woodland would be created as illustrated in Drawing TPS 3/4.

This would include a significant area of woodland planting adjacent to the western-most section of private road. The planting would extend the area of existing native woodland up the valley slope and enclose the tight curve at the western most section of the road. The woodland would be extended out to existing field boundaries or new beech hedgerows planted along its edge to form new field boundaries where required. Additional areas of native broad leaved woodland up to 5 hectares would also be planted.

Similar hedgerow and woodland planting would be carried out to sections of the proposed access route adjacent to Cefn-crib Road to re-enforce existing vegetation and replace vegetation lost during the road construction.

Woodland topsoil from the construction corridor would be used in new planting areas where possible. This has the potential to allow the regeneration of woodland flora, fungi and lower plants that may exist in as propagules in the soil. Retaining woodland topsoil for use in new woodland areas may also reduce the possible effects upon woodland micro-fauna.

### 8.25.5 Initial Impact Assessment and Mitigation

Table 8/11 provides a summary of how the activities identified above are predicted to have an impact upon the features of ecological significance. Impacts are characterised under the following headings:

**TABLE 8/11 - KEY TO CHARACTERISATION OF IMPACTS**

<b>Descriptor</b>	<b>Definition<sup>15</sup></b>
Direction of impact	Positive or negative impact
Probability of occurring	Broadly defined on 3 levels: Certain, Probable or Unlikely
Complexity	Direct, Indirect or Cumulative
Extent and Context	Area/number effected and % of total
Magnitude	Describe severity of effect in words
Duration	Permanent or Temporary in ecological terms (e.g. within the lifetime of the species effected)
Reversibility	Whether or not the effect can be reversed in an ecological timescale
Confidence	Confidence is measured as a percentage where based directly upon scientific data. Otherwise expressed as high, medium or low, based upon the view of the assessor.
Area	Expressed as area or percentage of the study area, i.e. the area shown on TPA 1.

<sup>15</sup> Definitions for these terms and further information relating the methods of assessment are given in Guidelines for Ecological Impact Assessment (IEEM, 2005)

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TABLE 8/12 – SUMMARY TABLE OF INITIAL IMPACT ASSESSMENT AND MITIGATION

Characterisation of Important Ecological Feature	Description of Potential Impact	Characterisation of Impact	Ecological Significance of Impact if unmitigated	Mitigation Compensation and Degree of Certainty of Success	Residual Impact following Mitigation and Significance
<p><b>Woodland habitats between Craig Sion Siencyn and Craig Gwent.</b> District value Extensive habitat supporting ancient woodland indicator species, bat and breeding bird populations</p>	<p>Clearance of 20m wide vegetation corridor through woodland. Total area 1.8 hectares. Habitat loss, fragmentation, and disturbance during construction and operation</p>	<p>Negative Certain Direct 5% of connected woodland area lost Remaining woodland fragmented into 2 parts Not reversible Permanent</p>	<p>Significant at District Level Confidence level – Medium Majority (90%) of habitat remains undisturbed but habitats fragmented into 2 parts</p>	<p>Replanting with suitable species, introducing a long-term biodiversity-led management programme to remaining woodland habitats. Creation of small areas of woodland plantation outside current areas.  Medium certainty</p>	<p>Significant at District level</p>
<p><b>Fragranted heathland habitats within Tir Shon Shenkin Farm</b> District value Small areas of dwarf shrub heath dominated habitat (approx 200m<sup>2</sup>), supports reptile and small mammal populations</p>	<p>Clearance of 20m wide vegetation corridor through heathland total approx 50m<sup>2</sup>, habitat loss, fragmentation, disturbance of reptile and small mammal populations</p>	<p>Negative Certain Direct 15% total adjacent heathland area lost Remaining heathland fragmented Not reversible Permanent</p>	<p>Significant at District Level Confidence level – Medium-High Significant area of heathland habitats lost, remaining areas fragmented.</p>	<p>Removing and translocating heathland turfs to nearby suitable locations Introducing management to maintain and enhance area of heathland  Low certainty</p>	<p>Significant at District level</p>
<p><b>Acid grassland habitats on common land</b> District value Extensive area of semi-upland acidic grassland, supporting wintering, passage and breeding bird assemblage and fungi species, including meadow waxcap.</p>	<p>Clearance of 20m wide vegetation corridor – 0.6 hectares. Habitat loss, fragmentation, smaller fragment may be more susceptible to disturbance. Operational construction and disturbance of bird</p>	<p>Negative Certain Direct &lt;1% total habitat area lost Remaining habitat split into 2 fragments Not reversible Permanent</p>	<p>Not significant at District Level Confidence level – Medium Small area of habitat lost, small fragment may be more susceptible to disturbance</p>	<p>Recreating acidic grassland on cleared habitats through replacement of topsoil and re-seeding.  Medium certainty</p>	<p>Not significant</p>



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Characterisation of Important Ecological Feature	Description of Potential Impact	Characterisation of Impact	Ecological Significance of Impact if unmitigated	Mitigation Compensation and Degree of Certainty of Success	Residual Impact following Mitigation and Significance
<p><b>Neutral grassland within Tir Shon Shenkin Farm</b></p> <p>District value</p> <p>Relatively species-rich semi-improved neutral grassland, typical of NVC MG5. Habitats surveyed could meet Wildlife Site selection criteria.</p>	<p>Clearance of 20m wide vegetation corridor (approx 1 hectare). Habitat fragmentation and loss, Landscape planting woodland may alter habitat in long-term.</p>	<p>Negative</p> <p>Certain</p> <p>Direct</p> <p>5% total habitat area lost</p> <p>Not reversible</p> <p>Permanent</p>	<p>Not significant at District Level</p> <p>Confidence level – Medium</p> <p>Small area of habitat lost, small fragment may be susceptible to disturbance</p>	<p>Re-seed cleared vegetation corridor with species-rich native meadow grassland</p> <p>Medium certainty</p>	<p>Not significant</p>
<p><b>Beech hedgerows within Tir Shon Shenkin Farm</b></p> <p>Parish value</p> <p>Hedgerows potentially support a nesting bird assemblage, foraging, roosting and navigational resource for bats</p>	<p>Loss of individual trees, estimated between 10-30 mature trees</p>	<p>Negative</p> <p>Uncertain</p> <p>Direct</p> <p>5 – 10% total habitat area on farm lost</p> <p>Not reversible</p> <p>Permanent</p>	<p>Not significant at Parish Level</p> <p>Confidence level – Low</p> <p>Small area of habitat lost</p>	<p>Re-plant beech hedgerows where appropriate to replace those removed</p> <p>Medium certainty</p>	<p>Not significant</p>
<p><b>Bat assemblage</b></p> <p>County value</p> <p>All bats are protected under the provisions of Section 9 (pt 1-5) of WCA 1981 and Habitat Regulations 1994</p> <p>Species within assemblage include noctule, brown long eared, common pipistrelle, whiskered, Brandt's, Daubenton's and Barbastelle. Bat species roost, forage and commute through the study area.</p>	<p>Site clearance leading to loss of foraging, commuting and possible roosting sites</p> <p>Construction and operation disturbance, habitat loss and fragmentation.</p> <p>Creation of new corridor as potential foraging and navigational resource (+ve)</p>	<p>Negative (minor Positive)</p> <p>Uncertain</p> <p>Direct and Indirect</p> <p>10% of woodland area, 5-10% of beech hedgerows</p> <p>Not reversible</p> <p>Permanent</p>	<p>Significant at County Level</p> <p>Confidence Level – Low</p> <p>Detailed design and further survey required to reduce impacts, particularly with respect to foraging and flight lines</p>	<p>Further survey recommended to inform mitigation and ensure compliance with WCA 1981 and Habitat Regulations 1994. Majority of habitat unaffected, replacement habitat created on a like-for-like basis. Scheme implemented under Welsh Assembly Licence through consultation with CCW.</p> <p>Medium-Low certainty</p>	<p>Impacts upon roosts - Not significant</p> <p>Impacts upon foraging and flight lines – Not significant (Low certainty)</p>

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Characterisation of Important Ecological Feature	Description of Potential Impact	Characterisation of Impact	Ecological Significance of Impact if unmitigated	Mitigation and Compensation Proposals and Degree of Certainty of Success	Residual Impact following Mitigation and Significance
<p><b>Breeding, passage and wintering bird assemblage associated with common land habitats</b> District value Protected whilst breeding under Section 1 WCA 1981 Bird species associated with common land habitats include snipe, lapwing, curlew, red grouse and sky lark</p>	<p>Clearance of 20m wide vegetation corridor, total 0.6 hectare. Loss of potential breeding and foraging habitat, disturbance</p>	<p>Negative Uncertain Direct and Indirect &lt;1% of habitat Not reversible Permanent</p>	<p>Not significant at District Level – Confidence Level – High</p>	<p>Avoidance of habitat disturbance during breeding season (March-August inclusive) Recreate acidic grassland on cleared habitats through replacement of topsoil and re-seeding. High certainty</p>	<p>Not Significant</p>
<p><b>Slow worm population on roadside embankment of old Crumlin Road</b> District value Protected from killing and injury under Section 5 (pt 1, 5) of WCA 1981 Small population slow worm</p>	<p>Clearance of vegetation corridor and visibility splay. Loss and fragmentation of habitat, potential for killing and injury of animals</p>	<p>Negative Certain Direct and Indirect 20% of habitat Partially reversible Permanent</p>	<p>Significant at District Level – Confidence Level – High</p>	<p>Implement a mitigation scheme designed according to best practice guidelines to avoid harm to reptiles, including translocation. Re-create slow worm habitats in cleared areas around road bell mouth and visibility splay and manage to maximise reptile value. Medium certainty</p>	<p>Not Significant</p>
<p><b>Slow worm and common lizard populations associated with Tir Sion Shenkin Farm</b> District value Protected from killing and injury under Section 5 (pt 1, 5) of WCA 1981 Small populations slow worm and common lizard</p>	<p>Clearance of vegetation corridor through heathland and grassland. Loss and fragmentation of habitat, potential for killing and injury of animals</p>	<p>Negative Certain Direct and Indirect 10% of habitat lost Partially reversible Permanent</p>	<p>Significant at District Level – Confidence Level – High</p>	<p>Implement a mitigation scheme designed according to best practice guidelines to avoid harm to reptiles, including translocation. Re-create reptile habitats and manage to maximise reptile value Medium certainty</p>	<p>Not Significant</p>

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Characterisation of Important Ecological Feature	Description of Potential Impact	Characterisation of Impact	Ecological Significance of Impact if unmitigated	Mitigation proposals and degree of certainty of success	Residual Impact and Significance
<p><b>Palmate newt and common frog populations associated with Tir Sion Shenkin Farm pond</b></p> <p>Parish value Protected from sale under Section 5 (pt 5) WCA 1981. Good population of palmate newts and a Low population of common frog</p>	<p>Loss and fragmentation of terrestrial foraging habitat, Pollution, dust and noise and visual disturbance during operation.</p>	<p>Negative Certain Indirect &lt;10% of terrestrial habitat lost; no loss of aquatic habitat Partially reversible Permanent</p>	<p>Not significant at Parish Level Confidence Level – High</p>	<p>Create new amphibian terrestrial habitats manage to maximise value High certainty</p>	<p>Not Significant</p>
<p><b>Breeding bird assemblage associated with woodland</b></p> <p>Parish value Protected whilst breeding by WCA 1981 Existing habitat supports breeding and feeding habitat for a range of wild birds.</p>	<p>Clearance of 20m wide vegetation corridor through woodland. Total area 1.8 hectares. Habitat loss, fragmentation, and disturbance during construction and operation.</p>	<p>Negative Certain Direct and Indirect 5% of habitat lost, other areas fragmented Not reversible Permanent</p>	<p>Significant at Parish level if habitat clearance undertaken during breeding season Confidence Level - High</p>	<p>Removal of breeding habitat outside breeding season Mitigation planting of scrub and trees within development High certainty</p>	<p>Not significant</p>

## **8.25.6 Summary of Initial Impact Assessment**

In summary, the initial impact assessment shows that the loss and fragmentation of woodland and heathland habitats between Craig Shon Shenkin and Craig Gwent would represent a significant residual impact upon an ecological feature of up to District value.

Habitat fragmentation and operational disturbance associated with traffic on the proposed road may lead to further indirect impacts upon fauna populations, notably bats, especially if the road route crosses existing foraging or flight lines. Mitigation measures to reduce these impacts have been outlined, but there is low confidence that these measures would reduce the negative effects to not significant levels.

There is a medium to high level of certainty that the other impacts upon important ecological features identified could be effectively mitigated by the measures proposed. Further details of the mitigation measures proposed are provided below.

## **8.26 Mitigation Measures**

The following sections provide a summary of the mechanisms proposed to implement mitigation measures outlined in earlier sections of this report. It is recommended that the suggested approaches to mitigation outlined here are discussed agreed with the TBC and CCW prior to their implementation.

### **8.26.1 Woodland Habitats between Craig Sion Siencyn and Craig Gwent**

Landscape proposals include outline recommendations to replant the road corridor cleared of vegetation following the construction of the roadway. In addition, it is proposed to plant a further 5 hectares of native mixed broad leaved woodland within the vicinity of the proposed access road to create a connected wooded landscape of copses, hedgerows and trees. A mix of locally appropriate woodland edge and scrub species would be included in the planting mix, including a locally-appropriate species-rich mix of woodland glade flora. Where available, planting stock would be of local, i.e. South Wales, provenance. Woodland topsoil from the construction corridor would be used to in new woodland planting areas.

A management and maintenance scheme would be implemented to ensure that these habitats establish and are maintained to maximise their biodiversity value.

### **8.26.2 Fragmented Heathland Habitats within Tir Shon Shenkin Farm**

Fragmented remnant heathland habitats that occur within the vegetation clearance corridor would be lifted in turfs and directly placed onto pre-prepared soils in receptor sites, which are to be located in adjacent areas. Receptor sites would be selected that have a similar aspect and soil profiles of the donor area. Where possible, previously disturbed areas of heathland habitat would be selected as donor areas to extend and increase the continuity of current habitats.

A long-term management plan would be prepared to ensure the maintenance of heathland areas in favourable condition. Management is likely to include the selected cutting of heathland to create a mosaic of heather of different ages. If possible, brashings from the cutting would be spread onto adjacent grassland following ripping to create a suitable seedbed. This would encourage the spread of heathland into surrounding habitats.

### ***8.26.3 Restoration of Grassland Habitats Disturbed by Earthworks***

Where possible, turfs and/or topsoil of species-rich grassland would be identified prior to the start of earthworks and the top 10cm of the soil profile would be stored in nearby areas during the construction works. Following construction, removed turfs/topsoil would be replaced in a patchwork arrangement on a prepared soil surface. If necessary, to prevent silt-laden runoff or slope instability, slopes would also be re-seeded with a nurse grass of bents and fescues, sown at a low rate. A nurse grass would allow natural colonisation of species from translocated turfs.

In areas where translocated turfs are not available, species-rich native grassland seed or green hay of local provenance would be sought as an alternative. Neighbouring fields may be able to provide a suitable local source of green hay.

### ***8.26.4 Beech Hedgerows within Tir Shon Shenkin Farm***

As part of landscaping proposals, beech hedgerows would be replanted to replace those removed as part of the vegetation clearance. Existing hedgerows and tree lines of beech would also be enhanced through new planting to recreate missing or gappy hedgelines throughout Tir Shon Shenkin Farm.

### ***8.26.5 Bats***

A strategy to minimise disturbance and provide adequate mitigation to bats and their habitats during the proposed development has been devised. The main elements of this strategy are:

- Where possible, avoid development disturbance to known or potential bat roosts.
- Ensure that any disturbance of roosts is carried out under a Welsh Assembly licence and that the timing of disturbance is the most appropriate time to minimise disruption to bats.
- Where the loss of a roost is unavoidable, mitigate for the loss of existing roosts by creation of a roost providing a minimum of the equivalent replacement habitat.
- Create a local landscape that provides linked woodland and scrub habitats as flight lines for bats.
- Provide detailed survey information on activity and use of the roosts scheduled for demolition prior to application of Welsh Assembly licence.

- Where possible, provide habitat enhancements for bats through the provision of bat boxes on trees, wetland and aquatic habitat, trees, shrubs and woodland edge habitat.
- Monitor bat populations on the site, especially any artificial roosts that are created, to inform management decisions and to adhere to monitoring provisions of a Welsh Assembly licence.

A specifically designed mitigation scheme for bats would be designed in consultation with CCW and TBC. This scheme is likely to include the provision of new roosting areas to replace those roosts that may be removed and would also seek to enhance roosting and foraging opportunities for local bat populations. Surrounding vegetation would be managed and enhanced through a detailed management plan to ensure that the local bat population is maintained in favourable conservation status in the long term. Welsh Assembly will require a detailed method statement to be submitted outlining the proposed mitigation scheme to ensure the favourable conservation status of bats in this area.

### **8.26.6 *Breeding Birds***

Where existing trees and hedgerows are located within the vegetation clearance corridor, pending their removal, they will not receive any further arboricultural maintenance prior to clearance. Where possible, these trees would be removed outside of bird nesting season, i.e. beginning of March to end of August inclusive, immediately prior to earthworks operations. Hedgerows and trees would only be removed where required for earthworks or to ensure the stability of remodeled slopes.

If necessary, any clearance of trees or hedgerows within Bird Nesting Season should only be undertaken following a check for nesting birds by a suitably qualified Ecologist, immediately prior to clearance. Where feasible, any nests currently in use by breeding birds that are found would be left until such time as the birds have finished nesting in that location.

Clearance of rough grassland and moorland habitat would only be undertaken during the Bird Breeding Season following a check for the presence of ground nesting birds. Where possible, these habitats would be cleared of suitable nesting habitat, e.g. long grass and patches of rushes, prior to the start of the Bird Nesting Season to limit their attractiveness to breeding birds.

### **8.26.7 *Reptiles and Amphibians***

A two-point strategy for reptile mitigation is proposed below. Each different level of mitigation will be implemented where the relevant criteria have been met.

1. Precautionary mitigation for potential reptile habitats;
2. Mitigation for small/moderate populations of common UK reptiles;

In addition, brief notes relating to the management and enhancement of existing or created habitats are provided. Whilst not directly targeted by the proposed mitigation methodology, this mitigation is also appropriate for amphibians in terrestrial habitats. It is recommended that the suggested approaches to mitigation are discussed agreed with the TBC and CCW prior to their implementation.

### *Precautionary mitigation for potential reptile habitats*

In principle, the precautionary mitigation approach involves the clearance and modification of vegetation to make it unsuitable habitat for reptiles. This approach would be used where the present survey has not shown that reptiles are present, but that the habitats are still deemed to be suitable for reptiles.

Initially, the vegetation to be cleared would be walked through, observing for signs or evidence of reptiles. For small areas, up to 100m<sup>2</sup>, the vegetation would be cut by brushcutter to a height of 5cm or lower, without disturbing the soil surface. Where larger areas are proposed to be cleared, a tractor-mounted mower could be used following an initial check of the habitats to be mown.

This method would make these habitats unsuitable for reptiles moving through and would encourage any reptiles that may be present within this area to move into surrounding habitats that are undisturbed.

In the event that any reptiles or other protected species are found during these operations then a suitably qualified ecologist should be contacted.

It is proposed to use this approach for areas of potentially suitable reptile habitat within the proposed access route where survey has not confirmed the presence of reptiles. Vegetation within these habitats would be cleared during winter, to minimise potential disturbance to reptiles and breeding birds.

### *Mitigation for Small to Moderate Populations of Reptiles*

Where survey has identified small to moderate populations of reptiles then it is proposed to combine the above approach of habitat modification with targeted translocation of reptiles using artificial refuges or “tins”.

A series of clusters of artificial refuges would be laid out in suitable habitats within the area to be cleared; these refuges would be arranged in small grids of 6-10 refuges, with a target density of a minimum 100 refuges/Ha. There will be a space of approximately two weeks before the following visits take place in order to allow the refuges to ‘bed-in’ and become more attractive to reptiles. The site would then be visited, in suitable weather conditions, until no reptiles have been captured or observed for five visits.

During each successive visit approximately 20% of the area to be cleared would be selectively strimmed following an initial hand-search for reptiles and a check of all

artificial refuges. Any reptiles or amphibians discovered using refuges would be moved to suitable unconnected reptile donor habitats. The progressive strimming would encourage any reptiles that may be present in the area into surrounding undisturbed areas. Strimming will also reduce the habitat area suitable for reptiles and increase the chances of finding individuals under artificial refuges. During each visit, a destructive search of any suitable natural refuges and features such as brick and wood piles would also be made; if possible, these would then be made unsuitable for reptiles.

Where possible, donor sites would be completely unconnected to habitats which are being disturbed. If this is not possible, sections of reptile-proof fencing may be employed to reduce the risks of reptiles returning to cleared areas.

## 8.27 Proposed Enhancement Measures

Due to the nature of the proposed scheme and the mitigation measures already incorporated into the scheme, no additional ecological enhancements are proposed as part of this proposal for an access route to the Tir Pentwys reclamation site. However, ecological enhancements are proposed as part of the operation and restoration of the proposed reclamation and recycling activity at Tir Pentwys.

The restoration scheme for the proposed reclamation activity at Tir Pentwys Cut aims to progressively re-create a series of locally appropriate habitats throughout the site as phases of extraction come to completion. Table 8/13 shows the habitats that would be re-created and indicates whether any national or local Torfaen BAP targets are likely to benefit from the scheme.

**TABLE 8/13 - RESTORATION HABITATS**

Habitat Types	Community types (where applicable) and location.	BAP habitat targets	Possible BAP species that may benefit from restoration
Acidic grassland.	Throughout site. Target community NVC U4 <i>Festuca ovina</i> – <i>Gallium saxatile</i> grassland		buzzard (L), kestrel (L), lapwing (L), skylark (UKP), brown hare (UKP)
Upland heather moor	Restored hilltops and valley sides, above 370m. Target community NVC H12 <i>Calluna vulgaris</i> – <i>Vaccinium myrtillus</i> heath.	Upland heath (UKP)	buzzard (L), peregrine (L), common lizard (L)
Bryophyte-dominated flush and springs	Restored plant stocking area and retained quarry faces in NE and the western cut.		
Acidic marshy grassland and mire	Topographic hollows created within restored plant stocking area		amphibians (L)

Table 8/13 cont

Ponds	Ephemeral and permanent pools re-created in plant site and retained outside working area.	Standing open water and canals (UKB)	amphibians (L)
Upland streams	Restored stream through working area	Rivers and streams (UKB)	bats (L, UKP), dipper (L),
Upland oak/birch woodland	Oak – birch woodland planted on site boundaries and within plant stocking area. Target community NVC W16 <i>Quercus - Betula pendula</i> woodland	Upland oakwood (UKP)	bats (L, UKP), lesser spotted woodpecker (L), green woodpecker (L),
Scrub and hedgerows	Planted on woodland edges and as boundaries to grassland areas	Scrub (L)	bats (L, UKP), farmland birds (L)
Sandstone cliffs	Retained quarry faces in NE end of the eastern cut and western cut.	Quarries (L)	

KEY: UKP – UK BAP priority habitat or species

UKB – UK BAP broad habitat

L – Torfaen local BAP species or habitat

## 8.28 Policy Implications

The Local Plan for the County Borough of Torfaen (Adopted July 2000) contains a number of nature conservation policies relevant to the proposed access route. General Policy G1 B (v) states that a development proposal will be permitted insofar as it “does not result in the unacceptable loss of, or damage to, areas identified as being of special nature conservation importance.”

The proposals do not have an effect upon any statutory or non-statutory designated sites for nature conservation (Policy E6 and E7). Woodland, heathland and acidic grassland (common land) habitats may meet the criteria for the selection of non-statutory sites of nature conservation importance, and therefore the criteria of Policy E7 are considered in greater depth.

Policy E7 states that “Proposals for development on non-statutory sites of wildlife...importance will only be permitted where they satisfy all of the following criteria:

*A Proposals shall preserve as far as possible the site’s conservation value*

*B Wherever possible, proposals shall provide replacement habitats or features where damage is unavoidable.”* In this instance, the proposals minimise the disturbance to woodland, heathland and acidic grassland habitats, and, where possible, re-create new areas of these habitats. These measures would ensure that the criteria of this policy are met.

Policy E8 states: “Proposals for development in areas not formally designated as being of nature conservation importance will only be permitted where they satisfy all of the following criteria” These criteria include trees, hedgerows, wetland habitats, watercourses, geological features and other important natural features or habitats, and state that these are retained “as far as is reasonably practicable and are protected during any construction periods” It is also stated that “appropriate native species” should be used in landscape schemes and that, where features of interest are inevitably lost as a requirement of development, compensatory provision should be made as part of the proposal.

The proposed scheme for the access road involves the necessary loss of areas of woodland, heathland, hedgerows, trees, neutral and acidic grassland habitats. Removal of mature trees and hedgerows would be limited to the minimum required to safely construct the proposed access route. Woodland would be replanted to replace cleared vegetation and new areas of woodland recreated. Fragmented heathland habitats would be translocated to suitable nearby areas and suitable management implemented. Proposals for the restoration of Tir Pentwys Cut include the creation of acidic grassland, woodland, heathland and ponds which would partially compensate for the loss and fragmentation of habitats which would occur as a result of the construction of the proposed access road.

Technical Advice Note 5 (TAN 5) Nature Conservation and Planning<sup>16</sup> provides countrywide planning policy guidance with respect to nature conservation. TAN 5 highlights legal protection for statutory and non-statutory designated sites and certain species. Where appropriate to this development, an explanation of this protection is outlined below.

In addition, TAN 5 states: “Much common land is important ecologically. The Secretary of State is committed to maintaining the status of common land, protecting the rights of commoners and encouraging the proper management of commons. The placing of buildings, fencing or works on Common Land normally require the consent of the Secretary of State, or may be prohibited under common land legislation.”

The proposed access route crosses an area of common land, removing or disturbing approximately 1 hectare of common land. No fencing or lighting are included in this proposal and the loss of common land proposed, which accounts for <1% of the common land habitat in the area, would not be significant in ecological terms.

## 8.29 Legal Implications

### 8.29.1 Wild Birds

Section 1, Part I of the Wildlife and Countryside Act 1981 (as amended) (WCA 1981) makes it an offence (with certain limited exceptions and in the absence of a licence) intentionally to kill, injure or take any wild bird, or intentionally to damage, take or

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<sup>16</sup> [http://www.wales.gov.uk/subiplanning/content/tans/tan05/tan5\\_info\\_e.htm#33](http://www.wales.gov.uk/subiplanning/content/tans/tan05/tan5_info_e.htm#33)

destroy its nest whilst it is being built or is in use, or to take or destroy its eggs. It is also an offence to possess any live or dead wild bird or egg, or anything derived from a wild bird or egg. Further, the Act affords additional protection to specific species of birds listed in Schedule 1 of the Act.

The nests of wild birds would be protected under the mitigation mechanism proposed below.

## **8.29.2 Reptiles**

All UK native reptiles are afforded protection under Section 9(1) and 9(5) of the Wildlife & Countryside Act 1981 (as amended) and as such it is an offence to:

- Intentionally or recklessly kill or injure native species of reptile;
- Sell or transport for sale etc. any native species of reptile.

Smooth snake (*Coronella austriaca*) and sand lizard (*Lacerta agilis*) are afforded additional protection, although these species do not occur in South Wales.

Individual reptiles would be protected from killing or injury under the mitigation mechanism proposed below.

## **8.29.3 European Protected Species - Bats**

The Habitats Regulations 1994 implement the requirements of the Habitats Directive for species listed in Annex IV of the Directive. These species are commonly known as European protected species. Great crested newt, otter, wild cat, dormouse, sand lizard, smooth snake, natterjack toad and all species of bat are the terrestrial species offered protection under the above Act.

Stricter provisions than those contained in the Wildlife and Countryside Act 1981 apply for these species although all European protected species are also separately protected under the Wildlife and Countryside Act 1981.

Under regulation 39 of the Habitats Regulations, subject to certain defences or in the absence of a licence (regulations 40 and 44), it is unlawful to:

- deliberately kill, capture, disturb or deliberately take or destroy the eggs of a wild animal of a European protected species; or
- damage or destroy a breeding site or resting place of a wild animal of a European protected species; or
- keep, transport, sell or exchange any live or dead wild animal of a European protected species, or any part thereof.

These offences apply to all stages of the life of the animal.

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It is not an offence to deliberately disturb a wild animal of a European protected species, or to damage or destroy a breeding site or resting place of such an animal, where this takes place within directly accessible areas of a dwelling-house. However, in relation to actions that may affect bats outside a living area in a dwelling-house (such as a loft), this exception only applies where the appropriate authority has been pre-notified allowing them a reasonable time within which to advise on the proposed course of action.

Actions which may otherwise cause an offence to occur may be licensed under the provisions of Regulation 44 of the Habitats Regulations. A licence must not be issued unless there is no satisfactory alternative and unless the action authorised by the licence would not be detrimental to maintaining the population of the species concerned at a favourable conservation status in its natural range.

CCW is the licensing authority for granting licences for the purposes in regulation 44(2) (a)-(d), which include “scientific or education purposes”, e.g. surveying. Welsh Assembly is the licensing authority for the purposes within regulation 44(2) (e)-(g). Regulation 44(2) (e) contains the purpose: “preserving public health or public safety, or for reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment”.

Bats and bat habitats would be protected under the mitigation mechanism proposed in Section 6 above.

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**TABLE 8/14 - SIGNIFICANCE MATRIX FOR RESIDUAL IMPACTS**

Ecological Feature or Resource	Importance of Feature	Ecological Implications of Development	Mitigation Proposes	Measures	Legal Implications	Policy Implications	Implementation Mechanisms
Woodland habitats between Craig Sion Siencyn and Craig Gwent.	District	Loss and fragmentation of habitat, causing reduction in carrying capacity for fauna  Operational disturbance along road route, causing disruption of natural migration routes of fauna and increasing chances of road kill.	Creation of new woodland plantation outside current areas to increase habitat linkages and create new woodland habitat.  Replanting clearance corridor with suitable scrub and grassland species.  Introducing a long-term biodiversity-led management programme to remaining woodland habitats.  Clearance of vegetation outside the bird breeding season.  Further survey for the presence of bat roosts and foraging routes within cleared woodland habitats and implementing mitigation as required.	Without mitigation, potential loss of habitat of Annex II species; possible disturbance, injury or killing of Annex II species. Licence required from Welsh Assembly.  Potential killing, injury or disturbance of nests or nesting birds.	Proposals (post-mitigation) are not contrary to policies in the Torfaen Local Plan or TAN 5 policies relating to the protection of important sites and species.  With mitigation in place medium certainty that there would be no adverse effects on bats and birds during construction.  Post-construction disturbance and fragmentation low certainty of long-term negative effects upon populations of fauna species associated with woodland habitats.	Method statement for mitigation proposals for bats and birds would be agreed through consultation with CCW and TBC.  Mitigation works relating to bats to be carried out under licence from Welsh Assembly.	
Fragmented heathland habitats within Tir Shon Shenkin Farm	District	Loss and fragmentation of habitat, causing reduction in carrying capacity for fauna	Removing and translocating heathland turfs to nearby suitable locations  Introducing management to maintain and enhance area of heathland	Loss and fragmentation of habitat. Potential for killing and injury of reptiles protected under WCA 1981 without mitigation.	Proposals (post-mitigation) are not contrary to policies in the Torfaen Local Plan or TAN 5 policies relating to the protection of important sites and species.	Mitigation strategy outlined above for heathland and reptiles.	

## 8.30 Summary and Conclusions

A range of specialist ecological surveys have been undertaken along the proposed access route for Tir Pentwys, Hafodyrynys in support of a recent application for reworking secondary aggregate in the eastern part of the site. The information provided here is supplemental to ecological surveys and assessment undertaken at the application site in 2003, which is provided in the original ES and further surveys undertaken in 2004<sup>12</sup>.

Extensive consultation regarding the ecological issues at the application site and along the proposed access route has been undertaken with CCW and TBC prior to undertaking further survey and a number of alternative schemes have been considered. The scope and survey methods reported in this document were agreed with the parties mentioned above prior to commencement.

The following groups have been the subject of specialist surveys:

- Habitats, Phase I and Phase II (NVC);
- bats;
- reptiles; and
- dormouse.

An assessment of the significance of predicted impacts that would result from the construction and operation of the proposed access road has been undertaken using recent IEM guidelines. The results of impact assessments of valued ecological receptors are consistent with the assessments made in the original Environmental Statement. The assessment concludes that the habitats that occur along the proposed access route are of up to District value. The assemblage of bats which occurs within the study area is assessed as being of up to County importance.

Following initial assessment of the potential impacts of the scheme; an assessment of the residual impacts has been undertaken, taking into account the proposed mitigation measures. This assessment clearly shows that the construction of the road would have a significant impact upon woodland and heathland habitats of District value. The scheme would result in loss of approximately 1.8 hectares or about 5% of the total area of woodland within the study area and would fragment the habitat into two smaller woods, with the potential to reduce the movement of fauna within woodland habitats. Whilst mitigation measures have been put forward which would reduce the potential effects, there remains a residual impact resulting from the fragmentation, operational disturbance and the potential for the interruption of faunal movements during operation of the access road. Compensation, in the form of new woodland planting and management is proposed to offset these impacts.

Mitigation, in the form of translocation of heathland turfs and long-term management to increase the total area of heathland within the study area has been proposed to offset the predicted impacts that would result from the loss of 15% of heathland habitats within the study area.

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Mitigation measures for protected and notable species, including bats, reptiles and birds are outlined above and would be implemented to ensure compliance with the relevant legislation and to maintain the populations of these species in a favourable conservation status on the site.

The careful design of the proposed access road and the adoption of mitigation measures committed to in this document and the Environmental Statement would ensure that other potential ecological impacts upon the flora and fauna of the application site are negligible. It is considered that sufficient mitigation and compensation has been provided within the proposed development scheme to minimise the adverse effects upon the valued ecological receptors that occur and no additional ecological compensation has been recommended.

The restoration of Tir Pentwys Cut application site to a range of upland habitats, including heathland, acid grassland, woodland, wetland and ponds would enhance the current habitats within application site and would provide a habitat resource of up to District value. The restoration scheme for the application site is considered to increase the quality of habitats available for a range of flora and fauna; including bats, birds, invertebrates, amphibians and flush vegetation communities; as well as contributing to some of the targets for these groups set out in the UK and Torfaen Biodiversity Action Plans.

## 9.0 NOISE

### 9.1 Introduction

The assessment of noise and vibration associated with the proposed access road has been carried out with reference to EIA Good Practice, the EIA regulations and British Standard guidance. The specific noise and vibration issues listed below have been considered:

- the noise climate at and around the reclamation site;
- the effect of the construction and use of the proposed access road.

The noise levels around the reclamation site have been assessed in the original ES. This supplementary statement assesses the impact of the construction and use of the alternative access road described in Section 3.

Technical terms or references are occasionally used that may be new to the non-acoustician. To assist the reader a glossary of terminology and an introduction to the subject of noise and vibration, including a table of example noise levels that may be found in general life, is included in Appendix 9/1.

### 9.2 Approach to the Assessment

This assessment considers the noise and vibration that would be generated by both the construction and use of the proposed access road. Throughout, the assessment has been undertaken with reference to existing conditions, British Standards, national planning guidance, and national and international guidance on noise impacts. Appendix 9/2 provides more detail on the standards and criteria against which this assessment has been carried out.

An assessment has been made of the baseline situation and the impact of the proposals. Where appropriate, environmental advantages and disadvantages have been identified and recommendations made for possible mitigation measures and/or scheme changes to offset potentially adverse environmental impacts.

The properties and locations that could potentially be affected by noise and vibration during the construction and operation of the proposed access road have been identified and topographical information that could affect the propagation of sound has been obtained.

Noise levels during the construction phase have been calculated using the methodology contained within British Standard 5228: Part 1: 1997 *Noise and Vibration Control on Construction and Open Sites: Part 1: Code of Practice for Basic Information and Procedures for Noise and Vibration Control*.

The assessment of noise and vibration from the construction works has been undertaken in accordance with British Standards and other available guidelines, including BS5228, BS6472, the former DoE Advisory Leaflet 72, and the draft

*Guidelines for Noise Impact Assessment*, produced by a joint working party of the Institute of Acoustics (IoA) and the Institute of Environmental Management and Assessment (IEMA).

Traffic flow data produced by SLR, together with the procedures contained within the former Department of Transport document *Calculation of Road Traffic Noise* (CRTN, 1988) have been used to determine the potential change in noise levels as a result of the use of the proposed access road. The predicted changes in traffic noise have been assessed against the draft guidance produced by the IoA/IEMA working party.

### 9.3 Data Requirements

In undertaking the noise and vibration assessment the following information has been used:

- traffic flow information for the key roads accessing the site; and
- construction data where available.

### 9.4 Baseline Conditions

A noise survey was carried out over a three hour period on 1<sup>st</sup> July 2003 to capture typical background noise levels at the noise-sensitive receptors around the site.

The noise measurements were undertaken using a Cirrus 704B sound level meter, which was calibrated prior to and upon completion of the survey using a Cirrus 513A acoustic calibrator, which had itself been calibrated by a UKAS-accredited calibration laboratory within the preceding twelve months. No drifts in calibration were found to have occurred.

The noise monitoring locations are identified in Drawing TP9/1 in the original ES and are described below:

- Position 1 – Tir-ysgubor-ddu (Blaen-y-cwm); and
- Position 2 – Blaen-y-cyffin.

Measurements of 15 minutes duration were taken at each of the two positions over periods representative of the daytime period.

At each measurement position the following noise level indices were recorded:

- $L_{Aeq,T}$  The A-weighted equivalent continuous noise level over the measurement period.
- $L_{A90}$  The A-weighted noise level exceeded for 90% of the measurement period. This parameter is often used to describe background noise.
- $L_{A10}$  The A-weighted noise level exceeded for 10% of the measurement period. This parameter is often used to describe road traffic noise.

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- $L_{Amax}$  The maximum A-weighted noise level during the period.

The full results of the ambient noise survey are presented in Appendix 9/3 with a summary of the results presented below. The measurements have been averaged for the daytime period.

**TABLE 9/1**  
**SUMMARY OF MEASURED NOISE LEVELS, FREE-FIELD dB**

Position	Period	$L_{Aeq,T}$	$L_{A90}$	$L_{A10}$	$L_{Amax}$
1 – Blaen-y-cwm	Day	49.8	32.8	44.8	72.0
2 – Blaen-cyffin	Day	47.3	32.3	45.7	70.8

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The noise sources that were present during the noise survey included distant and local road traffic, occasional overflying aircraft and natural sources of noise, such as birdsong and grazing sheep.

The weather during the survey was acceptable for noise monitoring, it being dry with light winds of less than 3m/s throughout the survey.

## 9.5 Construction Effects

### 9.5.1 Construction Noise

It is inevitable with any development of this nature that some disturbance will be caused to those living and working nearby during the construction phase. However, disruption due to construction is a localised phenomenon and is temporary in nature. In general, only people living within 100-200m of the site boundary are likely to be seriously impacted by construction noise.

Although there are techniques available to predict the likely noise effects from construction works, such as those contained within BS5228: Part 1: 1997 and Part 4: 1992 *Noise and Vibration Control on Construction and Open Sites*, they are necessarily based on quite detailed information on the type and number of plant being used, their location and the length of time they are in operation.

An estimate of the likely effects of noise from the site clearance, preparation and construction phases has been made for those properties closest to the route of the new access road. The predictions are based on the methodology contained within BS5228 over the core working day and reflect the currently available construction information. The predictions assume that no mitigation measures have been implemented, such as those identified later in this chapter.

The predicted noise levels have been assessed against an external façade criterion of 70 dB  $L_{Aeq, 1 \text{ hour}}$  and against the existing ambient noise levels in the area. The derivation of the 70 dB criterion is contained in Appendix 9/2.

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For the purpose of predicting the likely noise impact, the construction works have been divided into the following phases. The full list of plant assumed for each phase of works is contained in Appendix 9/4:

- Road preparation including earthmoving, site profiling and excavation. The total sound power level for these items is assumed to be 121 dB  $L_{WA}$ ; and
- Road surfacing, including the installation and compaction of the road sub-base, and the laying of a tarmac surface. The total sound power level for these items is assumed to be 116 dB  $L_{WA}$ .

The predictions are undertaken for each of the following noise-sensitive receptors, as shown in Drawing TPS 9/1. These receptors are considered representative of the adjacent sensitive properties.

- Assessment location 1 – Blaen-y-cwm;
- Assessment location 2 – Cefn-y-crib Farm;
- Assessment location 3 – Tir Pentwys Cottages;
- Assessment location 4 – Cefn Crib; and
- Assessment location 5 – Tir Shon Shenkin Farm.

When a linear feature is constructed, such as a road, the noise levels will vary greatly, depending on the proximity of the works to the receptor. Therefore, predictions have been carried out of the highest noise levels likely to be generated by each of the above operations at each of the sensitive receptors along the route, in effect where the construction works are at their closest point to the receptor under consideration. A further prediction has been made of a more typical value, where the construction works are approximately 150 metres from each receptor, or in the case of Blaen-y-cwm, which is 150 metres from the works at its closest point, the typical case is taken to be 500 metres away.

This means, in effect, that the assessments that have been made relate to the upper section of works described in Section 3.2.1 in Section 3 of this supplementary document. These works would have very limited duration due to their limited scale and the noise levels that would be generated would last for days rather than weeks. The majority of the works, in terms of timescale, would be associated with the lower section of the road described in Section 3.2.2. These works would be conducted out of the line of sight of, and at significant distances from, the noise sensitive properties described above and would, therefore, generate much lower noise levels during this stage of development.

In each instance, the façade that faces toward the site has been considered. The effects of intervening structures and topography have been ignored. The predicted noise levels are shown in Table 9/2 overleaf.

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**TABLE 9/2  
PREDICTED CONSTRUCTION NOISE LEVELS, FAÇADE  $L_{Aeq}$ , 1 hour dB**

Location	Road preparation	Road surfacing
Blaen-y-cwm	53-66	46-59
Cefn-y-crib Farm	66-81	59-74
Tir Pentwys Cottages	66-74	59-69
Cefn Crib	66-86	59-78
Tir Shon Shenkin Farm	66-82	59-75

It can be seen from the above figures that the highest noise levels predicted for the construction phase are above the 70dB assessment criterion adopted in this assessment at four of the five receptors considered. This would apply to the situation where the works would be taking place at the closest approach to the properties. As the works move away from the properties, the noise levels would drop and would be likely, for the majority of the construction period, to be below the 70dB criterion.

The effect that the construction works would have on the ambient noise levels at the closest residential receptors can be assessed by logarithmically adding the predicted construction noise levels to the measured  $L_{Aeq}$  noise levels during the daytime period. This has been done for the noisiest phase of works, the road preparation works, and the results are shown below.

Note that the predicted construction noise levels have been reduced by 3 dB so that free-field values are obtained. These may be added directly to the free-field measured values.

**TABLE 9/3  
PREDICTED AVERAGE AMBIENT NOISE LEVELS DURING THE ROAD  
PREPARATION WORKS, FREE-FIELD  $L_{Aeq, T}$  dB**

Location	Existing ambient noise level	Predicted future ambient noise level	Change	Impact
Blaen-y-cwm	49.8	54.7	+4.9	Moderate adverse
Cefn-y-crib Farm	49.8	66.1	+16.3	Substantial adverse
Tir Pentwys Cottages	49.8	66.1	+16.3	Substantial adverse
Cefn Crib	49.8	66.1	+16.3	Substantial adverse
Tir Shon Shenkin Farm	49.8	66.1	+16.3	Substantial adverse

Note: Ambient noise levels at all receptors are assumed to be similar to that measured at Blaen-y-cwm

Comparing the above predicted changes in noise level during the noisiest phase of works with the impact scale adopted for this assessment, which is summarised in Appendix 9/2, it can be seen that the construction works are predicted to lead to short term moderate to severe adverse impacts at all receptors considered. Mitigation measures are set out later in this chapter to address these impacts.

## 9.5.2 Construction Vibration

There are currently no British Standards that provide a methodology to predict levels of vibration from construction activities, other than that contained within BS5228: Part 4, which relates to percussive or vibratory piling only. It is generally accepted that for the majority of people vibration levels in excess of between 0.15 and 0.3  $\text{mm s}^{-1}$  peak particle velocity are just perceptible. Table 9/4 details the distances at which certain activities give rise to a just perceptible level of vibration; these figures are based on historical field measurements.

**TABLE 9/4  
DISTANCES AT WHICH VIBRATION MAY JUST BE PERCEPTIBLE**

Construction Activity	Distance from activity when vibration may just be perceptible (metres)
Excavation	10-15
Heavy Vehicles (e.g. dump trucks)	5-10
Hydraulic Breaker	15-20

The closest residential properties are in the region of 25 to 30 metres from the main works; therefore, on the basis of the above figures, it is considered unlikely that construction-induced vibration would lead to off-site impacts at nearby dwellings.

## 9.6 Operational Effects

### 9.6.1 Operational Use of the Access Road

The effect on the noise climate of road traffic using the proposed access road has been considered. The noise level likely to be generated by vehicles accessing the site has been predicted using the prediction framework set out in the former DoT/Welsh Office memorandum Calculation of Road Traffic Noise (CRTN, 1988). The prediction algorithms contained in CRTN have been implemented using the proprietary noise modelling software CADNA/A.

The predictions use the traffic flow information taken from SLR's transport assessment. The road alignment and setting, which included all roadside landforms, have been input into CADNA/A.

The assessment considers the noise levels at the receptors closest to the proposed access road both before and after the road's opening. The impact scale set out in Appendix 9/2 has been used to quantify the impacts. The road traffic noise levels have been predicted in terms of the  $L_{Aeq}$  noise index. The assessment is shown below.

**TABLE 9/5**  
**PREDICTED CHANGE IN ROAD TRAFFIC NOISE LEVELS, FREE-FIELD**  
 **$L_{Aeq, T}$  dB**

Location	Existing ambient noise level	Predicted future ambient noise level	Change	Impact
Cefn-y-crib Farm	49.8	51.8	+2.0	Slight adverse
Tir Pentwys Cottages	49.8	50.2	+0.4	Slight adverse
Cefn Crib	49.8	53.4	+3.6	Moderate adverse
Tir Shon Shenkin Farm	49.8	52.3	+2.5	Slight adverse

At three of the properties, the change in noise levels as a result of the use of the proposed access road is predicted to be virtually imperceptible and therefore to lead to slight adverse impacts at these locations. At the fourth location the predicted increase of 3.8 dB  $L_{Aeq}$  is marginally above the threshold of perception such that the impact would be regarded as slight to moderate. Mitigation measures to address these impacts are set out in the next section.

## 9.7 Mitigation Measures

### 9.7.1 Construction Noise

The assessment of construction noise has shown that at several receptors the adopted criterion is predicted to be exceeded and there are to be a moderate to severe adverse impact to the ambient noise climate.

Several safeguards exist to minimise the effects of construction noise and it is suggested that these should operate during the construction of the proposed development. These safeguards include:

- the various EC Directives and UK Statutory Instruments that limit noise emissions of a variety of construction plant;
- guidance set out in BS5228: Part 1: 1997, that covers noise control on construction sites; and
- the powers that exist for local authorities under Sections 60 and 61 of the Control of Pollution Act 1974 to control environmental noise and pollution on construction sites.

The precise noise mitigation measures to control noise and vibration from the construction works may require the agreement of the local planning authority prior to the works starting. Generic measures below are given to illustrate the range of techniques available.

The adoption of Best Practicable Means, as defined in the Control of Pollution Act 1974 is usually the most effective means of controlling noise from construction sites. In addition, the following measures would be employed, where appropriate:

- phasing the works to maximise the benefit from perimeter structures;
- any compressors brought on to site would be silenced or sound reduced models fitted with acoustic enclosures;
- deliveries should be programmed to arrive during daytime hours only. Care should be taken when unloading vehicles to minimise noise. Delivery vehicles should be routed so as to minimise disturbance to local residents. Delivery vehicles should be prohibited from waiting within the site with their engines running;
- all plant items would be properly maintained and operated according to manufacturers' recommendations in such a manner as to avoid causing excessive noise. All plant would be sited so that the noise impact at nearby noise sensitive properties is minimised;
- local hoarding, screens or barriers would be erected as necessary to shield particularly noisy activities; and
- problems concerning noise from construction works can sometimes be avoided by taking a considerate and neighbourly approach to relations with the local residents. Works should not be undertaken outside of hours agreed with the local planning authority.

Experience from other sites has shown that by implementing these measures, typical noise levels from construction works can be reduced by 5dB(A) or more. In particular, maximising the screening benefit from perimeter structures could reduce the noise levels by 10dB(A) or more.

The working hours (for construction only) would be limited to the hours agreed with the local planning authority, which are proposed to be 08:00 to 18:00 hours Monday to Friday, 08:00 to 13:00 hours on Saturdays, with no audible works outside of these times.

It may be appropriate to adopt a noise management plan for the duration of the construction works, to ensure that the works are managed in a manner that is sensitive to potential noise emissions.

### **9.7.2 Construction Vibration**

There are anticipated to be no off-site vibration impacts at residential receptors as a result of the main construction works, so no mitigation measures are considered necessary.

## **9.8 Operational Use of Access Road**

The use of the proposed access road is predicted to lead to slight or moderate adverse impacts at the receptors considered. Traditional measures for reducing road traffic noise, such as low noise road surfaces or speed restricting measures, are not considered appropriate for this access road due to the high proportion of heavy goods traffic that would use it.

## 9.9 Conclusions

The assessment has considered both the potential for the construction and operation use of the proposed access road to give rise to noise and vibration impacts at the closest noise-sensitive receptors.

The assessment has found that:

- The construction of the upper section of the road, and in particular the road preparation works, are likely to lead to short term moderate to substantial adverse impacts, in terms of the magnitude of noise levels, at the closest sensitive receptors. However, the noise levels during the majority of the construction works are predicted to be below the assessment criterion adopted in this assessment.
- Vibration from the construction works is unlikely to be perceptible at off-site residential receptors during the construction works.
- The change in traffic noise as a result of the use of the access road is predicted to be barely perceptible, and therefore to lead to slight adverse impacts at three of the noise sensitive receptors along the proposed route and to be just above the threshold of perceptibility at the fourth property leading to slight to moderate adverse impact.

## 10.0 AIR QUALITY

### 10.1 Introduction

The review of air quality associated with the development and use of the proposed access road has been carried out with reference to Technical Guidance LAQM.TG(03)<sup>1</sup>. Consideration has been given to the construction of the access road, as well as its ongoing use, with respect to local sensitive receptors. In particular, the proposed access road has been considered with respect to proposed HGV traffic that would pass through or close to local communities as a direct result of the use of the access road itself (or indirectly, as a result of traffic movements en-route to the proposed site access road).

Given the proposed construction and usage of the access road, this desk study has focused on emissions typically derived from construction type activities, as well as from road traffic sources. These include particulates (PM<sub>10</sub>), nitrogen dioxide (NO<sub>2</sub>) and carbon monoxide (CO).

The sensitive receptors that have been considered as part of this desk study are provided in Table 10/1, as these are the closest receptors to the proposed access road. The distances can be related directly to the Technical Guidance LAQM.TG(03)<sup>1</sup> with regard to fugitive and uncontrolled sources of PM<sub>10</sub>, as well as for determining whether further assessment is required in relation to vehicle emissions (see Sections 10.2 and 10.3, respectively).

**TABLE 10/1  
SENSITIVE RECEPTORS**

<b>Receptor</b>	<b>Location Relative to Tir Pentwys Cut</b>	<b>Location Relative to Proposed Access Road</b>
Tir-ysgubbor-ddu	350m S	<50m SE
Cefn-y-crib Farm	1,500m S	<50m SE
Tir Pentwys Cottages	1,300m SSE	150m E
Cefn Crib	1,375m S	<50m E
Tir Shon Shenkin Farm	1,750m S	65m NW

From the above it is noted that all of the potentially sensitive properties lie at significantly greater distances from the boundary of reclamation site than the 200m buffer zone suggested by the Welsh Assembly in paragraph 71 of the its technical advice<sup>2</sup> on aggregates. Accordingly, it is considered that the technical advice note, which was published after the original ES was submitted, suggests that, subject to appropriate technical precautions being taken, as described in the original ES, the reclamation operations should be able to take place without significant impacts on local residential properties.

<sup>1</sup> Part IV of the Environment Act 1995: Local Air Quality Management, Technical Guidance, LAQM.TG(03), 2003

<sup>2</sup> Welsh Assembly Minerals Technical Advice Note (Wales)- 1:Aggregates. March 2004

The rest of this section concentrates, therefore, on assessing the potential impacts associated with the construction and use of the new access road.

## 10.2 Construction of Access Road

During the construction of the access road, which would be a short term operation, the most common concern regarding dust emissions would be their nuisance effect. Particles generated from processes associated with the construction of the access road, such as the mechanical break up of soils, would be between  $PM_{2.5}$  and  $PM_{10}$  and termed the coarse fraction<sup>3</sup>. Technical Guidance LAQM.TG(03)<sup>1</sup> discusses the screening of fugitive and uncontrolled sources of  $PM_{10}$ . In the absence of local monitoring data, a number of approaches are recommended based on predicted background concentrations and the distance to sensitive receptors. The guidance suggests that:

*Where properties lie closer than 200 metres to the source, authorities are advised to investigate whether any dust nuisance complaints have been reported, as this may give a guide to potential problems. The absence of complaints is not alone a basis for saying that the objectives will not be exceeded and authorities are advised to take account of local background levels and their own professional judgement based on visual inspection of the operations.*

The background  $PM_{10}$  concentration in the vicinity of the site for 2004 is  $17.1 \mu\text{g m}^{-3}$ . This represents 42.8% of the air quality objective of  $40 \mu\text{g m}^{-3}$ . Given the low background concentration of  $PM_{10}$ , the effective management of potential fugitive dust/ $PM_{10}$  emissions from the construction of the access road, and the location of the nearest sensitive receptors, the requirement for  $PM_{10}$  monitoring around the proposed access road area is not considered necessary.

These conclusions are consistent with the Torfaen County Borough Council's findings with regard to concentrations of  $PM_{10}$  within the borough. The Air Quality Progress Report completed by the council in August 2005 states that concentrations of  $PM_{10}$  have not exceeded the 2004 air quality objectives<sup>4</sup>, and that they are also expected to comply with the 2010 objectives.

## 10.3 Traffic Flows

Technical Guidance LAQM.TG(03)<sup>1</sup> provides criteria for determining whether there is a requirement for further assessment of vehicle emissions using the Design Manual for Roads and Bridges (DMRB) screening model. For carbon monoxide, these criteria focus on the designation of "busy roads" that exceed a daily average traffic flow of 80,000 vehicles per day. For particulates and nitrogen dioxide, the criterion focuses on "busy" streets with more than 10,000 vehicles per day, and roads with relatively high flows of HGV traffic. A more detailed description of these criteria is provided below.

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<sup>3</sup> Airborne Particulate Matter in the UK, 3<sup>rd</sup> Report of the Quality of Urban Air Review Group (QUARG), May 1996.

<sup>4</sup> Torfaen County Borough Council, Air Quality Progress Report 2004, August 2005

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For sulphur dioxide (SO<sub>2</sub>), Technical Guidance LAQM.TG(03) states that “*whilst the transport sectors associated with aircraft and road traffic emit small quantities of SO<sub>2</sub>, evidence suggests that there is little risk of the objectives being exceeded due to their emissions*”. As such, no further consideration has been given to emissions of SO<sub>2</sub> from traffic (including HGV) sources. This is consistent with the Council’s Updating and Screening Assessment (USA)<sup>5</sup> which has not considered emissions of SO<sub>2</sub> from traffic related sources.

For carbon monoxide (CO), the screening should:

- Identify “very busy” roads and junctions in areas where the 2003 background is expected to be above 1 mgm<sup>-3</sup>
- Determine whether there is relevant exposure within 10m of the kerb
- Obtain detailed information on traffic flows, speeds and the proportion of different vehicle types. There is no need to look at relevant exposure if the daily average traffic flows are less than 80,000 vehicles per day along a single carriageway road.

For particulates (PM<sub>10</sub>) and nitrogen dioxide (NO<sub>2</sub>), the screening should:

- Identify “busy” streets and/or all roads with an unusually high proportion of heavy duty vehicles
- For busy streets, identify where members of the public may be exposed within 5m of the kerb for 1-hour or more (for all vehicles). For roads with a relatively high proportion of HGV traffic, determine whether there is relevant exposure within 10m of the kerb.
- Obtain detailed information on traffic flows, speeds and the proportion of different vehicle types. There is no need to look for relevant exposure if the flow is less than 2,500 HGVs per day for NO<sub>2</sub>, and less than 2,000 HGVs per day for particulates.

Traffic flow data provided by Torfaen County Borough Council indicates that the overall traffic flow along the A472 (Pontypool) over a 12 hour period in 2003 was 13,299, with 5% of the traffic flow (674 vehicles) recorded as HGV traffic. Using the National Road Traffic Forecasts<sup>6</sup>, total traffic flows are expected to increase by 1.69% per year. As such, traffic flows along the A472 for 2005 are predicted to be 13,747 (with 687 HGVs) and 13,979 (with 699 HGVs) for 2006.

The traffic flow data provided above indicate that the total number of vehicles using the A472 would not exceed the screening threshold of 80,000 vehicles per day for carbon monoxide.

Given the limited, the number of vehicles using the proposed site access and other smaller roads in the vicinity of the site as set out in Section 12.6.2 of this document, the increased volume of traffic on the A472 would be negligible and would be

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<sup>5</sup> Updating and Screening Assessment, Torfaen County Borough Council, October 2003

<sup>6</sup> National Road Traffic Forecasts (Great Britain), 1997, Department for Transport

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significantly lower than the screening thresholds of 2,500 HGVs per day for nitrogen dioxide and 2000 HGVs per day for particulates.

## 10.4 Conclusions

The construction and ongoing use of the proposed access road represents a potential source of particulate matter. However, the application of the relevant mitigation measures discussed in Section 10 of the original ES would minimise the release of dust and particulates from the construction and ongoing use of the access road. Such measures include the continuous visual monitoring of operations that are likely to cause the generation of dust, and the use of static and/or mobile spraying units during the construction phase. Given the effective implementation of these mitigation measures during the construction and ongoing use of the proposed access road, together with the low background concentration of PM<sub>10</sub> in the vicinity of Tir Pentwys Cut, the potential impact of dust and PM<sub>10</sub> on surrounding receptors is considered to be minimal.

The frequency of traffic (including heavy goods vehicles) that would use the proposed access road does not exceed the air quality assessment screening criteria specified in Technical Guidance LAQM.TG(03) and detailed in Section 10.3. Even when considering the busiest road in the vicinity of Tir Pentwys Cut, the A472, predicted traffic flow rates do not exceed the relevant criteria. As such, it is not considered necessary to undertake any further assessment of emissions from HGV vehicle movements to and from the site.

These conclusions are consistent with those compiled by Torfaen Borough Council in its Updating and Screening Assessment (USA). The USA stated that, for NO<sub>2</sub>, PM<sub>10</sub> and NO<sub>x</sub>, there are no areas of relevant exposure in relation to “busy” or “very busy” roads, and/or all roads with an unusually high proportion of heavy duty vehicles. This situation would not change as a result of the development of the proposed quarry access road.

It is concluded therefore that the development of the reclamation site and construction and use of the proposed access road would not give rise to unacceptable impacts on air quality at surrounding sensitive locations.

# CULTURAL HERITAGE 11

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## 11.0 CULTURAL HERITAGE

### 11.1 Introduction

The application site (Site) is situated in Torfaen County, the eastern most valley of the South Wales coalfield. As such, the landscape surrounding the proposed development is heavily influenced by a history of coal mining activity.

#### *11.1.1 The Nature of the Application Site*

The majority of the application site (edged red on Drawing TPS 11/1), comprising the reclamation area from which it is proposed to extract the secondary aggregate, has been subject to recent open-cast coal extraction as evidenced by an analysis of historic OS maps as described in Section 5 of this supplementary document. This area is considered to have, therefore, no significant surviving cultural heritage value other than that relating to recent mining activities.

However, the proposed access route, as described in Section 3, would cross areas of undeveloped land and it is necessary, therefore, to consider the potential effect of the development on the land affected by this route.

#### *11.1.2 Information Sources*

The following information sources have been utilised to assess the impact of the development proposals on the cultural heritage of the area;

- Torfaen County Borough Council Landscape Strategy Volume 1: Report (2002);
- Ordnance Survey maps 1878 to present day (see Section 5);
- Consultations with the Glamorgan-Gwent Archaeological Trust including details of the Scheduled Monuments Record;
- Glamorgan-Gwent Archaeological Trust web site;
- National Museums and Galleries of Wales: Detailed Record web site

### 11.2 Historic Landscape

Torfaen County has a rich industrial history. The market town of Pontypool was home to the early development of the iron industry in the 16<sup>th</sup> Century. Due to the situation of the county in the South Wales coalfield, the mining industry has played an important role in the county's development. The extraction of coal was necessitated by the industrial demand for raw materials and led to improvements in infrastructure such as the Monmouthshire Canal which made transportation of materials out of Torfaen County more efficient. The historic map record shows the Blaen y Cwm Colliery to be present on the Site in 1880.

Prior to large scale industrialisation at the end of the 18<sup>th</sup> century, settlements in Torfaen County comprised largely of dispersed farmsteads and parochial centres.

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Human activity has influenced the landscape of the county for several millennia and features such as burial round barrows are present within the county. However, no record of any pre-industrial finds within or close to the application site was found during desk study research except for a Bronze Age axe which was found at least 1km to the south-west of the Site and a coin which was found at least 2km to the south-east of the Site.

## 11.3 Present Situation

The majority of the Site is situated within what Torfaen County Borough Council's Landscape Strategy Report describes as the history and archaeological aspect area of 'Waun-wen and Mynydd Llanhilleth' (code T/H/19) which has been evaluated in the report to be of 'moderate' value.

A search of the Sites and Monuments Record has been undertaken for the Site and the surrounding area. Drawings TPS 11/1 and TPS 11/2 illustrate the findings of this search. The features found by the search which are situated close to the boundary of the site are listed in the Table 11/1 below.

**TABLE 11/1  
SCHEDULE OF SITES AND MONUMENTS RECORDS**

Plan Ref (LA Code)	Name	Type	Description
06252g	Blaen-y-Cnew	Farm, Agriculture and Subsistence	Farmhouse, outbuildings and yard.
539 and 04914g	Blaen-y-Cwm	Building, Domestic; Agriculture and Subsistence	Ruined farmstead.
07034g	Site name not known	Linear Feature	Ridgeway. Runs concurrently with eastern border of Parish of Llanhilleth. Could be post medieval in date.
540 and 04919g	Cefn Crib	Farmhouse, Agriculture and Subsistence	House with barn or cowshed adjoining the north end.
300196	Cefn Crib	House, Domestic.	
210244	Ty-Pwll, Cefn Crib	House, Domestic	
557 and 04915g	Ruined Farmstead, Crumlin	Farmhouse, Domestic; Agriculture and Subsistence	
04895g	Coal Washery, Hafodyrynys	Industrial, Coal Cleaning Plant	Last surviving part of colliery
85103	Thickner Tank	Reservoir	
91477	Hafodyrynys Colliery	Coal Mine	
91476	Hafodyrynys Coal Preparation Plant		

The features listed in Table 11/1 largely consist of farms and their related buildings. In addition to these features, structures related to Hafodyrynys Colliery are also present to the south of the proposed development area. These structures include a coal

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preparation plant, a coal cleaning plant and an associated reservoir. An un-named linear feature runs concurrently with the north-west boundary of the development area. The sites and monument record lacks detailed information about this feature, but it is considered likely to be a post medieval feature.

## 11.4 Assessment

Although the sites present in the vicinity of the site are not ancient they can be argued to be valuable due to their influence on the context of this historic industrial landscape. However, given that none of the recorded archaeological sites lie within the Site, and due to the nature of the proposed development and the character of the historic landscape in this area, it is not considered that the development would have an unacceptable impact on any of the above sites or the context in which they are situated.

The features which are identified in the sites and monuments record further away from the boundary of the Site are also largely linked to the mining, quarrying and agriculture industries. A number of former collieries and quarries have created the landscape which surrounds the site. Due to the nature of this landscape and the relative distance of many of the surrounding features from the Site, it is considered that the proposed development would not have an unacceptable impact on any of these features and would not unacceptably influence the context of the area in which they are located.

## 11.5 Mitigation

Given that there are no records or evidence of archaeological features either within, or close to the Site, it is not considered that any further investigatory mitigation measures are required.

However, it is acknowledged that the construction of the new access road, and in particular the clearance of vegetation along the route of the road, could reveal some hitherto unrecorded features. Accordingly, it is proposed that a walk over survey would be completed by a suitably qualified archaeologist prior to earth moving commencing and following the clearance of vegetation along the route of the road. The walkover survey would determine whether any further watching brief, or recording, was required during the earth moving operations. Such brief or recording activities would be conducted in accordance with a protocol which would be agreed with the local authority archaeologist.

## 11.6 Conclusions

A desk study of archaeological records, and Ordnance Survey mapping, has demonstrated that the majority of the Site, comprising the reclamation area at Tir Pentwys Cut, has been disturbed by recent open cast coal mining. However, there is no evidence of recent disturbance of the land that would be affected by the proposed access route. Consideration of records of ancient monuments has shown that there are

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no recorded archaeological features within the Site although there are records of features, predominantly of an industrial nature, in the vicinity of the Site.

Given the nature of the land that would be affected by the access route, a mitigation strategy has been put forward which would involve the route of the road being inspected following clearance of vegetation at which stage the need for any further mitigation measures, which would comprise a watching brief, or recording of specific features, would be agreed with the council's archaeologist.

Given the findings of the desk study, and taking into account the mitigation measures which have been put forward, it is concluded that there would not be an unacceptable impact on features of cultural heritage importance as a result of the development proposals being implemented.

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## 12.0 HIGHWAYS

### 12.1 Introduction

This Transport Assessment assesses the impact of the revised application proposals on existing traffic network. The application proposals are to extract secondary aggregates recovered from the site through excavating previously deposited material. Recovered material would be exported by road.

Access to the site would be via a proposed new haulage link road as described in Section 3. The proposed haulage road would connect with Crumlin Road, which in turn provides access to the A472 – Crumlin to Pontypool Road.

This assessment updates the previous transport assessment submitted to Torfaen County Borough Council in 2003, which previously assessed two possible existing access routes to the application site.

Following consultations with Torfaen County Borough council, in its capacity as local highway authority, two potential routes were rejected on the grounds that they were either too steep in gradient; the width of the roads were insufficient to accommodate two passing HGVs safely or visibility was restricted. The route which was selected as forming the basis for the access to the site described in the original ES was not considered acceptable to the highways authority for similar reasons and it was suggested that further consideration to alternatives should be given.

This assessment assesses the existing impact in transportation terms that would be caused by the new development proposals. Consideration is given to the routing of vehicles accessing the site and to measures to mitigate the effects of additional traffic. The assessment concludes with a summary of the work carried out and an overview of the mitigation measures proposed.

This Transport Assessment has been prepared in accordance with the guidelines for Traffic Impact Assessment 1994 as published by the Institution of Highways and Transportation and also takes into account the latest Planning Policy Guidelines as directed by PPG:13 and the Torfaen County Borough Council Local Transport Plan. The methodology for the assessment was discussed and agreed with Torfaen County Borough Council.

### 12.2 Proposed Development

#### 12.2.1 *Current Site Usages and Recent Use History*

The reclamation site is located approximately 2.5km north of the A472, Crumlin to Pontypool Road, at national Grid Reference SO 240.014. The site at the present moment is an un-restored, linear excavation flanked by a mineral waste tip, and screened by established coniferous tree planting.

The proposed access route crosses a short stretch of open moorland, some fields used for grazing and a wooded valley side that has no formal use.

## ***12.2.2 Proposed Development Usage***

It is proposed to excavate previously deposited material for screening and partial recovery of secondary aggregates. It is estimated that approximately 1,000 tonnes per day of recovered material would be exported from the site, equating to 250,000 tonnes per annum. This operation would be sustained over an extensive period of time.

It is proposed to construct a new haul road linking the application site with Crumlin Road. The layout of the proposed haulage road is shown in Drawings TPS12/1 and TPS12/2. The haul road would essentially consist of two separate sections, a private haul road ascending Cwm-y-Glyn and the public highway section across Cefn-y-Crib farm / common land, as described in more detail in Section 3.

HGV traffic travelling along both sections of the proposed access road would be controlled by traffic signals on a demand basis. Initially while traffic flows were low, HGV traffic would not be controlled by signals. The signals would only be installed once traffic levels increased and when there was considered to be a risk of vehicles meeting on the narrow sections.

The implementation of the measures once traffic flows had increased would prevent HGVs meeting along the road and on inclines and being unable to pass. As detailed in Section 3, waiting areas would be provided on the haul road and within the reclamation site.

The details of the two separate sections are described in further detail below.

## ***12.2.3 Cwm-y-Glyn Private Haul Road***

The proposed private haul road would link Crumlin Road with Cefn Crib Road via an ascending carriageway approximately 4m wide with localised widening on tight radii. The alignment of the road would follow the natural hill slope of Cwm-y-Glyn, with a maximum gradient of 12%.

Passing places would be located at the middle and bottom sections of the private haul road. The carriageway at these sections would be widened to 7.3m with further widening around the radii adjacent to the ascending haul road's junction with Crumlin Road.

The middle section of the haul road would have sufficient capacity for approximately seven articulated HGVs to be able to wait at the designated passing place at any one time, travelling in both directions. Approximately 17 ascending articulated HGV vehicles would be able to wait on the bottom section of the private haul road.

The haul road from the passing place located in the middle section, to its junction with Crumlin Road would be fenced on both sides with post and rail fencing.

Traffic signs and access gates to prevent unauthorised use of the haul road would be positioned at the junctions to Crumlin Road and Cefn Crib Road. In addition, a cattle grid would be located at the haul road's junction with Cefn Crib Road.

The Cefn Crib Road section linking the ascending haul road and the public highway across Cefn-y-crib farmland would be fenced on both sides with post and rail fencing.

#### ***12.2.4 Public Highway across Cefn-y-Crib Common Land***

It is proposed to widen the existing public highway road across the common land on top of Tir Pentwys to a minimum width of 4.5m (maximum 6m). This is not to allow for a two-way flow of traffic on the public highway but to remove lorry wheels from the edges of the road that would result in early pavement failure. All widening would be carried out on the common side of the road.

A single passing place is to be located approximately half way between the reclamation site and the private haul road. The passing place would be 7.3m wide and 15m in length.

A 1m wide clear verge would be provided on both sides of the carriageway with localised widening on bends to achieve 90m forward visibility.

At three locations the land falls away from the road sharply, at these locations the road is to be widened to 5.5m, and ribbed edge line is to be provided 2m from the edge of the carriageway on the side of the landscape drop. This is to encourage vehicles to stay away from the edge.

The public highway road would not be fenced on the common.

A waiting bay would be provided within the reclamation site boundary, with sufficient capacity to accommodate HGVs moving within the site prior to them entering onto the public highway.

### **12.3 Assessment Criteria**

The threshold by which traffic related impact is determined is a 5% increase in baseline flows, and this is detailed further within this report. The assessments demonstrate that the increase in baseline flow as a result of the traffic generated by the proposed development would be substantially below 5% on the A472. The Study Area for the assessments is therefore deemed to not be required to extend extensively beyond the A472, and may be summarised as follows.

- The existing site access;
- The existing Blaen-y-Cwm and Cefn Crib hill roads;
- Crumlin Road;
- The A472 / Crumlin Road junction; and
- The A472 from Crumlin to Pontypool.

## 12.4 Existing Conditions

### 12.4.1 Current Transport Policy

*Torfaen County Borough Council Local Transport Plan – 2001 - 2005*

The Torfaen County Borough Council Local Transport Plan (LTP) was published in 2000 and was prepared in line with current national guidelines developed to identify targets towards a more sustainable integrated transport system and to reduce levels of road traffic.

The LTP included the following aspirational objectives when setting out the County Borough's main priorities in order to achieve these targets;

- Improve the accessibility for all and reduce social exclusion;
- Maximise the benefit of existing transport infrastructure;
- Remove accessibility barriers to economic development;
- Increase safety, particularly for vulnerable road users;
- Reduce the adverse environmental impact of transport;
- Promote healthier lifestyles by encouraging walking and cycling;
- Reduce reliance on the car, particularly for commuters and school children;
- Develop public awareness of transport issues and the consequence of travel choices; and
- Identify a realistic plan of action.

Specific objectives identified and considered relevant to this assessment are given below;

- Encourage the use of alternatives to the private car;
- Decrease vehicle /pedestrian conflict and lower levels of accidents;
- Ease vehicular congestion at pinch points in certain locations to assist targeted user groups;
- Optimise investment in recently constructed highway infrastructure such as bypasses; and
- Improve the distribution of goods having regard to environmental issues.

Chapter 5 of the LTP identifies the main pressures placed on the local environment from transport movements, which include traffic congestion, noise and air pollution.

Section 8.5 specifically identifies the impact of heavy good vehicles (HGVs) on the County Borough's road network and the Plan emphasises improvements to the infrastructure to accommodate freight movements by road and rail.

## *12.4.2 Existing Highway Network*

The existing highway network within the Study Area is illustrated in Drawing TPS11/2 in the original ES and is described in detail below.

### *Blaen-y-Cwm and Cefn Crib Roads*

The Blaen-y-Cwm and the Cefn-Crib roads are typical of roads across mountain/common land, and are approximately 4m wide with open moor land verges. Visibility in the area is, generally, good. The surface of the road is considered to be adequate and appears to have been improved.

There is an informal T-junction linking both roads located near Tir Pentwys. Cutting into the landform have been excavated in order to aid poor visibility leading into the junction in all directions.

### *Crumlin Road*

Crumlin Road is approximately 7.3m wide with kerbed edges. The road is illuminated and appears to be subject to the national speed limit. Forward visibility is considered to be adequate throughout this section.

### *A472 / Crumlin Road Priority T-junction*

The A472 / Crumlin Road junction is a priority splay junction that appears to conform to standards set out in the Highways Agency Design Manual TD42/95<sup>1</sup>. Visibility taken at a point 4.5m behind the 'give-way' line was considered to meet the required standard in both directions.

The A472 carriageway running through the junction is approximately 8m wide with kerbed edges and soft verges located on both sides of the carriageway. The road is illuminated and subject to the national speed limit. Forward visibility through the junction arrangement is considered to meet the required standard.

Crumlin Road as it approaches the junction arrangement is approximately 7.3m wide with kerbed edges. Soft verges are located on the west / north side of the carriageway, a pedestrian footway is located on the east / south side of the carriageway. The pedestrian footway terminates approximately 100m north of the junction bellmouth.

### *The A472 Carriageway*

The A472 carriageway is approximately 8m wide with kerbed edges and soft verges located on both sides of the carriageway. The road is illuminated and subject to the national speed limit.

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<sup>1</sup> TD42/95 'Geometric Design of Major / Minor Priority Junctions', DMRB Volume 6, January 1995.

### 12.4.3 Existing Traffic Flows

A 12 hour fully classified manual count was obtained from Capita Gwent Consultancy for the A472. The count was undertaken on the 16<sup>th</sup> July 2003. The data collected are included in Appendix 12/1.

From the data received, the average 12-hour traffic for the A472 was derived, and this is summarised in Table 12/1 below.

**TABLE 12/1  
12 HOUR FLOW ON A472**

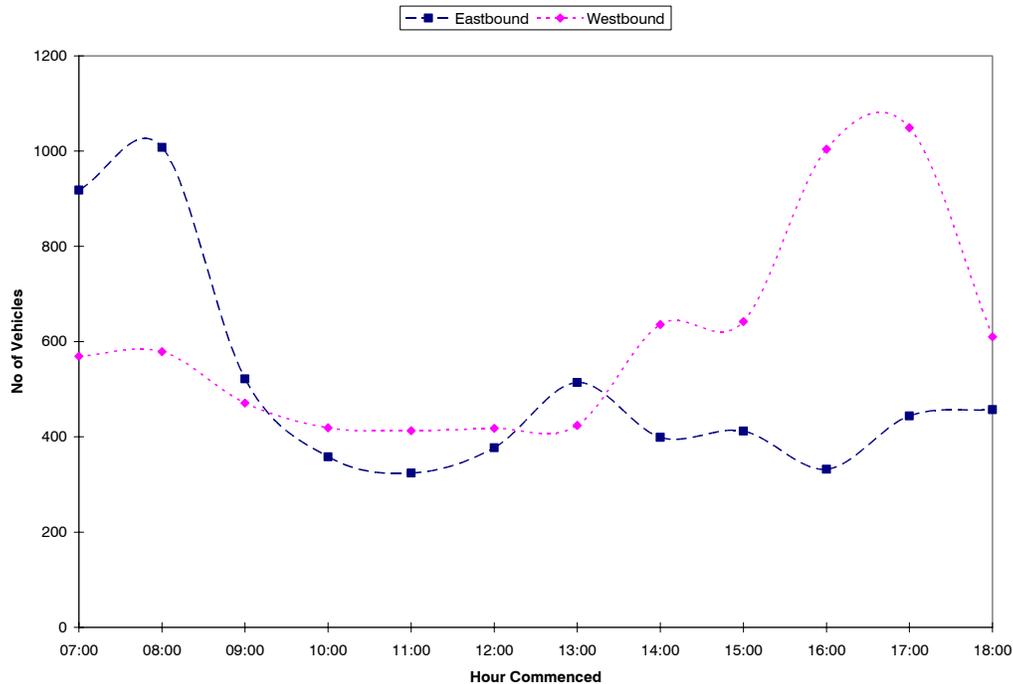
Arm	Two Way Flow			One Way Flow			
	12 Hour Flow	HGVs	%age HGV	Direction	12 Hour Flow	HGVs	%age HGVs
A472	13,299	674	5.1%	Eastbound	6,065	315	5.2%
				Westbound	7,234	359	5.0%

Table 12/1 demonstrates a two-way flow on the A472 of 13,299 vehicles with 5.1% HGVs.

The 12hr profile for the A472 is demonstrated graphical form in Figure 12/1 overleaf.

Figure 12/1 demonstrates a tidal flow 12 hour profile with clear peaks in the morning and evening rush hours and shows that eastbound traffic towards Pontypool is higher in the morning and westbound traffic higher in the evening.

**FIGURE 12/1  
12 HOUR TRAFFIC FLOW PROFILE – A472**



#### **12.4.4 Accident Records**

Road traffic accident statistical data covering the five year period from January 2000 to August 2005 for the study area were obtained from Capita Gwent. The data received are included in Appendix 12/2 and the locations of the accidents and their severity are shown on Drawing HMS 12/4.

Of the 49 personal injury accidents recorded, 44 (90%) were classified as slight, 3 (6%) were classified as serious and 2 (4%) were classified as fatal.

Of the fatal accidents, one involved two cars travelling in opposite directions and colliding head on, the second involved a school bus losing control and toppling over.

The locations and causes of accidents are given further consideration below.

#### **12.4.5 Non-Car Transport**

The application site is located in a remote location approximately 2.5km north of the A472 – Crumlin to Pontypool. There are no modes of public transport currently providing access to the application site.

## **12.5 Proposed Site Access Arrangements**

As described in Section 3, the development proposals include for the construction of a private access road linking the application site directly with the A472 via Crumlin Road. The access road would join with Crumlin Road via an at grade priority “T” junction.

It is envisaged that the construction of the proposed access road would take approximately 6-8 months. Traffic flow on Crumlin Road would be unaffected during the period of construction, with the exception of a time period of approximately 4 weeks when the access road junction is tied in with Crumlin Road.

The haul road would join Crumlin Road via a priority T-junction. The proposed configuration of the access road and the junction has been discussed with the Torfaen County Borough Council highway authority and the layout conforms to their requirements.

The proposed improvements have been designed in accordance with standards set out in the Highways Agency’s design guidance manuals TD 9/93<sup>2</sup> and TD 42/95<sup>3</sup>.

## **12.6 Modal Choice / Trip Attraction**

### ***12.6.1 Existing Trip Generation***

The reclamation site is currently dormant and there is therefore no existing traffic generation.

### ***12.6.2 Future Trip Generation***

It is estimated that the development proposals would generate approximately 50 one way HGV trips per day (100 HGV two way movements), assuming an average payload of 20 tonnes per vehicle.

In addition to HGV traffic, it is assessed that there would be a small number of car / light vehicle trips associated with the operation proposed. The levels of these trips has been assessed at 20 one way trips per day, and for the purposes of this assessments it has been assumed that these would arrive during the morning peak hour and leave during the evening peak hour.

This would equate to 140 movements of vehicles per day. The peak hour is estimated to have 18 vehicle movements, 12 of which would be by HGVs.

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<sup>2</sup> TD 9/93 – ‘Highway Link Design’, DMRB Volume 6, February 2005.

<sup>3</sup> TD42/95 ‘Geometric Design of Major / Minor Priority Junctions’, DMRB Volume 6, January 1995.

## **12.7 Trip Assignment / Distribution**

### ***12.7.1 Future Trip Assignment***

The distribution of HGV trips at the A472 / Crumlin Road junction would depend on specific orders for material at any one time. In view of the national market for high specification aggregates, however, the majority of HGV trips are anticipated to be via Pontypool to the east.

In light of this, the assumed average percentage distribution split of HGV at the A472 / Crumlin Road junction is shown below: -

- East to Pontypool 75%;
- West to Newbridge 25%;

It is assumed that the distribution of light vehicles at the A472 / Crumlin Road junction would be distributed evenly to the east and west.

## **12.8 Highway Impact**

### ***12.8.1 Assessment Years***

For the purposes of this assessment, it is assumed that the development proposals would be implemented and operational in 2006.

It is a standard assessment technique for junction capacity analysis to estimate traffic levels 15 years on from the initial analysis year; it is considered that a design year of 2021 is therefore appropriate.

This ensures that a robust assessment may be undertaken, which would take account of fluctuation errors in the baseline traffic and fluctuations in daily trips to the site. Capacity assessments have been undertaken for both the opening year and the design year.

Baseline peak hour traffic flows measured in 2003 have been growthed to 2006 and 2021 using National Road Traffic Forecast (NRTF) medium growth figures.

Taking into account of the baseline traffic, existing / future trip generation and the likely distributions as detailed above, peak hour turning movements at the site access junction have been derived and are shown in Appendix 12/3.

### ***12.8.2 Existing Site Access***

Under the development proposals, a new access road serving the site would be established. Considering the extremely low volumes of existing traffic using the mountain road across Mynydd Llanhilleth, it is considered that the reclamation site access junction with the proposed haul road would operate safely and well within its capacity.

### 12.8.3 Proposed Haulage Link Road

The proposed haulage link road has been designed in compliance with TD 9/93<sup>4</sup>. As such it would have adequate width and alignment for the safe passage of future HGV trips to the site.

### 12.8.4 Crumlin Road

From site observations, baseline flows on Crumlin Road was considered to be extremely low. Crumlin Road is considered to be of adequate width and with sufficient capacity for safe passage of future HGV trips to the site.

### 12.8.5 A472 / Crumlin Road Junction Capacity

The capacity of the A472 / Crumlin Road junction has been assessed for both 2006 and 2021 using the Transport Research Laboratory software PICADY 4.1. The capacity assessments assume a simple priority T-junction layout and the results are included in Appendix 12/4, summarised in Table 12/2.

**TABLE 12/2**  
**A472 / CRUMLIN ROAD JUNCTION CAPACITY ASSESSMENTS**

Movement	AM Peak Hour		PM Peak Hour	
	Demand / Capacity (RFC)	Max Queue (Vehicles)	Demand / Capacity (RFC)	Max Queue (Vehicles)
<i>Opening Year 2006</i>				
Turning Movements from Crumlin Road	0.030	0.0	0.051	0.1
Right Turn Movements into Crumlin Road	0.037	0.1	0.042	0.1
Turning Movements from Crumlin Road	0.088	0.1	0.071	0.1
Right Turn Movements into Crumlin Road	0.089	0.2	0.103	0.2

It is demonstrated that the A472 / Crumlin Road junction would perform adequately in both the opening and design years when taking into consideration the likely level of traffic accessing the development.

The maximum ratio to flow of capacity (RFC) would occur on the A472 – east arm in 2021 during the PM peak. The figure of 0.103 is well below the recommended RFC figure of 0.850. The maximum queue predicted occurs on the A472 – east arm; the

<sup>4</sup> TD 9/93 – ‘Highway Link Design’, DMRB Volume 6, February 2005.

figure of 0.2 indicates that there would be no significant queuing on any arms of the junction as a result of the development proposals.

## 12.8.6 Link Capacity

The additional vehicular traffic resulting from the development proposals in daily flow terms is assessed in Table 12/3 below. The table demonstrates that the development would result in a maximum increase in traffic flows on both arms of the A472 of 0.7%.

The Guidelines for Traffic Impact Assessment 1994 suggest that an increase in the existing traffic flow “*which exceeds 10%*” would constitute a traffic impact. Where traffic congestion exists, or would exist under new flows, a 5% increase would constitute a traffic impact.

In falling below the 5% threshold, it is not considered that the future traffic levels would materially affect, in capacity terms, the local road network and adjacent junctions.

## 12.9 Environmental Impact

### 12.9.1 Impact of Additional Traffic

For the purposes of this assessment, it is estimated that the development proposals would result in a total increase of 140 vehicles per day.

The future levels of traffic on the local road network within the Study Area are compared to the existing situation, in 12 hour terms, in Table 12/3 below. To provide a worst case impact assessment, the maximum traffic generated by the development proposals during the working week has been assessed against existing weekday traffic levels (July 2003). It is assumed that all traffic accessing the site does so during the 12 hour period (07:00 to 19:00).

**TABLE 12/3  
PREDICTED AVERAGE TOTAL AND HGV TRAFFIC INCREASES**

Road Arm	Existing Two Way Flows			%age Increase	
	12 Hour Flow	HGVs Flow	%age HGVs	Total	HGV
A472 – East	13,299	672	5.1%	0.7%	11.1%
A472 – West	13,299	672	5.1%	0.3%	3.7%

The Guidelines for the Environmental Assessment of Road Traffic suggest two broad rules to define an environmental impact and determine the need for an impact analysis:

1. Highways Links where traffic flows will increase by more than 30% (or the number of HGVs will increase by more than 30%);
2. Sensitive areas where traffic flows will increase by 10% or more.

The A472 is considered to be a primary distributor road and is therefore not considered to be located within a “*sensitive area*” and the 30% threshold is deemed to apply.

In falling below the 30% threshold, it is considered that there would be no material environmental impact resulting from future traffic movements.

Notwithstanding the above, consideration has been given to the impact on certain environmental issues, most notably road safety, in the sections below.

### ***12.9.2 Driver Delay***

Delay to drivers is generally caused at junctions and is only likely to be significant when the network is close to capacity.

Construction of the access road junction with the Crumlin Road would predominantly be undertaken off line with no disruption to traffic flows, except for tie-ins for which the traffic signal control would be in operation. Delay to drivers here is predicted to be minimal.

It is clear from the assessments carried out above, and from visual inspections, that the junctions within the study area would perform well within their available capacity under the development proposals.

It is therefore considered that the delay caused by current operations will be improved and no delay is envisaged as a result of this application.

### ***12.9.3 Pedestrian Amenity***

From site observations there is little or no pedestrian activity observed at the site entrance or on the local roads within the study area.

It is therefore considered that there is no perceivable impact on pedestrians in the current situation and hence there would be no perceivable impact as a result of this application.

## **12.10 Road Safety**

### ***12.10.1 Methodology***

A summary of the road traffic accident data is set out above, and the locations of recorded accidents are shown on Drawing TPS12/4.

The majority (90%) of the personal injury accidents recorded within the study area were classified as slight. There were also 3 serious and 2 fatal accidents recorded.

An assessment of the location of accidents has been undertaken to establish any areas of concern and to be able to determine the likely impact of traffic arising from the application site on existing accident rates.

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The recorded accidents have been grouped by location, as identified in Table 12/4 below.

## 12.10.2 Locations of Accidents

A summary of the data with regards to accident location over the roads within the study area is summarised in Table 12/4 below.

**TABLE 12/4  
SUMMARY OF RECORDED ACCIDENTS, 2000 TO 2005**

Road Section	Number of Recorded Accidents			
	Total	Slight	Serious	Fatal
A472 / A4043 Roundabout – Ponypool	15	15	0	0
A472 Between Hafodyrynys and Crumlin	6	5	0	1
A472 Between Pontypool and Hafodyrynys	11	10	0	1
A472 J/W A467 – Crumlin	6	6	0	0
A472 J/W Albion Road	2	1	1	0
A472 J/W B4471	3	2	1	0
A472 J/W Pont Bren	5	4	1	0
A472 Lower Race Junction	1	1	0	0
<b>TOTAL</b>	<b>49</b>	<b>44</b>	<b>3</b>	<b>2</b>

Table 12/4 demonstrates that the highest proportion (31%) of recorded accidents occurred at the A472 / A4043 roundabout junction to the west of Pontypool.

The second highest numbers of accidents (22%) occurred on the A472 between Pontypool and Hafodyrynys.

It is worthy to note that no recorded occurrences of accidents at the A472 – Crumlin road junction.

## 12.10.3 Principal Cause of Accidents

Based on the information given in the accident data, the principal cause of each accident has been identified and these are summarised in respect of their locations in a table included in Appendix 12/5.

Appendix 12/5 identifies that the principal cause of accidents within the study area was tail end shunts and manoeuvring at junctions, factors responsible for 17 (39%) and 12 (24%) of the 49 recorded accidents respectively. These types of accidents are considered typical accidents resulting from excessive speed and lack of driver care.

## ***12.10.4 Impact of Additional Traffic***

As detailed in the sections above, it is not considered that the proposed development would create an adverse impact on the operation of the local road network.

The proposed haulage link road and the proposed junction with Crumlin Road would be constructed in accordance with TD 9/93<sup>5</sup> and TD 42/95<sup>6</sup>. As such, they have been designed with adequate width and alignment for the safe passage of future HGV trips to the site.

It is therefore considered that the impact in terms of road safety from the proposed development would be minimal.

The type and nature of recorded accidents should, however, be emphasised and the policies and targets identified in the Torfaen County Borough Council Local Transport Plan in the respect of the need to reduce accident levels should be borne in mind.

## **12.11 Transport Policy**

An outline summary of the objectives of the Torfaen Local Transport Plan is given above. An assessment of the impact on the development proposals on transport is set out below.

### ***12.11.1 Modal Choice***

Due to the location of the site and the nature the operations of movements of material from site, the site would only be accessible by the new access road.

### ***12.11.2 Better Managed Road Network***

The LTP states that traffic should ‘maximise the benefit of existing transport infrastructure’ and ‘remove accessibility barriers to the economic development’.

The development site would seek to improve the standard of the local infrastructure and would also provide much needed economic development. The development would make effective use of the local road network.

### ***12.11.3 Target Reduction in Accident Levels***

The majority of accidents recorded within the study area are classed as slight and thus would not have incurred significant personal injury.

Further, it has been assessed that the predicted increase in traffic levels would not make any significant impact on accident levels.

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<sup>5</sup> TD 9/93 – ‘Highway Link Design’, DMRB Volume 6, February 2005.

<sup>6</sup> TD42/95 ‘Geometric Design of Major / Minor Priority Junctions’, DMRB Volume 6, January 1995.

## **12.11.4 Infrastructure Improvements**

Section 8.5 of the Torfaen County Borough Council seek improvements to the existing transport infrastructure to accommodate freight movements by road or rail.

It is considered that the construction of the proposed haul road and the methods of vehicular flow control would greatly enhance the local road infrastructure to accommodate large vehicular movements.

## **12.12 Public Rights of Way**

Details of public rights of way within the vicinity of the application site were obtained from Torfaen County Borough Council. The information provided is taken from the Definitive Map, prepared under the National Parks and Access to the Countryside Act 1949. The locations and local reference numbers of each public right of way within the vicinity of the application site are shown on Drawing TPS12/3.

Presently public footpaths / bridleways 423/20, 423/105, 337/54 and 337/53 cross the application site boundary from north to south. Bridleway 337/33 crosses the application sites boundary on the western edge. Under the development proposals footpaths 423/20 and 423/105 would be diverted to follow the western boundary perimeter of the application site. Footpaths 337/54, 337/53 and 337/33 would be diverted to follow the eastern boundary perimeter of the application site.

The development proposals would result in the constructing of the ascending haul road crossing the existing public footpaths 423/1 and 423/2 in two separate locations. Where the haul road crosses the current path of the footpaths, adequate crossing facilities would be provided to ensure the safety of ramblers. Where the current alignment of footpaths runs parallel to the proposed haul road, the footpath would be securely separated from the main haul road.

## **12.13 Mitigation**

It is not considered that the predicted increase in traffic on the local road network resulting from the development proposals would have a significant impact on the baseline flows on the surrounding road network.

It is noted, however, that the development proposals would result in a marginal increase in HGVs accessing the A472.

The development proposals therefore include the for the following mitigation measures to enable safe access into the application site and to ensure that the impact of additional traffic is minimised:

- Additional signage and road markings on the A472, Crumlin Road and the Blaen-y-Cwm and Cefn-y-Crib roads within the vicinity of the proposed haul road, warning of the presence of the development site;

- The creation of temporary soil screen mounds and extensive tree planting to reduce the visual impact of the haul road on the surrounding area;
- Careful routing of HGV traffic to avoid sensitive locations; and
- The temporary re-alignment of the public footpaths as outlined in 12.12 above, ensuring that adequate safety measures are undertaken to protect the walking public.

Vehicle routing would be achieved by a legal agreement with the planning authority and may be reinforced by weight restrictions imposed by the Highways Authority which, in both cases would be Torfaen County Borough Council. These proposals are presented in more detail in Section 3.4.

Such mitigation would be implemented following close liaison and agreement with the highway authority where appropriate.

## 12.14 Residual Impact

Taking into account of all factors assessed in this section and the mitigation measures outlined above, the final analysis of the impacts resulting from the planning proposals has been carried out and is summarised below.

• Junction Capacity	No Impact
• Link Capacity	No Impact
• Driver Delay	No Impact
• Environmental Impact	No Impact
• Road Safety	No Impact
• Public Rights of Way	No Impact
• <b><u>Overall</u></b>	<b><u>No Impact</u></b>

## 12.15 Conclusions

An assessment of the impacts on the local road and transportation network as a result of the proposed development has been undertaken.

It has been demonstrated that the proposed private haul road and Crumlin Road would not be significantly affected in capacity terms by the proposed development.

The proposed development would result in a marginal increase in baseline traffic levels on the A472. In falling below Government and Highways Agency guidance thresholds, it is concluded that the highway network would not be significantly affected in capacity terms by the proposed development.

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Standard Capacity tests have been undertaken on the existing A472 / Crumlin Road junction. These tests demonstrate that the proposed junction would operate within capacity for both of the design years.

It is concluded that the additional traffic generated by the application site would not have an adverse environmental impact when taking into account any increase arising from the proposed development.

A study of the road traffic accident records within the vicinity of the site has been undertaken; it is considered that the relatively small levels of traffic arising from the development proposals would not have an adverse affect on the current accident levels.

A number of public footpaths would be temporarily affected during the construction of the proposed new access road and would cross the new road with appropriate signage and steps on any steep embankments or cuttings. Taking into consideration of the mitigation measures proposed it is not considered that the public rights of way would be significantly affected.

In overall terms, it is concluded that the development proposals would have a minimal impact in terms of transportation, highways and public rights of way.