

6 TRANSPORT

6.1 Introduction

- 6.1.1 The purpose of this section is to identify the traffic, transport and movement patterns affected by the proposed development and to ascertain the significance of the impacts identified.
- 6.1.2 The A48 is a major distributor route for Bridgend and provides convenient access to the application site from the local, regional and, via the M4 - the national road network.
- 6.1.3 A Movement Assessment (contained within Appendix 6.1), prepared in accordance with the Institution of Highways and Transportation's "Guidelines for Traffic Impact Assessment", has been undertaken by Opus International Consultants to consider the impact of the development on the highway network and other potential movement issues.

6.2 Policy and Legislation

- 6.2.1 In 2004 a development proposal, described elsewhere in the submission, was accessed by a junction similar to that of the current proposal; via a new signalised junction constructed on the A48 and a secondary access from Ewenny Road via an extended Technology Drive. The major difference between the submissions is the current A48 junction proposal is located some 40 metres west of the original location. The causes of the westward shift are the environmental constraints associated with the original location. In 2004 planning approval was granted for the original junction and the principle of a Highways Act Section 278 Agreement established with the Highway Authority.
- 6.2.2 Bridgend County Borough Council (BCBC) adopted its Unitary Development Plan (UDP) on the 12th May 2005 which provides an allocation of high quality employment use, such as an extension of the existing science park, to the northern half of the Island Farm development site.
- 6.2.3 Regarding access to the development site, the UDP makes reference to issues of constraint along the A48 / A473 corridor, although it provides an opportunity to support development, if appropriate locations for highway improvements are identified.
- 6.2.4 The UDP also acknowledges the requirement for a new junction on the A48 to serve the extension to the science park which will also improve the existing adjacent Merthyr Mawr junctions with the A48.
- 6.2.5 BCBC have aspirations to undertake improvements to the A48 to increase capacity. Currently three projects, within the vicinity of the proposed development, are listed as potential highway schemes within the South East Wales Transport Alliance (SEWTA) final draft regional transport five year plan. These being:-
- Improvement to Ewenny Roundabout;
 - Improvement of Broadlands Roundabout; &
 - Dualing of A48 between Waterton and Laleston.
- 6.2.6 The Regional Transport Plan is currently being finalised, by SEWTA, with an anticipated

delivery to Welsh Assembly Government (WAG) in late September 2009 for approval before the end of the year.

6.3 Assessment Methodology and Criteria

- 6.3.1 The methodology contained within the Institution of Highways and Transportation “Guidelines for Transport Assessment” and the Institute of Environmental Assessment “Guidelines for the Environmental Assessment of Road traffic” have been adopted.
- 6.3.2 An assessment is made of the vehicle movements likely as a result of the development. The assumptions on which this has been made have been clearly indicated within the movement assessment and methods of mitigation are proposed, to reduce negative impacts identified.
- 6.3.3 The assessment criteria used, see section 4, relate to the effect of the impact, the magnitude of the impact and residual impact, and the duration of the residual impact.

6.4 Baseline Data and Assessment

6.4.1 A movement assessment is required by the local planning authority on the basis that the development will add to the traffic using the local road network and that the A48 will be affected by changes resulting from the development infrastructure. The junctions / roundabouts which will potentially be affected by the application site are;

- Broadlands roundabout (Non-signalised)
- Ewenny roundabout (Signalised)
- Ewenny Road / Technology Drive (Non-signalised) T-Junction
- Picton Park roundabout (Non-signalised)
- Waterton Cross roundabout (Signalised)
- Coychurch Roundabout (Signalised)
- Bocam Park roundabout (Non-signalised)

6.4.2 The movement assessment provides a comprehensive and robust assessment of the development’s impact on the operation of the local highway network inclusive of the following points:

- Former and current site usage
- Current transport and highway conditions;
- The proposed development;
- Future highway situation;
- Proposed Parking Allocation;
- Accident Analysis;
- Sustainable and mobility impaired access; &
- Green travel plan.

- 6.4.3 The scope of this report has been agreed with representatives of BCBC.
- 6.4.4 Baseline data in the form of a turning movement survey and Automated Traffic Count data (obtained from BCBC), ranging from 31st March 2008 to the 23rd June 2008, have been collated and calibrated to gauge the existing capacity at the junctions, peak flows rates and the extent of AM and PM peak hours.
- 6.4.5 BCBC have provided information of the scale of committed developments in the area which are likely to impact the same junctions.
- 6.4.6 Trip generation rates have been established using the industry standard Trip Rate Information Computer Systems (TRICs) for committed and proposed development traffic respective of each anticipated land use classification. At the request of BCBC 67.5th Percentile trip rates have been used.
- 6.4.7 The Office of National Statistics (ONS) Middle Super Output Areas (MSOA) has provided population numbers used to produce a gravity model for expected local traffic movements.
- 6.4.8 Growth factors have been interrogated using the Department for Transport's National Road Traffic Forecast (NRTF) combined with Origin / Destination factors determined by TEMpro 5.1 computer program using the Wales dataset for 'Wales' 'S East' 'Bridgend' 'Bridgend' inline with the recommendations of the Institution of Highways and Transportation.
- 6.4.9 This collection of information has enabled a number of future scenarios to be considered. Simulations have been run using the Department of Transport computer programs ARCADY 5.0 (roundabouts) and PICADY 4.1 ("tee" junctions) have been used. For junctions controlled by traffic signals, LINSIG (signalised "tee" junctions) and TRANSYT 13 (signalised roundabouts). Each respective software package has been used where applicable to test the capacity of the existing priority junctions.
- 6.4.10 Parking considerations have been made with reference to CSS Wales Parking Standards, 2008. Similarly Park and Ride proposals have been made with reference to the Department for Transport's "Bus Priority: The Way Ahead", November 2008.
- 6.4.11 Assessment of existing accident information has also been undertaken with reference to information obtained from Capita Glamorgan Consultancy during the period of 1st July 2003 to 30th June 2008. This shows that the junctions assessed have accident rates generally lower than or commensurate with national rates. With the exception of the two accidents, both involving motorcycles, near the petrol station entrance near Picton Court Roundabout, the accidents are spread along the whole of the route under consideration. One fatal accident was recorded in the assessment period involving a young driver losing control at night in wet conditions.

6.5 Predicted Effects

Construction

- 6.5.1 The construction of the works will affect the existing highway infrastructure both by changing and increasing vehicle movements. Its impact will be seen in a temporary increase in traffic flows in the area, predominantly along the A48/A473 corridor, as a result of vehicles delivering materials and plant, as well as carrying construction staff employed on the site.

- 6.5.2 Construction operations will be carried out during normal working hours (0800 to 1800 hours Monday to Friday and 0800 to 1300 hours on Saturdays.) Construction workers are likely to remain on-site throughout the day and will thus increase car traffic flows in the area only on their arrival and departure from site. Parking for construction staff will be within the contractor's compound located on the development site.
- 6.5.3 Deliveries of plant and materials by HGVs will occur regularly during the construction period however they will generally occur outside the peak periods.
- 6.5.4 Appropriate signage will be put in place to ensure local residents and road users are aware of the nature, extent and timing of the works, and of their impact on local roads. Details of access routes and other measures will be agreed with BCBC prior to the start of works and properly enforced under contractual arrangements.
- 6.5.5 The construction of the new access from the A48 into the site will be undertaken at an early stage in the overall construction programme. This will introduce cycle facilities and improve the existing pedestrian facilities past the site. In addition the junction will incorporate a new controlled pedestrian/cyclist crossing of the A48.
- 6.5.6 From this assessment it can be seen that the majority of construction related trips will be outside the peak periods when there is available capacity on the adjacent highway network. The impact of the construction work on traffic, transport and movement patterns at all considered junctions is therefore likely to be minor and short term.

Operational

- 6.5.7 Two different scenarios need to be considered in considering the impact of the development. The first being the effect of employees at the science park and general use of the sports village during peak weekday AM and PM periods and the second from match attendance at the stadia. Maximum generation from the development is expected from stadia use, predominantly at the weekend, but since this peak occurs at periods of lower flow on the A48, the worst condition for overall traffic delay is predicted to occur during the weekday morning and evening peaks, namely 08:00 - 09:00 hours and 17:00 - 18:00 hours.
- 6.5.8 The new accesses to the development will be designed and constructed in accordance with the Welsh Assembly Governments Design Manual for Roads and Bridges and the Local Authorities design standards.
- 6.5.9 During the operational phase of the development it is not predicted that there will be a significant number of trips by HGV's and no hazardous loads are envisaged.
- 6.5.10 The traffic surveys and analyses reported in the Movement Assessment indicate that the existing A48 corridor is operating above capacity at peak periods and is also expected to be operating above capacity when the development proposals are implemented.
- 6.5.11 Even without the Island Farm Development the three roundabouts on the A48 (Broadlands, Ewenny and Picton) will generally be overloaded by 2012 when the effects of the committed developments are incorporated. Conditions will be worse in 2022.
- 6.5.12 The traffic effects have been determined under a worst-case scenario. Vehicle generation has been determined using 67.5th percentile TRICS rates based on proposed development areas resulting in 611/149 and 252/520 inbound/outbound trips during the AM and PM periods respectively. Lower vehicle generation can be achieved through better public transport

provision and increased use of walking and cycling through Green Travel Plans. In addition all trips to the application site have been assumed to be new trips, ignoring the potential for diverted trips to the sports village and science park. Employees within the extension to the science park may already travel to work along the A48 or become residents within the committed residential development at Broadlands.

6.6 Mitigation and Enhancement Measures

- 6.6.1 The mitigation measures proposed to support the development include provision of park & ride facilities and improvements in the provision for alternative modes of access including public transport, cycling and walking. In addition to serving the park & ride buses will also convey users from Bridgend Town centre to the science park (both the existing and proposed extension) and sports village. Facilities for pedestrians and cyclists will also be provided to improve the external links to the site. Within the site good pedestrian linkage between the different elements of the development are proposed.
- 6.6.2 Events management planning will be essential for the operation of the stadia. The Events Management Plan will have to be prepared in consultation with representatives of the facility user/BCBC/police/WAG (Transport Directorate) etc and will need to be subject to periodic review. The strategy for the stadium events with the potential to generate large numbers of car trips will focus primarily on an off-site parking strategy allied to park and ride that will reduce the traffic impact in the vicinity of the site. This element of the scheme is dependant on the identification of suitable sites for remote parking and negotiations with land owners.
- 6.6.3 During general operation it is not predicted that the development will change the character of the existing traffic and so existing accident information is considered representative of the future situation. For major events at the proposed stadiums an event management plan will be produced considering access, parking and marshalling.
- 6.6.4 As BCBC's plans to undertake improvements to the A48 come into fruition, capacity of the highway network will see improvement. Consequently, the figures for anticipated capacity and queue lengths at the investigated junctions can be regarded as a worst case scenario with any improvements made to the A48 having a positive effect on the same.
- 6.6.5 Proposals and options to mitigate anticipated traffic are summarised in table 6.2 and discussed below.

Pedestrians and Cyclists

- 6.6.6 The scheme is designed to encourage maximum use of walking and cycling by the provision of segregated pedestrian and cycleways within the application site and alongside the A48 junction proposal, linking wherever possible to existing amenities. As part of the proposed development, new cycle facilities are proposed along the improved section of the A48. Cyclist friendly, toucan crossing points, are to be provided at the development's access junction. Cycle park facilities will be provided within the development.

Car Parking

- 6.6.7 The master plan for the site, illustrates substantial parking facilities for the general usage of the development which will benefit: -

- Users of the sports village and science park extension;
- Spectators for non – special event occasions; &
- Parking for the town centre with a park and ride.

Park and Ride Facility

- 6.6.8 It is intended that the park and ride facility will operate between the hours of 7.00am and 9.00pm, at intervals of 15 minutes during the peak periods and 30 minutes during off-peak periods. The buses will travel to Bridgend town centre and the bus station on a short circular route, providing a comprehensive coverage of the town with minimal journey times.
- 6.6.9 Detailed arrangements will be agreed between the bus operators and the BCBC. The support of the BCBC for the park and ride facility is fundamental to the success of the strategy. In addition to serving the park and ride the buses would also convey passengers from the town centre to the existing and proposed science park and sports village.
- 6.6.10 The benefits of the park and ride facility are: -
- Reduction of traffic within the town, thus reducing the environmental impact;
 - Improving access to the sports village and business park;
 - Substantial improvement to the existing public transport links between the site, town centre and other local districts;
 - Bus services to the town centre and bus station will encourage further use of bus transport from the bus terminus; &
 - Improved public transport serving major events with limited special event parking facilities.

Special Event Measures

- 6.6.11 There are 3 major considerations associated with generated traffic to special events at the application site. They are: -
- Ability of existing highways to accommodate the additional traffic flows;
 - Event organiser to cater for parking of car and coach arrivals; &
 - Event organiser to provide transport from parking facilities to the development site.
- 6.6.12 The A48 has the capacity to cater for the generated traffic at off-peak periods, however, consideration has to be given to the organisation of the limited special event parking available and the disbursement of this traffic at event closure.
- 6.6.13 An Event Management Plan will be required which will contain reference to the following:-
- **Parking - On-site:** The application site will provide approximately 1000 reserved

car parking spaces for any particular event, (reservations will be determined in advance by the event hosts). Alternative parking spaces will be provided for other leisure users, although the number may be limited at times of special events. Advanced publicity of the limited on-site parking availability will discourage non - event car trips to the site entrance;

- **Parking - On-site - Event Closure:** Event marshals will regulate the appropriately phased release of traffic onto the A48. This will be achieved by controlling the timings of the traffic signal phases to optimise the release of vehicles onto the A48, whilst mitigating delay to through traffic on the A48. Cars will only be able to egress the site via the A48 junction;
- **Parking – Off-site:** To mitigate parking within residential sites and other areas likely to be unacceptable to BCBC , it is intended to provide event parking areas within and adjacent to the A48/A473 corridor. These will be located predominantly to the east of the site, as the major proportion of generated traffic is likely to come from that direction. The event organisers will need to formalise agreements with owners to allow their land, parking areas etc. to be used during special events. Park and ride buses will collect spectators at regular intervals prior to the event and provide a shuttle service to the temporary parking areas post event. For these measures to work, adequate media publicity together with signage will be required;&
- **Park and Ride - Event Closure:** During events, park and ride buses will be stationed along Technology Drive and within the science park areas reserved for business car parking. Egress will be along Technology Drive, a dedicated exit route for buses and coaches. The park and ride buses will deliver spectators to the town centre and the dedicated parking areas referred to above.

Table 6.1 - Summary of Potential Impacts

Receptor / Environmental Resource	Description of Effects	Significance of Impact	Mitigation Measures	Residual Impact
Construction Impacts				
Local roads and road users	Increase in traffic flows along A48 owing to site access and deliveries	Moderate	Consultation with BCBC to identify preferred access routes and times; signage to ensure local residents and other road users are aware of works.	Temporary Minor Adverse Short term
Operational Impacts - General				
Local roads and road users	Increase in traffic flows along A48 & Ewenny Road.	Moderate	Improvements to A48 to accommodate existing and committed developments planned by BCBC.	Permanent Minor Adverse Long term

Receptor / Environmental Resource	Description of Effects	Significance of Impact	Mitigation Measures	Residual Impact
	Illegal right runs into/out of Merthyr Mawr Road	Minor	Provision of new junction on A48 incorporating a central reserve will eliminate illegal right turn manoeuvres.	Permanent Minor Beneficial Long term
Public transport	Limited parking and congestion within Bridgend Town Centre and limited bus service.	Major	Provision of park & ride facility resulting in a reduction in car trips into Bridgend Town centre and provision of public transport for exiting Science Park and proposed development.	Permanent Major Beneficial Long term
Pedestrians and cyclists	Limited facilities	Minor	Provision of pedestrian footways and cycleways within development and on A48	Permanent Minor Beneficial Long term
	Limited crossing points on A48	Moderate	Provision of controlled crossing within proposed junction.	Permanent Moderate Beneficial Long term
Operational Impacts – Capacity crowd event				
Local roads and road users	Increase in traffic flows along A48/A473	Major	Event would occur at off peak periods very infrequently. Event management plan to be produced, limiting parking on site in conjunction with operation of remote park & ride sites.	Temporary Major Adverse Long term

6.7 Summary and Conclusions

- 6.7.1 The application site is ideally located adjacent the A48, a major highway providing direct local, regional and, via the M4, national access.
- 6.7.2 Whilst the A48 is currently operating at or above capacity at peak periods and will continue to do so at the future design dates, the traffic generated by the proposed development at off-peak periods can be accommodated. BCBC have aspirations to increase the capacity of the A48 and are currently awaiting confirmation of funding as part of the SEWTA Regional Transport 5 year plan.

- 6.7.3 The implementation of a park and ride facility has many advantages with the support of BCBC fundamental to its success.
- 6.7.4 The site can accommodate special events subject to the implementation of a Event Management Plan. The plan will need to regulate the arrival and departure of spectators/visitors in a manner which minimises delays and disruption to both the local populace and normal day to day activities.

