



South Sebastopol - Barratt Phase 1

Environmental Statement - Addendum (revised)

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Comments

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1. Introduction

Preamble

- 1.1. Waterman has been appointed by Barratt Homes Wales Ltd to coordinate and collate an Environmental Statement (ES) as part of the EIA process to support a detailed scheme proposing residential development on part of a site known as South Sebastopol, Cwmbran, Torfaen. This application follows the submission in 2001 of an outline application for the development of the wider site for 1200 dwellings which has yet to be determined (LPA Ref 01/P/05525). It is accepted that this application will not be determined until such time as the outline application is determined and should the outline application be refused for whatever reason then this application is unlikely to be considered favourably. However, the time constraints on the development are such that it has been necessary to submit this application in advance of the determination of the outline application.
- 1.2. This document is intended to be read as an Addendum to the Environmental Statement (ES) submitted as part of the outline planning application for the whole of the South Sebastopol site (LPA ref. 01/P/05525). Therefore, to avoid unnecessary duplication, many of the sections within this Addendum have been summarised from the original outline ES.
- 1.3. The adopted Torfaen Local Plan designates some 138 hectares of land at South Sebastopol as a General Development Area under policy S2/2. The reasoned justification for this policy confirms that this allocation constitutes the Local Plan's principal housing allocation and is intended to accommodate some 1200 dwellings in addition to neighbourhood shopping, a primary school, community facilities and formal and informal open space. The precise extent of the site and the distribution of land uses, landscaping and infrastructure is to be controlled by a Development Framework. This Environmental Statement and the application which it supports is intended to take forward Phase 1 of that allocation. It is relevant to note that the planning application site, and therefore the area covered by the ES is not exactly co-terminus with the General Development Area boundary defined by the Local Plan. Most significantly the golf course is excluded from the application site boundary.
- 1.4. The need for, and the possible locations of, land for housing was considered extensively as part of the Local Plan preparation process.
- 1.5. Barratt Homes Wales Ltd has worked closely with Torfaen County Borough Council and other stakeholders to develop the Master Plan and Management Plan. The final document has been the subject of wide-ranging consultation with the Council and other interest groups. Where relevant the assessments in this Environmental Statement are based on the Environmental Statement prepared to support the outline application for the whole Master Plan Area, the illustrative proposals set out in the Master Plan (included in Appendix 1.2) and the more detailed layout for Phase 1 prepared by Hammond Yates (included in Appendix 1.1). It is anticipated that, where appropriate, the outline consent will be conditioned to ensure that subsequent reserved matters applications are consistent with the aforementioned Master Plan and Phasing Plan (included in Appendix 1.3), Landscape Plan (included in Appendix 1.4) and Management Plan (prepared by Asbri Planning). In this respect, the Phase 1 design/management proposals have been prepared with reference and consideration of aforementioned documents relating to the outline application.

Legislative Background

- 1.6. The purpose of Environmental Impact Assessment is to provide the local planning authority, when determining a planning application, with sufficient information to allow it to properly assess the

environmental effects of a project. The legislative background to this requirement originated with the EEC Directive on 'The Assessment of the Effects of Certain Public and Private Projects on the Environment' (85/337/EEC) and was amended by Council Directive 97/11/EC. These Directives are implemented for the purpose of determining planning applications via the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 which came into force on 14 March 1999.

- 1.7. The above Regulations establish the criteria which determine whether Environmental Impact Assessment is necessary or not and identify the nature and scale of the projects and their applicability to be determined as Schedule 1 or Schedule 2 projects. Schedule 1 projects require EIA in every case. Schedule 2 projects may or may not require EIA dependent on whether the project in question is likely to give rise to significant environmental effects by virtue of factors such as nature, size or location. Column 2 of Schedule 2 establishes that urban development projects with an area exceeding 0.5 hectares fall to be screened using the criteria set out in Schedule 3. In this case the applicant has volunteered the ES in accordance with Regulation 4(2)(a). Therefore the development is defined as EIA development for the purposes of the Regulations.

Method Statement

- 1.8. The scope of the ES has been determined in accordance with Schedule 4 of the Regulations. The methodology adopted in preparing the Statement is largely that described in the Department of the Environment Planning Research Programme "Good Practice Guide" produced in 1995 which gives advice on the preparation of Environmental Statements for planning projects that require environmental assessment. The scope of that exercise has been discussed in advance with Torfaen County Borough Council. In specific areas of analysis the methodology adopts specific National Guidance for Wales, or where none has been published, the methodology defaults to best practice methodology. Specific methodology in these cases is referred to in each individual Chapter.
- 1.9. Much of the analysis has also been supplemented by field survey and recourse to recent and historical records and data.

2. Project Description

The Site – Context

Site and Surroundings

- 2.1. The site lies in the southern part of Torfaen County Borough, some 2km to the north-west of Cwmbran town centre. Pontypool is approximately 3.5km to the north and Newbridge 7.5km to the west. Further afield, Newport is some 10.5km to the south and Cardiff 24km to the south-west (all straight line distances).
- 2.2. The site itself covers an area of approximately 9ha (22.03 acres). It forms part of the wider South Sebastopol development area (as identified on the Master Plan proposed under application 01/P/005525) which extends to some 100.6 hectares (249 acres) in total.
- 2.3. The site is located in the north-eastern corner of the Master Plan area, and covers an area of approximately 9ha, and is bounded to the west by a farmland, to the east by Avondale Road and Cwmbran Drive (the A4051), and to the north and south by the built up areas of Panteg/Sebastopol and Cwmbran respectively. A site plan is included in Appendix 1.1 herewith.
- 2.4. The existing site is predominantly used for agriculture, with some areas of woodland. The Monmouthshire and Brecon Canal lies to the west of the site in a north-south orientation. A dismantled railway line, which is now utilised as a cycle track, runs north-south within the site's boundary and separates the site in two. A disused listed barn lies within the extent of the application area (although it does not form part of the application site) and the site adjoins the curtilages of two existing dwellings.
- 2.5. In general the land falls from north-west (at around 90mAOD) to south-east (at around 76mAOD) with the steepest gradients being at the western part of the site. In this area several streams have formed steep sided valleys.
- 2.6. The site is classified on the provisional Agricultural Land Classification Map for Wales as predominantly Grade 4 Agricultural Land with some non-agricultural use.

3. Project Proposal

- 3.1. This Environmental Statement supports a detailed application that follows the submission of an outline Planning Application (No. 01/P/05525) for the overall Master Plan Area.
- 3.2. The current proposals comprise 199 no. residential dwellings.
- 3.3. This scheme will be developed on predominantly greenfield land (i.e. land which has not sustained building development previously) which comprises mostly agricultural land with small pockets of woodland and a number of detached properties.
- 3.4. The documents submitted in support of this Planning Application are:
 - Design & Access Statement (prepared by Hammonds Yates Ltd)
 - Planning Layout (prepared by Hammond Yates Ltd)
 - House Type Elevation and Floor Plans (prepared by Hammonds Yates Ltd)
 - Street Scenes (prepared by Hammonds Yates Ltd)
 - Phasing Plan (programme – prepared by Hammonds Yates Ltd)
 - Environmental Statement (prepared by Waterman)
 - Management Plan (prepared by Soltys Brewster Consulting)
 - Soft Landscape Plan (Reserved Matters) 1 of 2 and 2 of 2 (1040902/PL/P/001 and 002)
 - Phase 1 Landscape Management Plan (1040902/R01)
 - Code for Sustainable Homes Pre-Assessment (prepared by Asbri Planning Ltd)

Aims of the Development Framework

- 3.5. The Development Framework was submitted as part of the outline application for the site but the aims and objectives of the Framework will be adhered to in this current scheme.
- 3.6. The Development Framework seeks to draw on the distinctive aspects of the site identified on the Principal Constraints Plan in order to create:
 - An integrated, comprehensive and sustainable development in accordance with the policies and proposals of the adopted Local Plan;
 - A development which takes account of the existing landscape, the canal, pedestrian and cycle routes and existing dwellings;
- 3.7. While at the same time promoting:
 - A distinct community with a well defined village centre, a bold landscape setting and an urban form which reflects and reinforces the character of the area.
 - A development area of 100.6 hectares (249 acres) accommodating approximately 1,200 dwellings.

Objectives

- 3.8. Given the opportunity to provide a totally new residential environment the overall approach is to create a new balanced community that:
 - Makes best use of the existing features such as woodland, tree lined hedgerows, streams and the Monmouthshire and Brecon Canal.

- Has a clear identity that gives residents and visitors a sense of place.
- Echoes the features of a traditional urban settlement including a mix of homes and recreational, social, welfare and educational facilities with local small scale employment opportunities intermixed to create a balanced community.
- Has a focus in the form of a village centre providing a range of facilities and which also relates well to the existing housing to the north of the site thereby fostering a sense of community
- Provides a range of housing from first time buyer homes, through to family homes and includes smaller units suitable for the elderly with the aim of creating a balanced community of all ages and incomes.
- Creates a safe and pleasant place for pedestrians and cyclists and which accommodates the motorcar within a traffic calmed predominantly 20mph environment.
- Ensures that buildings enhance the pedestrian environment in the way that they relate to public streets and thereby provide an attractive, safe and inviting public realm.
- Provides an integrated public transport solution with emphasis on bus penetration throughout the site and direct and safe pedestrian and cycle routes serving destinations within and adjoining the site.
- Creates a community with a connected and permeable public network of streets and open spaces that act as the main structuring elements within the settlement.
- Reinforces that structure with a hierarchy of buildings and spaces that provide a sense of place, and act as landmarks of community identity.

3.9. The broad principles that are incorporated into the Development Framework are:

Landscape

3.10. The existing landscape structure constitutes a major determinant of the disposition of land uses within the proposed development. The overriding principle adopted is to retain and protect those existing landscape features which give the site its existing quality and character. These are the canal, woodland, streams and associated riparian vegetation, and the site hedges. They have been afforded generous buffer zones not only to built development but also from ground works. The localised hill and ridge lines around Wrens Nest Farm are treated with particular care as they are particularly visually sensitive and provide topographical relief from the general eastward slope of the site. In the order of 50% of the gross site area is left undeveloped and will be retained as open space or woodland. The following principles are adopted in respect of specific landscape components:

Central Open Space Corridor

3.11. The formulation of a central open space strategy through the core of the site, focusing around the pedestrian crossing over the canal tunnel, linking areas of substantial vegetation within the site.

Canal Corridor

3.12. Protecting and enhancing the distinct character of the canal corridor, limiting views to the development in sensitive locations and opening up the canal in the vicinity of the local centre/canal basin.

Focal Open Space

- 3.13. Retaining the 'special' landscape character of the pedestrian crossing of the canal over the existing tunnel. Views out to the hillside should be retained, as should existing buildings to create focal points within the landscape. The exposed ridge line above Wren's Nest Farm should remain free from development.

Visually Prominent Slopes

- 3.14. Where possible visually prominent slopes should be broken up with bands of new structure planting, reinforcing existing hedgerow networks where appropriate.

Ecologically High Quality Hedgerows

- 3.15. Where feasible the hedgerows identified within the ecological assessment as being particularly valuable from an ecological aspect should be retained, incorporating them meaningfully within the development.

Road Linkages through Open Space

- 3.16. Establishing the alignment of key road corridors as they pass through the open space. The roads should be designed to follow the existing site contours, thereby reducing the impact in these principal areas.

Ecology

- 3.17. The aim is to endeavour to retain as much of the existing higher value habitats and features of the site within the proposed development as possible. The principles to be adopted are:
- All areas of woodland will be retained within the development. The detailed design will aim to maintain hydrological continuity with the wet woodlands.
 - The hedgerows identified in the surveys as being of high ecological quality will be retained where possible.
 - The canal will be preserved as a navigable waterway and all aspects of the development that will impact upon it will be given the highest consideration with regard to ecological impacts.
 - Principal wildlife corridors associated with the site will be maintained wherever practicable.
 - The areas to be retained will be made as large as is possible within the constraints of the proposed development, with the aim of creating substantial blocks of mixed habitats that can be sustainably managed for wildlife in the long term.
 - The long term preservation and management of some areas of scrub vegetation and grassland associated with locally important invertebrate species will be supported.
 - The areas to be retained will remain true to the Local Plan requirement for a 'green wedge' through the proposed development. The detailed design will place infrastructure at points of minimum ecological impact as far as is practicable. In that respect existing breaches in hedgerows will be used, wherever possible, for the siting of roads, footpaths, or services.

Hydrology

- 3.18. The site is currently drained by a series of streams flowing west to east through the site and discharging to the Afon Llwyd to the east. The southern stream initially discharges into the canal before appearing again as an overflow from the canal.

- 3.19. Torfaen County Borough Council have confirmed that they will not permit flows in the streams, particularly the central and southern ones, to be increased by discharging from the development as sewer systems further downstream which they pass through prior to outfalling to the Afon Llwyd occasionally surcharge. Conversely flows should be maintained at levels to ensure continued supply to vegetation etc along the streams lengths. It is thus intended, where possible, to retain all streams and their tributaries by culverting where appropriate within the development infrastructure. Flows from the .development will be collected in new sewer networks, pass under the canal and discharge to balancing ponds strategically located on the low eastern side of the development. Flow from the main balancing ponds will discharge to the offsite requisition sewer and then to the Afon Llwyd whilst two smaller ponds located in the north east and south east of the site will discharge to the adjacent streams as agreed in principle with TCBC.
- 3.20. Allowable discharge from the ponds will be based on 20 l/sec/hectare of development area as agreed with the Environment Agency and endorsed by TCBC.

Topography

- 3.21. Significant parts of the wider Master Plan area lie at gradients that are steeper than 1:8. This makes residential development more expensive both in terms of construction costs and land take (eg. split level buildings and retained slopes) and substantially reduces the density that is achievable. This constraint makes it necessary to achieve at least 48.5 hectares (120 acres) of the total developable area over the wider Master Plan area.

Circulation

- 3.22. The aim is to make South Sebastopol a safe and convenient place for pedestrians and cyclists while accommodating the motorcar in a traffic calmed environment in accordance with the latest version of Manual for Streets. The two principal vehicular access points are to the east in Cwmbran Drive, with secondary access to the residential areas north and south of the site. The existing footpath and cycle network will be incorporated into the scheme with the aim of safeguarding existing routes and providing new linkages within the site, especially to the village centre and open space areas, and to adjoining routes and areas.
- 3.23. The topography of the site will also play a major part in the alignment and route of the network of access roads on the site. The slope and the need to minimise cut and fill on the site will mean that the looped distributor road will have to meander with the contours not against them.

4. Residual Impacts, Environmental Effects and Management

Introduction

- 4.1. This chapter of the ES presents a summary of the mitigation, monitoring measures and Residual Impacts identified through the EIA process and full details can be found in the respective ES chapters.
- 4.2. Schedule 4 of the EIA Regulations requires ESs to include:
- “...a description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.”*
- 4.3. The mitigation measures included in this ES generally fall into one of four categories:
- mitigation incorporated into the Development Parameters;
 - additional mitigation to be applied to the Proposed Development during detailed design;
 - mitigation through controls on construction procedures; or
 - mitigation through controls on operational procedures.
- 4.4. Table 1 outlines a topic by topic summary of the key issues addressed by the EIA including the mitigation measures identified and the Residual Impacts. It can be seen that prior to the implementation of mitigation measures the significance rating is generally negligible to adverse. There are a few exceptions to this however as in the case of Society and Economy where job creation even in the construction stage would be beneficial. Following the implementation of the proposed mitigation measures however the residual significance rating is generally negligible to beneficial. This confirms that the proposed mitigation measures are considered to be effective in dealing with the potential development impacts.
- 4.5. With regard to cumulative effects generally there are in the immediate area two planning applications as part of the Avesta scheme that are considered likely to have cumulative effects on in particular ecology and landscape. A full application is currently being processed and an approved reserved matters application has been approved these are for:
- 10/P/00542(W) – full application – “residential let mixed use development comprising apartments and housing (amended scheme)” – not yet determined (Barratt Homes)
 - 10/P/00033(W) – reserved matters application – “reserved matters for 209 dwellings” – approved 31st August (Persimmon Homes)
- 4.6. This ES has considered the cumulative effects relating to ecology and landscape and the cumulative effects of traffic generation and transportation issues generally have also been considered.

Review Procedure

- 4.7. The Proposed Development will be built out over a period of two to three years (from 2012 to 2015), subject to securing planning permission. It is recognised that environmental standards and legislation that currently apply to the Proposed Development may change during this period. In light of this, the Applicant intends to undertake regular reviews of the Proposed Development, to ensure that best practice and environmental legislation is being followed. The review process will be iterative and ongoing, so that new information is identified at an early stage and incorporated into the Proposed Development.

- 4.8. The best practicable construction techniques will be incorporated into the works, which will be updated when new techniques are devised. This would also apply to monitoring of the works, and ensuring that the most effective mitigation measures are used to minimise disturbance to surrounding receptors. The Applicant has committed to producing an CEMP which will clearly set out the methods of managing environmental issues during the demolition and construction works. The CEMP will be set out in an iterative document which will be updated for each phase of work, thus ensuring it always incorporates current mitigation techniques and practices. The CEMP will be formulated at the detailed design stage and will be agreed with Torfaen County Borough Council and the Environment Agency (Wales) prior to works commencing on the Application site.



Table 1: Summary of mitigation and monitoring measures

ES Chapter/ Topic	Potential Effect	Nature of Effect (Permanent/ Temporary)	Significance (Major/ Moderate/ Minor) (Beneficial/ Adverse/ Negligible)	Mitigation/ Enhancement Measures	Residual Effects (Major/ Moderate/ Minor) (Beneficial/ Adverse/ Negligible)
ECOLOGY AND NATURE CONSERVATION					
Construction					
	Designated Sites	Negligible	Negligible	None Required	Negligible
	Woodland and Scrub	Temporary	Minor Adverse	Detailed within EMP	Minor Beneficial
	Hedges	Temporary and Permanent	Minor Adverse	Detailed within EMP	Minor Beneficial
	Grassland	Temporary and Permanent	Minor Adverse	Detailed within EMP	Minor Beneficial
	Monmouthshire and Brecon Canal	Temporary	Minor Adverse	Detailed within EMP	Negligible
	Badgers	Temporary and Permanent	Minor Adverse	Detailed within EMP	Negligible
	Bats	Temporary and Permanent	Minor Adverse	Detailed within EMP	Minor Beneficial
	Birds	Temporary and Permanent	Minor Adverse	Detailed within EMP	Minor Beneficial
	Great Crested Newts	Negligible	Negligible	Detailed within EMP	Negligible
	Invertebrates	Temporary and Permanent	Minor Adverse	Detailed within EMP	Negligible
	Reptiles	Temporary and Permanent	Minor Adverse	Detailed within EMP	Negligible
	Common Dormouse	Negligible	Negligible	None Required	Negligible
	White-clawed Crayfish	Temporary	Minor Adverse	Detailed within EMP	Negligible
	Otters and Water Voles	Temporary	Minor Adverse/Negligible	Detailed within EMP	Minor Beneficial/ Negligible

Completed Development					
	Designated Sites	Negligible	Negligible	None Required	Negligible
	Woodland and Scrub	Permanent	Minor Adverse	Detailed within LEMP	Minor Beneficial
	Hedges	Permanent	Minor Adverse	Detailed within LEMP	Minor Beneficial
	Grassland	Permanent	Minor Adverse	Detailed within LEMP	Negligible
	Monmouthshire and Brecon Canal	Permanent	Minor Adverse	Detailed within LEMP	Minor Beneficial
	Badgers	Permanent	Minor Adverse	Detailed within LEMP	Minor Beneficial
	Bats	Permanent	Minor Adverse	Detailed within LEMP	Minor Beneficial
	Birds	Permanent	Minor Adverse	Detailed within LEMP	Minor Beneficial
	Great Crested Newts	Negligible	Negligible	None Required	Negligible
	Invertebrates	Permanent	Minor Adverse	Detailed within LEMP	Minor Beneficial
	Reptiles	Permanent	Minor Adverse	Detailed within LEMP	Minor Beneficial
	Common Dormouse	Negligible	Negligible	None Required	Negligible
	White-clawed Crayfish	Permanent	Minor Adverse	Detailed within LEMP	Negligible
	Otters and Water Voles	Permanent	Minor Adverse/Negligible	Detailed within LEMP	Minor Beneficial/ Negligible
Cumulative Effects					
	During the construction and completed development stage of the development there is likely to be a cumulative effect in the local area. It is anticipated however that these impacts as a result of the scheme are minimal due to the geographical context of the site.	Permanent	Negligible	site specific mitigation proposed within the EMP and LEMP	Negligible
SERVICES (UTILITIES)					
Construction					

	Accidental damage caused to existing services during the construction phase	Temporary	Minor Adverse	Introduction and enforcement of construction phase protocols to mitigate the potential for accidental damage, etc	Negligible
	Current risk of flooding by overland flow from the site could continue throughout the construction phase	Temporary	Minor Adverse	Programme of construction of drainage works early in the construction programme	Negligible
Completed Development					
	Current inadequacies in delivery capacity on mains water supply require off-site enhancements to supply.	Permanent	Major Adverse	Re-design of off-site distribution systems to provide adequate water supplies.	Major Beneficial
	Electricity supply adequate for proposed development	Permanent	Negligible	On-site distribution enhancements may be required to accommodate extended use of electricity	Major Beneficial
	Gas supply adequate for proposed development	Permanent	Negligible	On-site distribution enhancements may be required to accommodate extended use of Gas Supply.	Major Beneficial
Cumulative Effects					
	No other schemes in locality contributing to a cumulative effect assessment				
SOCIETY AND ECONOMY					
Construction					
	A variety of construction jobs provided over a 20 year period, depending on future take-up rates	Temporary	Moderate, beneficial	Impacts of construction phase controlled by conditions on planning permission	Moderate/beneficial effect, eg local spending patterns.
Completed Development					
	Provision of range and choice of market and affordable units	Permanent	Moderate, beneficial		Moderate beneficial, eg will reduce need for releases in more sensitive areas
	Provision of improved education and community facilities	Permanent	Moderate, beneficial		Moderate beneficial, eg reducing need to travel to existing facilities

	Enhancement of canal corridor and improved recreation/open space	Permanent	Minor, beneficial	Part of overall mitigation to reduce visual and environmental impact of built development	Minor beneficial – linked to wider canal initiatives
Cumulative Effects					
	Regeneration benefits – combination of job creation, provision of housing expansion area and increasing catchment population.	Permanent	Moderate beneficial		Moderate beneficial, eg increasing catchment of Pontypool/Cwmbran town centres

LANDSCAPE CHARACTER AND VISUAL ASSESSMENT

Construction					
Landscape Character					
	LCA1A: Afon Lwyd Valley: Escarpment	Direct, medium-term	Minor to major adverse	<ul style="list-style-type: none"> • Phased build out • Adoption of CoCP • Tree protection fencing • Selective use of hoarding 	Direct, medium-term moderate adverse
	Special Landscape Area to the west	Direct, medium-term	Moderate adverse	As above	Direct, medium-term minor adverse
	LCA1B: Afon Lwyd Valley: Rolling Countryside	Direct, medium-term	Minor adverse	As above	Direct, medium-term negligible
	Special Landscape Area to east	Direct, medium-term	Minor adverse	As above	Direct, medium-term negligible
	LCA2: Mynydd Twyn-glas Uplands	Direct, medium-term	Negligible	None specific required	Direct, medium-term negligible
	LCA3: Afon Lwyd Valley Settlements	Direct, medium-term	Negligible	None specific required	Direct, medium-term negligible
	Brecon Beacons National Park	Direct, medium-term	Negligible	None specific required	Direct, medium-term negligible
Landscape Features					
	Woodland Blocks	Direct, medium-term	Minor adverse	<ul style="list-style-type: none"> • Adoption of CoCP • Tree protection fencing 	Direct, medium-term negligible
	Hedgerows	Direct, medium/long-term	Minor adverse	As above	Direct, medium-term negligible
	Brecon and Monmouthshire Canal	Direct, medium-term	Minor adverse	As above	Direct, medium-term negligible

Visual Amenity					
Receptors within the site	Direct, medium-term	Major adverse	<ul style="list-style-type: none"> • Phased build out • Adoption of CoCP • Tree protection fencing • Selective use of hoarding 	Direct, medium-term moderate to major adverse	
Brecon and Monmouthshire Canal	Direct, medium-term	Moderate to Major adverse	As above	Direct, medium-term moderate adverse	
Private dwellings within the site	Direct, medium-term	Major adverse	<ul style="list-style-type: none"> • As above • Provision of open space 	Direct, medium-term moderate to major adverse	
Receptors in Sebastopol	Direct, medium-term	Negligible	None specific required	Direct, medium-term negligible	
Receptors in Cwmbran	Direct, medium-term	Negligible	None specific required	Direct, medium-term negligible	
Receptors in countryside to the west	Direct, medium-term	Minor adverse	<ul style="list-style-type: none"> • Phased build out • Adoption of CoCP • Strengthening of boundary vegetation 	Direct, medium-term negligible	
Middle distance receptors from the east	Direct, medium-term	Negligible	None specific required	Direct, medium-term negligible	
Brecon Beacons National Park	Direct, medium-term	Negligible	None specific required	Direct, medium-term negligible	
Completed Development					
Landscape Character					
LCA1A: Afon Lwyd Valley: Escarpment	Direct, long-term	Moderate to Major beneficial	<ul style="list-style-type: none"> • Retention of landscape features of value • Adoption of strategic landscape strategy 	Direct, long-term moderate to major beneficial	
Special Landscape Area to the west	Direct, long-term	Minor adverse	As above	Direct, long-term negligible	
LCA1B: Afon Lwyd Valley: Rolling Countryside	Direct, long-term	Negligible to minor adverse	As above	Direct, long-term negligible	

	Special Landscape Area to east	Direct, long-term	Negligible to minor adverse	As above	Direct, long-term negligible
	LCA2: Mynydd Twyn-glas Uplands	Direct, long-term	Negligible	None specific required	Direct, long-term negligible
	LCA3: Afon Lwyd Valley Settlements	Direct, long-term	Negligible	None specific required	Direct, long-term negligible
	Brecon Beacons National Park	Direct, long-term	Negligible	None specific required	Direct, long-term negligible
Landscape Features					
	Woodland Blocks	Direct, long-term	Negligible	<ul style="list-style-type: none"> Retention, enhancement and future management as part of adopted landscape strategy 	Direct, long-term negligible
	Hedgerows	Direct, long-term	Negligible	As above	Direct, long-term negligible
	Brecon and Monmouthshire Canal	Direct, long-term	Negligible	As above	Direct, long-term negligible
Visual Amenities					
	Receptors within the site	Direct, long-term	Negligible	<ul style="list-style-type: none"> Retention of landscape features of value Creation of new features of interest and high quality design Adoption of strategic landscape strategy 	Direct, long-term negligible
	Brecon and Monmouthshire Canal	Direct, long-term	Moderate beneficial	As above	Direct, long-term moderate beneficial
	Private dwellings within the site	Direct, long-term	Negligible	As above	Direct, long-term negligible
	Receptors in Sebastopol	Direct, long-term	Negligible	None specific required	Direct, long-term negligible
	Receptors in Cwmbran	Direct, long-term	Negligible	None specific required	Direct, long-term negligible
	Receptors in countryside to the west	Direct, long-term	Negligible	Strengthening of boundary vegetation	Direct, long-term negligible
	Middle distance receptors from the east	Direct, long-term	Negligible	None specific required	Direct, long-term negligible
	Brecon Beacons National Park	Direct, long-term	Negligible	None specific required	Direct, long-term negligible



Cumulative Effects					
	Landscape Character	Direct, long-term	Negligible		Direct, long-term negligible
	Visual Amenity	Direct, long-term	Negligible		Direct, long-term negligible
TRANSPORTATION ASSESSMENT (TRAFFIC, TRANSPORT AND MOVEMENT)					
Construction					
	Use of Existing residential highway Network by Construction Traffic	Temporary	Minor Adverse	Provision of Construction Traffic Management Plan. Provision of Construction Traffic routes	Negligible
Completed Development					
	Residual Traffic	Permanent	Minor Adverse	Introduce Travel Plan to encourage the uptake of more sustainable travel modes.	Major Beneficial
	Traffic Safety	Permanent	Major Beneficial	Assessment has investigated the impact of the proposed development on existing infrastructure, and has recommended measures where necessary to mitigate potential increases in traffic and to improve highway safety, including the implementation of Travel Plans to encourage more sustainable forms of travel.	Major Beneficial
	Traffic Safety	Permanent	Major Beneficial	Reduction of Speed Limits	Major Beneficial
Cumulative Effects					

The cumulative effect of the South Sebastopol and Avesta developments have been assessed in addition to the organic growth of traffic in the immediate area	Permanent	Minor adverse	Reduction in Speed Limits	Major beneficial
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ARCHAEOLOGY, BUILT AND CULTURAL HERITAGE

Construction

Canal Tunnel – new canal crossing to be built over this structure - Grade II Listed (23957)	Permanent	Direct and indirect, Moderate adverse	New crossing designed so as to preserve the structure of the tunnel in situ. Construction Management plan will limit traffic noise and dust effects.	Indirect, Moderate adverse
Milepost – adjacent to new canal crossing - Grade II Listed (80863)	Temporary	Indirect, Minor adverse	Will be protected during the construction phase, unchanged thereafter.	Negligible
Tyr-Brychiad - Grade II Listed (80864) - not part of development plan but adjacent to main road into site	Permanent	Indirect, Minor adverse	Landscape planting will help screen listed buildings from new development and a construction management plan will limit traffic noise and dust effects on the setting of this structure.	Negligible
Wren's Nest Barn – Grade II Listed (80861) - not part of development plan but adjacent to main road into site	Permanent	Indirect, Minor adverse	As above.	Negligible
Canal – setting will be changed along its route	Permanent	Indirect, Minor adverse	Sensitive landscape design and screening. Suitable investigation where directly affected.	Direct or Indirect, Minor adverse
Hedgerows, tracks and field boundaries	Permanent	Direct, Minor adverse	Incorporated as part of design as far as possible.	Indirect, Minor adverse
Buried remains throughout the site – potential sites	Permanent	Direct, Minor to Moderate adverse	Suitable archaeological investigation prior to construction.	Minor adverse

Completed Development

As above	As above	As above	As above	As above
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Cumulative Effects

No other schemes in locality contributing to a cumulative effect assessment

GROUND CONDITIONS (HYDROGEOLOGY, SOILS AND CONTAMINATED LAND)

Construction					
Earthworks					
	Material generation and re-use	Temporary / Permanent	Minor	Effective site waste management plan and materials management plan will be produced to facilitate the earthworks and management of all materials on the scheme in accordance with established industry practice. Effective site waste management plan and materials management plan will be produced to facilitate the earthworks and management of all materials on the scheme in accordance with established industry practice.	Minor
	Sediment and silt generation and pollution of watercourses	Temporary	Negligible	Quality of discharged water controlled through an engineered sediment lagoons with interceptors	Minor
	Filling Sediment migration into river	Temporary		Erosion from rainfall and surface water to be minimised by sealing and establishment of grass cover.	Minor
	Piling works – arisings	Temporary	Negligible	All arisings will be restricted to the area of the specific construction activity and will be incorporated into landscaped bunds	Negligible

Piling works – vibration / noise	Temporary	Negligible	Well maintained equipment will be used, suitably equipped with noise attenuation facilities. Vibration effects will be local to works area and since there are no other operating facilities or housing in the area then no adverse effects will be experienced by third parties. Minor disturbance to bird life may result.	Negligible
Services/utilities/other infrastructure - Maintenance or replacement	Temporary	Negligible	Where made ground is present all apparatus to be constructed within clean backfill materials	Negligible
Services/utilities/other infrastructure - Contact with made ground materials	Temporary	Negligible	Where made ground is present all apparatus to be constructed within clean backfill materials	Negligible
Contamination				
Contamination causing pollution harm to site users	Temporary / Permanent	Minor	No specific measures are required to protect the development from known areas of made ground. However further investigation of potential contamination sources will be required as development layouts are finalised to verify assumptions and development site preparation strategy	Negligible
Contamination leachate causing pollution of river from leachates	Temporary	Minor	Quality of existing made ground materials already assessed as generally acceptable. Further testing will also ensure continued compliance with this assumption. All excavated made ground to be strictly controlled at source and during placement. Specification limits placed on acceptable levels of compounds.	Negligible

Completed Development					
	Loss or geological resource	Temporary/ Permanent	Negligible	Judicious design and minimisation of scale of earthworks.	No loss of geological resource. No impact on geology and soils
	Impact on Geological and Topographic Features	Permanent	Negligible	Judicious design and minimisation of scale of earthworks	Minor / Negligible
	Impact' on site Stability	Temporary / Permanent	Negligible	Judicious design and minimisation of scale of earthworks. Appropriate management of materials	Minor / Negligible
Cumulative Effects					
	It has been assessed that with regard to Ground Conditions there are no cumulative effects associated with other developments		Negligible		Negligible

WATER RESOURCES (WATER QUALITY, HYDROLOGY, FLOOD RISK AND DRAINAGE ASSESSMENT)

Construction					
	Accidental spillages of contaminants during construction affecting groundwater and quality of surface water (overland flow)	Temporary	Major Adverse	Introduction and enforcement of construction phase protocols to enhance surface water management and to mitigate the potential for accidental spillages, etc	Negligible
	Current risk of flooding by overland flow from the site could continue throughout the construction phase	Temporary	Minor Adverse	Programme of construction of drainage works early in the construction programme	Negligible
Completed Development					
	Increased surface water run-off from impermeable areas could (without mitigation) cause increased flooding in urban environment	Permanent	Major Adverse	Design and implementation of SUDS drainage system to prevent surface water emanating from the development discharging off site to offsite sewer and urban environment generally	Major Beneficial

	Increased surface water run-off from impermeable areas could (without mitigation) cause increased flooding in urban environment. Applies to all mechanisms of flooding	Permanent	Major Adverse	Design and implementation of SUDS drainage system to prevent surface water emanating from the development discharging off site to combined sewer and urban environment generally	Major Beneficial
Cumulative Effects					
	It has been assessed that no other schemes in locality contributing to a cumulative effect assessment		Negligible		Negligible
NOISE AND VIBRATION ASSESSMENT					
Construction					
	Construction Noise	Temporary	Minor to Substantial Adverse	Implementation of site Specific EMP, including: Selecting inherently quiet plant; The use, where necessary and practicable, of enclosures and screens around noisy fixed plant; Limiting site work where possible to daytime hours; and Adherence to relevant British Standards.	Moderate Adverse
	Construction Traffic	Temporary	Minor Adverse	Implementation of construction logistics plan	Negligible

	Construction Vibration	Temporary	Substantial Adverse	Implementation of site Specific EMP, including: Selecting inherently low vibration plant; Limiting site work where possible to daytime hours; and Adherence to relevant British Standards.	Minor Adverse
Completed Development					
	Road Traffic Noise	Permanent	Negligible to Moderate Adverse	Implementation of green travel plan; Construction of acoustic barrier along site access from Lowlands Road	Negligible
	Building Service Plant Assessment	Permanent	Minor Adverse	Plant noise to be restricted secured by way of a suitably worded planning condition.	Negligible
Cumulative Effects					
	It has been assessed that there are no other schemes in the local area which would add to the cumulative effect	Permanent	Negligible		Negligible
AIR QUALITY ASSESSMENT					
Construction					
	Dust emissions from demolition and construction activities	Temporary	Minor adverse to moderate for existing surrounding properties	Routine environmental management control measures to prevent and control dust, as part of EMP	Negligible to minor adverse for existing surrounding properties
	Emissions from construction vehicles	Temporary	Negligible to minor adverse	Routine environmental management control measures	Negligible to minor adverse
Completed Development					

Emissions from traffic associated with the completed Development	Permanent	Minor adverse to moderate adverse in terms of NO ₂ concentrations and Negligible in terms of PM ₁₀ concentrations	Implementation of Travel Plan	Minor adverse to moderate adverse (depending on receptor location) in terms of NO ₂ concentrations and Negligible in terms of PM ₁₀ concentrations
Introduction of new residential uses to the site	Permanent	Negligible to moderate adverse	Implementation of site's Travel Plan	Negligible
Cumulative Effects				
It has been assessed that there are no other schemes in the local area which would add to the cumulative effect	Permanent	Negligible		Negligible
SUSTAINABILITY				
Construction				
Energy Use and Carbon Emissions	Temporary	Negligible	Prepare and implement an Environmental Management Plan (EMP). Consideration of the Taylor Wimpey and Barratt sustainability policies and guidelines at the detailed design stage.	Negligible
Reuse of Land and Buildings	Temporary	Minor adverse	None	Minor adverse
Resource Efficiency	Temporary	Minor beneficial	Prepare and implement an Environmental Management Plan (EMP). Consideration of the Taylor Wimpey and Barratt sustainability policies and guidelines at the detailed design stage.	Minor beneficial
Waste	Temporary	Minor beneficial	Prepare and implement a site Waste Management Plan (SWMP).	Minor beneficial

Pollution	Temporary	Minor beneficial	Prepare and implement an Environmental Management Plan (EMP).	Minor beneficial
Transport	Temporary	Minor beneficial	Prepare and implement an Environmental Management Plan (EMP).	Minor beneficial
Natural Environment	Temporary	Negligible	Retention of ecologically valuable habitats (as detailed in Chapter 5).	Negligible
Community and Social Needs	Temporary	Minor beneficial	None	Minor beneficial
Economic Prosperity	Temporary	Minor beneficial	None	Minor beneficial
Climate Change	Temporary	Minor beneficial	None	Minor beneficial
Completed Development				
Energy Use and Carbon Emissions	Permanent	Negligible	Consideration of the Taylor Wimpey and Barratt sustainability policies and guidelines at the detailed design stage.	Negligible
Reuse of Land and Buildings	Permanent	Minor adverse	None	Minor adverse
Resource Efficiency	Permanent	Minor beneficial	Consideration of the Taylor Wimpey and Barratt sustainability policies and guidelines at the detailed design stage.	Minor beneficial
Waste	Permanent	Minor beneficial	Consideration of the Taylor Wimpey and Barratt sustainability policies and guidelines at the detailed design stage.	Minor beneficial
Pollution	Permanent	Minor beneficial	Use of petrol interceptors to prevent pollution entering surface water courses. Use of SuDS techniques.	Minor beneficial
Transport	Permanent	Minor beneficial	Consideration of the Taylor Wimpey and Barratt sustainability policies and guidelines at the detailed design stage.	Minor beneficial

Natural Environment	Permanent	Negligible	Consideration of the Taylor Wimpey and Barratt sustainability policies and guidelines at the detailed design stage.	Negligible
Community and Social Needs	Permanent	Minor beneficial	None	Minor beneficial
Economic Prosperity	Permanent	Minor beneficial	None	Minor beneficial
Climate Change	Permanent	Minor beneficial	Use of SuDS techniques. Consideration of the Taylor Wimpey and Barratt sustainability policies and guidelines at the detailed design stage.	Minor beneficial
Cumulative Effects				
No other schemes in locality contributing to a cumulative effect assessment				

5. Ecology and Nature Conservation

Introduction

- 5.1. This addendum chapter identifies and evaluates the existing ecology and nature conservation resources for development of the Barratt Phase 1 area (refer to outline application phasing plan) at South Sebastopol, Pontypool (hereafter referred to as 'the site') and surrounding areas. The chapter considers the likely significant effects of the proposed Development both during the construction phase and following completion of the Development at the site.
- 5.2. The chapter forms part of an addendum to the Environmental Statement (ES) submitted as part of the outline planning application for the whole of the South Sebastopol site (LPA ref. 01/P/05525). Therefore, to avoid unnecessary duplication, many of the sections within this addendum chapter have been summarised from the original outline ES. However, specific effects in relation to ecology and nature conservation as a result of the Phase 1 proposals are now able to be assessed in further detail and any mitigation that may be required in order to avoid, reduce or offset any likely significant adverse impacts are included.
- 5.3. Reference should also be made to the most recent ecological reports undertaken by RSK Carter Ecological Ltd (hereafter referred to as RSK) in 2010. The type and scope of surveys to support the outline planning application were agreed with the Countryside Council for Wales (CCW) and Torfaen District Council (TDC). Previous surveys undertaken by ADAS and RPS Chapman Warren Planning and Environment (hereafter referred to as RPS) were also used to inform this assessment.

Legislative and Planning Policy Context

- 5.4. Reference should be made to Chapter 5 paragraphs 5.4 - 5.31 of the outline ES in relation to the ecology and nature conservation legislative and planning policy context, which details all relevant legislation and planning policies.

Assessment Methodology

- 5.5. Ecology surveys at the site have been undertaken over an approximate 10 year period as agreed with Torfaen County Council (TCC) and the Countryside Council for Wales (CCW). The list below therefore only lists the most up to date surveys undertaken. The assessment methodology has comprised the following:
 - Undertaking of an updated ecology desk-study 2010;
 - Undertaking of an updated extended phase I habitat survey 2010;
 - Undertaking of a phase II flora and fauna surveys 2007-2010
 - Evaluation of the ecological value of the site; and
 - Identification and evaluation of potential and residual effects.
- 5.6. A full description of the methodologies adopted for the relevant surveys are provided in the outline ES (refer to Chapter 5 paragraphs 5.32-5.75). The ecology and nature conservation assessments followed best practice guidance at the time of survey.
- 5.7. The current assessment is based on the Planning Layout Plan produced by Hammonds Yates (drawing ref. 1291-100) on behalf of Barratts South West and David Wilson Homes. It has also

been informed by other documentation submitted as part of the outline planning application (refer to Chapter 5 paragraph 5.32 of the outline ES).

Evaluation of Ecological Features

- 5.8. The basis for the evaluation of ecological features is provided by the 2006 Institute of Ecology and Environmental Management (IEEM) guidelines for Ecological Impact Assessment (EclA). These guidelines aim to provide consistency in the approach to evaluating the importance of ecological features and any effect that a new development would have upon them.
- 5.9. In accordance with the IEEM EclA guidelines, the ecological features identified must be assigned a value. Secondly, the effects of the relevant development should be predicted, taking into account the different stages and activities within the development process. These identified effects must then be assessed for their significance. The significance of the effect is a function of the value of the ecological feature and the type and nature of the effect.
- 5.10. The value of ecological features is defined according to the following geographical scales:
- International value;
 - UK value;
 - National value (i.e. England / Northern Ireland / Scotland / Wales);
 - Regional value;
 - County / Metropolitan value;
 - District / Borough value;
 - Local or Parish value;
 - Of value within the site only; and
 - Negligible.
- 5.11. IEEMs criteria are broadly similar to those set out in Chapter 2: EIA Methodology with the terms 'Local or Parish' and 'District / Borough' equivalent to the 'local' scale, and 'County / Metropolitan' equivalent to the 'district' scale. The remaining geographical scales are consistent with both methodologies.
- 5.12. The following factors are considered in assessing whether ecological effects are significant:
- The extent of the effect;
 - The magnitude of the effect;
 - The duration of the effect;
 - The reversibility of the effect; and
 - The timing and frequency of the effect.

Evaluation of Significance

- 5.13. In accordance with Chapter 2: EIA Methodology, the potential and residual effects of the Development upon identified ecological features are expressed as follows:
- Adverse: Detrimental or negative effect on a valued ecological receptor;

- Negligible: No significant effect on a valued ecological receptor; and
 - Beneficial: Advantageous or positive effect on a valued ecological receptor.
- 5.14. Where adverse or beneficial effects have been identified, these are then assessed against the following scale:
- Minor: Slight, very short or highly localised effect;
 - Moderate: Limited effect (by extent, duration or magnitude) which may be considered significant; and
 - Substantial: Considerable effect (by extent, duration or magnitude) of more than local significance or in breach of recognised acceptability, legislation, policy or standards.
- 5.15. A 'valued' ecological receptor has been defined as any receptor valued at the Assessment site level or above, in accordance with the geographical scales provided above.
- 5.16. In accordance with IEEM guidelines, where activities associated with the Development could result in the intentional killing or injury of protected species, this is stated and a level of significance is not given. This is because such killing or injury must be avoided by law. For other activities that could lead to an offence but may be permissible under licence or agreement with a government body, the significance of the effect is assessed according to the significance criteria described previously.

Consultation

- 5.17. As previously stated consultation with agreement on the scope of the ecological surveys at the site and the Master Plan design have been undertaken with the local Countryside Council for Wales (CCW) office and Torfaen Borough Council (TBC) throughout the life of the project dating back to 1999.

Baseline Conditions

- 5.18. The baseline conditions of the site remain as those set out within the outline ES. Reference should be made to the baseline section of Chapter 5 (paragraphs 5.86 - 5.183).

Potential Effects

- 5.19. This section considers the effects of the proposals on the ecological and nature conservation of the site throughout the life-cycle of the development, from construction to operational phase.

Demolition and Construction

- 5.20. The Development has the potential to result in a number of ecological effects. Those relevant to the site include:
- Land take and associated habitat loss;
 - Disturbance due to construction operations, including noise, dust, vibration and changing habitats throughout construction;
 - Changes in the pattern of human activity and associated disturbance and/or damage;
 - Creation of barriers or other obstacles affecting the movement of wildlife;
 - The likely increase in domestic cats within the site; and

- Creation of additional habitat for species favouring the urban environment.

5.21. The significance of these potential effects is assessed in the following section. Effects are assessed against the current baseline conditions.

Designated Sites

5.22. There are considered to be no likely effects on any statutory and non-statutory Sites owing to their sufficient separation from the demolition and construction works. It is therefore considered that there will be a **negligible** effect on designated Sites during the demolition and construction stage.

Woodland and Scrub

5.23. The proposed development would retain the existing areas of broadleaved semi-natural woodland and adjacent scrub habitats. However, in the absence of mitigation measures, demolition and construction works adjacent to this habitat would result in an increase in dust, noise and vibration and would result in a **temporary, local** potential effect of **minor adverse** significance to this habitat.

Hedges

5.24. The proposed development would retain most notable species rich hedgerows that resemble Torfaen local BAP habitat on site with removal of hedgerows confined to species poor hedgerows where possible. In addition, and in the absence of mitigation measures, demolition and construction works adjacent to retained hedgerows would result in an increase in dust, noise and vibration. The impacts on hedgerows during the demolition and construction phase would therefore result in a **temporary and permanent, local** potential effect of **minor adverse** significance to this habitat.

Grassland

5.25. The proposed development would retain the most diverse areas of grassland that resemble UKBAP and Torfaen local BAP habitat with removal of the more species poor and agricultural grassland on site. In addition and in the absence of mitigation measures, demolition and construction works adjacent to retained grasslands would result in an increase in dust, noise and vibration. The impacts on grasslands during the demolition and construction phase would therefore result in a **temporary and permanent, county** potential effect of **minor adverse** significance to this habitat.

Bats

5.26. The site is considered to be of **county** value to bats. The proposed development would retain the majority of the most valuable habitats to bats such as the woodland and grassland habitats. The only roost recorded is outside the current Phase 1 planning application boundary at Hay Barn. As such Hay Barn would also be retained. Some habitat would be lost as part of the development. However, the retained habitats provide excellent green infrastructure for this species across and bordering the site. In the absence of mitigation measures, demolition and construction works would create an increase in dust, noise and vibration and would result in a **permanent and temporary, county** potential effect of **minor adverse** significance due to indirect disturbance roosting, commuting and foraging bats via changes to the local landscape.

Birds

5.27. The site is considered to be of **county** value to birds. The proposed development would retain the

majority of the most valuable habitats to birds such as the woodland and grassland habitats. Some habitat would be lost as part of the development. However, the retained habitats provide excellent green infrastructure for this species across and bordering the site. In the absence of mitigation measures, demolition and construction works would create an increase in dust, noise and vibration and would result in a **permanent and temporary, county** potential effect of **minor adverse** significance due to disturbance to birds and adverse effect of habitats of value to this species group for nesting and foraging.

Invertebrates

- 5.28. The site is considered to be of **local** value to invertebrates. The proposed development would retain the majority of habitats of value to invertebrates such as woodland (where glow worms *Lampyrus noctiluca* has been recorded), grassland and streams. Some habitat would be lost as part of the development. However the retained habitats provide excellent green infrastructure for this species across and bordering the site. In the absence of mitigation measures, demolition and construction works would create an increase in dust, noise and vibration and would result in a **permanent and temporary, local** potential effect of **minor adverse** significance due to disturbance to reptiles and adverse effect of habitats of value to this species group.

Completed Development

Designated Sites

- 5.29. As previously noted, it is considered that there will be no likely effects on any statutory and non-statutory Sites. As such it is considered that the operation of the proposed development would also result in a **negligible** effect on designated Sites.

Woodland and Scrub

- 5.30. The woodland and adjacent scrub habitat is considered to be of **district** ecological value and would be retained during demolition and construction. However, in the absence of mitigation, as a result of the development there is likely to be an increase in human pressure on the woodland. The effect of the completed Development on this habitat would be of **permanent district minor adverse** significance.

Hedges

- 5.31. The most species rich hedgerows that resemble Torfaen local BAP habitat would be retained during demolition and construction but the more species poor hedgerows will be removed to predominantly allow for the development infrastructure. In the absence of mitigation the completed development will result in the reduction of this habitat on site. As such it is considered that the effect of the completed Development on this habitat would be of **permanent local minor adverse** significance.

Grassland

- 5.32. The most diverse areas of grassland that resemble UKBAP and Torfaen local BAP habitat would be retained with removal of the more species poor and agricultural grassland during the demolition and construction phase on site. In the absence of mitigation the completed development will result in the reduction of this habitat on site. In addition, as a result of the development there is likely to be an increase in human pressure on the retained grassland habitats. As such it is considered that the effect of the completed Development on this habitat would be of **permanent county minor**

adverse significance.

Bats

- 5.33. The ecological value of the site is considered to be of county importance for bats. The completed development would not directly impact upon the roost at Hay Barn as it is outside the current Phase 1 planning application boundary. In addition the predominant habitats of value to bats will also be retained. However during the operational stage of the development it is considered that there would be an increase in lighting and human disturbance. In addition in the absence of mitigation there would also be loss of commuting and foraging habitat of ecologically poor hedgerows and grassland. As such the effect of the completed Development on this species would be **of permanent county minor adverse** significance.

Birds

- 5.34. The ecological value of the site is considered to be of county importance for birds. The completed development would retain habitats of value to nesting and therefore breeding birds. However, during the operational stage of the development it is considered that there would be an increase in lighting and human disturbance. In addition in the absence of mitigation there would also be loss of and foraging and nesting habitat (hedgerows only) of ecologically poor hedgerows and grassland. As such the effect of the completed Development on this species would be of **permanent county minor adverse** significance.

Invertebrates

- 5.35. The ecological value of the site is considered to be of local importance for invertebrates. The completed development would retain habitats of value to invertebrates including woodland (where glow worms have been recorded) grassland and streams. However during the operational stage of the development, it is considered that there would be an increase in lighting and human disturbance. In addition, in the absence of mitigation there would also be loss of habitat of ecologically poor hedgerows and grassland. As such the effect of the completed Development on this habitat would be of **permanent local minor adverse** significance.

Mitigation Measures and Recommendations

- 5.36. This section provides a summary of mitigation measures which would be implemented in order to:
- Avoid, mitigate and compensate for the identified potential adverse effects;
 - Ensure that all works comply with relevant nature conservation legislation; and
 - Promote biodiversity on the site.
- 5.37. The mitigation proposals set out below describe additional mitigation measures which would be implemented during the demolition and construction and operational phases of the Development.

Demolition and Construction

Environmental Management Plan

- 5.38. Demolition and site clearance works would be undertaken outside the main bird breeding season where practicable (i.e. only during September to February inclusive). If these works cannot be restricted to within this period, an Ecological Watching Brief would be maintained during the main

bird breeding season to ensure that no nesting birds were adversely affected. This would entail checking all suitable habitats for nesting birds by a suitably qualified ecologist prior to the commencement of works.

- 5.39. It is recommended that low level lighting is used during demolition and construction works, particularly in areas adjacent to all the broadleaved woodland.
- 5.40. An Environmental Management Plan (EMP) would ensure that appropriate environmental controls would be implemented during the demolition and construction works. The EMP would be in accordance with relevant British Standards Best Practice Guidelines and would include ecological mitigation such as:
- Tree protection measures including protective fencing around the root zones of retained trees, woodlands and hedgerows during construction to prevent damage from compaction;
 - Lighting would be controlled in order to ensure there is minimal light spill on to the broadleaved woodland and connecting features to minimise any potential impacts on foraging or commuting bats and other wildlife;
 - Measure to reduce potential disturbance activities in the vicinity of the off-site bat roost at Hay Barn via set haul routes and avoidance of night time working in the local vicinity.
 - Protection of the retained grassland areas from encroachment of the works through appropriate fencing;
 - Protection of the streams from encroachment of works via a suitable fenced buffer;
 - Measures to prevent the possible spread of signal crayfish disease via control checks of equipment and machinery on site, as native white-clawed crayfish *Austropotamobius pallipes* are present downstream;
 - Measures to minimise dust arising during demolition and construction would, when necessary, include regular damping down of the site by spraying with water; and
 - The EMP would be agreed with TBC and CCW prior to the commencement of demolition and construction works on the site, and would be a condition of contract for all contractors.

Proposed Landscape Strategy

- 5.41. The proposed Development's landscape strategy would create new areas of hedgerows, semi-improved grassland and tree planting. This would be done using native species and/or species of benefit to wildlife indicative of the local area. The landscape strategy would increase the botanical biodiversity of the site. Once fully established, deciduous trees would provide habitat for invertebrates, and therefore foraging opportunities for birds and bats and other wildlife.

Proposed Nesting/Roosting Opportunities

- 5.42. Artificial bat roosting and bird nesting opportunities could be provided as an integral part of the proposed development within the broadleaved woodland.

Completed Development

Landscape and Ecological Management Plan

- 5.43. The landscape and ecological value of the site would be enhanced by implementing management

regimes on the retained and created habitat, for example by planting the created areas of semi-improved grassland with a wild flower mix and managing it as a wildflower meadow, via specific cutting regimes. These management regimes, along with management of the proposed whip and hedgerow planting and management of retained habitats would be detailed in a Landscape and Ecological Management Plan (LEMP) for the operational Development. The LEMP would also detail measures to be implemented to minimise human disturbance to habitats, for example:

- Existing pathways would be clearly delineated to avoid trampling;
- Design and Implementation of a lighting strategy would be undertaken to minimise impacts on nocturnal species such as bats;
- Access to the retained grassland would be limited through the provision of signs, fencing and planted buffers around this habitat.

Residual Effects

- 5.44. Residual effects are those remaining effects following the successful implementation of mitigation measures outlined above. It is considered that many local impacts can be reduced as a result of successful mitigation, particularly during construction.
- 5.45. The table at the end of this chapter summarises the significance of effects and residual effects for both construction and completed development respectively.

Cumulative Effects

- 5.46. In the local area there are two planning applications as part of the Avesta scheme that are considered likely to have cumulative effects on ecology during the construction and completed development stage of the scheme. A full application is currently being processed and an approved reserved matters application has been approved these are for:
- 10/P/00542(W) – full application – “residential let mixed use development comprising apartments and housing (amended scheme)” – not yet determined (Barratt Homes)
 - 10/P/00033(W) – reserved matters application – “reserved matters for 209 dwellings” – approved 31st August (Persimmon Homes)
- 5.47. In addition to the Avesta scheme, the remainder of the outline application for Sebastopol (LPA ref 01/P/05525) is also considered as part of the cumulative assessment.
- 5.48. During the construction and completed development stage of the development there is likely to be a cumulative effect on ecology within the local area. It is anticipated however that these impacts as a result of the scheme are minimal due to the geographical context of the site, separation caused by the A4051 and best practice and site specific mitigation proposed within the EMP and LEMP. During construction and completed development stage the cumulative effects would be associated with:
- Land take and associated habitat loss;
 - Disturbance due to construction operations, including noise, dust, vibration and changing habitats *throughout construction*;
 - Changes in the pattern of human activity and associated disturbance and/or damage;
 - Creation of barriers or other obstacles affecting the movement of wildlife;

- The likely increase in domestic cats within the site; and
- Creation of additional habitat for species favouring the urban environment.

Summary

- 5.49. A comprehensive sweep of ecological surveys have been undertaken at the site (type and scope agreed with CCW and TBC) have concluded that the site is currently of negligible to County ecological value.
- 5.50. Though there would be change to the existing habitats of ecological value at the site as a result of the Development, the extent and nature of the proposed enhancement inherent to the Development design and additional mitigation including the production of an Ecological Management Plan during construction and a Landscape and Ecological Management plan post construction would result in a negligible and beneficial effect to the biodiversity of the site. This would include the introduction of habitats for suitable new species, whilst protecting the existing species of ecological value.
- 5.51. A number of potential and residual effects have been identified for the demolition and construction phases of the Development and once the Development is completed and operational. These are summarised below in the Table below.

Table 2: Potential and residual effects for demolition and construction phases

Issue	Potential Effect / Significance	Mitigation Measures	Residual Effect / Significance
Demolition and Construction			
Designated Sites	Negligible	None Required	Negligible
Woodland and Scrub	Minor Adverse	Detailed within EMP	Minor Beneficial
Hedges	Minor Adverse	Detailed within EMP	Minor Beneficial
Grassland	Minor Adverse	Detailed within EMP	Minor Beneficial
Bats	Minor Adverse	Detailed within EMP	Minor Beneficial
Birds	Minor Adverse	Detailed within EMP	Minor Beneficial
Invertebrates	Minor Adverse	Detailed within EMP	Negligible
Completed Development			
Designated Sites	Negligible	None Required	Negligible
Woodland and Scrub	Minor Adverse	Detailed within LEMP	Minor Beneficial
Hedges	Minor Adverse	Detailed within LEMP	Minor Beneficial
Grassland	Minor Adverse	Detailed within LEMP	Negligible
Bats	Minor Adverse	Detailed within LEMP	Minor Beneficial
Birds	Minor Adverse	Detailed within LEMP	Minor Beneficial
Invertebrates	Minor Adverse	Detailed within LEMP	Minor Beneficial

Table 3: Table of Significance – Ecology and Nature Conservation

Potential Effect	Nature of Effect (Permanent/ Temporary)	Significance (Major/ Moderate/ Minor) (Beneficial/ Adverse/ Negligible)	Mitigation/ Enhancement Measures	Geographical Importance*							Residual Effects (Major/ Moderate/ Minor) (Beneficial/ Adverse/ Negligible)
				I	UK	W	R	C	D	L	
Construction											
Designated Sites	None	Negligible	None Required								Negligible
Woodland and Scrub	Temporary	Minor Adverse	Detailed within EMP							✓	Minor Beneficial
Hedges	Temporary/ permanent	Minor Adverse	Detailed within EMP							✓	Minor Beneficial
Grassland	Temporary/ permanent	Minor Adverse	Detailed within EMP					✓			Minor Beneficial
Bats	Temporary/ permanent	Minor Adverse	Detailed within EMP					✓			Minor Beneficial
Birds	Temporary/ permanent	Minor Adverse	Detailed within EMP					✓			Minor Beneficial
Invertebrates	Temporary/ permanent	Minor Adverse	Detailed within EMP							✓	Negligible
Completed Development											
Designated Sites	None	Negligible	None Required								Negligible
Woodland and Scrub	Permanent	Minor Adverse	Detailed within LEMP						✓		Minor Beneficial
Hedges	Permanent	Minor Adverse	Detailed within LEMP								Minor Beneficial
Grassland	Permanent	Minor Adverse	Detailed within LEMP						✓		Negligible
Bats	Permanent	Minor Adverse	Detailed within LEMP						✓		Minor Beneficial
Birds	Permanent	Minor Adverse	Detailed within LEMP						✓		Minor Beneficial
Invertebrates	Permanent	Minor Adverse	Detailed within LEMP							✓	Minor Beneficial
Cumulative Effects											
During the construction and completed development stage of the development there is likely to be a cumulative effect in the local area. It is anticipated however that these impacts as a result of the scheme are minimal due to the geographical context of the site.											

* **Geographical Level of Importance** I = International; UK = United Kingdom; W = Wales; R = Regional; C = County; D = District; L = Local

6. Services (Utilities)

Introduction

- 6.1. The existing Master Plan site comprises mostly agricultural land with small pockets of woodland, a number of detached properties and the Monmouthshire and Brecon Canal, which bisects the centre of the Master Plan development area in a north to south direction.
- 6.2. The South Sebastopol development site is crossed by two 66kV overhead power lines on wooden poles together with a number of 11kV and low voltage overhead lines. At the time of the last enquiry, it was confirmed that the 11kV network has sufficient capacity to serve the proposed development.
- 6.3. A number of gas mains cross the entire site and were also reported to have capacity to serve the proposed development.
- 6.4. The existing water supply in the vicinity of the site was reported previously to have insufficient capacity and therefore a new off-site connection was required.
- 6.5. The proposed South Sebastopol development Master Plan as a whole, comprises up to 1200 dwellings and a village centre.
- 6.6. The proposed Barratt Phase 1 development (part of the overall South Sebastopol Development Master Plan) which this Environmental Statement Addendum covers, comprises of a mixed residential development of 1, 2, 3, and 4 bedroom properties, with a total build for Phase 1 of 199 no. dwellings.

Utilities Strategy

- 6.7. The scope of the Assessment to be undertaken to derive a Utilities Strategy is to include *inter alia* the following:-
 - **Strategic Services Option Review**
 - Provide the Consortium with a Recommendations Report to enable visibility of costs, ensure future provision of adequate capacity for connections and to identify long lead in times.
 - Review of services provision to cover Electricity, Gas, Potable Water and Telecoms.
 - Obtain up to date existing utility records from the incumbent Utility Providers for the proposed development area in order to assess the existing local network and the current available services capacities.
 - Review the investigations and recommendations of previous consultants who have reviewed the Utilities provision on the site.
 - Assess the likely diversified load requirements based on Consortium requirements.
 - Provide budgetary costs for new utility supply infrastructure requirements.
 - Ascertain way leave rights of utilities over existing infrastructure - highlight way leave issues.
 - Provide overview of likely way leave requirements for new utility infrastructure.
 - Identify long delivery items that can impact on programme.
 - Identify requirement to divert existing utility infrastructure and estimated costs for doing so.
 - Identify requirements to disconnect existing utility infrastructure and estimated costs for doing so.

- Identify the required points of connection to existing utility networks to provide the required capacity for the development taking into account phased requirements.
- Provide high level assessment of alternative heat and energy solutions (such as district heating).
- **Diversion/Disconnection/Removal of Existing Infrastructure**
 - Agree diversion / disconnection / removal of existing infrastructure requirements with Utility companies whilst maintaining uninterrupted services where required.
 - Complete application forms and supporting information and submit to the host network operator for C4 estimates / programmes for the diversions / disconnections / removal of equipment.
 - Challenge costs/programme by seeking to apply the terms of licenses, statutory acts, legal agreement clauses etc.
 - Review proposals to ensure compliance with Project objectives.
 - Consider diversion elements open to competition and obtain contestable prices where relevant.
 - Resolve matters in respect of existing rights identified in Strategic Services Options Review.
 - All diversions / disconnections / removal works to form enabling works contract.
- **New Supply Design & Procurement**
 - **Scheme Design.**
 - Assess diversified load requirements as appropriate.
 - Apply for and agree preferred phased points of connection to existing utility networks.
 - Evaluate detailed route planning and design.
 - Negotiate and agree optimum servicing / metering strategy.
 - Advise on utility servicing cost plan.
 - Prepare all detailed design, CAD drawings and specification of the site-wide services system for approvals, tender and construction.
- **Procurement**
 - Obtain, challenge and reduce non-contestable costs.
 - Pre qualification and tender to competitive installation contractors.
 - Utilise alternative asset ownership strategies by also tendering to embedded network operators (including consideration of adoption of water and sewerage system).
 - Procure and manage the bid process, receive the bids from the incumbent hosts and competitors in the open market [IDNO'S, IGT'S & ESCO].
 - Compile and present a recommendation report for the appointment of utility service providers taking into account the phased build requirements to ensure availability of capacity at the correct time.
 - Establish a framework for the on-going plot infrastructure procurement.
- **Construction Stage**
 - Manage and co-ordinate the pre-construction process and design approvals.

- Co-ordinate any off-site works, reinforcement, asset adoption / acceptance, along with the on-site works.
 - Manage and co-ordinate the pre-construction works, including route proving, network control approvals, and procurement of major plant, equipment and cable.
 - In conjunction with the project engineers, review and co-ordinate the Infrastructure design.
 - Review, agree and monitor the programme for the works.
 - Meet with external stakeholders with regards to the off-site works, including Local Authority Highways, local Bus Companies, Police and 3rd party landowners.
 - Manage adoption of assets by the appointed distribution company.
- **Phasing**
 - For the purpose of the assessment it is assumed that the Primary infrastructure works will be implemented in 3 phases.

Planning Policy Context

National Planning Policy

Planning Policy Wales

- 6.8. Planning Policy Wales' (2010) (PPW) is the overarching policy document that deals with planning matters in Wales. Chapter 4 of PPW confirms WAG's commitment to sustainable development and the document states that;

'Sustainable development in Wales means enhancing the economic, social and environmental well-being of people and communities, achieving a better quality of life for our own generations in ways which

Promote social justice and equality of opportunity; and

Enhance the natural and cultural environment and respect its limits – using only our fair share of the earth's resources and sustaining our cultural legacy"

- 6.9. This is a general requirement to achieve sustainability through the development process. Chapter 12 of PPW deals with Infrastructure and Para 12.1.1 explains that adequate and efficient infrastructure is crucial for the economic, social and environmental sustainability of all parts of Wales. This again is a general objective which requires local interpretation to ensure compliance with the sustainability objectives.
- 6.10. The provision of Utilities is fundamental to any development and in order to comply with general sustainability objectives the proposed type and level of services provision for any development should be sustainable.

Local Planning Policy

Adopted Local Plan for County Borough of Torfaen (adopted July 2000).

- 6.11. The County Borough of Torfaen has incorporated the general principles and objectives of PPW in their Unitary Development Plan. The Plan defines the general development objectives of the Authority to be commensurate with the objectives of PPW in general and in respect of sustainability principles in particular. The provision of services utilities involves careful consideration of

sustainability principles.

Discussion

- 6.12. The determination of a Utilities Strategy for any proposed development needs to involve the consideration of the sustainability of provision given the status of the primary infrastructure reasonably available in the vicinity of the proposed development.
- 6.13. The general principles promoted by PPW in terms of sustainability of infrastructure provision provide a general framework for assessing utilities provision
- 6.14. In practical terms the determination of a Utilities Strategy must ensure that the utilities provision associated with a proposed development is compatible with the requirements of the proposed development and must cater for the cumulative effects of other users.

Assessment Methodology

Philosophy of Approach

Assessment of existing Infrastructure and Consideration of future Provision

- 6.15. The philosophy of approach in the assessment of existing services infrastructure and future requirements of the development has involved inter alia the following:
 - Contact with Service Providers to establish status of existing supplies to the site via the primary distribution system;
 - Liaison with Service Providers to establish actual or perceived operational delivery problems;
 - Assessment of site infrastructure and identification of operational problems (through discussions with Client site Management);
 - Assessment of future services requirements including option appraisals;
 - Discussions with other Design Team Members; and
 - Preparation of recommendations in respect of a Utilities Strategy for the proposed development site.
- 6.16. The following services have been considered in the assessment:
 - Electricity;
 - Gas;
 - Potable Water; and
 - Telecommunications.
- 6.17. In summary the methodology of approach has been to establish the existing baseline situation and to compare this with the future baseline situation following development. Depending on the impact mitigation measures may need to be incorporated into the design of the works. The assessment identifies alternative solutions to overcome development constraints and provides recommendations for the provision of utilities generally.

Baseline Conditions

Existing Services

Electricity

- 6.18. The overall South Sebastopol Master Plan Area is crossed by two 66KV overhead power lines. As shown on Drawing No. 11765/C/SA/90/0002-A01, which is included in Appendix 6.1 herewith, both overhead lines trend east-west with the northern line following close to the northern boundary of the site and the other running through the centre of the site. There are also several 11 KV and LV overhead power lines crossing this area in various directions. An underground 11 KV cable is also present in Cwmbran Drive adjacent to the eastern Master Plan Area boundary. Existing dwellings within the Master Plan Area are supplied via overhead lines and pole mounted transformers.

Gas

- 6.19. The Master Plan Area is crossed by two gas mains as shown on Drawing No. 11765/C/SA/90/0002-A01, which is included in Appendix 6.1 herewith.
- 6.20. A high pressure (HP) gas main runs in an east-west orientation close to the northern boundary of the site. The HP gas main (Ref: Hafod yr ynys – Panteg (HS004) is a 300mm high pressure gas pipeline, which was diverted within the site in the mid-1990s. Wales and West Utilities (WWU) have confirmed that it is a heavy wall steel pipe which means effectively reducing the building proximity distance to 3m either side of the main. Any future planning application will be subject to further consultation with WWU on safe building proximity distances and to PADHI (Planning Advice for Developments near Hazardous Installations) guidelines issued by the Health and Safety Executive. The gas main is also covered by easements that WWU have agreed with the landowner.
- 6.21. An intermediate pressure (IP) main runs north-south along the alignment of the former railway line near the eastern boundary of the Master Plan Area and within the boundary of the Phase 1 site. Although the IP main has an associated easement that WWU have been agreed with the landowner, it is not subject to the same safety clearances as the HP main.

Water

- 6.22. Dwr Cymru Welsh Water (DCWW) have confirmed that there is an insufficient existing water supply in the vicinity of the site with sufficient capacity to serve the development. All existing water supply pipework within the curtilage of the Master Plan Area development boundary is privately owned. It will therefore be necessary to provide a new offsite connection from the network in the nearby Springvale Industrial Estate. A requisition scheme is proposed by DCWW to complete these works.

Telecommunications

- 6.23. BT advise that the telephone network immediately adjacent to the Master Plan Area has sufficient capacity to serve the development. Existing dwellings within the site boundary are served by overhead lines. Underground service supplies are located within the A4051 main site entrance. Virgin Media (originally NTL) services, if required, will have to be brought in from elsewhere, details of this network are unknown.

Likely Significant Effects

Table 4: Significance Matrix - Services (Utilities)

Sensitivity / Value of Receptor	Magnitude of Effect		
	High	Medium	Low
High (Wales/UK/International)	Major	Major/ Moderate	Moderate
Medium (County/Regional)	Major/ Moderate	Moderate	Moderate/ Minor
Low (Local/District)	Moderate	Moderate/ Minor	Minor

Construction

Construction Protocols

- 6.24. In general the serviceability of the services infrastructure should not be affected by the construction of the proposed works. On the assumption that existing facilities will need to remain 'live' whilst the construction works proceed the construction programme will take account of the presence of live services and appropriate protocols would be put in place to ensure continuity of servicing to the existing facilities.
- 6.25. Should there be a requirement for new distribution systems to be incorporated in the development works the construction and installation of the new distribution elements would be included in the construction works and taken account of in the construction programme and method statements.
- 6.26. In this case any adverse effects, however unlikely, would only occur in the **short term**, i.e. throughout the construction phase, and would without the implementation of construction protocols be **minor adverse**.
- 6.27. The Phase 1 development of 199 no. dwellings on a predominantly greenfield site will clearly have an impact on the local services infrastructure. In general terms, the primary distribution networks for the principal services are adequate to accommodate the proposed development except in the case of Potable Water Supply where enhancements will be required to the primary distribution network.

Completed Development

Electricity

- 6.28. Currently the South Sebastopol development site is serviced by 66Kv and 11Kv overhead supplies. There has been no supply problems reported on the site.
- 6.29. WPD has confirmed that the existing overhead network would have sufficient capacity to accommodate the proposed development. In this case, there are no capacity requirements which would require any modifications to the existing network. Further consideration would however need to be given to the adequacy of the on-site distribution system between the WPD apparatus and the points of demand. In general the development areas would be served by local ring mains fed off a main feeder supply. Further consideration of the onsite distribution would take place at

detail design stage.

- 6.30. The undergrounding of all overhead networks would be undertaken as the development phases progress, and in accordance with further discussion with WPD.
- 6.31. In general, the extension or enhancement of the existing services provision will facilitate the demands of the proposed development. In this case, since there are no plans to enhance the capacity supply the likely significant effect without any mitigation is considered to be **negligible**.

Gas

High Pressure Gas Main

- 6.32. The general philosophy of approach in terms of the Master Planning of the South Sebastopol development site area has been to design around existing principal services wherever possible. In this respect consideration has been given to locating access roads and public open spaces over the line of the HP Gas Main. In addition it has been acknowledged given the nature of the HP Gas Main that any planning application for the Master Plan area will be subject to consultation with Wales and West Utilities (WWU) on safe building proximity distances and to PADHI (Planning Advice for Developments near Hazardous Installations) guidelines issued by the Health and Safety Executive.
- 6.33. Discussions have been on-going with the Services Provider in respect of the practical details which need to be incorporated in the Master Plan design to safeguard the existing service and to ensure the safety of construction workers and future occupiers of the development. The main considerations have related to the loading on the pipeline caused by development over the line of the service and the accommodation of the safety distances to satisfy PADHI requirements. A summary of the principal concerns is provided below: -

General

- 6.34. With regard to the cover over the main WWU has stated that they would oppose any reduction in cover regardless of the type of land use above. WWU has also stated that they would allow a maximum increase in cover of 300mm. These tolerances are particularly restrictive but are imposed because of the nature of construction of the main.

HP Gas Main under future Roads

- 6.35. There is no objection to locating the main under future roads provided that there is no reduction in cover over the main and that there are no increases in cover. If there is a requirement to increase cover then mitigation measures will need to be implemented. In this case, the likely significant effect without any mitigation is considered to be **negligible**.

HP Gas Main under Public Open Space

- 6.36. There is no objection to locating the main under future POS provided that there is no reduction in cover over the main and that increases in cover do not exceed 300mm (in open ground). If there is a requirement to increase cover then mitigation measures will need to be implemented as in the case of locating the main under access roads. In this case, the likely significant effect without any mitigation is considered to be **negligible**.

HP Gas Main under Footpaths

- 6.37. In principle there is no objection to locating the main under future footways but the consideration would need to be given to vehicular loading at driveways/junction cross-overs. In this case mitigation measures may also need to be carried out as in the case of the access roads. The safety zone could be located in gardens to properties provided that there are no permanent structures or buildings in the restricted zone. If this option was to be adopted then the future development restrictions would need to be reflected in the deeds to properties.

HP Gas Main under Front or Rear Gardens to Residences

- 6.38. In principle the main could also be located under front or rear gardens provided that the maintenance easement and the safety zone is not encroached on by any permanent structures (i.e. dwellings). If this option was to be adopted then the future development restrictions would need to be reflected in the deeds to properties.

Intermediate Pressure Gas Main

- 6.39. There are no plans to divert the IP Main. The location of the main and its easement is regarded as a constraint to the spatial development of the site. Should there be an unavoidable requirement to undertake local diversions of this main then this will be identified at detail design stage.
- 6.40. WWU have indicated that the IP Main will be able to accommodate the demand for the proposed development. The source of on-site distribution will be a new Governor Station located in a services compound near the north eastern boundary of the site. The proposed services compound will be the subject of a separate application. The governor will reduce the pressure to serve the future Low Pressure mains distribution systems on site. LP Mains will be located under access roads wherever possible. In this case, the likely significant effect without any mitigation is considered to be **negligible**.

Low Pressure Gas Mains

- 6.41. There are no Low Pressure Gas Mains within the vicinity of the Barratt Phase 1 Development.

Potable Water

- 6.42. The proposed Phase 1 development includes for the provision of 199 no. dwellings (plus associated facilities). The potable water demand will increase on the site and the existing supply will need to be enhanced to accommodate this increased demand.
- 6.43. As in the case of the gas supply the future development could not function without an enhancement to the water supply. In this case the likely significant effect of progressing the development without supply enhancement would not be feasible and as such the affect would have to be regarded as **adverse major**. Mitigation measures must be implemented.

Telecommunications

- 6.44. BT has advised that the telephone network in the immediate vicinity of the site has sufficient capacity to accommodate the proposed development. No problems are anticipated in supplying the development with BT and cable communications services from existing networks in the vicinity of the site.
- 6.45. Apart from the enhancement of on-site distribution, if required, there are no capacity issues relating to the servicing of the proposed development. In this case the likely significant effect without

mitigation is **negligible**.

Mitigation Measures

- 6.46. As part of the Master Planning for the proposed development various forms of mitigation in respect of services provision have been considered. The principal forms of mitigation can be defined as follows:-
- Modifications to Primary Distribution Networks (where necessary) to provide required capacity.
 - Modifications to Primary Distribution Networks to protect visual amenity of existing and future residents.
 - Design of Master Plan layout to accommodate existing Primary Distribution Networks in order to minimise services diversions.
 - Design of Master Plan layout to accommodate existing easements and safety zones associated with Primary Distribution Networks.
 - Design of on-site services distribution systems such that services routes will generally be under or adjacent to principal access roads.
 - Design of on-site services distribution systems such that future crossings of the Canal will be (wherever possible) coincident with access road bridge crossing points.
 - Design of existing services diversions and new services infrastructure on a phased basis.
- 6.47. The design of the services provision for the proposed development has involved the consideration of the above mitigation options. The recommendations in respect of the provision of the principal services are described in the following sections.

Construction

Construction Protocols

- 6.48. During the construction phase protocols would need to be put in place to ensure that the existing services infrastructure would not be accidentally damaged by the construction works. Where enhancements are proposed to the services distribution systems these works will be included in the scope of the contract works. Normal construction protocols would apply.
- 6.49. The agreed construction protocols would be included as part of the Construction Management Plan which would be approved prior to the commencement of construction works.
- 6.50. There would be no special mitigation measures required for the construction phase of the development and as such the likely significant effect would be **negligible**.

Completed Development

General

- 6.51. The actual services demands will be established for the completed development, if necessary on a phased basis and the Service Providers will be able to plan their network development to accommodate the future demands and other future development proposals in the immediate area.
- 6.52. It should be noted that the primary infrastructure will be delivered under a separate reserved matters application, which will be considered following the issue of an outline consent relating to the Planning Application for the whole of the South Sebastopol site (LPA ref. 01/P/05525).
- 6.53. The proposed mitigation measures in respect of the principal services are summarised as follows:

Electricity

Primary Distribution Network

- 6.54. The two existing 66KV overhead lines crossing the northern and central parts of the South Sebastopol development site are part of the Regional Distribution Network. The overhead lines merely cross the site and do not directly contribute to the servicing of the site area. There are no sub-stations on this overhead system in the vicinity of the site. Both lines need to be retained in order to maintain the links between the Regional Distribution Networks to the east and west of the site.
- 6.55. It is recommended that the northern 66KV line will be retained but realigned as necessary to suit the phased development layout. Any re-alignment and undergrounding has been considered having regard to the need to protect the amenity of both the existing residents to the north of the site and new residents in the northern part of the site. The landscape buffer in this area will help to minimise those effects.
- 6.56. The existing northernmost 66kV overhead line crosses the Monmouthshire and Brecon Canal, identified within the South Sebastopol Development Site Master Plan, at a point approximately midway along the northern boundary of the site. The crossing point is close to the location where the High Pressure Gas Main crosses under the Canal. If the overhead line is undergrounded in this area the 66KV line would also have to pass under the Canal. This may cause difficulties with maintenance easements, dealings with British Waterways, etc and as such re-routing under the Canal should be avoided if at all possible. One mitigation option would be for two overhead sections (the one crossing the Canal and the adjacent section to the west) to be repositioned to the immediate north of the High Pressure Gas Main. The adjacent two sections to the east could then be re-positioned (by introducing another pole) such that the overhead line is almost totally north of the High Pressure Gas Main. Alternatively the two most easterly overhead sections could be undergrounded along site access roads. This would also involve a coincident Canal Crossing to the highway crossing, which under the current Master Plan is via the existing bridge crossing carrying Bevan's Lane over the Canal. This latter option appears to be the most straightforward depending on development phasing.
- 6.57. With regard to the 66KV overhead line routed through the centre of the site, the presence of this service would detract from the visual amenity of the site. In order to enhance the visual amenity of the site it has been determined that the service would need to be undergrounded.
- 6.58. Discussions with the Service Provider, Western Power Distribution (WTD) have resulted in the Service Provider undertaking, at their cost, to underground the central 66KV line under the site access roads. This however has phasing implications and consideration has been given to undertaking undergrounding works over two/three phases. In this case, some temporary sections of overhead or underground cabling may be necessary to facilitate the phasing requirements. The undergrounding of the central 66kV overhead electricity line will have a positive visual and landscape impact. This is very important due to the fact that the sensitivity of the area will be increased as a result of the proposed development.
- 6.59. In this respect the likely significant effect following the development works would be regarded as **major beneficial**.

Local Distribution Network

- 6.60. A number of inter-connecting 11KV overhead lines cross the site area. The existing properties on the site are served by Low Voltage connections from pole mounted transformers on the 11KV

system. The existing 11KV network runs obliquely in a number of directions and the existing configuration of overhead lines would provide a considerable constraint to development of the site. It is therefore clear that the onsite distribution of 11KV lines would need to be rationalised as part of the development works.

- 6.61. It is proposed that the 11KV lines and other limited low voltage lines serving existing properties will be undergrounded or replaced by the new site supplies as the development proceeds. WPD has confirmed that the 11KV underground cables present in the verge of Cwmbran Drive, together with the existing on-site overhead 11KV lines have sufficient spare capacity to serve the development via a series of on-site sub stations.
- 6.62. As in the case of the 66KV crossing the central area of the site WPD have agreed to divert the 11KV system to underground locations compatible with the Master Plan layout. Phasing of the development works also comes into consideration in the diversion and undergrounding of the 11KV system.
- 6.63. In this respect the likely significant effect following the development works would be regarded as **major beneficial**.

Gas

High Pressure Gas Main

- 6.64. The HP gas main close to the northern boundary of the site comprises a 300mm diameter steel pipe. Consultation with Wales & West Utilities has confirmed that the main was diverted in 1995, The pipeline operates at 24.1 bar pressure.
- 6.65. Wales & West Utilities have advised that a main of this construction and operating pressure normally requires a 12m wide easement. At the time of the construction of the main however an easement was agreed with the landowners and the agreed easement is indicated on Drawing No. 11765/C/SA/90/0002-A01 included in Appendix 6.1 herewith. It can be seen that the easement width varies (between 6m and 12m) depending on the depth of the main.
- 6.66. At the time of planning and construction of the HP Main the terrain and the nature of the land through which the main is routed was very much as it is at present, i.e. undeveloped agricultural land. In this case, the design loading for the main has related to the service being constructed in fields.
- 6.67. The general philosophy of approach in terms of the Master Planning of the site area has been to design around existing principal services wherever possible. In this respect consideration has been given to locating access roads and public open spaces over the line of the HP Gas Main. In addition it has been acknowledged given the nature of the HP Gas Main that any planning application for the Master Plan area will be subject to consultation with Wales and West Utilities (WWU) on safe building proximity distances and to PADHI (Planning Advice for Developments near Hazardous Installations) guidelines issued by the Health and Safety Executive. WWU have confirmed that the minimum building proximity distance from a safety point of view is 3m either side of the main. In this case, the easement widths referred to in Section 6.63 above, will define the ultimate building constraint..
- 6.68. Discussions have been on-going with the Services Provider in respect of the practical details which need to be incorporated in the Master Plan design to safeguard the existing service and to ensure the safety of construction workers and future occupiers of the development. The main considerations have related to the loading on the pipeline caused by development over the line of

the service and the accommodation of the safety distances to satisfy PADHI requirements. A summary of the principal concerns is provided below:

General

- 6.69. With regard to the cover over the main WWU has stated that they would oppose any reduction in cover regardless of the type of land use above. WWU has also stated that they would allow a maximum increase in cover of 300mm. These tolerances are particularly restrictive but are imposed because of the nature of construction of the main.

HP Gas Main under future Roads

- 6.70. There is no objection to locating the main under future roads but, given the nature of construction of the main, the existing service would need to be protected. It has been suggested that the protection would comprise of exposing the main by hand dig, the installation of a shell around the existing main to strengthen the steel pipe (and the welding) followed by the construction of a concrete slab to relieve pressure on the pipeline. Strengthening of the main in this way would relieve the restrictions relating to increasing cover or loading on the pipe provided that the mitigation works would accommodate the proposed loading. This is however a particularly onerous and costly exercise and the solution may not be feasible in many areas given the topography and the requirement to design the access roads to adoptable standards (e.g. compliance with gradient standards in adverse topography may require a cut and fill exercise which could be restricted by the cover restrictions on the main.

HP Gas Main under Public Open Space

- 6.71. There is no objection to locating the main under future POS provided that there is no reduction in cover over the main and that increases in cover do not exceed 300mm (in open ground). If there is a requirement to increase cover then mitigation measures will need to be implemented as in the case of locating the main under access roads.

HP Gas Main under Footpaths

- 6.72. In principle there is no objection to locating the main under future footways but the consideration would need to be given to vehicular loading at driveways/junction cross-overs. In this case mitigation measures may also need to be carried out as in the case of the access roads. The safety zone could be located in gardens to properties provided that there are no permanent structures or buildings in the restricted zone. If this option was to be adopted then the future development restrictions would need to be reflected in the deeds to properties.

HP Gas Main under Front or Rear Gardens to Residences

- 6.73. In principle the main could also be located under front or rear gardens provided that the maintenance easement and the safety zone is not encroached on by any permanent structures (i.e. dwellings). If this option was to be adopted then the future development restrictions would need to be reflected in the deeds to properties.

Down grading of HP to IP Service

- 6.74. WWU have considered the option of down grading the high pressure service to and intermediate pressure service. If this option was feasible then easement widths may potentially be reduced, and there would be a far less requirement for mitigation works to protect the main. Preliminary

investigations carried out by WWU suggest however that the option would not be feasible because of the resulting additional transportation costs for the supply of gas and the resulting reduction in pressure in the IP and LP mains downstream of the existing HP Service.

HP Main

- 6.75. The Master Plan and thereby current development proposals have aimed to retain the existing HP main within Public Open Space, with 2no. road crossings in the north-west of the Master Plan Area. In order to achieve this existing ground levels will need to be retained above the main and its easement.

Intermediate Pressure Gas Main

- 6.76. An intermediate pressure (IP) main runs north-south along the alignment of the former railway line near the eastern boundary of the site. The main comprises a steel pipe (WWU to confirm pipe diameter). As in the case of the HP Main the easement widths agreed with the landowners varies along its length but the average easement is around 3m each side of the pipe. There is no formal safety zone to be accommodated as in the case of the HP Main.
- 6.77. There are no plans to divert the IP Main. The location of the main and its easement is regarded as a constraint to the spatial development of the site. Should there be an unavoidable requirement to undertake local diversions of this main then this will be identified at detail design stage.
- 6.78. WWU have indicated that the IP Main will be able to accommodate the demand for the proposed development. The source of on-site distribution will be a new Governor Station located in a services compound near the north eastern boundary of the site. The governor will reduce the pressure to serve the future Low Pressure mains distribution systems on site. LP Mains will be located under access roads wherever possible.

Low Pressure Gas Mains

- 6.79. There are no identified Low Pressure Gas mains within the vicinity of the Barratt Phase 1 development.

Summary

- 6.80. In summary, there will be no primary network supply problems on account of the proposed development. In this case, whatever the decision relating to the energy source the supply provision would be enhanced. As such the likely significant effect following completion of the development would be considered as **major beneficial**.

Water

- 6.81. With regard to water supply, discussions with Dwr Cymru Welsh Water (DCWW) over a period of time have confirmed that the existing distribution systems in the vicinity of the site do not have the required capacity to accommodate the proposed development. This is accepted and in this case enhancement works are required to the primary distribution mains in order to facilitate the development.
- 6.82. In this respect, DCWW have proposed that various off-site works be undertaken to facilitate a new supply connection to serve the proposed development. The proposed works to the primary distribution network are planned in three phases as indicated on DCWW Drawing titled 'Proposed Water Mains', which is included in Appendix 6.2 herewith. The three phases of the up-grading

works are as follows:

- Phase 1 - Croesyceiliog Crematorium to Race Farm – excavate and lay approx. 1200m of 300mm ductile iron pipe (between points A and B on the drawing)
- Phase 2 - Pontyfelin Avenue to Polo Grounds Industrial Estate - excavate and lay approx. 380m of 300mm ductile iron pipe (between points C and D on the drawing)
- Phase 3 - Foundry Cottages to Bevans Lane - excavate and lay approx. 1500m of 225mm HPPE pipe (between points E and F on the drawing).

- 6.83. The termination point for the enhanced service will be at a booster pumping station, which is proposed to be located in a dedicated services compound close to the north eastern boundary of the site. The booster pumping station will service the on-site distribution mains, which will be located under the access roads wherever possible.
- 6.84. DCWW have confirmed that the new supply will accommodate the demand from the proposed development.
- 6.85. The cost associated with this DCWW requisition scheme is currently being reviewed by DCWW. Following confirmation of these costs and a subsequent Consortium instruction, DCWW have advised that there would be a three month lead-in to the start of the works and then the construction works would take six months.
- 6.86. On the basis of the improvements to the supply which will need to be incorporated in the proposed works the likely significant effect following the development works is considered to be **major beneficial**.

Telecommunications

- 6.87. No problems are anticipated in supplying the development with BT and cable communications services from existing networks in the vicinity of the site.
- 6.88. The existing on-site distribution system will be extended to service the additional facilities. In this case there would be a benefit to the service and as such the likely significant affect following development would be **major beneficial**.

Residual Effects

Construction

Residual Effects following Mitigation during the Construction Phase

- 6.89. The implementation of the construction phase protocols will protect existing services distribution apparatus. There will however not be an improvement to the services distribution until all off-site development infrastructure works have been completed.
- 6.90. With regard to water supply, discussions with Dwr Cymru Welsh Water (DCWW) over a period of time have confirmed that the existing distribution systems in the vicinity of the site do not have the required capacity to accommodate the proposed development. This is accepted and in this case enhancement works are required to the primary distribution mains in order to facilitate the development.
- 6.91. In this respect, DCWW have proposed that various off-site works be undertaken to facilitate a new supply connection to serve the proposed development. In this case the development works will be designed to incorporate the alterations to the supply system.

- 6.92. In this respect there is a residual effect but the effect has been mitigated by design and the residual effect is regarded as **major beneficial**.

Completed Development

Residual Effects following completion of the Development Works

- 6.93. As in the case of the construction phase the only residual effect following completion of the development works is that the existing distribution systems in the vicinity of the site do not have the required capacity to accommodate the proposed development. This deficiency in supply will have been mitigated in the design of the onsite and offsite enhancements to the water supply. In this case the residual effect would be considered to be **major beneficial**.

Cumulative Effects

Construction and Completed Development

- 6.94. The likely significant effects associated with the proposed development should also be considered with the cumulative effects of other schemes in the locality.
- 6.95. It is understood however that currently there are no other schemes in the immediate area which could be considered to be part of a cumulative effects assessment. In this case, there are no cumulative and interactive effects to consider in this assessment.
- 6.96. With regard to Interactive effects in respect of other site assessments the following comments apply: -

Landscape and Visual Impact

- 6.97. The undergrounding of the overhead 66KV and 11KV cables will have a beneficial effect in terms of visual amenity

Summary

- 6.98. This document has provided a Strategic Services Option Review of the principal services to facilitate the proposed development. The Strategic Options review is the first phase of the Utilities Strategy. Subsequent sections of the Utilities strategy will deal with detail design elements and procurement of the various services supplies through discussions with the Services Providers.
- 6.99. This chapter on Utilities has assessed the likely impact of the proposed development on the existing services provision to the site and the distribution of services on the site.
- 6.100. The enhancements proposed to the services supplies will result in considerable betterment (considered to be **major beneficial**) in **the long term**.
- 6.101. Table 5 below, contains a summary of the likely significant effects of the Proposed Development.

Table 5: Table of Significance – Services (Utilities)

Potential Effect	Nature of Effect (Permanent/ Temporary)	Significance (Major/ Moderate/ Minor) (Beneficial/ Adverse/ Negligible)	Mitigation/ Enhancement Measures	Geographical Importance*							Residual Effects (Major/ Moderate/ Minor) (Beneficial/ Adverse/ Negligible)
				I	UK	W	R	C	D	L	
Construction											
Accidental damage caused to existing services during the construction phase	Temporary	Minor Adverse	Introduction and enforcement of construction phase protocols to mitigate the potential for accidental damage, etc							L	Negligible
Current risk of flooding by overland flow from the site could continue throughout the construction phase	Temporary	Minor Adverse	Programme of construction of drainage works early in the construction programme							L	Negligible
Completed Development											
Current inadequacies in delivery capacity on mains water supply require off-site enhancements to supply.	Permanent	Major Adverse	Re-design of off-site distribution systems to provide adequate water supplies.							L	Major Beneficial
Electricity supply adequate for proposed development	Permanent	Negligible	On-site distribution enhancements may be required to accommodate extended use of electricity							L	Major Beneficial
Gas supply adequate for proposed development	Permanent	Negligible	On-site distribution enhancements may be required to accommodate extended use of Gas Supply.							L	Major Beneficial
Cumulative Effects											
No other schemes in locality contributing to a cumulative effect assessment											

* Geographical Level of Importance

I = International; UK = United Kingdom; W = Wales; R = Regional; C = County; D = District; L = Local

7. Society & Economy

- 7.1. Please refer to main South Sebastopol Environmental Statement prepared by Waterman (January 2011).

8. Landscape Character and Visual Assessment

Introduction

- 8.1. This addendum chapter identifies and evaluates the existing landscape and visual resources for development of the Barratt Phase 1 area (refer to outline application phasing plan) at South Sebastopol, Pontypool (hereafter referred to as 'the site') and surrounding areas. The chapter considers the likely significant effects of the proposed Development both during the construction phase and following completion of the Development at the site.
- 8.2. The chapter forms part of an addendum to the Environmental Statement (ES) submitted as part of the outline planning application for the whole of the South Sebastopol site (LPA ref. 01/P/05525). Therefore, to avoid unnecessary duplication, many of the sections within this addendum chapter have been summarised from the original outline ES. However, specific effects in relation to landscape and visual amenity as a result of the Phase 1 proposals are now able to be assessed in further detail and any mitigation that may be required in order to avoid, reduce or offset any likely significant adverse impacts are suggested.
- 8.3. Reference should also be made to the arboricultural survey report of the site, produced by Waterman (ref. E11338-R-2-2-2-101212-BC) in accordance with BS5837:2005 – 'Trees In Relation To Construction' and submitted as part of the outline planning application documentation. Reference should also be made to the Tree Loss Plan contained in Appendix 8.1 contained herewith.

Planning Policy Context

- 8.4. Reference should be made to Chapter 8 paragraphs 8.6 - 8.28 of the outline ES and Figure 8.1 in relation to the landscape and visual planning policy context, which details relevant policies from nation to local level.
- 8.5. However, of particular pertinence is Policy S2 which designates the site (and areas beyond) as a General Development Area (ref. S2/2 South Sebastopol). This designation essentially allocates the land for development and development proposals within this area will be permitted provided they are in accordance with policy framework of the local plan which seek to protect the integrity of landscape character and visual amenity of the area.
- 8.6. In addition to local plan policies the adopted South Sebastopol Development Framework (2004) provides ad hoc guidelines for development of the GDA. Development should seek to:
 - Make best use of existing features such as woodlands, tree-lined hedgerows, streams and the canal;
 - Give residents a sense of place and belonging;
 - Maintain and enhance the existing character and recreational value of the canal;
 - Create open space corridors and areas of focal open space throughout the site;
 - Retain where possible existing important views and create new focal points within the landscape;
 - Where possible maintain the alignment of existing public rights of way; and
 - Reinforce new linkages with surrounding communities.

Other Statutory Designations

Public Rights of Way (PRoW)

- 8.7. A number of local PRoW cross the site, mainly in the north between Bevan's Lane and the urban edge of Sebastopol. A National Cycle Route also follows the line of the old railway north to south in the east of the site.

Tree Preservation Orders (TPOs)

- 8.8. There are no TPOs present within the site.

Listed Buildings

- 8.9. The Barn in Bevan's Lane is a Grade II listed building. Tir Brychiad is also Grade II listed and abuts the site to the west.

Assessment Methodology

- 8.10. The assessment methodology for the landscape and visual assessment follows best practice as set out by the Countryside Agency, Landscape Institute and Institute of Environmental Management and Assessment as detailed in the outline ES (refer to Chapter 8 paragraphs 8.30 – 8.42).
- 8.11. The assessment is based on the Planning Layout Plan produced by Hammonds Yates on behalf of Barratts South West and David Wilson Homes. It has also been informed by other documentation submitted as part of the outline planning application (refer to Chapter 8 paragraphs 8.34 and 8.36 of the outline ES).

Significance Criteria

- 8.12. The significance of landscape and visual effects are determined by assessing:
- The sensitivity of the affected landscape;
 - The sensitivity of the visual receptor; and
 - The magnitude of the potential change that will occur.
- 8.13. Effects may be adverse or beneficial, the significance of which (including residual impacts following mitigation measures) is shown graphically as a significance matrix in Table 6 using the following definitions:
- *Minor* – an effect which on its own is likely to have a minor influence on decision making but when combined with other effects could have a more material influence;
 - *Moderate* – an effect which on its own could have some influence on decision making, particularly when combined with other similar effects; or
 - *Major* – an effect which in isolation could have a material influence on the decision making process.
- 8.14. In addition, the term negligible is used to describe impacts that would cause very limited changes to the landscape and/or views, but creates no significant impact.
- 8.15. The nature of effect is also assessed as being either short-term (less than 5 years), medium-term (5 - 10 years) or long-term (10 years plus) in timescale. All landscape and visual effects are considered to be direct (i.e. a direct consequence of the Development proposals).

8.16. The assessment of the nature of landscape and visual effects will depend on the degree to which the Development:

- Complements, respects and fits into the existing scale, landform and pattern of landscape context;
- Enables enhancement, restoration or retention of the landscape character and visual amenity;
- Affects strategic and important views in addition to the visual context of receptors; and
- Meets landscape and visual policy aspirations for the area.

Table 6: Significance Matrix – Landscape Character and Visual Assessment

Sensitivity / Value of Receptor	Magnitude of Effect		
	High	Medium	Low
High (Wales/UK/International designation/private residents)	Major	Major/ Moderate	Moderate
Medium (County/Regional designations/PROW/Outdoor Recreation)	Major/ Moderate	Moderate	Moderate/ Minor
Low (Local/District designations/ Local Road Users)	Moderate	Moderate/ Minor	Minor

8.17. In addition, the term negligible is used if the development would cause very limited changes to the landscape and/or views, but creates no significant impact.

Baseline Conditions

8.18. The baseline conditions of the site remain as those set out within the outline ES. Reference should be made to the baseline section of Chapter 8 (paragraphs 8.43 - 8.75) and associated Figures 8.3 to 8.18. A short description specific to the site is also provided below.

8.19. The site is located in the north east of the Sebastopol outline application area and comprises of rough pastoral grassland and scrubby hedgerows, falling east toward the A4051 in the Afon Lwyd Valley. As this is the least elevated area of the outline application area, it lacks the wider panoramas available elsewhere and the combination of hedgerows and topography creates a rural and small scale character. However, there are a number of urban features including the A4051, the Knauf insulation works and neighbouring residential suburbs which erode the sense of rurality.

Likely Evolution of the Baseline

8.20. In landscape and visual terms, the site is likely to remain relatively unchanged in the near future. However, the designation of the site and wider area between Cwmbrian and Sebastopol as a General Development Area (GDA) within the Torfaen Local Plan means that its development, resulting in substantial change to the character and visual amenity, is likely in the future.

Likely Significant Effects

8.21. This section considers the effects of the proposals on the landscape character and visual amenity of the receiving environment throughout the life-cycle of the development, from construction to operational phase. The assessment also identifies the timescale over which these effects will occur, their direct or indirect nature as well as their potential reversibility. The significance of impact has been identified using the methodology detailed above and the matrices contained within Table 6. It should be noted that the all impact significances identified within this section are before the implementation of mitigation measures.

Construction

8.22. The effects of demolition, site preparation works and construction activities are assessed below and have the potential to affect the landscape character and visual amenity of the site and its environs in the following ways:

- Ground excavation works, including levelling and cut and fill activities;
- Movement of heavy plant and material both within and to site;
- Erection of construction infrastructure (e.g. scaffolding and mobile cranes) and siting of workers welfare facilities; and
- Construction of new infrastructure and buildings.

8.23. The majority of effects identified for the construction phase are short-term in nature, lasting for less than five years. Demolition and construction effects are generally considered to be reversible in landscape and visual terms. However, some impacts, such as the removal of trees and hedgerows are considered to be permanent.

Landscape Character

8.24. Due to the extensive nature of the Development, construction works within the site are likely to have a considerable impact on the site and its immediate environments. Processes will include earthworks, such as the grading of levels and movement of topsoil, the removal of small sections of hedgerows and trees for access and the construction of buildings and access routes. These processes are likely to result in substantial local intrusion into what is at present a relatively rural environment. However, construction activities will not be seen in isolation and will be viewed in the context of existing built form and industrial works located within Afon Lwyd valley.

8.25. The most apparent effects to character will be to LCA1A: Afon Lwyd Valley Escarpment in which the site lies. The relative rural character of this part of the LCA will be replaced by construction activities as the build out of the site is completed. The retention of existing woodland and vegetation will ameliorate the potential disruption construction has on this LCA, serving as an important visual and acoustic screen. Construction will be seen within the context of the valley as opposed to the more open valley sides. Taking the above into consideration, the magnitude of change is considered to be low resulting **direct, short-term term effects of minor adverse significance** before mitigation.

8.26. Impacts beyond LCA1 to other character areas and Special Landscapes Areas are likely to be **negligible**.

Landscape Features

Woodland Blocks

- 8.27. The character of woodland blocks, namely between the site and the A4051, will be largely unaffected during the construction phase as every effort has been made to retain them as part of the iterative design process. As noted previously in the outline ES, the blocks will continue to provide an important visual and acoustic screen to construction activities, ensuring that disruption is kept to a minimum. It is considered that where the removal of trees is required for access purposes this is not of a quantity to result in a significantly deleterious effect to the overall contribution of these features in this locality. The magnitude of change as result of the construction phase is considered to be to be medium resulting in **direct, short-term (long-term for removal) impacts of minor adverse significance**.

Hedgerows

- 8.28. As with woodland blocks, hedgerows within the site have largely been retained and incorporated into the design as part of the Master Planning strategy. Inevitably, some small sections of hedgerow will be removed for access and the proximity of built form will mean that the rural character of Bevan's Lane will be lost in places, but these are not considered to be significant in relation to the overall hedgerow resource of the site. Overall, the impact to hedgerow features of the site are considered to be **direct short-term (long-term for removal) of minor adverse significance**.

Visual Amenity

- 8.29. Owing to the extensive nature of development across the site construction is likely to be highly visible within local views (photo viewpoints 1 and 11). However, owing to the low lying nature of the site and the strong vegetative network that surrounds it, views of construction from the wider locality will be largely screened. The retention of woodland belts along the cycle track in the southeast contribute to this screening effect. Furthermore, the proximity of the A4051 and adjacent suburbs of Sebastopol and Cwmbran mean that construction within the site will be seen in the existing context of settlement of the Afon Lwyd valley.

Private Dwellings

- 8.30. Construction will be prominent in views from Tir Byrchiad and Wren's Nest Cottage although the retention of boundary vegetation to these properties will provide some screening. It is also of note that views of construction will only be visible from certain aspect of these dwellings. Nonetheless **direct, short-term impacts of major adverse significance** will occur to visual receptors from these dwellings before mitigation.
- 8.31. Private dwellings adjacent to the site at Railway Terrace and Lansdowne will experience **negligible** impacts to their visual amenity as a result of intervening vegetation and the provision of adjacent open space to the north of the site.

Public Rights of Way within the site (photo viewpoint 11)

- 8.32. Owing to their proximity, public rights of way within the site will experience substantial change as a result of the construction phase. Construction activities will be prominent in views from footpaths in the north of the site and from the cycleway traversing north to south in the east. The magnitude of change to receptors is assessed as high resulting in **direct, short-term impacts of**

major/moderate adverse significance before mitigation.

Views From Adjacent Countryside (photo viewpoints 5, 8, 14 and 15)

- 8.33. Views of construction within the site from adjacent countryside to the west will largely be screened by the undulating topography and intervening vegetation. Where open views are possible, from the more elevated countryside further west (photo viewpoint 14 and 15), construction will be seen amongst the backdrop of Sebastopol and associated works in the valley and not as a conspicuous encroachment into the open countryside. Therefore, the magnitude of impact to visual receptors in this area is assessed to be **negligible**.

Other Visual Receptors (photo viewpoints 1, 2, 5, 8, 12, 13 and 18)

- 8.34. Views from the Brecon and Monmouthshire Canal, Sebastopol and Cwmbnan, middle distance views and views from the Brecon Beacon's National Park will experience **negligible impacts** owing to a combination of intervening built form, vegetation and distance.

Completed Development

- 8.35. The completed development will see the extension of built form into currently agricultural farmland. This is not considered to be out of place when compared to the historic development pattern with the growth of linear settlement within the Afon Lwyd valley. Importantly, the mature vegetative network of woodland belts and hedgerows has been retained where possible, softening built form and aiding assimilation into the existing landscape context.

Landscape Character

- 8.36. The completed development will see the transformation of the farmland of LCA1A: Afon Lwyd Valley: Escarpment into new built form, resembling that of LCA3, and resulting in substantial change to local character of the site. However, although a considerable change of character, it is not totally alien in the overall landscape context and the majority of LCA1 will be unaffected. Moreover, a substantial and continuous band of LCA1 will remain running parallel to settlement within the valley. The magnitude of change to LCA1 as a whole is assessed as low to medium, resulting in **direct, long-term minor adverse** impacts to the character of LCA1. The change of character should also be considered in the context of policy aspirations for the area under its designation as a General Development Area (GDA) which seeks to facilitate substantial development of the area. The completed development will contribute significantly to these aims and should this scenario come to pass **direct, long-term impacts of negligible** significance.
- 8.37. Owing to distance, intervening built form and vegetation, **negligible impacts** are likely to occur to character areas LCA1B, LCA2 and LCA3. **Negligible impacts** to the character of Special Landscape Areas (SLAs) and the Brecon Beacons National Park are also concluded due to distance and intervening vegetation.

Landscape Features

Woodland Blocks

- 8.38. The character of woodland blocks within the site will be largely unaffected as a result of the completed development as every effort has been made to retain them as part of the iterative design process. As noted previously, the blocks will continue to provide an important visual and acoustic screen to development, adding maturity and aiding assimilation. The allocation of public open

space adjacent to many of these features provides a further buffer ensuring that their integrity is protected.

- 8.39. Where development abuts these features there will inevitably be an encroachment of urbanising features in the setting of that woodland although the actual character of the woodland itself will remain relatively unchanged. **Negligible** impacts are therefore predicted.

Hedgerows

- 8.40. Inevitably some small sections of hedgerows will be removed to allow for access. However, these sections will be limited and it is considered that retained hedgerows can continue to contribute positively to the character of the area and indeed the development itself, adding maturity to the scheme. **Negligible** impacts are therefore predicted.

Visual Amenity

- 8.41. In visual terms the completed development is considered to be a logical extension to existing settlement, in keeping with the ribbon settlement pattern within the Afon Lwyd valley. Views of the completed development will be largely screened by topography and vegetation. Where the completed development can be seen from middle and long distance views it will be seen as part of existing settlement pattern. The retention of woodland blocks and hedgerows is considered to be significant in softening the appearance of the Development within views, aiding its assimilation into the composition.
- 8.42. Inevitably, local visual receptors will experience significant change owing to their proximity to the development. However, many of these effects will be localised and the allocation of public open space adjacent to existing properties will allow the openness of views to be maintained to some extent. Nonetheless, the current pastoral view of countryside will be replaced by that of suburban built form marking a significant change to the composition of views from properties and rights of way within the site at present.

Private Dwellings

- 8.43. The retention of boundary vegetation around private dwellings within the site and the provision of public open space next to many of them will mean that the openness of views will be maintained in some circumstances. Nonetheless, the composition of views from north facing aspects will be dominated by built form. However, it is important that retained buildings are incorporated within new settlement and contribute positively to the *genius loci*, to avoid forming isolated remnants visually detached from their surroundings. As such, a balance must be struck between maintaining the integrity of the buildings whilst assimilating them into the Development. It is also of note that views of open countryside will remain from these dwellings in some directions. Taking the above into consideration, the impacts to the visual amenity of private dwellings is assessed as **direct, long-term of major/moderate adverse significance**. However, the change to the visual amenity should also be considered in the context of policy aspirations for the area under its designation as a General Development Area (GDA), which seeks to facilitate substantial development within the area and create new focal points and open space corridors whilst retaining existing important views and reinforcing new links with the surrounding communities. The completed development will contribute significantly to these aims and should this policy be realised **direct, long-term impacts of negligible significance** are anticipated.
- 8.44. Other neighbouring private dwellings near to site, namely those at Railway Terrace and Lansdowne will experience **negligible** impacts to their visual amenity as a result of intervening vegetation and

the provision of adjacent open space to the north of the site.

Public Rights of Way within the site (photo viewpoint 11)

- 8.45. The composition of views from public rights of way will alter substantially from those pre-development, becoming dominated by built form. Although the context of view will change, features of notable value, such as original buildings, mature trees and hedgerows will remain, providing a visual 'buffer' behind which development would be set. However, it is of note that many of the views at present do contain built form albeit on a less prominent basis and open views to the wider countryside are likely to still be possible whilst those more enclosed and intimate will remain (as a result of the retained vegetative network). Taking the above into consideration, **direct, long-term impacts of major/moderate adverse significance** for receptors on public rights of way are concluded. However, the change to the visual amenity from public rights of way should also be considered in the context of policy objectives for the area under its designation as a General Development Area (GDA), which seeks to facilitate development within the area, including maintaining public rights of way whilst creating new focal points and reinforcing links with the surroundings. Such aspirations will inevitably result in substantial change to the visual amenity of these recreational routes. If this scenario were to be realised, **direct, long-term impacts of negligible significance** are anticipated.

Views From Adjacent Countryside (photo viewpoints 5, 8, 14 and 15)

- 8.46. Views of the completed development from adjacent countryside to the west will largely be screened by the undulating topography and intervening vegetation. Where open views are possible, from the more elevated countryside further west (photo viewpoint 14 and 15), the Development will be seen amongst the backdrop of Sebastopol and associated works in the valley and not as a conspicuous encroachment into the open countryside. Therefore, the magnitude of impact to visual receptors in this area is assessed to be **negligible**.

Other Visual Receptors (photo viewpoints 1, 2, 5, 8, 12, 13 and 18)

- 8.47. Views from the Brecon and Monmouthshire Canal, Sebastopol and Cwmbran, middle distance views and views from the Brecon Beacon's National Park will experience **negligible impacts** owing to a combination of intervening built form, vegetation and distance. The roofline of dwellings may be visible in views from the canal at Bevan's Bridge (photo viewpoint 1) although they will not be obtrusive features and are likely to merge into the urban backdrop of Sebastopol.

Mitigation Measures

- 8.48. The following mitigation measures are suggested for the construction phase and completed development and should be employed to reduce adverse landscape and visual effects where they occur, as identified during the course of this assessment. It should be noted that the EIA process as part of the outline application has informed design as part of an iterative design process, designing out adverse impacts before they become cemented as part of the finalised scheme. The principles adopted as part of the strategic outline planning application (as detailed within the Design and Access Statement and Concept Master Plan) have been carried forward as part of the detailed design.

Construction

- 8.49. The following mitigation measures should be adopted to reduce adverse impacts as a result of the

construction phase:

- Adoption of Code of Construction Practice (CoCP) to ensure good site management and house-keeping;
- Sensitive siting of welfare facilities, plant and material storage areas;
- Erection of protective fencing in accordance with BS5837 – Trees in Relation to Construction around areas of important retained vegetation;
- Selective use of wooden hoardings to visually demarcate working areas. In many instances the retained mature vegetative network of the site will provide a more natural screen; and
- Where removal of vegetation is inevitable for access purposes, preference to be made towards existing gateways, thin or low value sections of hedgerow as shown within the arboricultural survey report.

Completed Development

8.50. The following mitigation measures should be adopted to reduce adverse impacts as a result of the completed development:

- Retention of woodland blocks and hedgerows within the site aiding assimilation of the Development into the landscape context;
- The insistence of high quality design and materials of landscaped areas to ensure successful and cherished public spaces;
- Adoption of a landscape management plan to ensure both informal and formal public spaces, including woodland blocks within the site, are maintained and contribute positively to the Development and wider landscape context (this should be in accordance and informed by the strategic management plan produced for the whole outline application area);
- An appreciation and sympathetic articulation of character of existing retained buildings to provide a link to historical character, facilitate harmonic articulation between new and old built form and create a distinctive sense of place; and
- Strengthening of vegetative boundaries where appropriate within the site to further enhance their ecological and landscape value.

Residual Effects

8.51. Residual effects are those remaining effects following the success implementation of mitigation measures outlined above. It is considered that many local impacts can be reduced as a result of successful mitigation, particularly during construction.

8.52. Table 7 at the end of this chapter summarises the significance of effects and residual effects for both construction and completed development respectively

Cumulative Effects

8.53. In the local area there are two planning applications as part of the Avesta II scheme that are considered likely to have cumulative effects on landscape character and visual amenity. These are:

- Planning Reference 10/P/00542(W) – full application – “residential let mixed use development comprising apartments and housing (amended scheme)” – not yet determined (Barratt Homes); and
- Planning Reference 10/P/00033(W) – reserved matters application – “reserved matters for 209

dwellings” – approved 31st August (Persimmon Homes)

- 8.54. In addition to the Avesta II, the remainder of the outline application for Sebastopol (LPA ref01/P/05525) is also considered as part of the cumulative assessment.
- 8.55. The Avesta II scheme is located within the Afon Lwyd valley, following the organic settlement pattern of the area. As such it, along with the outline application for Sebastopol, will be seen as part of the organic growth of settlement within the area and not as intrusion into open uplands. The extent and character of LCA3: Afon Lwyd Settlements will remain relatively unchanged, albeit of a more contemporary vernacular.
- 8.56. The outline application for Sebastopol includes a large area adjacent to the site to the west and south. The landscape and visual effects of this proposals are assessed in detail as part of the outline ES. In terms of cumulative impacts, development within the site is likely to inconsequential in relation to the wider outline scheme.
- 8.57. The additional cumulative impact to landscape character as a result of development of the site is assessed to be **direct, long-term of negligible significance**.
- 8.58. In terms of visual amenity, although resulting in substantial change to the composition of local views, all developments are considered to be in keeping with the organic settlement growth of area. Development within the site will be seen in conjunction with the Avesta II scheme in local views although not appear out of place or obtrusive in the context of existing settlement. The site is also likely to merge inconspicuously with the new built form of the outline application for Sebastopol, again reading as a logical extension to existing settlement patterns.
- 8.59. The additional cumulative impact to visual amenity as result of the development of the site is assessed to be **direct, long-term of negligible significance**

Summary

- 8.60. The landscape of the site and its surrounds demonstrate many characteristics associated with the landscape of South Wales. The elevated uplands provide attractive settings to linear, southerly orientated settlements within the valleys. In relation to the site itself, the undulating topography, mature vegetative network and isolated cottages combine to create an attractive, semi-rural landscape. However, the presence of urban features, such as settlement and industrial works within the Afon Lwyd valley mean that it cannot be regarded to be devoid of urbanising influences entirely.
- 8.61. Due to the extensive nature of the Development, construction works within the site are likely to have a considerable impact on the site and its immediate environments. However, construction activities will not be seen in isolation and will be viewed in the context of existing built form and industrial works located within Afon Lwyd valley. Furthermore, as a result of the vegetative network, impacts will be largely limited to the site and its immediate surrounds and not be significant to more distant receptors. Impacts to the character and visual amenity are assessed to be of **direct, short-term of negligible to major adverse significance**.
- 8.62. The principles detailed as part of the outline application for Sebastopol have been followed for this detailed planning application for the site. The completed development will see the extension of development into currently agricultural farmland. This is not considered to be out of place with the overall historic development pattern within the Afon Lwyd valley and read as a logical extension to built form of Sebastopol.
- 8.63. The Development has sought to retain and enhance features of value, such as existing buildings,

woodland blocks and hedgerow networks, all of which contribute to the sense of place and local distinctiveness of the site and will aid assimilation of the Development into the existing context. As the site within a General Development Area (GDA) as designated within the local plan, the Development will contribute significantly towards policy aspirations for the area, which envisage substantial change to the area. Impacts concluded as part of this assessment must therefore be considered within this policy context. The significance of impacts to landscape and visual receptors as a result of the completed development is assessed to be **direct, long-term of negligible to major/moderate adverse significance**.

Cumulative effects to landscape character and visual amenity of the development in addition to the Avesta II scheme and outline application for the wide Sebastopol site are assessed to be **negligible**.

Table 7: Table of Significance – Landscape Character and Visual Assessment

Potential Effect	Nature of Effect (short<1 year/ Medium 1-5 years/ long term>5years)	Significance (Major/ Moderate/ Minor) (Beneficial/ Adverse/ Negligible)	Mitigation/ Enhancement Measures	Geographical Importance*							Residual Effects (Major/ Moderate/ Minor) (Beneficial/ Adverse/ Negligible)
				I	UK	W	R	C	D	L	
Construction											
<i>Landscape Character</i>											
LCA1A: Afon Lwyd Valley: Escarpment	Direct, short-term	Minor adverse	<ul style="list-style-type: none"> Adoption of CoCP Tree protection fencing Selective use of hoarding 						*		Direct, short-term minor adverse
LCAs 1B, 2 and 3	Direct, short-term	Negligible	<ul style="list-style-type: none"> None specific required 						*		Direct, short-term negligible
Special Landscape Areas	Direct, short-term	Negligible	<ul style="list-style-type: none"> None specific required 					*			Direct, short-term negligible
Brecon Beacons National Park	Direct, short-term	Negligible	<ul style="list-style-type: none"> None specific required 			*					Direct, short-term negligible
<i>Landscape Features</i>											
Woodland Blocks	Direct, short/long-term	Minor adverse	<ul style="list-style-type: none"> Adoption of CoCP Tree protection fencing 						*		Direct, short/long-term negligible
Hedgerows	Direct, short/long-term	Minor adverse	<ul style="list-style-type: none"> As above 						*		Direct, short-term negligible
<i>Visual Amenity</i>											
Private dwellings within the site	Direct, short-term	Major adverse	<ul style="list-style-type: none"> Provision of public open space buffer Adoption of CoCP Selective use of hoarding 						*		Direct, short-term major adverse
Public Rights of Way within the site	Direct, short term	Major/Moderate adverse	<ul style="list-style-type: none"> Provision of public open space buffer Adoption of CoCP Selective use of hoarding 						*		Direct, short-term major/moderate adverse

Views from adjacent countryside	Direct, short-term	Negligible	• None specific required						*			Direct, short-term negligible
Other Visual Receptors	Direct, short-term	Negligible	• None specific required						*	*		Direct, short-term negligible
Completed Development												
<i>Landscape Character</i>												
LCA1A: Afon Lwyd Valley: Escarpment	Direct, long-term	Minor adverse (Negligible if GDA delivered)	• Retention of landscape features of value • Adoption of landscape strategy						*			Direct, long-term minor adverse (Direct, long-term negligible if GDA delivered)
LCAs 1B, 2 and 3	Direct, long-term	Negligible	• None specific required						*			Direct, long-term negligible
Special Landscape Areas	Direct, long-term	Negligible	• None specific required						*			Direct, long-term negligible
<i>Landscape Features</i>												
Woodland Blocks	Direct, long-term	Negligible	• Retention, enhancement and future management as part of adopted landscape strategy						*			Direct, long-term negligible
Hedgerows	Direct, long-term	Negligible	• As above						*			Direct, long-term negligible
<i>Visual Amenity</i>												
Receptors within the site	Direct, long-term	Major/Moderate adverse (Negligible if GDA delivered)	• Retention of landscape features of value • Creation of new features of interest and high quality design • Adoption of strategic landscape strategy							*		Direct, long-term Major/moderate adverse (Direct, long-term negligible if GDA delivered)
Public Rights of Way within the site	Direct, long-term	Major/Moderate adverse (Negligible if GDA delivered)	• As above							*		Direct, long-term Major/Moderate adverse (Direct, long-term negligible if GDA bought delivered)
Views from adjacent countryside	Direct, long-term	Negligible	• None specific required						*			Direct, long-term negligible



Other Visual Receptors	Direct, long-term	Negligible	• None specific required						*	*	Direct, long-term negligible
Cumulative Effects											
Landscape Character	Direct, long-term	Negligible	• None specific required						*		Direct, long-term negligible
Visual Amenity	Direct, long-term	Negligible	• None specific required						*		Direct, long-term negligible

*** Geographical Level of Importance**

I = International; UK = United Kingdom; W = Wales; R = Regional; C = County; D = District; L = Local

9. Transportation Assessment (Traffic, Transport and Movement)

- 9.1. Please refer to main South Sebastopol Environmental Statement prepared by Waterman (January 2011).

10. Archaeological, Built and Cultural Heritage

Introduction

- 10.1. This chapter identifies and evaluates the archaeological, built and cultural heritage affected by the development of the Barratt Phase 1 area (refer to outline application phasing plan in Appendix 1.3) at South Sebastopol. This chapter outlines the likely impact the development is expected to have on the archaeological and historic environment and the measures considered suitable to minimise any adverse impacts.
- 10.2. This chapter complements the Environmental Statement (ES) submitted in January 2011 as part of the outline planning application for the whole of the South Sebastopol site (LPA ref. 01/P/05525). Therefore, to avoid unnecessary duplication, many of the sections within this chapter have been summarised from the original outline ES.
- 10.3. The information upon which this environmental chapter is based was collated as part of an Archaeological Desk Based Assessment by Waterman in December 2010.
- 10.4. The likely significant effects have been assessed in relation to Hammonds Yates Planning Layout ref. 1291-1000-A (Appendix 1.1), and the Solstys Brewster Strategic Landscape Plan (Outline Planning) ref. 1040901/PL/GA/001 (Appendix 1.4).

Planning Policy Context

National Planning Policy

- 10.5. The Welsh Assembly has produced Planning Policy Wales (March 2010) to provide advice on all aspects of planning policy in Wales - Chapter 6 of this relates to “Conserving the Historic Environment”. Detailed advice on archaeology in the planning process is contained in Welsh Office Circular 60/96 Planning and the Historic Environment: Archaeology. Welsh Office Circular 61/96 Planning and the Historic Environment: Historic Buildings and Conservation Areas presents the Government’s advice on the handling of historic buildings and landscapes in the planning process.

Local Planning Policy

- 10.6. Chapter 9 of the Gwent Structure Plan (1996) relates to “The Built and Historic Environment” and contains several relevant policies, namely BC1 to BC5, relate to the protection of the archaeological, historical and architectural environment. Priority is given to the protection and enhancement of these cultural resources, and where development proposals are submitted which are likely to impact on archaeological sites or their setting, evaluation of the impact is recommended. Policy B5 states that :

BC5 Where there is a justified need for development sites of archaeological importance sufficient to override their protection under policy B3:

- *Facilities for investigation and recording may be required; and*
- *Preference will be given to the minimisation of areas of conflict, and*
- *The preservation of remains in situ will generally be preferred to excavation.*

- 10.7. Chapter 9 of the Adopted Local Plan for the County and Borough of Torfaen (2000) relates to “Heritage” and also contains several relevant policies, namely H1 to H7, as below:

H1 Development within a conservation area will only be permitted where the proposal satisfies all

of the following criteria:

- a) *The proposal preserves or enhances the visual, architectural and historic character of the area.*
- b) *The proposal respects the scale and character of both the surrounding buildings and the conservation area.*
- c) *The provision of open space between and around buildings reflects the scale, layout and character of the conservation area.*

H2 The demolition, or part demolition, of any building or feature within a conservation area will only be permitted where a strong case can be made. Where a building is to be replaced, evidence will be required that a contract for redevelopment has been entered into.

H3 The demolition, or part demolition, of a Listed Building will only be permitted where the proposal satisfies all of the following criteria:

- a) *The building is so unsound that it constitutes a danger to the general public and is incapable of being refurbished at a reasonable cost.*
- b) *In the case of the owner being unable to finance the necessary works, the building has been publicly offered for sale or lease at a reasonable price without success.*
- c) *A realistic and appropriate development scheme for the site, which will make a positive contribution to the areas character, has been advanced.*

H4 The alteration or extension of listed buildings will only be permitted where the proposal reflects the original building in respect of the setting of the site and the mass, form, scale, materials, colour, character and design of the building.

H5 Development on, or adjoining, a scheduled ancient monument will only be permitted where the proposal would not have an adverse impact upon its respective setting and character.

H6 In determining applications for development, account will be taken of archaeological (sic) considerations. Where planning approval is to be granted, for development on a site known to contain archaeological (sic) remains, conditions will be imposed to require that adequate provision is made for the conservation and/or recording of the site during the period of development.

H7 Development proposals which are of such a scale that they would adversely affect or visually impinge upon the overall integrity of the 'Landscape of Outstanding Historical Interest' at Blaenavon will not be permitted.

Assessment Methodology

- 10.8. This Chapter is based on a recently undertaken desk based assessment (Appendix 10.1).
- 10.9. The site within which this phase of development is located, was designated as one of the two major General Development Areas (GDAs) in the Adopted Local Plan for the County Borough of Torfaen (Adopted 27 July 2000) – policy S2/2 (centred on ST 285 975). The site relevant to this report does not cover the full extent of the GDA, as it excludes the golf course, for which there are currently no redevelopment proposals.
- 10.10. Subsequent to this allocation of the land, several studies were commissioned, including an Environmental Statement prepared in support of a planning application by a consortium comprising the Welsh Development Agency, Barratt Homes and Crest Strategic Projects. This document is dated 6th June 2001.

- 10.11. In May 2003 Torfaen County Borough Council adopted the South Sebastopol – Adopted Development Framework. This document relied on a Desk Based Assessment by the Glamorgan Gwent Archaeological Trust (GGAT) for the determination of archaeological and historical significance, as well as the above mentioned Environmental Statement.
- 10.12. In September 2010 a Scoping Opinion was issued – Planning Application 01/P/05526 – Residential Development Land at South Sebastopol, Cwmbran. The main purpose of this document was “To identify the information which needs to be incorporated into a refreshed Environmental Assessment...”. In terms of archaeology it stated that:
- “Consideration should be given to the canal” (...) “The Historic Environment Record held by Glamorgan Gwent Archaeological Trust is the official archaeological record and should be visited to establish if any new information has been entered into the official record. The information included in the first four volumes of the Gwent County History and the revised cultural heritage aspect section in the Torfaen LANDMAP, and other relevant sources, should be included in the revised ES and should comply with the Standards and Guidance for Desk-based Archaeological Assessments issued by the Institute for Archaeologists.”*
- 10.13. The assessment carried out by Waterman in December 2010 was therefore intended as a review of known archaeological and historical information relating to South Sebastopol, updating any previous searches, whilst conforming to the Institute for Archaeologists’ *Standards in British Archaeology: Desk-based Assessments*.
- 10.14. The following work was conducted to provide a baseline to inform the impact assessment:
- Search of archaeological and historical record, including Historic Environment Record (HER) via an enquiry with the Glamorgan and Gwent Archaeological Trust Ltd., National Monuments Record (NMR), and local archives.
 - Search of Aerial Photography Record at the Central Registry for Aerial Photography in Wales.
 - Search of Local Cartographic Record, and other available information at the Gwent County Record Office.
 - Review of the information included in the first three volumes of the Gwent County History.
 - Review of the revised historical and cultural heritage aspect sections in the Torfaen LANDMAP.
 - Site visit/ walkover to consider the site and also potential impacts on nearby heritage assets.
- 10.15. A search of the archaeological and historical record was made via an enquiry to the Glamorgan Gwent Archaeological Trust. This was intended to identify all known Historic Environment Records (HERs), including any Scheduled Ancient Monuments (SAMs) and listed building records held by CADW, and sites listed in the National Monuments Record held by the Royal Commission on the Ancient and Historic Monuments of Wales, or any other relevant information on the site.
- 10.16. Historical maps were obtained from a visit to the Gwent County Record Office; aerial photographs were obtained via a search of the Aerial Photography Record at the Central Registry for Aerial Photography in Wales. Secondary sources were consulted at the Cardiff Central Library, such as the Register of Landscapes of Outstanding Historic Importance (1998) and Register of Landscapes of Special Historic Interest (2001). The adopted Local Plan for the County Borough of Torfaen also lists those within the Borough. The Torfaen LANDMAP was consulted online via the Countryside Council for Wales website.
- 10.17. The site was visited on the 17th September 2010. The aim of the visit and walkover was to identify the ground conditions, and identify remains of previously recorded sites, or any hitherto unrecorded remains.

10.18. This chapter forms part of an addendum to the Environmental Statement (ES) submitted in January 2011 as part of the outline planning application for the whole of the South Sebastopol site (LPA ref. 01/P/05525).

Significance Criteria

10.19. In Table 9 below (assessment of effects), the following significance criteria against which the assessment of **impact** is made are used:

- a) Major (adverse) – total loss;
- b) Moderate (adverse) - significant loss – likely to result in reduction of value of surviving site;
- c) Minor (adverse) - loss unlikely to result in reduction of value of surviving site; and
- d) Where the receptor is not directly affected by the development it is classed as not significant and it is not listed.

10.20. Effects of the completed development have not been considered, as all likely significant effects will occur from during the construction phase.

10.21. In addition, the nature of effect is also assessed as being either short-term (less than 5 years), medium-term (5 - 10 years) or long-term (10 years plus) in timescale.

Baseline Conditions

Designated Heritage

10.22. There are no Scheduled Ancient Monuments (SAM) within the site.

10.23. The nearest SAM lies approximately a mile west of the site being the Ironstone Works at the Upper Race (Primary Reference Number (PRN 07976g; NGR ST276986), dating from the 16th century.

10.24. The site does not lie within or contain any conservation area, designated landscape or park/garden.

10.25. There are two listed buildings adjacent to the site.

10.26. **Tir-Brychiad** - Grade II listed (80864) on the north side of Bevan's Lane, is a one storey building, with white walls and black doors – this is recognisable in the regional tradition (PRN 00102g; NGR ST 2926 9767). It is a one storey farmhouse with semi-attic and slate roof. The interior has many thick ceiling beams, but the doors and windows are modern with brick surrounds. This is excluded from the proposed development master plan. This structure and its curtilage are not directly affected by the development plans.

10.27. On the south side of Bevan's Lane, east of Tir-Brychiad, is **Wren's Nest Barn** – Grade II listed (80861), also known as Hay Barn in some documents (PRN 07660g; NGR ST 2938 9757). On the 1840 Tithe map this is shown as belonging to Wren's Nest Cottage. It survives as a well built stone structure, re-roofed relatively recently, but of some antiquity. This is also excluded from the proposed development master plan. This structure is also not affected directly by the development plans.

Non-designated Heritage

Prehistoric, Roman and Medieval

10.28. There are no known remains or records pre-dating the 16th century within the site.

Post-medieval (after circa 1500 AD)

10.29. The **canal** is the main historic feature near the site (PRN 3263g; NGR linear), and runs roughly from north to south to the west of the proposed development area.

10.30. In the Llandrechfa Upper Tithe Map (1842), land uses throughout the wider South Sebastopol site are shown as mainly meadow, pasture, coppice, wood, arable and brake. The main land unit belonged to Ty Brychiad, and a smaller units belonged to Wren's Nest Farm. Land use has continued to focus around the same activities since then, although some of the smaller units have been merged into larger ones, old buildings fell into disuse, and new buildings have appeared (for example Wren's Nest Farm).

10.31. Other than the few farmsteads, the land units within the site are mainly used as pasture/ grazing, with several areas of woodland and mature hedgerows. This use of land reflects the use of land reported in historical maps consulted, and is probably post medieval in nature.

10.32. Main hedgerows, used as land unit boundaries, but which relate closely to topographical features and particularly to several streams crossing the site, also survive to the present day. The Hedgerows Regulations 1997 provide a set of criteria to determine the importance of historic hedges. The principal qualifying are those along the canal, Bevan Lane, and around the farm of Tir Brychiad. The lanes and public footpaths running through the site are all shown on the 1840 Tithe Map and may be earlier. They are for the most part bordered by hedgerows and wooded areas.

10.33. To the south east of the proposed development area a culverted stream runs west to east under the canal and discharges on to what is suggested was once some sort of **settling tank** (PRN 07657g; NGR ST 2878 9720, see below). In the 1882 1st Edition OS Map the area is described with the labels "Well" and "Sluice".

10.34. There are a further 3 non-designated Historic Environment Record entries within/ adjacent to the development site, but they are not included in the proposed development plan.

10.35. The **Pontypool to Cwmbran Railway** (PRN 07665g, NGR linear). The single track (mineral) railway has been dismantled and is now used as a cycle path. It crosses the eastern edge of the site.

10.36. On the west side of the railway, and outside the proposed development area, lie the remains of the **Ponrhydyrun Railway Station House** (PRN 0943g, NGR ST 2943 2974 05). The remains of a façade at least 2 storeys high are visible from the cycle path, but obscured by mature vegetation, and it is hard to gauge the extent and condition of any surviving remains. This is to be retained in the proposed development as it lies within a wooded area.

10.37. **Wren's Nest Cottage** (PRN 07659g; NGR ST 2923 9755) – is also recorded on the 1840 Tithe Map, and still survives. This immediately adjacent, but excluded from the proposed development plan.

Archaeological Potential

10.38. Information for the site is limited, especially pre-dating the post medieval period, although this may

be a reflection of the limited investigation completed previously. Medieval and post medieval land use (ploughing, specifically) will have led to truncation of any sub-surface earlier archaeological deposits. Indeed, it is unlikely that the site contains any remains of greater than local importance. However, the possibility of the survival of some sub-surface remains of local importance cannot be discounted entirely.

Likely Significant Effects

10.39. The likely significant effects of the Proposed Development are considered here in relation to the future baseline conditions. The identification of significant effects covers all potential effects before any mitigation measures. The significance matrix within Table 8 defines the level of significance of effects and uses the following terms:

Beneficial or Adverse:

- Beneficial – advantageous or positive effect to an environmental resource or receptor; or
- Adverse – detrimental or negative effects to an environmental resource or receptor.

10.40. Where an effect is considered to be not significant or have no influence, irrespective of other effects, this is classified as **negligible**.

10.41. **Minor, Moderate or Major** – this is the level of significance after mitigation where effects are beneficial or adverse:

- Minor – an effect which on its own is likely to have a minor influence on decision making but when combined with other effects could have a more material influence;
- Moderate – an effect which on its own could have some influence on decision making, particularly when combined with other similar effects; or
- Major – an effect which in isolation could have a material influence on the decision making process.

10.42. **Short, Medium or Long Term** – short to medium term effects are considered to be those associated with the construction phase, and long term effects are those associated with the completed development, when it is occupied and occupational.

10.43. Effects of the completed development have not been considered, as all likely significant effects will occur from during the construction phase, and all therefore all effects considered on Table 43 below are long term.

10.44. **Direct** (for example, demolition) and **indirect** (for example, impact on setting).

10.45. The scale of effect e.g. Local level (on Application Site or neighbouring sites); District level (within Pontypool/ Cwmbran area); County level (within Torfaen); Regional level (South Wales); Wales level; UK level; International level.

Table 8: Significance Matrix – Archaeology, Built and Cultural Heritage

Sensitivity / Value of Receptor	Magnitude of Effect		
	High	Medium	Low
High (Wales/UK/International)	Major	Major/ Moderate	Moderate

Medium (County/Regional)	Major/ Moderate	Moderate	Moderate/ Minor
Low (Local/District)	Moderate	Moderate/ Minor	Minor

Table 9: Significance Matrix – Archaeology, Built and Cultural Heritage – assessment of effects

PRN	Description	Sensitivity/ Value	Magnitude of Effect	Impact before mitigation
00102g	Tyr-Brychiad - Grade II Listed (80864) (farmhouse) – not part of development plan but adjacent to main road into site	Medium	Minor	Indirect, Minor adverse
07660g	Wren’s Nest Barn – not part of development plan but adjacent to main road into site - Grade II Listed (80861)	Medium	Minor	Indirect, Minor adverse
	Buried remains throughout the site – potential sites	Low to medium	Major	Direct, Minor to Moderate adverse
	Hedgerows, tracks and field boundaries	Low	Moderate	Direct, Minor adverse

Mitigation Measures

- 10.46. The post medieval landscape can be established confidently from cartographic sources and a review of aerial photography throughout the 20th century, as well as examination of current land uses, and suggest continuity of use. It is however difficult to establish the presence/ absence of surviving archaeological features on this site before the post-medieval period, especially as previous work seems to point to low intensity of past activity.
- 10.47. It is therefore proposed that further archaeological investigation to define any actual remains, followed by suitable investigation to record any sub-surface features, will mitigate the impact on any archaeological remains.
- 10.48. Landscape planting, complementing retained vegetation, will help screen listed buildings from new development and a construction management plan will limit traffic noise and dust effects on the setting of all structures.

Residual Effects

- 10.49. Given completion of the mitigation set out above, issues can be mitigated to restrict adverse effects, and mostly residual impacts would be negligible.

Summary

- 10.50. A number of listed buildings and other non-designated structures are identified as lying close to or

surrounded by the site. The setting and fabric of these designated heritage receptors would be safeguarded in the main.

- 10.51. A number of hedgerows and lanes survive within the site and are likely to be of some age. These are incorporated as far as practical within the new plan for development.
- 10.52. The undesignated remains of the old Pontrhydyrun Railway Station House will be retained, but if they have to be removed as part of development, a full record should be made of their fabric, as agreed with the Council and their advisors.
- 10.53. There are no significant remains of earlier than post-medieval date known within the site area and the records for the surrounding area suggest relatively low archaeological potential. However, the paucity of hitherto recorded remains may reflect the dominance of pasture across the site and the absence of past archaeological investigation. Further archaeological investigation will be completed in advance of construction in order to minimise any adverse impact of the proposals.

Table 10: Table of Significance – Archaeology, Built and Cultural Heritage

Potential Effect	Nature of Effect (Permanent/ Temporary)	Significance (Major/ Moderate/ Minor) (Beneficial/ Adverse/ Negligible)	Mitigation/ Enhancement Measures	Geographical Importance*							Residual Effects (Major/ Moderate/ Minor) (Beneficial/ Adverse/ Negligible)
				I	UK	W	R	C	D	L	
Construction Phase and Completed Development											
Tyr-Brychiad - Grade II Listed (80864) - not part of development plan but adjacent to main road into site	Permanent	Indirect, Minor adverse	The rural setting of the two listed structures on Bevan's lane will be changed permanently, but a construction management plan will limit traffic noise and dust effects on the setting of this structure during construction and landscape planting will help screen listed buildings from new development.				*				Minor adverse
Wren's Nest Barn – Grade II Listed (80861) - not part of development plan but adjacent to main road into site	Permanent	Indirect, Minor adverse	As above.				*				Minor adverse
Hedgerows, tracks and field boundaries	Permanent	Direct, Minor adverse	Incorporated as part of design as far as possible.							*	Negligible
Buried remains throughout the site – potential sites	Permanent	Direct, Minor to Moderate adverse	Suitable archaeological investigation prior to construction.							*	Negligible

* Geographical Level of Importance

I = International; UK = United Kingdom; W = Wales; R = Regional; C = County; D = District; L = Local

11. Ground Conditions (Hydrogeology, Soils and Contaminated Land)

11.1. Please refer to main South Sebastopol Environmental Statement (January 2011).

12. Water Resources (Water Quality, Hydrology, Flood Risk and Drainage Assessment)

Introduction

- 12.1. This addendum chapter has been written by Waterman to investigate the hydrological regime associated with the development of the Barratt Phase 1 area (refer to outline application phasing plan) at South Sebastopol, Pontypool (hereafter referred to as 'the site') and surrounding areas. The chapter considers the establishment of a sustainable drainage strategy that will serve to protect the hydrological status quo to support a planning application for a development comprising up to 199no. residential dwellings.
- 12.2. The chapter forms an addendum to the Environmental Statement (ES) submitted as part of the outline planning application for the whole of the South Sebastopol site (LPA ref. 01/P/05525). Therefore, to avoid unnecessary duplication, some sections within this addendum chapter have been summarised from the original outline ES. However, specific effects in relation to water resources as a result of the Phase 1 proposals are now able to be assessed in further detail and any mitigation that may be required in order to avoid, reduce or offset any likely significant adverse impacts are suggested.
- 12.3. Previous investigations have been carried out in the preparation of the original ES which also referred to previous work on the proposed development site carried out by PBA and Integral Geotechnique. A former Environmental Statement (ES) was produced by RPS in 2002. Reference is made in this report to the investigations and conclusions of these previous reports and documents, and text has been abstracted and quoted where it is considered that the factual data is relevant and agreed by WTD.
- 12.4. On the basis of the previous investigations and conclusions, and in particular the work carried out in the preparation of the ES for the outline application, the following issues, inter alia, were required to be addressed in this Chapter.
- Ascertain whether more surface water could be discharged into the Streams if an attenuation system were introduced to restrict the flow to similar levels to existing.
 - Seek quotations from DCWW for Requisition route options (for the off-site surface water sewer) with associated timescales
 - Investigate the status & condition of the existing offsite culverts to which the on-site watercourses discharge through
 - Identify opportunities to allow the use of soakaways
 - Meet with DCWW to discuss their current status of surface water sewers in the vicinity of the site and assess the potential impact of the South Sebastopol development

Planning Policy Context

National Planning Policy

Planning Policy Wales – 3rd Edition (July 2010)

- 12.5. Planning Policy Wales' (2010) (PPW) is the overarching policy document that deals with planning matters in Wales. Chapter 4 of PPW confirms WAG's commitment to sustainable development and the document states that;

‘Sustainable development in Wales means enhancing the economic, social and environmental well-being of people and communities, achieving a better quality of life for our own generations in ways which

Promote social justice and equality of opportunity; and

Enhance the natural and cultural environment and respect its limits – using only our fair share of the earth’s resources and sustaining our cultural legacy”

- 12.6. This is a general requirement to achieve sustainability through the development process. Chapter 12 of PPW deals with Infrastructure and Para 12.1.1 explains that adequate and efficient infrastructure is crucial for the economic, social and environmental sustainability of all parts of Wales. This again is a general objective which requires local interpretation to ensure compliance with the sustainability objectives.
- 12.7. Planning Policy Wales and its associated Technical Advice Note 15 requires that consideration be given to any potential for flooding from surface water emanating from the developed site. The redevelopment of existing grass and woodland areas to form hard (impermeable) surfaces such as highways and buildings will cause an increase in surface water runoff rates and volumes.

EU Directives

- 12.8. Reference is made in this assessment to various EU legislation on Water Quality including the following:
- Urban Waste Water Treatment Directive
 - Nitrates Directive
 - Water Framework Directive
- 12.9. The references however relate to the work carried out by such authorities as the Countryside Council for Wales (CCW), Environment Agency Wales (EAW) and DCWW in their progressive and on-going efforts to ensure compliance with the EU Directives. DCWW’s compliance with these directives is regulated by the application of discharge consents granted by EAW

Local Planning Policy

[Adopted Local Plan for County Borough of Torfaen \(adopted July 2000\).](#)

- 12.10. The County Borough of Torfaen has incorporated the general principles and objectives of PPW in their Unitary Development Plan. The Plan defines the general development objectives of the Authority to be commensurate with the objectives of PPW in general and in respect of sustainability principles in particular. The assessment of water resources involves careful consideration of sustainability principles.
- 12.11. The proposed development has generally been considered in the context of local and national planning policy and in particular the Unitary Development Plan policy. The Plan provides policy guidance for proposed developments and provides an estimate of the scope of future development. Such information is used by the statutory authorities and service providers to plan services provision for the future. With particular reference to this chapter of the EIA the UDP Plans are utilised to provide an estimate of the size of future population centres to be served by DCWW assets. The data thus derived has been used in the design of the on-going AMP programme. Variations may occur between planned levels of UDP development and actual development allocations. Such variations may occur due to changes in Government policy (for example in terms

of development densities, etc.) but in terms of water quality such variations can be accommodated provided that the sewage treatment facilities within the development drainage catchment can be shown to be adequate to cater for the variance in development levels.

Assessment Methodology

- 12.12. In addition to the methodology outlined within the Introduction of this Chapter previously the following philosophy of approach was defined for investigation in the report: -
- 12.13. With regard to surface water drainage the preferred method of disposal was defined to be via the use of Sustainable Urban Drainage Systems, such as soakaways. In this case, the report would need to review the potential feasibility of these systems using the available site Investigation information.
- 12.14. As a general principle it was stated that should soakaways not be feasible then all surface water run-off emanating from the proposed development areas would be discharged into the streams running through the site. In order to do this however it would be necessary to investigate the hydrological status quo. Existing catchments and sub-catchments would need to be defined as would the points of outfall of the various catchments.
- 12.15. The current rates and points of discharge for the existing site runoff would be maintained as part of the development proposals, and any increased runoff as a result of the proposals would be attenuated within holding ponds, swales or sub-surface structures. Calculations relating to the attenuation storage are required at this stage in order to determine storage volumes and ascertain that the hydrological status quo is maintained and that third parties downstream of the development site are not adversely affected
- 12.16. Maintaining the status quo, both in terms of rate/volume and quality of runoff, would be fundamental for the drainage catchments that are associated with the canal and wetland habitat.
- 12.17. It was envisaged that a hydraulic model of the existing network of streams would be carried out as part of the Flood Risk/Hydrological/Hydro-geological Assessment required by the EIA. The Flood Risk Assessment would highlight any potential for out-of-bank flood flow generated by an extreme rainfall event on the upstream catchment and as such provide constraints for the proposed development in terms of flood risk.

Baseline Conditions

The Hydrological Regime

Hydrogeology

- 12.18. Investigations into the hydrogeology of the site and its environs generally concur with the findings of the previous investigations reported in the ES prepared in 2002 and in the ES prepared for the outline planning see Chapter 11 of the ES prepared for the outline application. A summary of the baseline conditions is included below.
- 12.19. With regard to the regional setting, the underlying bedrock of the St. Maughans Group and Raglan Marl is classified as a 'Secondary A' (Minor) Aquifer by the Environment Agency. The major constituents of these strata are bands of mudstone or siltstone. These would be of low permeability and would have a low yield, forming aquicludes (effectively preventing groundwater flow) or aquitards (severely restricting groundwater flow). Sandstone bands within the strata would be potential aquifers, which can have high permeability and yield. Their local importance would be

determined by their setting, lateral persistence and thickness. They are more likely to be important within the St. Maughans Group than the Raglan Marl, due to their greater thickness and persistence. Groundwater flows are likely to be controlled by fracture flow. Generally, aquifers are noted to be of major local importance in South East Wales and the Welsh Borders. Groundwater in sandstone bands within the St. Maughans Group may contribute to some of the issues crossing the site.

- 12.20. The Brownstone Group (to the west of the site) comprises predominantly sandstone and therefore is likely to be a more persistent aquifer with higher yields. Indeed, the Environment Agency Groundwater Maps (included in Appendix D herewith) indicate a band to the west of the site that is designated a Principle (Major) Aquifer. Groundwater within this stratum is considered to be the source of many of the issues and streams across the site.
- 12.21. It is considered that, across the site, groundwater is unlikely to be encountered at shallow depth in the cohesive strata. However where bands of sandstone are present, a limited groundwater body may be present. This groundwater is likely to be recharged where the sandstone is exposed at the ground surface or in stream channels. In general, the surface soils of the site commonly weather to a fine grained consistency which significantly reduces the permeability of the strata. Therefore generally the scope for surface water infiltration is limited. However, based on available geological and geo-morphological information bedrock may be present at shallow depth in areas of the site, particularly those which are more elevated the presence of more competent, fractured sandstone may locally offer some potential for infiltration capacity.
- 12.22. Groundwater within the gravels in the east of the site is likely to be associated with the Afon Lwyd and could represent the regional groundwater table.
- 12.23. No licensed groundwater abstractions are recorded in the area of the site, however historical maps indicate the presence of a number of wells at the site, e.g. at Bryn Farmhouse and Wren's Nest Cottages. These wells probably abstracted water from sandstone bands within the St. Maughans Group. Several wells are presently shown on Ordnance Survey maps on the elevated ground to the west of the site, probably in the Brownstone Group and Carboniferous Limestone.
- 12.24. Table 11 summarises the expected site hydrogeology based on the underlying geological unit.

Table 11: Summary of site Hydrogeology

Geological Unit	Aquifer Classification	Aquifer Characteristics	Source Protection Zone	Groundwater Abstractions
Made ground	Not classified	Highly variable permeability and porosity. Perched water may be present with variable flow directions.	No	None

Geological Unit	Aquifer Classification	Aquifer Characteristics	Source Protection Zone	Groundwater Abstractions
Glacial till deposits	Minor aquifer	Variable moderate permeability and porosity with intergranular flow possible. High clay content likely to restrict flow.	No	None
Raglan Mudstone/St. Maughans Formation	Minor aquifer	Low permeability mudstones interbedded with siltstones and sandstones	No	None

12.25.A conceptual site model (which shows the relationship between groundwater and surface water runoff) has been established for the site within the desktop site Investigation (SI) carried out by Intégral Géotechnique, is included in Appendix 12.1 herewith.

Hydrology

General Description

12.26.The site lies within the relatively narrow catchment area of the Afon Lwyd, which flows in a southerly direction approximately 300 – 400m beyond the eastern site boundary. The catchment is fairly urbanised and receives approximately 1,150 mm of rainfall per year¹. The catchment responds quickly to rainfall due to its steep, impermeable upper reaches and moderate urban area.

12.27.The wider Master Plan area (which was the subject of the outline application and is described in paragraphs 2.1 to 2.7 of the ES prepared in support of the outline application) is traversed in a generally north/south direction by the Monmouthshire and Brecon Canal and in a west/east direction by three primary watercourses. The application site is located in the north east corner of the wider Master Plan area. The northern watercourse (reference Stream 1) drains an area to the west of the canal via a culvert under the canal, and flows through the north and north eastern parts of the site before ultimately discharging to the Afon Lwyd to the east. The second watercourse to the south of the site appears to have been historically culverted beneath the canal, however it currently discharges into the canal, the culvert being effectively redundant except possibly during storm events.

12.28.Plans showing the existing surface water features and catchment boundaries are included in Appendix 12.2 herewith. Each of the streams crossing the site, or in the general vicinity of the site, is described in more detail below.

Stream 1

12.29.Stream 1 runs along the northern site boundary, and appears to originate from issues on higher ground to the west of the site, probably in outcrops of the Brownstone Group. A number of issues

¹ Environment Agency Wales, *Wye and Usk Catchment Flood Management Plan – Final Plan, Version 2* (2009)

feed 3no. tributaries (denoted Streams 1A, 1B and 1C from north to south), which flow in partially straightened channels to converge in the north west of the site.

12.30. The resulting stream is of moderate flow in a valley along the northern site boundary. This valley is initially slightly incised and closed, becoming deeper but more open with areas of grass and heather towards the canal in the east.

12.31. The stream crosses beneath the canal in a deep culvert before flowing to the east in a heavily wooded valley at a significantly lower level than the site.

Stream 2

12.32. Stream 2 is a small tributary of Stream 1 that originates from issues around Tir-Brychiad. The watercourse begins as a well defined drainage ditch, however its path becomes poorly defined prior to its confluence with Stream 1 just upstream of the old railway embankment.

Streams 3 and 5

12.33. Streams 3 and 5 cross the middle of the wider Master Plan area in a west to east direction. They originate from issues on the hillside to the west of the Uplands farmhouse, probably from outcrops of the Brownstone Group, passing to the north of the golf course and Bryn farmhouse to the canal. Stream 3 runs to the south of Uplands in a channel in dense woodland, before running partly in a culvert and open ditch. Stream 3 converges with Stream 5 via a 300mm diameter culvert near Bevans Lane. The culvert has collapsed in one location however the drainage system appears to operate satisfactorily. The watercourse subsequently flows east towards the canal in an incised, steep sided wooded valley.

12.34. Historically, the watercourse passed beneath the canal via a 900mm diameter culvert just to the north of the tunnel, however it currently discharges into the canal, the culvert being effectively redundant (except possibly during storm events).

12.35. It is not known whether the diversion of Stream 3 to discharge into the Canal was authorised but the loss of surface flow in the section of Stream 3 to the east of the canal may have had a detrimental effect on the fauna and flora. The previous ES (2001) identified crayfish along this section of Stream 3.

12.36. To the east of the canal, the stream runs in a significantly deeper, heavily wooded valley, with particularly high and steep sides on the southern side. It passes beneath a track through a stone arch near Wrens Nest Cottages.

12.37. Environment Agency records indicate that water is abstracted under licence from this stream from a point on the golf course to the west of the Uplands Farm (at Grid Reference 328180, 197800). The water is used by the golf course for irrigation and the licence allows abstraction between April and October.

Stream 4

12.38. To the north of Stream 5, Stream 4 has a low to moderate flow in an incised, steep sided and heavily wooded valley. The watercourse discharges into the canal just north of Stream 5.

Stream 6

12.39. Stream 6 originates close to Bryn farmhouse, and discharges into the canal to the south of the tunnel. The stream reappears from the canal as an overflow approximately 120m further south on

the eastern side and flows in a channel across the south eastern part of the site.

12.40. To the east of the canal, the channel is moderately incised and is overgrown with mature trees. In January 2000, Torfaen CBC Drainage Department indicated that some scour had occurred just to the east of the canal, and a weir had been reconstructed. The channel is partially brick lined, but some scour still remains. A further small tributary originates in the south east of the site, possibly at the junction of the St. Maughans Group with the underlying Raglan Marl.

Stream 7

12.41. Stream 7 appears to originate from springs to the west of Bryn Farm near Stream 5, and crosses the golf course and the south-western corner of the wider Master Plan area in straightened channels, before converging with the Blaen Bran near Five Locks.

Stream 8

12.42. Stream 8 flows to the west of the wider Master Plan area in a slightly meandering, shallow channel along a deeply incised valley with high, steep slopes overgrown with bracken and mature trees. The stream bed is formed by cobbles and gravel, although it is obscured in places by fly tipping and vegetation debris. The watercourse converges with the Blaen Bran to the west of Stream 7.

Local Drainage Area

12.43. Runoff from this Local Drainage Area is collected via a short length of drainage ditch to the east of the site, which also appears to drain the highway embankment. The outfall within this open ditch enters a culverted watercourse beneath Cwmbran Drive that eventually discharges into the Afon Lwyd. This culverted watercourse is understood to act as a local highway drain.

Hydrological Calculations

Base Flow Assessment of Existing Streams

12.44. As Part of the wider Master Plan area, the previous investigations carried out into the Streamcourses included an assessment of the base flow in the water features.

12.45. In order to quantify spring-fed base flows, weirs were installed and monitored between August and October 2002 in Streams 1, 3, 5 and 6. The results, which are summarised in Table 12, indicated that base flows are low in comparison to design flood flows, and therefore no separate base flow assessment is required in design flood estimation, other than that allowed for in standard methods.

Table 12: Base Flow Assessment

Stream 1A Base Flow (l/s)	Stream 1B Base Flow (l/s)	Stream 1C Base Flow (l/s)	Stream 3 Base Flow (l/s)	Stream 5 Base Flow (l/s)	Stream 6 Base Flow (l/s)
0.01 to 0.08	0.04 to 0.07	0.04 to 0.2	0.3 to 0.4	0.01 to 0.15	None

Source: Peter Brett Associates, *Study of Existing Streams, Addendum Report (2002)*

12.46. Groundwater monitoring carried out as part of the previous EIA (2001) for the site also suggests that the Stream 5 is not groundwater fed, at least in the drier summer months, however it is possible that during the winter months groundwater may maintain spring flow in Stream 4.

Flood Flows for Existing Streams

12.47. The catchments of the existing stream courses have been estimated using both the topographical and the LIDAR surveys.

12.48. Due to the small size of these catchments, the 1%+CC and 0.1% probability flood flows for the stream courses have been estimated using *Report 124 – Flood Estimation for Small Catchments* (Institute of Hydrology, 1994). The SUDS Manual (Ciria, 2007) recommends that catchment sizes between 50 and 200ha should be hydrologically investigated using the Report 124 method. The estimate was based on the area of each catchment along with the soil characteristics and average annual rainfall. The Institute of Hydrology Report 124 calculations are included in Appendix 12.3 herewith, and the peak flows are summarised in Table 13.

Table 13: Extreme Design Flows

Event	Stream 1A Base Flow (l/s)	Stream 1B Base Flow (l/s)	Stream 1C Base Flow (l/s)	Stream 1D Base Flow (l/s)	Stream 5 Base Flow (l/s)	Stream 6 Base Flow (l/s)	Stream 7 Base Flow (l/s)
1%+CC	0.13	0.10	0.03	0.41	0.18	0.11	0.18
0.1%	0.15	0.12	0.04	0.50	0.22	0.13	0.21

Surface Water Runoff from Existing site

12.49. Catchment boundaries have been estimated based on LiDAR and topographical survey information, as shown on the plan included in Appendix 12.4 herewith. These catchment areas have been used to derive peak flood flows at various locations on each Stream using *Report 124 – Flood Estimation for Small Catchments* (Institute of Hydrology, 1994). The calculations in respect of the above are included in Appendix 12.3 herewith, and the Greenfield runoff rates for the site are summarised in Table 14.

Table 14: Greenfield Runoff Rates

3.33% (l/s/ha)	Probability	1% (l/s/ha)	Probability	1%+CC (l/s/ha)	Probability	0.1% (l/s/ha)	Probability
6.6		8.3		10.0		12.1	

Monmouthshire and Brecon Canal

12.50. The canal trends north to south across the centre of the wider Master Plan area and to the west of the application site. It was built over 200 years ago as a main communication highway between Brecon and the docks at Newport, with a general gradient of the order of four inches per mile towards the south. A towpath runs along the eastern edge of the canal along its length, excluding the tunnel. British Waterways are responsible for the water within the canal with Torfaen County Borough Council being responsible for maintaining the towpath and banks.

12.51. The Canal is a very influential part of the surface water regime. The feature acts as a cut-off for surface water flowing over the open ground to the west. The Canal also accommodates point discharges from three streams to the west of the Canal. The Canal is an earth structure generally and its structural stability depends on the stability of the supporting earthworks.

12.52. A study has recently been undertaken by Waterman for the wider Master Plan area (Ref. C-11765-

101111-CF-GC-R-0001 – Canal Condition Survey) to assess the overall stability of the earth structures (embankments and cuttings) within the length of the canal as it passes through the Master Plan area.

- 12.53. The Study Report comments on the potential risk to the proposed development presented by the canal and identifies the scope of works required to improve the canal earth structures. The works include the replacement of a section of sheet piling and some erosion protection measures along the eastern embankment that retains the canal which lies to the west of the site.
- 12.54. The length of embankment investigated was found to comprise a sandy clay fill, overlying similar in-situ material, with weathered mudstone bedrock at relatively shallow depth. No materials were found either comprising or beneath the embankment which would be particularly prone to excessive long-term consolidation settlement, for example peat or organic clays.
- 12.55. The local-hydrogeology, together with a temperature-based leakage detection survey indicates that there is no significant deep-seated leakage through the embankment which might significantly reduce the factor of safety against shear failure. It has been concluded previously that the wet areas observed above and below the canal exist as a result of the local hydrogeological conditions, and are not directly related to the canal. These wet areas are expected to show considerable seasonal variation in extent and severity, although some may remain wet even during extended period of dry weather, due to the poor drainage characteristics of the near-surface materials.
- 12.56. There is however evidence that under certain conditions (for example when the canal is relatively full), leakage occurs at a very high level within the embankment in places, and that this leakage is leading to internal erosion (piping) of the embankment.
- 12.57. The stability analysis undertaken as part of the previous investigations shows that under conditions where no leakage is taking place, the embankment is relatively stable, although steeper sections are likely to be prone to creep movements at shallow level. Factors of safety against significant shear failure using conservative, but assumed parameters, indicate that the embankment is unlikely to fail in this manner.
- 12.58. Where high level leakage is taking place, the stability analysis indicates that this leads to an unacceptable reduction in the factor of safety against a deeper-seated failure occurring. The probability of such a failure causing an immediate breach of the canal is considered to be low (this is helped by the relatively wide crest to the embankment). The reduced factor of safety against shallow failure, combined with localised internal erosion, may also be responsible for the apparent 'relaxation' of the embankment which has led to loss of freeboard and a noticeable slope across the crest in places.

Further Actions

- 12.59. Due to the undesirable effects of the high-level leakage, it is recommended that steps are taken to prevent this from occurring. A number of options have been considered in the aforementioned Canal Condition Survey, as follows: -
- Steel sheet piling
 - Masonry/mass concrete wall
 - Clay/soft 'engineered' bank protection
- 12.60. Following consideration of the relative merits of the above options it is recommended that the sheet pile option would be the most appropriate for the following reasons: -
- 12.61. The option of sheet piling would appear to be the simplest in terms of installation, as no particular

access problems are envisaged (subject to an assessment of temporary loads on the embankment), and the work can be carried out without the need to de-water the canal. The alternatives considered would require the water level to be lowered considerably to allow installation. However it should be recognised that there is a potential conflict between the creation of a hard edge to the canal and the maintenance / improvement of the potential water vole habitat, which requires the canal to have a soft edge.

Water Quality

- 12.62. In the existing situation surface water flow on the wider Master Plan area either discharges to one of the streamcourses or discharges overland to the Canal. With regard to the application site surface water flows discharge to one of the local streamcourses. Some surface flow may percolate into the ground depending on ground conditions.
- 12.63. With regard to water quality the setting is currently agricultural with the fields used for grazing livestock. In this case, the surface water run-off would be expected to be relatively high in nutrients (i.e. nitrates and phosphates). The surface water run-off is either discharged into the Canal (and subsequently carried downstream until it is discharged via a Canal overflow) or alternatively it is carried by one of the on-site streams to finally discharge into the main rivers of the Afon Lwyd.

Canal Waters

- 12.64. The water quality in the Monmouthshire & Brecon Canal is monitored by the Environment Agency and British Waterways. However no records are available for the stretch of canal in the vicinity of the site. Environment Agency records indicate that to the south of Llantarnam (approximately 5km south of the site), the water quality (General Quality Assessments) was 'fair' in 1990, but 'poor' between 1996 and 1998. North of Pontypool, British Waterways indicate the water quality to be 'fair' near Brecon, becoming 'poor' in the more industrialised valleys.
- 12.65. As part of a previous assessment, samples of water were recovered from the canal at Bevans Lane Bridge and Five Locks and were tested in the laboratory for a range of geo-environmental parameters. The purpose of this exercise was to provide a preliminary indication of the water quality of the canal in the vicinity of the site. The results indicated the levels of metals and suspended solids within the water to be less than the laboratory detection limits. The UK government has issued a list of contaminants, which should not be present at any significant level in surface waters (the UK 'Red List'), including volatile and semi-volatile organic compounds, pesticides, cadmium, mercury, PCBs and phenols. These were also found to be below the detection limits of the laboratory.
- 12.66. From the results of the testing, the water in the canal in the vicinity of the site may be tentatively considered 'fair', in the General Quality Assessments (GQA) system.
- 12.67. Environment Agency records indicate the water quality in the Afon Llwyd to be 'good' (GQA) in 1990, reducing to 'fair' between 1996 and 1998. No assessment has been undertaken on the other surface water courses.
- 12.68. Environment Agency records indicate water from the canal is abstracted at a number of locations to the north of the site for use in the Avesta Sheffield Works. The closest abstraction point is around 500m north of the site. It should however be noted that the Avesta Sheffield Works is no longer in operation.
- 12.69. A geotechnical study has also previously been undertaken on that part of the canal passing through the Master Plan area. Its scope and findings are reported in Chapter 11 of the ES

prepared for the outline application of the Master Plan area. The historical value of the canal is also considered further in Chapter 10 (Archaeology and Cultural Heritage) of the outline application ES.

- 12.70. Torfaen CBC (January 2000) indicated that dredgings from the canal are likely to have been placed on the ground uphill (to the west) to allow them to drain back into the canal. The silt in the canal in the Pontypool area is considered contaminated from the historical heavy industries in the area and this contamination could extend to the silts in the canal within the site boundaries. In order to provide a preliminary indication of the potential for contamination, a sample of soil was taken from the side of the canal and tested for a typical range of contaminants.
- 12.71. The results indicated levels of typical contaminants below their respective guideline levels. The level of total polyaromatic hydrocarbons was however found to be elevated – at *390mg/kg* - almost ten times the trigger level in the most commonly used guideline levels (Dutch Intervention Values). Polyaromatic hydrocarbons (PAH) are a group of a large number of organic compounds which result from the partial burning of organic materials or are contained within man-made products such as petroleum, coal tars and creosote. Some PAH are suspected carcinogens and hazardous to human health.
- 12.72. The source of the PAHs within the soils in the canal bank is not clear at present and further testing would be required to determine their nature. However, they may be indicative of a potential PAH contamination hazard within the silts in the base of the canal from historical heavy industries to the north. As discussed in the Ecological studies, the canal supports a wide diversity of fauna and therefore the current impact of this contamination maybe limited.
- 12.73. Any contamination present within the silts in the canals may also be present within any dredgings placed on the fields to the west of the canal. Ground levels to the west of the canal (uphill) do not obviously indicate such dredgings placement, however further investigation is recommended to confirm whether any elevated levels of contamination are present in placed dredgings.
- 12.74. In summary, the water quality in the streams in the immediate vicinity of the site is considered to be reasonably good and the quality of water in the Canal (to the west of the site) is considered to be fair. The philosophy of approach to be adopted in the detail design of the Master Plan works and in respect of the application site in particular is to ensure that the quality levels in the streams do not deteriorate on account of the development works. The strategy for retaining the existing quality of surface water runoff from the site into both the canal and the streams is described in a subsequent section of this assessment which deals with the surface water drainage strategy for the proposed development.

Flood Risk Assessment

Introduction

- 12.75. The Environment Agency's Flood Map (included in Appendix 12.3 herewith) indicates that the site is not at risk of fluvial flooding from main rivers (i.e. the Afon Lwyd and the Blaen Bran). The TAN 15 Development Advice Map (also included in Appendix I herewith) shows parts of the eastern boundary of the site around the A4051 to lie within Zone B, denoted as areas known to have been flooded in the past. This Zone B classification appears to relate to the Streams crossing the site, and is likely to be based on historical fluvial deposits as the flood zone does not correlate with the existing topography.
- 12.76. We are not aware of any history of flooding to the site.

Hydraulic Modelling

- 12.77. A hydraulic model of the existing network of streams has been carried out in order to highlight any potential for out-of-bank flood flow generated by an extreme rainfall event on the upstream catchment and as such provide constraints for the proposed development in terms of flood risk.
- 12.78. In this case, using topographical, Lidar and OS survey data a hydraulic model was created using the Tuflow software package. The design flows derived were then run through the model to determine the current risk of flooding.
- 12.79. It has been mentioned previously in this report that the Environment Agency's Flood Maps and the TAN 15 DAM's indicate that the site is not liable to flooding from the Afon Lwyd and Blaen Bran fluvial regimes. The TAN 15 DAM indicates some minor areas of Zone B on the eastern boundary of the site. These areas appear to have been established from the presence of historic alluvial deposits probably relating to the on-site ordinary watercourses.
- 12.80. As part of the investigations into the local hydrological regime the principal on-site streamcourses have been analysed to establish the potential flood risk in the case of a 0.1% event and also a 1% plus climate change event. In order to accurately simulate flood risk a thorough examination of the existing culvert structures have been carried out in order to assess vulnerability to blockage.
- 12.81. The flood extents derived from the analyses are indicated on Drawing No.'s 11765/C/SA/00/0003-A01 and 11765/C/SA/00/0004-A01 included in Appendix 12.5 herewith. It can be seen that in the case of both flood events there is a risk of flooding to areas on the northern boundary of the wider Master Plan area but not within the site itself.
- 12.82. Upstream of the northern boundary of the site, overland flooding results from the overtopping of the left bank of Stream 1 and possibly Stream 1A. There are several culverts along this section of Stream 1 and the hydraulic analysis indicates a lack of capacity which could initiate the overtopping and overland flow. The overland flow potentially affects residential properties in the Oakdale Road area. The depth of overland flow is shallow (<150mm) but the in bank depth of flow does approximate to 1 m at a point just downstream of the confluence of Streams 1A, 1B and 1C. The offending culvert is also vulnerable to blockages, which would increase the quantity of overland flow and therefore increase the depths/velocities of the floodwaters.
- 12.83. In general, the hydraulic analyses of the local water features indicate the potential for flooding to occur in localised areas on the northern boundary of the wider Master Plan area but not within the application site itself. The extent and depth of flooding are relatively minor and result from such factors as inadequate channel or culvert capacity, and channel restrictions (including partial blockages of culverts). The investigations have indicated a requirement for mitigation measures on some Streams, without which some Master Plan development areas could be at risk of flooding.

Potential Mechanisms of Flooding

Fluvial Flooding

- 12.84. It has been mentioned previously in this chapter that the Environment Agency's Flood Maps and the TAN 15 DAM's indicate that the site is not liable to flooding from the Afon Lwyd and Blaen Bran fluvial regimes.
- 12.85. The various watercourses that pass through the wider Master Plan area do however pose the potential to flood parts of the proposed development areas and in this case, as described in the previous section, a hydraulic model has been constructed to determine the risks.

Pluvial Flooding

- 12.86. Pluvial flooding is defined as flooding that results from rainfall-generated overland flow, before the runoff enters any watercourse or sewer. It is usually associated with high intensity rainfall events (typically >30mm/h) but can also occur with lower intensity rainfall or melting snow where the ground is saturated, frozen, developed or otherwise has low permeability resulting in overland flow and ponding within depressions in the topography. Urban pluvial flooding arises from high intensity 'extreme' rainfall events.
- 12.87. The nature of the topography of the existing site and immediate areas and the relatively low permeability of the ground indicates that there may be potential for sheet flow to develop in the undeveloped agricultural land. In this case, appropriately sized and located land drainage systems should be installed on the up-slope side of each development parcel. This should be considered at each phase of the development.

Groundwater Flooding

- 12.88. Flooding from groundwater occurs when the ground water table reaches the surface and creates overland flow. Groundwater flooding is generally associated with porous rocks, namely sands, gravels, limestone and chalk.
- 12.89. There are several issues and springs around the Master Plan area which indicate the emergence of groundwater at ground level just above the outcrop of an impermeable strata. The treatment of groundwater will need to be carefully considered before any terracing of the existing terrain is carried out. Without appropriate mitigation, groundwater flooding could be an issue for future residents.

Sewer Flooding

- 12.90. Another potential source of flooding could be resultant of a blockage or lack of capacity in the existing drainage system. In this case, overland flooding may initiate and in doing so has potential to flood highways and properties that lie within its flow path.
- 12.91. The existing site is predominantly 'Greenfield' and it is understood that surface water runoff from the existing properties and highways is discharged by gravity to the nearest watercourse. Without consideration and possibly mitigation the proposed development could be affected by floodwaters caused by a failure of these existing systems.
- 12.92. Given that there will be an increase in impermeable surfaces as a result of the development proposals it is inevitable that there will be an increase in the rate and volume of surface water runoff unless appropriate mitigation measures are implemented.
- 12.93. A combined public sewer exists within the north-east boundary of the site, however the topography of this area is such that should there be a blockage or lack of capacity in this combined sewer then floodwater would escape from a manhole and flow in an easterly direction off-site.
- 12.94. The Master Plan layout and drainage design is such that the proposed dwellings would be unlikely to be affected by this form of flooding.
- 12.95. A sewerage plan in the vicinity of the site is included in Appendix 12.6 herewith.

Flooding from the Canal

- 12.96. The land to the east of the canal would be affected by flooding should a breach of the eastern bank of the canal occur.

- 12.97. The Canal is an earth structure generally and its structural stability depends on the stability of the supporting earthworks. A study has recently been undertaken to assess the overall stability of the earth structures (embankments and cuttings) within the length of the canal as it passes through the Master Plan area. This study is discussed in detail in a previous section entitled 'Monmouthshire and Brecon Canal' (commencing at paragraph 12.50) of this assessment. It is noted that the stability analysis undertaken as part of the previous investigations shows that under conditions where no leakage is taking place, the embankment is relatively stable. Where high level leakage is taking place, the stability analysis indicates that this leads to an unacceptable reduction in the factor of safety against a failure occurring.
- 12.98. The probability of such a failure causing an immediate breach of the canal is considered to be low (this is helped by the relatively wide crest to the embankment), however due to the undesirable effects of the high-level leakage, it is recommended that steps are taken to prevent this from occurring.

Likely Significant Effects

Table 15: Significance Matrix – Water Resources (Water Quality, Hydrology, Flood Risk and Drainage Assessment)

Sensitivity / Value of Receptor	Magnitude of Effect		
	High	Medium	Low
High (Wales/UK/International)	Major	Major/ Moderate	Moderate
Medium (County/Regional)	Major/ Moderate	Moderate	Moderate/ Minor
Low (Local/District)	Moderate	Moderate/ Minor	Minor

Construction

Construction Protocols

- 12.99. In general, it is clear that the proposed development will generate additional surface water flows from the increased impermeable areas. It is therefore fundamental that surface water drainage and land drainage is appropriately managed to ensure that existing flood risk is not exacerbated.
- 12.100. During the construction phase of the works and prior to the construction of the proposed site drainage the status quo will prevail in that surface water emanating from the site would still discharge to the relevant natural watercourses previously detailed, creating real potential for downstream flooding.
- 12.101. In this case the adverse affects would continue in the **short term**, i.e. throughout the construction phase, and the affects rating without mitigation would be **major adverse**.

Completed Development

- 12.102. It has been demonstrated that in the baseline scenario there is real potential for flooding to occur from the sources described.

- 12.103. The proposed development would result in increased impermeable areas which in turn would result in higher levels of surface water run-off. The resulting surcharging of the downstream system would cause flooding in extreme rainfall events.
- 12.104. In this case the Likely Significant Effect in terms of sewer flooding without mitigation is **major adverse**.

Mitigation Measures

Construction

Construction Protocols

- 12.105. During the construction phase protocols would need to be put in place to ensure that the current flood risk situation is not exacerbated. The construction of the proposed drainage system early in the construction programme would reduce the surface water run-off discharging off-site into the sewer system. This would effectively mitigate the risk of flooding downstream.
- 12.106. The construction phase of the development could generate an increase in the concentrations of some pollutants, in particular suspended solids from the mobilisation of silts and sediments during earth works and from the movement of heavy plant. Construction plant may also generate a diffuse pollution source of hydrocarbons and, to a lesser extent, heavy metals, which could leach into the sub-soil and find their way into the groundwater regime and subsequently nearby watercourses. The majority of these pollutants would be mobilised during surface water run-off. It is important that strict protocols are put in place to ensure that polluted run-off is contained and disposed of or treated before discharge to a watercourse or public sewer.
- 12.107. In addition to the sources of diffuse pollution, there is also some risk of point source pollution of oils and hydrocarbons occurring from spillages or leaks, which could lead to a contamination of the surface water system and consequently any nearby watercourses. The greater risk of oil spillage occurs during vehicle re-fuelling.
- Construction protocols relating to the protection of water quality and surface water management in general would include inter alia the following:
 - The provision of temporary storage areas and stilling basins;
 - Should the existing drainage system local to the development site not include a petrol interceptor then it is recommended that a petrol interceptor be incorporated into the system as early as possible during the construction programme;
 - Any trapped road gullies present on the existing on-site system will provide an initial stage of pollution protection and should be maintained during construction to ensure that collected sediments and pollutants are not re-mobilised; and
 - Mitigation of point source pollution such as oil spillage or leakage will be achieved by provision of designated storage and refuelling areas, with storage areas provided with adequate bunding to prevent spillage.
- 12.108. The agreed construction protocols would be included as part of the Construction Management Plan which would be approved prior to the commencement of construction works.
- 12.109. The likely significant effect during the construction phase with the above mitigation measures in place would be **negligible**. The affects would be **short term**.
- 12.110. The existing fluvial regime is in need of some maintenance, which would assist in regularising flood

risk. The following general maintenance/mitigation measures are recommended:

Main Channel Improvements:

- Clear debris and obstructions from the main flow channels.
- Improve cross-sections of channel where necessary to streamline flow
- Increase height of channel banks to prevent overtopping and shallow overland flow.

Culverts:

- Clear debris and obstructions from culverts
- Increase the conveyance capacity of culverts by replacement or repair
- Construct bar screens on upstream faces of vulnerable culverts to prevent severe blockages taking place.

12.111. In addition there are specific recommendations in respect of maintenance in some parts of the regime within the Master Plan area. The recommendations having a beneficial effect on the current Phase 1 application are as follows:

Stream 2:

- Stream Course 2 crosses a small section of the site near the north east boundary, this stream course is a source of groundwater that feeds protected grassland areas referred to earlier in this assessment. It is recommended that a short upstream section of this stream is diverted locally to discharge into the proposed feeder systems for the protected grasslands as described in Section 12.118 of this assessment. The section of Stream which passes through the protected grassland areas will not be diverted.

Stream 5:

- Reinstatement connection of section of Stream 3 to the west of the Canal to the downstream section to the east of the Canal. Remove outfall into the Canal from the upstream section of Stream 5. The previous ES (2001) noted the ecological importance of the downstream section of Stream 5 which may be affected by the loss of surface flow. The re-introduction of surface flow should re-create the appropriate, and natural conditions in which the habitat can thrive again.

12.112. The above maintenance/mitigation works should be completed before the commencement of any development works on site. In all cases the design and implementation of the maintenance/mitigation measures must be such as not to adversely affect the hydrological status quo.

12.113. Flood mitigation measures required to address the potential of a breach occurring in the eastern bank of the canal are described in the Section entitled 'Monmouthshire and Brecon Canal' (commencing at paragraph 12.50) in this assessment. The proposed development site is located down gradient from the canal and the mitigation measures are required to prevent flooding on the site from overland flow.

Completed Development

12.114. The general philosophy of approach to the development of the Master Plan has been to create proposals which are sympathetic to the site topography and environmental setting.

12.115. The previous sections of this Chapter have described the local flood regime and potential

mechanisms of flooding. The flood risk has been found to be minor with flooding being initiated by current capacity inadequacies in the fluvial regime. Such inadequacies can be effectively addressed by the implementation of appropriate mitigation measures. In this case, fluvial flood risk can be managed and as such should not be a constraint to development.

Protection of Ecologically Sensitive Areas

MG5 and MG23 Grasslands

- 12.116. Areas of sensitive grassland are situated between Stream 2 and the right bank of Stream 1, in the north east corner of the site. (as shown on the plans included in Appendix 12.7 herewith). The actual area of the grasslands is designated Public Open Space on the Master Plan. The existing catchment area above the MG5 and MG23 grasslands is identified for development, and this will involve the paving of surfaces. This could, if not mitigated, change the hydrological regime and reduce the amount of runoff reaching the grassland.
- 12.117. To prevent this two mitigation measures are proposed. Firstly, the use of infiltration drainage techniques (soakaways, porous paviers, infiltration trenches etc.) to feed the local groundwater will be maximised in the detailed design although ground conditions may limit the effectiveness of these.
- 12.118. The second mitigation measure involves the construction of a feeder system to provide water to the grasslands. The feeder system would comprise a linear trench backfilled with granular material. It would be fed by surface water from the site drainage system, having passed through a petrol interceptor. It would be designed to feed the grassland areas with surface water, either through passing the water into the ground through the trench sides, or controlled by overflow of the trench onto the grassland areas. Weirs in the feeder system would control flows and levels to allow this, with excess water returned to Stream 1.
- 12.119. This is a simple but flexible system which can be monitored and managed to ensure that the MG5 and MG23 grassland hydrological regimes are protected

Proposed Surface Water Drainage Strategy

- 12.120. Planning Policy Wales and its associated Technical Advice Note 15 requires that consideration be given to any potential for flooding from surface water emanating from the developed site. The redevelopment of existing grass and woodland areas to form hard (impermeable) surfaces such as highways and buildings will cause an increase in surface water runoff rates and volumes.
- 12.121. It is proposed to provide separate foul and surface water drainage systems, and to implement a Sustainable Urban Drainage System (SUDS) for the surface water drainage. One of the key aims of utilising SUDS is to replicate the quantity and quality of existing site runoff, to ensure that the hydrological status quo is retained and thereby ensuring that the flood risk to third parties is not exacerbated.
- 12.122. Runoff from impermeable areas will be discharged via a controlled and attenuated discharge to the on-site watercourses, which then subsequently discharge into the Afon Lwyd. This will require attenuation balancing ponds to ensure that the rate of runoff from the development is not increased. The proposed surface water strategy includes for three storage ponds to provide attenuation located within the site as shown in the surface water strategy plan in Appendix 12.8. Surface water runoff from areas of hardstandings such as car parking or highways will pass through interceptors or trapped gullies prior to discharging to the watercourses.

- 12.123. Storage pond 1 has been designed to allow for a 100 year return period with 20% climate change for a small sub catchment area within the site and attenuated to Greenfield runoff rates calculated in Appendix 12.3. The discharge point for the pond will be via the highway culvert to south east of the site and runoff will to be controlled at Greenfield rate. A storage allowance of 625m³ has been estimated for the balancing pond volume.
- 12.124. Storage ponds 2 and 3 serve the same catchment area and have been designed to the same criteria as pond 1. The catchment area for these ponds are much larger and accounts for additional catchment areas outside of the site boundary, which are to be developed in a later phase of the overall Master Plan. It is proposed to discharge the runoff at an attenuated Greenfield rate to Stream 5. The storage volume for the combined storage ponds have been estimated to be 4140m³ site Master Plan
- 12.125. In addition to considering the effects of the proposed development on third party flood risk, it is also of primary importance to ensure that the proposed development does not adversely affect areas of ecological sensitivity – notably the MG5 and MG23 grasslands near Streams 1 and 2 in the north eastern section of the site. Furthermore, it is important to ensure that the development does not significantly alter the catchment divisions identified previously in this assessment.

Highways

- 12.126. It is proposed that surface water runoff from highway infrastructure within the site will be collected by appropriately located gullies and then conveyed via a gravity piped system, to be discharged via the three storage ponds referred to above. Surface water will pass through interceptors or trapped gullies prior to discharging to the watercourses.

Proposed Foul Water Drainage Strategy

- 12.127. The most sustainable method of disposal of foul water discharge from the proposed residential units is via the mains sewerage network. In this case, discussions have taken place with Dwr Cymru Welsh Water (DCWW) to establish an appropriate point of connection.
- 12.128. Two options for a method of connection to the nearby public foul sewerage system are currently being considered by DCWW. A plan indicating the existing public foul sewerage system is included in Appendix 12.6.
- 12.129. One of the options is to construct a new off-site gravity sewer between Cwmbran Drive and a field between the Avondale Road/Chapel Lane Junction and the railway. This new sewer, which would connect directly into the Eastern Valley Trunk Sewer, would be constructed by DCWW through a requisition scheme. All the proposed development's foul flows would be conveyed through this off-site sewer. DCWW have confirmed that the Eastern Valley Trunk Sewer has the capacity to accommodate the full development flow. A plan indicating the proposed requisition route for the new off-site sewer is included in Appendix 12.9.
- 12.130. The other option is to discharge the proposed development's foul flows into a section of adopted combined sewer in the north-east corner of the site. DCWW are currently reviewing the available capacity within this section of sewer, which connects to the Eastern Valley Trunk Sewer a short distance to the east of the site boundary (i.e. off-site). There may be the need to upgrade this short section of off-site sewer, however the results of the DCWW hydraulic modelling exercise are awaited.
- 12.131. Either of the above options would be suitable to accommodate the foul sewage emanating from the proposed Phase 1 development.

- 12.132. Where possible the sewage will be conveyed by gravity sewers to avoid the future maintenance costs and liability associated with foul water pumping stations. Due, however, to the topography of the site and surrounding area and the likely point of connection to the public sewerage system, it is anticipated that a minimum of 2no. on-site foul water pumping stations will be required to serve the Master Plan area. The preliminary design of the on-site infrastructure has been developed to allow flexibility between the two options for a connection with the public sewer. A diagrammatic plan of the potential foul drainage strategy for each of these connection scenarios is included in Appendix 12.6
- 12.133. All on-site sewerage will be constructed to adoptable standards, in accordance with the current edition of 'Sewers for Adoption' and any of the adopting authority's (DCWW) specific requirements.
- 12.134. The introduction of formalised drainage on site would effectively prevent surface water discharging off site and as such the risk of downstream flooding in the sewers would be prevented. This is a significant improvement on the existing situation and the works will also accommodate the proposed development. In this case the likely significant effect following completion of the development can be regarded as **major beneficial**.

Residual Effects

Construction

- 12.135. The implementation of the construction phase protocols will temporarily enhance the management of surface water on the site and the construction of the proposed drainage works in the early part of the construction programme will significantly reduce the risk of off-site flooding caused by the discharge of surface and near surface waters emanating from the site.
- 12.136. Surface water and groundwater flows emanating from undeveloped land up hydraulic gradient of the site will still be intercepted by the various Watercourses within the site. These will have the potential to be controlled, and the proposed on-site works will mitigate this situation. From a site specific point of view there will be betterment with an effect rating of **major beneficial**.

Completed Development

- 12.137. This chapter has assessed the likely impact of the proposed development on the existing hydrological regime. The assessment has demonstrated that following mitigation there is no risk of flooding from any of the mechanisms of flooding described.
- 12.138. Considerable betterment (considered to be **major beneficial**) will result in the **long term** from the proposed drainage works.

Cumulative Effects

Construction and Completed Development Phases

- 12.139. The likely significant effects associated with the proposed development should also be considered with the cumulative effects of other schemes in the locality.
- 12.140. It is understood however that currently there are no other schemes in the immediate area which could be considered to be part of a cumulative effects assessment. In this case there are no cumulative effects to consider further in this assessment.

Summary

Hydrological Regime

- 12.141. It is considered that, across the site, groundwater is unlikely to be encountered at shallow depth in the cohesive strata. However where bands of sandstone are present, a limited groundwater body may be present. This groundwater is likely to be recharged where the sandstone is exposed at the ground surface or in stream channels. In general, the surface soils of the site commonly weather to a fine grained consistency which significantly reduces the permeability of the strata. Therefore generally the scope for surface water infiltration is limited.
- 12.142. The investigations into the existing hydrological regime have established the natural drainage patterns for surface water flow between the site and the ultimate points of outfall at the Afon Lwyd. The local Streams convey the surface water either directly to the Afon Lwyd or Blaen Bran or alternatively discharge waters to the Canal. The Canal conveys surface water to the south and excess water is released via overflows to ultimately discharge to the main rivers.
- 12.143. The hydraulic analysis of the surface water flows has established that although distinct parts of the wider Master Plan area are vulnerable to flooding during extreme rainfall events the application site is not vulnerable to flooding during such extreme events.
- 12.144. This assessment has identified areas where remedial work is required to channels, culverts, etc and has recommended measures to improve the efficiency of the existing surface water regime.
- 12.145. High level leakage has been identified along some sections of the embankment that retains the Canal. Due to the undesirable effects of the high-level leakage (and the potential for overland flow affecting the development site), it is recommended that the existing section of sheet piling be replaced. The reduced factor of safety against shallow failure, combined with localised internal erosion, may also be responsible for the apparent 'relaxation' of the embankment which has led to loss of freeboard and a noticeable slope across the crest in places.
- 12.146. The water quality in the streams is considered to be reasonably good and the quality of water in the Canal is considered to be fair. The philosophy of approach to be adopted in the detail design of the Master Plan works in general and the application site in particular is to ensure that the quality levels in the streams and the canal do not deteriorate on account of the development works.

Flood Risk

Baseline

- 12.147. The Environment Agency's Flood Maps and the TAN 15 DAM's indicate that the site is not liable to flooding from the Afon Lwyd and Blaen Bran's fluvial regimes.
- 12.148. The various watercourses that pass through or close to the application site do however pose the potential to flood parts of the proposed development areas and in this case, a hydraulic model was constructed to quantify the risks.
- 12.149. The steep topography of the existing site and the relatively low permeability of the ground means that there may be potential for sheet flow to develop in the undeveloped agricultural land. In this case, appropriately sized and located land drainage systems should be installed on the up-slope side of each development parcel. This should be considered at each phase of the development.
- 12.150. There are several issues and springs around the site, which indicate the emergence of groundwater at ground level just above the outcrop of an impermeable strata. The treatment of

groundwater has been carefully considered and appropriate mitigation works will be undertaken before any terracing of the existing terrain is carried out. Without appropriate mitigation, groundwater flooding could be an issue for future residents.

- 12.151. A combined public sewer exists within the north-east boundary of the site, however the topography of this area is such that should there be a blockage or lack of capacity in this combined sewer then floodwater would escape from a manhole and flow in an easterly direction off-site. The Master Plan layout and drainage design is such that the proposed dwellings would be unlikely to be affected by sewer flooding.
- 12.152. As identified earlier in this report (see paragraphs 12.96 to 12.98) the land to the east of the canal (including the application site) would be affected by flooding should a breach of the eastern bank of the canal occur. The probability of such a failure causing an immediate breach of the canal is considered to be low (this is helped by the relatively wide crest to the embankment), however due to the undesirable effects of the high-level leakage, it is recommended that steps are taken to prevent this from occurring.

Development Options and Flood Mitigation Measures

- 12.153. The flood risk has been found to be minor with flooding being initiated by current capacity inadequacies in the fluvial regime. Such inadequacies can be effectively addressed by the implementation of appropriate mitigation measures. In this case, fluvial flood risk can be managed and as such should not be a constraint to development.
- 12.154. The existing fluvial regime is in need of some maintenance, which would assist in regularising flood risk, and in this respect several general maintenance/mitigation measures are recommended in this report.
- 12.155. The maintenance/mitigation works relevant to the Phase 1 development should be completed before the commencement of any development works on site. The design and implementation of the maintenance/mitigation measures must be such as not to adversely affect the hydrological status quo.
- 12.156. Flood mitigation measures required to address the potential of a breach occurring in the eastern bank of the canal are described previously in this chapter.
- 12.157. Given that there will be an increase in impermeable surfaces as a result of the development proposals it is inevitable that there will be an increase in the rate and volume of surface water runoff unless appropriate mitigation measures are implemented.

Surface Water Drainage Strategy

- 12.158. It is proposed to provide separate foul and surface water drainage systems, and to implement a Sustainable Urban Drainage System (SUDS) for the surface water drainage wherever possible.
- 12.159. Runoff from impermeable areas will be discharged via a controlled and attenuated discharge to the on-site watercourses, which then subsequently discharge into the Afon Lwyd. This will require attenuation balancing ponds to ensure that the rate of runoff from the development is not increased. The proposed surface water strategy includes for three storage ponds to provide attenuation to serve the Master Plan developments. Surface water runoff from areas of hardstandings such as car parking or highways will pass through interceptors or trapped gullies prior to discharging to the watercourses.
- 12.160. It is of primary importance to ensure that the proposed development does not adversely affect

areas of ecological sensitivity and in this respect a mitigation strategy has been recommended in this assessment.

Foul Water Drainage Strategy

- 12.161. Two options for a method of connection to the nearby public foul sewerage system are currently being considered by DCWW. A requisition scheme has already been prepared for one of these options, however there are benefits associated with the alternative point of connection. Either options would satisfactorily accommodate the Phase 1 development which is the subject of this current application.
- 12.162. Where possible the sewage will be conveyed by gravity sewers to avoid the future maintenance costs and liability associated with foul water pumping stations. Due, however, to the topography of the site and the surrounding area and the likely point of connection to the public sewerage system, it is anticipated that a minimum of 2no. on-site foul water pumping stations will be required to serve the Master Plan area.
- 12.163. The enhancements proposed to the on-site drainage system will result in considerable betterment (considered to be **major beneficial**) in the **long term**.
- 12.164. Table 13 below, contains a summary of the likely significant effects of the Proposed Development.

Table 16: Table of Significance – Water Resources (Water Quality, Hydrology, Flood Risk and Drainage Assessment)

Potential Effect	Nature of Effect (Permanent/ Temporary)	Significance (Major/ Moderate/ Minor) (Beneficial/ Adverse/ Negligible)	Mitigation/ Enhancement Measures	Geographical Importance*							Residual Effects (Major/ Moderate/ Minor) (Beneficial/ Adverse/ Negligible)
				I	UK	W	R	C	D	L	
Construction											
Accidental spillages of contaminants during construction affecting groundwater and quality of surface water (overland flow)	Temporary	Major Adverse	Introduction and enforcement of construction phase protocols to enhance surface water management and to mitigate the potential for accidental spillages, etc							L	Negligible
Current risk of flooding by overland flow from the site could continue throughout the construction phase	Temporary	Minor Adverse	Programme of construction of drainage works early in the construction programme							L	Negligible
Accidental spillages of contaminants during construction affecting groundwater and quality of surface water (overland flow)	Temporary	Major Adverse	Introduction and enforcement of construction phase protocols to enhance surface water management and to mitigate the potential for accidental spillages, etc							L	Negligible
Completed Development											
Increased surface water run-off from impermeable areas could (without mitigation) cause increased flooding in urban environment	Permanent	Major Adverse	Design and implementation of SUDS drainage system to prevent surface water emanating from the development discharging off site to offSite sewer and urban environment generally							L	Major Beneficial
Increased surface water run-off from impermeable areas could (without mitigation) cause increased flooding in urban environment. Applies to all mechanisms of flooding	Permanent	Major Adverse	Design and implementation of SUDS drainage system to prevent surface water emanating from the development discharging off site to combined sewer and urban environment generally							L	Major Beneficial
Cumulative Effects											
It has been assessed that no other schemes in locality contributing to a cumulative effect assessment											

* **Geographical Level of Importance** I = International; UK = United Kingdom; W = Wales; R = Regional; C = County; D = District; L = Local

13. Noise and Vibration Assessment

Introduction

- 13.1. This chapter of the Environmental Statement (ES) assesses the likely significant noise and vibration impacts of Phase 1 of the South Sebastopol development. In particular, it considers the potential effects of noise and vibration during the construction works, and on completion of the Development upon occupants of the proposed buildings and surrounding sensitive receptors.
- 13.2. The chapter describes the relevant legislative and policy context, the methods used to assess the effects, the baseline conditions currently existing at the site and surroundings, the potential direct and indirect effects of the Development arising from noise and vibration, the mitigation measures required to prevent, reduce or offset the effects, and the likely residual effects.
- 13.3. The chapter was written by Waterman. Additional data relating to the Noise and Vibration Assessment is contained within the following technical appendices:
- Appendix 13.1 Residential Suitability Assessment Guidelines
 - Appendix 13.2 Noise Survey
 - Appendix 13.3 BS 5228 Construction Noise Assessment
 - Appendix 13.4 Road Traffic Noise Assessment

Planning Policy Context

Legislation

Control of Pollution Act

- 13.4. Part III of the Control of Pollution Act 1974 (CoPA)² is specifically concerned with pollution. With regards to noise, it covers construction Sites; noise in the street; noise abatement zones; codes of practice and Best Practicable Means (BPM).

National Planning Policy

Planning Guidance Technical Advice Note 11: Noise

- 13.5. Planning Guidance Technical Advice Note 11 (TAN 11)³ is the principal guidance adopted in Wales for assessing the impact of noise on and from proposed developments. For residential development, the guidance is presented in terms of four Noise Exposure Categories (NECs), ranging from NEC A, where noise need not normally be considered in determining planning applications to NEC D, where planning permission may need to be refused on noise grounds. The criteria relevant to the proposed development are presented in Table 17 below.

Table 17: TAN 11 Noise Exposure Categories for Road Noise

NEC	L _{Aeq,T} dB (07:00–23:00)	L _{Aeq,T} dB (23:00–07:00)	Advice
A	< 55	< 45	Noise need not be considered as a determining factor in granting planning permission, although the noise level at

² The Stationery Office Limited. Control of Pollution Act, Chapter 40, Part III. 1974

³ TAN 11

NEC	$L_{Aeq,T}$ dB (07:00–23:00)	$L_{Aeq,T}$ dB (23:00–07:00)	Advice
			the high end of the category should not be regarded as a desirable level.
B	55 to 63	45 to 57	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.
C	63 to 72	57to 66	Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter Sites available, conditions should be imposed to ensure a commensurate level of protection against noise.
D	> 72	> 66	Planning permission should normally be refused.
Note:	Sites where individual noise events during the night-time (23:00 to 07:00) regularly exceed 82dB L_{Amax} (S time weighting) several times in any hour should be treated as being in NEC C, regardless of the $L_{Aeq, 8\text{ hour}}$ (except where the $L_{Aeq, 8\text{ hour}}$ already puts the site in NEC D).		

- 13.6. With regard to commercial or industrial developments, TAN 11 advises that much of the development which is necessary for the creation of jobs and the construction and improvement of essential infrastructure would generate noise and that, whilst local authorities must ensure that development does not cause an unacceptable degree of disturbance, the planning system should not place unjustifiable obstacles in the way of such development.

Regional Planning Policy

The Gwent Structure Plan, 1996

- 13.7. The Gwent Structure Plan⁴ was adopted by the former Gwent County Council in 1996, and covers the five former districts of Blaenau Gwent, Islwyn, Newport, Monmouth and Torfaen.
- 13.8. The Local Development Plan (LDP) for Torfaen⁵ is currently in production and would be a more concise and evidence based set of development policies to replace the adopted Gwent Structure Plan. However until the LDP is adopted, the Gwent Structure Plan Remains in force.
- 13.9. Policy ENV4 states:

'Development which creates atmospheric, water and / or noise pollution which would have an unacceptable effect on communities or the environment would not normally be permitted.'

Local Planning Policy

- 13.10. The LDP for Torfaen would also replace the adopted Torfaen Local Plan⁶ (published in 2000), however until the LDP is adopted, the Torfaen Local Plan would remain in force. Policy S2 highlights the Development site as a General Development Area (GDA) identified as 'S2/2: South Sebastopol' and states the following:
- 13.11. 'Proposals for development within General Development Areas which are in conformity with the development framework and other relevant policies of this local plan would be permitted.'

⁴ Gwent Structure Plan

⁵ Torfaen Local Development Plan (in development)

⁶ Torfaen Local Plan (Published 2000)

13.12. The document then goes into more detail about the requirements of the GDA as outlined below:

'South Sebastopol is the principal housing allocation in the local plan. Its development would span the plan period and beyond the year 2006. On completion it is expected to accommodate some 1200 dwelling units. The site would also include:-

- i) Neighbourhood shopping provision.*
- ii) A primary school.*
- iii) Community facilities.*
- iv) Formal and informal open space.*

Provision of these facilities would be phased to coincide with appropriate stages of residential development. Before the commencement of each stage the County Borough Council would seek agreement from developers for the provision of appropriate facilities.

...It is expected that 600 dwellings would be built on this site during the plan period.'

13.13. The document does not contain any policies which pertain directly to noise and vibration.

Assessment Methodology

Outline Methodology

13.14. The assessment of potential noise and vibration effects resulting from or impacting upon the Development was based upon the following:

- Identifying potentially sensitive existing and future noise receptors on the site and within the surrounding area;
- Establishing baseline noise conditions currently existing at the site and nearby receptor locations through an attended noise survey;
- Assessing the suitability of the site for the Development in terms of the prevailing baseline noise conditions;
- Assessing likely noise and vibration levels generated during the construction works associated with the Development;
- Establishing design aims for plant and services to be located on, or within, the proposed new buildings at the site;
- Assessing likely noise levels from the operation of the proposed Development including changes in traffic volumes as a result of the Development;
- Formulating proposals for mitigation, where appropriate; and
- Assessing the significance of any residual effects.

Establishing Baseline Conditions

13.15. To identify existing and future noise sensitive receptors (NSRs) that could potentially be affected by noise arising from the construction works and the operation of the proposed Development a desktop assessment of the site was carried out on 17th December 2010 and a site walkover was carried out on 11th January 2011. Various locations were identified and are detailed in Appendix 13.5. The NSRs are discussed in more detail in the baseline conditions section of this chapter.

Construction Assessment Methodology

Noise

- 13.16. In December 2008 the five parts of British Standard ('Construction Noise and Vibration') were withdrawn and BS 5228 parts 1 and 2: 2009⁷ were published. The new BS 5228 does not have any significant material changes when compared to the previous version. However, it does now include the updated construction plant source noise level data published by DEFRA and provides examples of construction noise limits in Annex E to Part 1 of the Standard. The Standard continues to provide guidance on minimising potential effects through the use of mitigation and the adoption of Best Practicable Means (BPM).
- 13.17. Calculations were carried out in accordance with the methodology prescribed within BS 5228-1:2009 for each of the major stages of construction, accounting for the typical plant and activities expected within each stage. Following the submission of the outline application for the proposed Master Plan area a Construction Environmental Management Plan (CEMP) has been adopted for the proposed Development. The CEMP includes the following key mitigation and noise control measures:
- Employing and correctly operating only modern, relatively quiet and well-maintained equipment (all equipment must comply with the EC Directives and UK Regulations set out in Annex A of BS 5228:2009 Part 1);
 - Using low impact techniques, such as bored piling instead of percussive piling or munchers instead of breakers, wherever practicable;
 - Using electrical equipment in preference to combustion-powered alternatives, wherever practicable;
 - Careful material handling, such as lowering rather than dropping items; and
 - Avoidance of unnecessary noise (such as engines idling between operations, shouting, loud radios or excessive revving of engines) by effective site management.
- 13.18. Maximising the distance between noise and vibration producing equipment/works and sensitive receptors would result in reduced adverse effects. This would be achieved by:
- Erecting impervious hoardings, of at least 5kg/m² surface density and of at least 2.4m in height to reduce demolition noise and vibration comparable with the existing ambient levels;
 - Siting stationary plant and loading/unloading areas away from sensitive receptors;
 - Use of existing non-sensitive structures to shield sensitive receptors from noisy works; and
 - Use of temporary structures, the site geometry or earth mounds to shield sensitive receptors from noisy works.
- 13.19. To assess the potential effects of construction noise on existing NSRs 'The ABC Method' provided in BS 5228 - 1:2009 was used. This method defines category threshold values which are determined by the time of day and existing monitored ambient noise levels. The noise level generated by construction activities, corrected to take into account the existing monitored ambient noise levels (i.e. the total noise level), is then compared with the 'threshold value'. If the total noise level exceeds the 'threshold value', a significant impact is deemed to occur.
- 13.20. To allow greater definition of the significance of the potential effects, the criteria in Table 18 below were adopted.

⁷ BS 5228

Table 18: Construction Noise Significance Criteria

Effect Significance	Level above threshold value dB(A)	Definition
Negligible	< 0	The impact is not of concern.
Minor adverse	0.1 to 4.9	The impact is undesirable but of limited concern.
Moderate adverse	5.0 to 9.9	The impact gives rise to some concern but is likely to be tolerable depending on scale and duration.
Substantial adverse	> 10	The impact gives rise to serious concern and it should be considered unacceptable.

Vibration

13.21. Two types of vibration impact were considered:

- The effects on people or equipment within buildings; and
- The effects on buildings (or other structures) themselves.

13.22. Owing to the expected nature of the proposed construction works, it is unlikely that vibration effects generated by the works would have any significant adverse effects on surrounding sensitive receptors. However, the following factors have been taken into consideration:

- The severity of the potential impact;
- Type and number of plant/equipment;
- Duration of the works;
- The distance between the source and receptor;
- The number of sensitive properties subject to any effects; and
- The number of listed buildings and their vulnerability to damage.

13.23. Determining the magnitude of significance of vibration effects is complex owing to the highly variable nature and duration of vibration effects arising from construction work.

13.24. At this stage in the design process, insufficient detail is available on the methods and equipment to be used during the construction works. Consequently, the significance of vibration effects arising from such works cannot be assessed quantitatively and was therefore determined using professional judgement.

Completed Development Assessment Methodology

Site Suitability for Residential Development

13.25. Due to the nature of the proposed Development it is necessary to determine the suitability of the site for residential use. The methodology of a residential suitability assessment relies on comparison of measured noise levels with the absolute levels set out in Table 17. As such, the usual environmental impact assessment methodology of applying significance criteria to changes in noise or vibration levels would not be appropriate due to the lack of a baseline level against which to draw comparisons. As a result, the residential suitability assessment would be carried out solely on the basis of TAN 11 methodology, the guidance provided in BS 8233:1999 'Sound Insulation

and Noise Reduction for Buildings⁸ and the WHO Guidelines for Community Noise⁹ (see Appendix 13.1).

Assessment of Road Traffic Noise

- 13.26. The Institute of Environmental Management and Assessment's (IEMA) Guidance Notes No. 1 'Guidelines for the Environmental Assessment of Road Traffic'¹⁰ recommends assessment where traffic flows would increase by more than 30% (or the number of Heavy Goods Vehicles (HGVs) would increase by more than 30%), and where specifically sensitive areas experience traffic flow increases of 10% or more. The guidance indicates that projected changes in traffic of less than 10% create no discernible environmental effects.
- 13.27. Changes in noise levels attributable to changes in road traffic flows and volumes resulting from both the proposed Development have been calculated using traffic data provided by Waterman. Traffic flow data was provided for the 'with' and 'without' Development scenarios. The scenarios include traffic associated with committed developments within the wider study area. The traffic data provided covers the Master Plan area as a whole and as such is considered to be representative of an absolute worst case scenario when considering Phase 1 of the proposed Development.
- 13.28. Basic Noise Levels (BNLs) were calculated for the road links covered by the traffic assessment. The calculations used the 18-hour Annual Average Weekly Traffic (AAWT), HDV compositions and vehicle speed for each road link.
- 13.29. The BNLs were calculated at positions 10m from the road using the guidance provided in the Calculation of Road Traffic Noise (CRTN). The potential effects of changes in road traffic noise were evaluated by consideration of the estimated changes in $L_{A10(18\text{ hour})}$ road traffic noise levels on the local highway network as a result of the operation of the proposed Development.
- 13.30. Using this guidance, the significance of any effects was assessed in accordance with the criteria detailed in Table 19 below.

Table 19: Road Traffic Noise Significance Criteria

Change in noise levels dB(A)	Definition	Effect Significance
> -10	The impact provides a significant positive gain.	Substantial beneficial
-9.9 to -5.0	The impact provides some gain to the environment.	Moderate beneficial
-4.9 to -3.0	The impact is of minor significance but has some environmental benefit.	Minor beneficial
-2.9 to +2.9	The impact is likely to be imperceptible and is therefore not of concern.	Negligible
3.0 to 4.9	The impact is undesirable but of limited concern.	Minor adverse
5.0 to 9.9	The impact gives rise to some concern but is likely to be tolerable depending on scale and duration.	Moderate adverse

⁸ BS 8233

⁹ WHO Guidelines for Community Noise

¹⁰ Institute of Environmental Management and Assessment (1993); 'Guidance Note No. 1 Guidelines for the Environmental Assessment of Road Traffic', IEMA

Change in noise levels dB(A)	Definition	Effect Significance
> 10	The impact gives rise to serious concern and it should be considered unacceptable.	Substantial adverse

13.31. The criteria provided in Table 19 were derived by considering how changes in noise levels can be categorised by significance based on key benchmarks that relate to human perception of sound. For example, a change in noise levels of 3dB is generally considered to be the smallest change in noise which is perceptible and a 10dB change in noise represents a doubling or halving of the noise level.

Limitations and Assumptions

13.32. The key limitations to the noise and vibration assessments include the current absence of, or possible future changes to details of the methods and plant likely to be used during the construction phase.

Consultation

13.33. Torfaen Council (TC) was consulted during the EIA Scoping process. TC's Scoping Opinion specifically requested that an assessment of noise and vibration effects in relation to nearby sensitive receptors was carried out.

13.34. Contact was made with Peter Oates of the TC Environmental Health Department to discuss the proposed Development and agree on a scope of works for the survey and assessment. Mr Oates was in agreement with the scope of works for the survey and assessment.

Baseline Conditions

Identification of Existing and Future Noise Sensitive Receptors

13.35. The nearest noise sensitive receptors to the proposed development site were identified during a site walkover on the 11th January 2011. The nearest NSRs are described in Table 20 and illustrated on Appendix 13.5. Where a number of NSRs lie in close proximity to each other, the nearest to the site boundary has been chosen to represent the immediate area.

Table 20: Potential Noise Sensitive Receptors

Noise Sensitive Receptor (see Appendix 13.5)	Description	Predominant Noise Sources
NSR A	Wrens Nest Cottages	Road traffic on Avondale Road / A4051
NSR B	Tir-Brychiad Farm	Road traffic on Avondale Road / A4051
NSR C	Uplands Farm	Distant road traffic, birdsong, occasional passing plane
NSR D	Wrens Nest Farm	Distant road traffic, birdsong, occasional passing plane
NSR E	Bryn Farm	Distant road traffic, birdsong, occasional passing plane
NSR F	Maes-gwyn Farm	Distant road traffic, birdsong, occasional passing plane

Noise Sensitive Receptor (see Appendix 13.5)	Description	Predominant Noise Sources
NSR G	Properties on Oaklands Road	Local suburban road traffic.
NSR H	Properties on Berkeley Crescent	Local suburban road traffic.
NSR I	Properties on Five Locks Close	Local suburban road traffic . Wind through trees.
NSR J	Properties on Five Locks Road	Local suburban road traffic .
NSR K	Properties on Grove Park	Local suburban road traffic .

Baseline Noise Surveys

13.36. A baseline noise survey was undertaken on the 10th and 11th January 2011 to provide an indication of the prevailing noise climate on and around the site. Five locations were chosen to best represent the noise environment experienced at potential noise sensitive receptors and to assess the propagation of noise across the site. The selected monitoring locations are described in Table 21 and identified on Appendix 13.5.

Table 21: Noise Monitoring Locations

Monitoring Location (see Appendix 13.5)	Representative NSR	Description	Observations and Predominant Noise Sources
LT1	Eastern Boundary	Eastern site Boundary - Avondale Road	Road traffic noise from Avondale Road and A4051
LT2	Eastern Boundary	Eastern site Boundary - Cwmbran Drive	Road traffic noise from A4051
LT3	NSR C,E,F	Western site Boundary	Distant Traffic Noise from surrounding road network
ST4	NSR A,B,G,H	Bevans Lane	Distant Traffic Noise from surrounding road network
ST5	NSR D,I,J,K	Southern Boundary - Five Locks Close	Localised Traffic noise on Five Locks Close and distant traffic noise from surrounding road network

13.37. Full details of the baseline survey are provided in Technical Appendix 13.2. As previously discussed baseline noise surveys were undertaken on the 10th and 11th January 2011. The monitored noise levels are provided in full in Appendix 13.2 and summarised in Table 22.

Table 22: Baseline Noise Measurements

Monitoring Location (see Appendix 13.5)	Monitoring Period	Duration	$L_{Aeq,T}^1$ dB(A)	$L_{A10,T}^1$ dB(A)	$L_{A90,T}^{1,2}$ dB(A)	L_{Amax}^3 dB(A)
LT1	Daytime (07:00–23:00)	15hr	63.9	66.5	50.5	94.2
	Night-time (23:00–07:00)	8hr	55.5	55.7	39.7	78.5
LT2	Daytime (07:00–23:00)	15hr	70.1	73.5	50.0	94.5

Monitoring Location (see Appendix 13.5)	Monitoring Period	Duration	$L_{Aeq,T}^1$ dB(A)	$L_{A10,T}^1$ dB(A)	$L_{A90,T}^{1,2}$ dB(A)	L_{Amax}^3 dB(A)
LT3	Night-time (23:00–07:00)	8hr	58.2	59.1	37.0	83.0
	Daytime (07:00–23:00)	12hr	45.8	47.4	37.2	73.9
	Night-time (23:00–07:00)	8hr	37.9	39.1	32.4	52.0
ST4	Daytime (07:00–23:00)	1hr	48.0	48.7	45.6	72.1
ST5	Daytime (07:00–23:00)	1hr	52.2	53.7	49.6	73.9

1 Average of 5 minute measurements over the survey period (L_{Aeq} arithmetically averaged)

2 Minimum 5 minute measurement over the survey period

3 Maximum instantaneous measurement over the survey period

13.38. The above tables give an overall indication of the averaged noise levels during the daytime and night-time periods. Monitored noise levels during the daytime and night-time periods are expected to vary subject to changing environmental conditions throughout the period.

13.39. When considering the hourly noise measurements as presented in full in Appendix 13.2 the following observations were made:

- Daytime monitored noise levels ranged between 64.0 and 72.8dB $L_{Aeq,1hr}$ at the eastern boundary of the site during the daytime period. The surveyor noted that the dominant noise source in this area of the site was road traffic associated with the local highway network.
- Daytime monitored noise levels ranged between 39.9 and 50.5dB $L_{Aeq,1hr}$ at the western boundary of the site. The surveyor noted that the dominant noise source in this area of the site was distant road traffic, wind through nearby shrubbery and birdsong.
- Night-time noise levels were typically lower and ranged between 38.3 and 69.2dB $L_{Aeq,5min}$ at the eastern boundary, and between 33.3 and 46.3dB $L_{Aeq,5min}$ at the location LT3.

Likely Significant Effects

Construction

Noise

13.40. As previously discussed the construction phase of the proposed Development is anticipated to take approximately 2 to 3 years to complete. It is expected that construction would take place progressively meaning dwellings constructed on site would become NSRs while latter-stage construction work is still being carried out. Further information on the anticipated construction schedule, type of plant and equipment to be used and hours of operation are provided in Chapter 3: Project Proposals.

13.41. Details of the methods and plant likely to be used during the construction phase are necessarily indicative at this stage and would be likely to change during the course of the works. This makes it difficult to accurately predict the noise levels for direct comparison with the noise criteria described previously. Therefore, a maximum worst case noise scenario over a 1 hour period was estimated, assuming that plant would be operating at the closest point to the nearest NSRs and in the

absence of mitigation. In practice, noise levels would tend to be lower owing to greater separation distances and screening effects. They would also tend to reduce over a 12-hour working day owing to periods of plant inactivity.

- 13.42. Calculations were undertaken using the data and procedures set out in BS 5228-1:2009 for the noisiest construction phases, to derive indicative noise levels at selected NSRs. The highest noise levels tend to be associated with plant used during earthmoving, concreting and road pavement construction. During the fit-out, construction noise would be significantly lower. The calculated worst case noise levels are presented in Technical Appendix 13.3.
- 13.43. The worst case predicted noise levels presented in Appendix 13.2 indicate that when allowing for the physical mitigation and noise control measures presented within the CEMP there would be the potential for the threshold levels presented in Table 19 to be exceeded at NSR A and NSR B which are located immediately adjacent to the site boundary. Noise levels of this magnitude would have the potential to give rise to **temporary short term minor to moderate adverse impacts** at these locations.
- 13.44. However, it should be noted that, to allow for a worst case assessment the calculated noise levels have assumed plant would be operating immediately adjacent to the site boundary, in reality plant would be moving close to and further away from the site boundaries, as such, the predicted noise levels are likely to be significantly less than those presented in Appendix 13.2.
- 13.45. All remaining NSRs are further removed from the proposed construction activities and as such would experience at worst minor adverse effects
- 13.46. In addition to construction plant operating on the site, there would be some movement of materials to and from the site by road. A construction logistics plan would be agreed with TC to minimise the temporary and intermittent adverse effects that construction traffic can cause. However, peak levels of noise or vibration arising from construction vehicles should not be any greater than can presently arise from existing heavy duty vehicle movements on the existing roads, and would be less than those from the main construction works on the site. Nevertheless, noise from construction traffic would be likely to give rise to a temporary, minor adverse effect on nearby NSRs.

Vibration

- 13.47. There are currently no British Standards that provide a methodology for predicting levels of vibration from construction activities other than BS 5228-2:2009, which relates to percussive or vibratory rolling and piling only. However, it is generally accepted that for the majority of people, vibration levels of approximately 0.14mm/s peak particle velocity (ppv) are just perceptible with cosmetic damage to buildings occurring at much higher levels (10mm/s). Based on historical field measurements undertaken by staff of Waterman, Table 23 below details the distance at which certain activities are likely to give rise to a just perceptible level of vibration.

Table 23: Distances at which vibration may be just perceptible

Construction Activity	Distance from Activity when Vibration may just be Perceptible (metres)
Excavation	10 – 15
Heavy vehicles	5 – 10

- 13.48. Details of methods and plant likely to be used during the construction phase are necessarily indicative at this stage and may change during the site redevelopment once further information on the ground conditions and the detailed design of foundations is known. This makes it difficult to

accurately predict the likely vibration levels.

- 13.49. Given the distance between the closest sensitive receptors and the proposed construction work (less than 15m) and allowing for the mitigation measures set out in the EMP there is potential for minor to minor adverse effects upon residents of nearby sensitive receptors to occur. However, these are likely to be short term and transitory in nature. Although there would be the potential for adverse effects to arise upon residents of nearby sensitive receptors, vibration levels generated by construction activities would be significantly below those which may give rise to building damage.

Completed Development

Residential Suitability Assessment

- 13.50. The development is expected to provide 199no. residential dwellings as highlighted in the design plans in Chapter 3: Development proposals. The monitored noise levels presented in Table 22 have been used to create a prediction model of the propagation of noise across the site using industry standard software CADNA-A. To provide for a worst case assessment, the monitored noise levels have been corrected for the increase in noise levels which would occur as a result of increased traffic flows associated with the operation of the proposed development (see Road Traffic Noise assessment below). The building and road layouts have been entered into the model using drawings supplied by Barratt North Wales.

- 13.51. The computer model has been used to predict the levels of road noise incident upon the proposed building façades. The CADNA-A noise model allows for assessment of individual façades. Hence the noise levels incident upon each façade of every proposed dwelling have been compared against the NEC criteria for road traffic noise as presented in Table 17. A graphical indication of the NEC criteria for the façades of the proposed dwellings is detailed in Appendices 13.6 and 13.7.

- 13.52. The assessment results indicate that those facades which face directly onto the eastern site boundary of the proposed Development with the A4051 would fall into NEC B. For dwellings exposed to noise levels in NEC B, TAN 11 states:

'Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.'

- 13.53. Although small areas of the proposed Development fall into NEC B, noise levels would reduce with distance from the primary noise source (A4051) resulting in the majority of the proposed Development falling into NEC A (see Appendix 13.6 and Appendix 13.7). However, given that small areas of the proposed Development fall into NEC B, mitigation measures would be required to protect the amenity of future residents of the development. Potential mitigation measures are discussed in the relevant section below.

External Amenity Areas

- 13.54. The guidance presented within PPG 24 highlights the importance of noise in external amenity spaces such as gardens. The WHO 'Guidelines for Community Noise' suggest a design goal of 55dB $L_{Aeq,T}$ in order to protect the majority of people from being seriously annoyed during the daytime.

- 13.55. However, a review of health effects based noise assessment methods undertaken for the DETR by Porter et al in 1998, just before the issue of Guidelines for Community Noise, it is noted that:

'Perhaps the main weakness of both WHO-inspired documents is that they fail to consider the practicality of actually being able to achieve any of the stated guideline values.'

13.56. The report goes on to state that:

'Around 56% of the population in England and Wales are exposed to daytime noise levels exceeding 55dB LAeq and that around 65% are exposed to night-time noise levels exceeding 45dB LAeq (as measured outside the house in each case). The value of 45dB LAeq night-time outdoors is equivalent to the 1995 WHO guideline value of 30dB LAeq night-time indoors allowing 15dB attenuation from outdoors to indoors for a partially open window (for free air ventilation to the bedroom). The percentages exposed above the WHO guideline values could not be significantly reduced without drastic action to virtually eliminate road traffic noise and other forms of transportation noise (including public transport) from the vicinity of houses. The social and economic consequences of such action would be likely to be far greater than any environmental advantages of reducing the proportion of the population annoyed by noise. In addition, there is no evidence that anything other than a small minority of the population exposed at such noise levels find them to be particularly onerous in the context of their daily lives.'

13.57. Based on the most recent national survey of noise exposure carried out in England and Wales in 2000/2001, the percentage of the population exposed to day and night-time noise levels exceeding the WHO guidelines are 54% and 67%, respectively. The studies indicate that:

'The percentage of the UK population exposed to daytime levels of 55dB LAeq, 16hr or greater, have decreased since 1990, whilst the percentage of the UK population exposed to night-time levels of 45dB LAeq, 8hr or greater, have increased since 1990, although this change is not considered statistically significant.'

13.58. Therefore, the levels suggested in Guidelines for Community Noise may be considered more aspirational than immediately attainable.

13.59. The proposed Development has been designed so as to ensure that all gardens are orientated away from the A4051 and as such would be screened from road traffic noise resulting in the 55dB LAeqmT criterion being met within all garden areas.

Road Traffic Noise

13.60. A road traffic noise assessment was completed for the submitted outline application for the South Sebastopol Master Plan area. The road traffic noise assessment takes into account traffic generated by the Master Plan area as a whole and as such, when considering Phase 1 of the proposed development, is representative of an absolute worst case scenario.

13.61. As stated above, the 18-hour annual average weekday traffic flows (AAWT) for the roads around the site were used to establish noise changes as a consequence of the proposed Development. Traffic flow data was provided by the project transport consultants, for the 'with' and 'without' Development scenarios for the proposed opening year of 2022. The scenarios include traffic associated with committed developments within the wider study area, which enables the noise impact as a direct consequence of the proposed Development to be calculated.

13.62. Basic Noise Levels were calculated for the road links covered by the Transport Assessment (see Chapter Transportation Assessment (Traffic, Transport and Modelling)). The calculations used the 18-hour AAWT, HGV compositions and vehicle speed for each road link. Calculated noise levels are detailed in Appendix 13.4.

13.63. For new proposed access roads, which currently have no flows associated with them the measured baseline LA10 noise levels have been used for comparison with future predicted traffic noise levels.

13.64. The proposed Development would result in an increase in noise levels along all modelled links.

For the most part an increase in noise levels of less than 3dB(A) has been predicted which would be imperceptible at nearby NSRs giving rise to predominantly negligible effects. However, there would be the potential for noise levels along Bevins Lane, the main site access to the proposed Development to increase by approximately 10dB(A). Given that there are no existing sensitive receptors at this location an increase in noise levels of this magnitude is predicted to be negligible.

13.65. However, there would be the potential for noise generated by the site access road to adversely impact upon proposed NSRs. Mitigation measures have been formulated for proposed residential dwellings adjacent to the site access road in order to protect the amenity of future residents of the development. The proposed mitigation measures are discussed in the relevant section of this chapter.

Construction

Noise and Vibration

13.66. A CEMP has been adopted for the proposed Development serving to reduce construction noise levels as far as is practicable for a development such as the proposed. Providing that the mitigation and noise control measures set out in the CEMP are adhered to no additional mitigation measures would be required.

Completed Development

Residential Suitability

Internal Noise Levels

13.67. Given that areas of the proposed development fall into NEC B, consideration has been given to appropriate acoustic attenuation measures to provide a commensurate level of protection against noise for future occupants.

13.68. BS 8233 suggests good and reasonable internal noise levels for various uses. The criteria relevant to the Development are presented in Table 24 below.

Table 24: Indoor Ambient Noise Levels (BS 8233:1999)

Location	Internal Noise Level
Living rooms (0700-2300hrs)	Good Standard 30 dB L_{Aeq} Reasonable Standard 40 dB L_{Aeq}
Bedrooms* (2300-0700hrs)	Good Standard 30 dB L_{Aeq} Reasonable Standard 35 dB L_{Aeq}

13.69. The amount of insulation provided by a building element is defined by the weighted sound reduction index (R_w). The R_w is commonly quoted with the spectrum adaption term C_{tr} . The spectrum adaption terms are added to the R_w and are used to take into account the characteristics of a particular noise spectrum. The term C_{tr} is used for noise with a frequency spectrum content similar to road traffic noise. This frequency spectrum contains a certain amount of low frequency noise and can also be attributed to low speed railway traffic, aircraft at large distances and factories which emit low frequency noise.

13.70. When considering the proposed development, wherever, possible habitable rooms have been orientated away from primary existing noise sources, namely the A4051. However, given the constraints associated with the site it would be necessary for some bedrooms and living rooms to

be orientated towards the A4051. A colour coded plan showing the level of attenuation that each façade would be required to provide has been prepared and is presented as Appendices 13.6 and 13.7.

13.71. Typical glazing and ventilation strategies which would allow the BS8233:1999 good standard to be met for each of these facades are summarised below and should be read in conjunction with Appendices 13.6 and 13.7.

- **Yellow** – Thermal double glazed window providing a minimum attenuation of 33 dB $R_{W;Ctr}$. This could be achieved through the provision of glazing of a specification of 10/12/4 coupled with a passive acoustic ventilator such as a trickle ventilator or a controllable sound insulation air brick on any exposed façade.
- **Green** - Thermal double glazed window providing a minimum attenuation of 33 dB $R_{W;Ctr}$. This could be achieved through the provision of glazing of a specification of 10/12/4

13.72. It is considered that with the above mitigation measures in place the 'good' standard presented in BS 8233:1999 would be met within all proposed residential dwellings.

External Noise Levels

13.73. The proposed Development has been designed so as to ensure that all gardens are orientated away from the A4051. By orientating gardens away from the A4051 it has been ensured that the 55dB $L_{Aeq,T}$ limit level for external living spaces would be met for all proposed residential dwellings and as such no additional mitigation measures would be required.

Road Traffic Noise

13.74. The worst case road traffic noise impact assessment indicates negligible impacts as a result of the proposed development, as such no additional mitigation measures would be required.

Residual Effects

Construction

Noise

13.75. Appropriate measures to mitigate and control noise from construction works are available and would be implemented in accordance with relevant planning conditions the CEMP for the site. As a consequence, it is envisaged that the construction works would proceed with the minimum disturbance to local residents. Nevertheless, some short term disturbance for premises immediately adjacent to the site is possible, resulting in at worst **temporary negligible to moderate adverse effect**.

Vibration

13.76. Owing to the proximity of vibration sensitive receptors to some of the construction works, some monitoring of vibration is recommended as part of the mitigation package for the Development. Vibration limits would be set to ensure compliance with national standards and hence to minimise the risk of complaints or building damage. With the appropriate mitigation, vibration effects would remain at worst **minor adverse**.

Completed Development

Suitability of the site for Noise Sensitive Development

13.77. With appropriate design of each building's façade, **negligible effects** are predicted for the new residential Development within the site.

Road Traffic Noise

13.78. Given that no mitigation measures are required **negligible** residual effects as a result of road traffic noise are predicted to remain.

Summary

13.79. A noise and vibration assessment has been completed to determine the potential effects of the proposed Development upon nearby noise sensitive receptors. A baseline noise survey was undertaken in January 2011 to establish the existing ambient noise climate on the site. The baseline noise measurements revealed that the existing site noise levels are relatively low with the exception of the eastern site boundary which is influenced by the A4051 and Avondale Road. There were no perceptible levels of vibration at any of the noise monitoring locations and no offSite sources capable of affecting the proposed Development other than road traffic were detected.

13.80. An assessment of the effects of the construction works, together with the completed and operational development was undertaken in relation to a number of existing and proposed noise and vibration sensitive receptors.

13.81. During the construction phase, measures to mitigate and control noise and vibration would be implemented in accordance with a Construction Environmental Management Plan. Additionally, noise and vibration monitoring is recommended as part of the mitigation package to ensure compliance with national standards. Nevertheless, due to the proximity of the noise and vibration sensitive receptors, some short term disturbance would be likely, resulting in at worst a temporary moderate adverse effect.

13.82. With respect to traffic, negligible impacts upon existing NSRs have been predicted. When considering the suitability of the site for residential development the assessment has shown that given the use of suitable mitigation measures such as appropriate glazing and trickle ventilators the site would be suitable for residential development.

13.83. It is considered that all design matters relating to internal noise and potential noise effects can be dealt with by way of planning conditions during the detailed design and as such that the development would be suitable for the proposed use.



Table 25: Table of Significance – Noise and Vibration Assessment

Potential Effect	Nature of Effect (Permanent/ Temporary)	Significance (Major/ Moderate/ Minor) (Beneficial/ Adverse/ Negligible)	Mitigation/ Enhancement Measures	Geographical Importance*							Residual Effects (Major/ Moderate/ Minor) (Beneficial/ Adverse/ Negligible)
				I	UK	W	R	C	D	L	
Construction											
Construction Noise	Temporary	Minor to Moderate Adverse	Non Available							x	Minor to Moderate Adverse
Construction Traffic	Temporary	Negligible	Non Required							x	Negligible
Construction Vibration	Temporary	Minor Adverse	Non Available							x	Minor Adverse
Completed Development											
Road Traffic Noise	Permanent	Negligible	None Required							x	Negligible
Cumulative Effects											

* Geographical Level of Importance

I = International; UK = United Kingdom; W = Wales; R = Regional; C = County; D = District; L = Local

14. Air Quality Assessment

14.1. Please refer to main South Sebastopol Environmental Statement prepared by Waterman (January 2011).

15. Sustainability

Introduction

- 15.1. This Chapter presents an assessment of the extent to which the Development accords with national, regional and local sustainable development policies and guidance. It also describes the approach of the Applicant towards achieving a more sustainable development, in relation to a range of key sustainability issues.
- 15.2. The importance of sustainable development is highlighted by a number of Welsh Assembly Government strategies and planning policy documents and there is a growing acceptance of an imminent need to consider and tackle climate change. Many definitions of sustainable development exist, although the common objective for all is the integration of economic, social and environmental issues, to ensure a better quality of life for people today, without compromising the needs of future generations. A key mechanism for delivering the principles of sustainable development within Wales lies within the national, regional and local planning system.

Planning Policy Context and Guidance

National Policy

One Wales: One Planet, a new Sustainable Development Scheme for Wales, 2009 (Ref.1)

- 15.3. One Wales: One Planet, a new Sustainable Development Scheme for Wales interprets sustainable development as:

"In Wales, sustainable development means enhancing the economic, social and environmental wellbeing of people and communities, achieving a better quality of life for our own and future generations:

- *In ways which promote social justice and equality of opportunity; and*
- *In ways which enhance the natural and cultural environment and respect its limits - using only our fair share of the earth's resources and sustaining our cultural legacy.*

Sustainable development is the process by which we reach the goal of sustainability."

- 15.4. To achieve forms of development that are more sustainable than previous projects, proposals must strike an acceptable balance between maximising resource and energy efficiency; minimising environmental impacts; delivering social benefits; and supporting a healthy economy.
- 15.5. The land use planning process therefore offers the opportunity to deliver substantial progress towards achieving the Welsh Assembly Government Sustainable Development priorities. In order to achieve this goal, the Sustainable Development Scheme for Wales sets the following targets:
- 80-90% reduction in use of carbon-based energy to build on existing 3% per annum reduction target in Wales and ambitions to make all new buildings zero carbon buildings and to move to producing as much electricity from renewable sources by 2025 as consumed;
 - Move towards becoming a zero waste nation. This will build on our stated goal of achieving 70% recycling of municipal waste by 2025;
 - Travel less by car, and create a stronger connection with local economies and communities;
 - Source more of our food locally and in season; and
 - Do all this in ways which make us a fairer society, building on our commitments to tackling child

and fuel poverty.

[Planning Policy Wales, Edition 3, July 2010 \(Ref. 2\)](#)

- 15.6. Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Assembly Government and is supplemented by a series of Technical Advice Notes (TANs). PPW states that the planning system has a fundamental role in delivering sustainable development in Wales. It must help in the process of balancing and integrating these objectives in order to meet current development needs while safeguarding those of the future. In particular the planning system, through both development plans and the development control process, must provide for homes, infrastructure, investment and jobs in a way which is consistent with sustainability principles and the urgent need to tackle climate change. Sustainability objectives set out in PPW include:
- Developments should plan for the impacts of climate change, and reduce the vulnerability of the natural environment and built environment to climate change;
 - Development proposals should mitigate the causes of climate change by minimising carbon and other greenhouse gas emissions associated with their design, construction, use and eventual demolition;
 - Previously developed (or brownfield) land should, wherever possible, be used in preference to greenfield sites, particularly those of high agricultural or ecological value;
 - Mixed-use developments should be encouraged;
 - High density urban development is encouraged, especially near to major transport nodes or near corridors well served by public transport;
 - Development proposals should reduce car dependence by facilitating walking, cycling and public transport use;
 - Development proposals should provide access by public transport to work, education, health facilities, shopping, leisure and social services;
 - Development proposals should provide a range of employment, leisure and community facilities;
 - A range of dwelling types and tenures, including affordable housing, should be provided;
 - Biodiversity should be protected and enhanced;
 - Buildings should use passive design and efficient technologies to reduce energy use;
 - Schemes should incorporate low and zero carbon energy technologies;
 - Developments should ensure access to open spaces; and
 - Development should be appropriately sited with regards to flood risk.

[TAN 22: Sustainable Buildings, 2010 \(Ref. 4\)](#)

- 15.7. TAN 22 was published by the Welsh Assembly Government in June 2010. It recognises that the planning system can play an important part in improving the sustainability of new developments whilst also tackling climate change. The purpose of this TAN is to provide technical guidance on the implementation of the national planning policy on planning for sustainable buildings through the planning application process. The TAN provides an introduction to sustainable buildings and the standards of assessment, the design solutions that may be employed in meeting these standards, and further design guidance on delivering low carbon buildings.
- 15.8. TAN 22 reiterates the need to consider the energy hierarchy when designing new buildings. Developers should look to achieve the minimum required carbon standard through passive design

and energy efficiency first, before considering how further emission savings can be achieved through the use of low and zero carbon (LZC) energy technologies.

Local Policy

Torfaen County Borough Adopted Local Plan, 2000 (Ref. 5)

- 15.9. One of the primary aims of the Local Plan is to ensure that development within the County Borough is sustainable, and protects non-renewable and finite resources for future generations. Proposals for Development will be permitted where the proposal is consistent with the principles of sustainable development.

South Sebastopol Adopted Development Framework, 2004 (Ref. 6)

- 15.10. The South Sebastopol Adopted Development Framework outlines the principles that are proposed to guide the Site's development. The Framework was adopted by TCBC following a period of public consultation, and has the status of Supplementary Planning Guidance.

- 15.11. The Framework:

'establishes the broad form and structure of a proposed new integrated and sustainable community at South Sebastopol. It is not its intention to set rigid standards but to provide future designers with clear guidance on design principles that are capable of creating an exciting and modern living environment, whilst at the same time respecting fully the inherent quality of the South Sebastopol environment and landscape'.

Gwent Structure Plan 1991 – 2006, 1996 (Ref. 7)

- 15.12. The overall goal of the Gwent Structure Plan is to accommodate the necessary growth while minimising its impact, and where possible enhancing the environment and quality of life.
- 15.13. Policy ENV 1 of the Structure Plan states that proposals which make a positive contribution to energy conservation will be supported. This includes the use of low energy building forms, improved site layouts, better design of settlements, and closer links between employment, houses and community facilities,

Torfaen County Borough Council Local Development Plan (LDP) 2006 – 2021, Preferred Strategy , 2010 (Ref. 8)

- 15.14. Although not yet adopted, the emerging LDP provides an indication of the future sustainability policy requirements in the Borough. The Preferred Strategy includes 19 objectives. Objectives of relevance to sustainability and the Site include:

- To promote health and wellbeing through the provision of community facilities, leisure and outdoor recreational opportunities, accessible to all.
- To ensure that the location of development does not result in unacceptable risk from flooding, subsidence or health hazards.
- To ensure the highest quality of design in all developments and delivering safe and attractive environments.
- To conserve and enhance the distinctive cultural and historic resources of the County Borough.
- To ensure that all new development reflects best practise in sustainable design and location, construction and operation.

- To protect, manage and enhance biodiversity and ecological networks across Torfaen.
- To minimise climate change impacts through reduced emissions of greenhouse gases in both new and existing development.
- To protect Greenfield land by enabling and promoting the most efficient use of brownfield sites for redevelopment across Torfaen.
- To ensure all development contributes to improving water quality, protecting water supply and maximising the efficiency of water consumption.
- To ensure the allocation of an appropriate quantity and variety of housing sites to deliver high quality choice in sustainable locations, well served by essential facilities and accessible by a range of transport modes.
- To develop integrated and efficient transport infrastructure, public transport and communication networks which are accessible and attractive to all, and encourage a reduction in private car use.
- To ensure people and organisations reduce, reuse and recycle waste and to foster this through the provision of regional and local waste management facilities.

15.15. The LDP will mitigate further climate change and also adapt to those effects of climate change which are already inevitable by prioritising the allocation of development sites which are not building in areas at risk from flooding or land instability. The development of urban and brownfield sites will be prioritised. The Preferred strategy also states that the LDP will require:

- A minimum 10% reduction in CO₂ emissions from all major new developments;
- A financial contribution from all non BREEAM Excellent developments to improve the carbon footprint of existing buildings;
- Development to be resource efficient;
- Development to consider small to medium renewable energy generation;
- Ensure that developments are designed to be resilient to the likely future effects of climate change; and
- Maintain habitat connectivity to allow wildlife to adapt to a changing climate.

Corporate Policy

Barratt Developments Plc 'Corporate Responsibility' and 'Environmental' Policies, 2009 (Ref. 9)

15.16. Barratt Developments Plc has an established Corporate Responsibility policy, which includes various commitments and targets relating to sustainable development. In 2009 they set a target to increase the amount of waste segregated for recycling on-site during construction by 7% and reduce the volume of waste produced per unit legally completed by 7% to achieve their Charter objective of reducing their impact from waste by 20% over three years. Both of these targets were exceeded and the charter objective was achieved.

15.17. In 2009 they also set a target to reduce the amount of energy used in construction by 7% in order to achieve the Charter objective to reduce their impact from energy by 20% in three years. The key performance indicator used to monitor this is the average amount of CO₂ emitted per unit legally completed. This metric reduced by approximately 1% in 2009 to 1,787 kg CO₂/unit. Although the target of 7% was not achieved Barratt are focusing on achieving the target in future years and are undertaking energy audits at several developments to understand where they use energy and how they can reduce their energy consumption.

Assessment Methodology and Significance Criteria

15.18. In order to gain a detailed understanding of the guiding sustainability policy framework relevant to the Site a desk based review of all relevant national, regional and local planning policy was undertaken. The desk based policy review enabled key sustainability objectives to be identified against which the Development proposals have been assessed. A brief summary of the key documents that were reviewed as part of this process is included in the preceding sections. In light of the above policy context and guidance, ten underlying sustainability principles have been identified relevant to the proposed Development:

- Energy Use and Carbon Emissions;
- Reuse of Land and Buildings;
- Resource Efficiency;
- Waste;
- Pollution;
- Transport;
- Natural Environment;
- Community and Social Needs;
- Economic Prosperity; and
- Climate Change Adaptation.

15.19. The proposals have been appraised against the identified sustainability principles. Due to the current nature of the Site, a direct impact assessment against the prevailing baseline conditions would be irrelevant. The impact assessment has therefore considered the extent to which the proposals accord with current and future sustainability policy objectives. However, the nature of the planning application means that the proposals are not required to comply with some of the current planning policy such as the latest policy in PPW or TAN 22. This is because the original application was submitted prior to this coming into force (the planning context of the application is described in detail in Chapter 1). The following significance criteria has been used in making the impact assessment:

Table 1: Significance Criteria

Major adverse	The proposals fail to meet the majority of the requirements of current/applicable sustainability policy and objectives, and are not in accordance with any future sustainability policy requirements and objectives.
Moderate adverse	The proposals fail to meet a considerable number of the requirements of current/applicable sustainability policy and objectives, and are not in accordance with any future sustainability policy requirements and objectives.
Minor adverse	The proposals fail to meet a small number of the requirements of current/applicable sustainability policy and objectives, and are not in accordance with any future sustainability policy requirements and objectives.

Negligible	The proposals are in general accordance with the current/applicable sustainability policy and objectives.
Minor beneficial	The proposals go a small way beyond the requirements of current/applicable sustainability policy and objectives, or are in accordance with some of the future sustainability policy requirements and objectives.
Moderate beneficial	The proposals go a considerable way beyond the requirements of current/applicable sustainability policy and objectives, or are in accordance with most of the future sustainability policy requirements and objectives.
Major beneficial	The proposals go well beyond the requirements of current/applicable sustainability policy and objectives, and start to go beyond the future sustainability policy requirements and objectives.

Consultations

15.20. TCBC has confirmed that the ES should:

'consider a sustainability chapter to include the environmental issue of climate change and what the developer was proposing as regards carbon reduction on the site. Consideration should be given to the Welsh Assembly Government's Sustainable Development policies.'

15.21. This Chapter has been prepared in response to these comments.

Baseline Conditions

The existing Site area is approximately 9 hectares (ha) and is predominantly used for agriculture, with some areas of woodland. The Monmouthshire and Brecon Canal lies to the west of the Site in a north-south orientation. A dismantled railway line, which is now utilised as a cycle track, runs north-south within the Site's boundary and separates the Site in two. A disused listed barn lies within the extent of the application area (although it does not form part of the application Site) and the Site adjoins the curtilages of two existing dwellings. Due to the nature of sustainability and the fact that the Site is currently largely undeveloped, a direct impact assessment against the prevailing baseline conditions would be irrelevant and therefore the baseline conditions are not considered further. However whilst the Site is greenfield, it does form part of the wider South Sebastopol development area which has been designated for housing, the Site has a low ecological value, low flood risk and is not subject to any archaeological designations. Further there are no significant air quality and noise issues on the site. Therefore the site is considered suitable for residential development.

Likely Significant Effects

The following sections outline how the proposals accord with current and future sustainability policy objectives. The proposed Development will be constructed over approximately a 5 year time period (2012 – 2017), and during this time sustainability standards will continue to be tightened. For example, permitted carbon emissions will continue to be tightened as Part L of the Building Regulations (Ref. 15.12) are updated. Energy Use and Carbon Emissions

15.22. In line with Barratt's policies and sustainability guidelines, energy consumption during construction

will be minimised where possible. This will include managing energy use on Site during construction, using energy efficient plant and equipment where available, and sourcing materials sustainably, including efforts to reduce the energy required to transport them to Site.

- 15.23. All buildings will be required to comply with the requirements of the version of Part L of the Building Regulations which is valid at the time of registration. The requirements of Part L will be progressively tightened over the course of the next 5 years. In 2013 the requirements will be updated to require a 44% improvement over the requirements of the 2006 version of Part L, and in 2016 the requirement for zero carbon residential buildings will be introduced. Given the likely duration of the construction phase it is possible that later phases will have to meet the requirements of future versions of Part L.
- 15.24. It is expected that building carbon emissions will be minimised through the use of passive design measures, thermal efficiency and efficient building services and will maximise the potential for future renewable energy supply and use, in line with regulatory requirements. This would include, where possible, orientating the dwellings to maximise solar gain and locating the longest face of the residential properties towards the south or west to maximise light into the rooms, particularly in the late afternoon and evenings, when most people tend to be at home.
- 15.25. The locations of the principal habitable rooms within the Development will be located to reduce the energy demand, priority will be given to locating these rooms in areas which receive the most natural light - therefore predominantly south and west facing. Cloakrooms, toilets and other low use rooms will, where possible, be located in parts of the dwelling receiving lower levels of natural light. Due to the potential for kitchens to become hot during cooking, the kitchens may benefit from being located on the north facing side of the building to minimise solar gains, which could increase heat levels. The majority of the dwellings on-site comprise of semi-detached and detached houses and therefore the potential for daylight will be maximised. Similarly amenity space would receive good levels of daylight and not be significantly overshadowed. Although the locations of the rooms are important in determining levels of natural light and heat, views from the rooms are also important and their location may alter as a result. The views and potential to provide appropriate levels of natural lighting and heating will therefore be considered in conjunction with each other.
- 15.26. Efficient systems and appliances will be installed. Energy efficient gas condensing boilers will be used to provide space heating and hot water. Internal lights throughout the Development will be installed with energy efficient light bulbs where possible, and where appropriate external lighting will utilise energy efficient LEDs. Electricity meters will be installed to allow users to monitor how much electricity they are using and set targets for reducing their consumption. If fitted by the developer any appliances will be 'A' rated energy efficient appliances. If these are not fitted, guidance on the benefits and availability of 'A' rated energy efficient appliances will be provided.
- 15.27. The whole Development will be designed to allow for natural ventilation and openable windows. This will decrease energy demand by reducing the need for mechanical ventilation and cooling. The thermal performance of the glazing and building envelope will meet the requirements of the current Building Regulations.
- 15.28. The opportunities for incorporating on-site renewable energy will be maximised through the use of passive design measures for the dwellings to ensure the overall energy demand is reduced, however at this stage no commitment to any on-site contribution from renewable energy technologies has been made as it is not required by the applicable planning policy.
- 15.29. Carbon emissions associated with transport will also be reduced through sustainable transport measures. Further details of these measures are provided in the 'Transport' section below.

15.30. Based on the commitments made, the proposals are in general accordance with the current applicable sustainability policy and objectives but do not go beyond these requirements. Accordingly the proposals are predicted to have a **negligible** effect on energy use and carbon emissions.

Reuse of Land and Buildings

15.31. The allocated Site is greenfield in nature. The existing Site is predominantly used for agriculture, with some areas of woodland. A dismantled railway line, which is now utilised as a cycle track, runs north-south within the Site's boundary and separates the Site in two. A disused listed barn lies within the extent of the application area (although it does not form part of the application Site) and the Site adjoins the curtilages of two existing dwellings.

15.32. The Site is allocated for development in the adopted Local Plan, however, the overarching sustainability objective of prioritising the use of previously developed land has not been met, and therefore the proposals are predicted to have a **minor adverse** effect on the sustainability objective of reusing land and buildings. Notwithstanding this, the development Site has been committed to within the Local Plan and as such it is understood that the Site's selection for inclusion within the Plan was the result of a sequential assessment of all potentially suitable/sustainable development sites.

Resource Efficiency

15.33. In line with Barratt's policies and sustainability guidelines consideration will be given to selecting materials with low environmental impacts. This includes using timber from accredited sustainable sources, and obtaining other materials from companies with established environmental management systems in place wherever possible.

15.34. The materials that are proposed for the Development will be sourced from local and regional suppliers where possible and the specification will take into consideration the environmental impact ratings as outlined in the *Green Guide to Specification*. The materials specified within the Development will be considered for their recycled content, low embodied energy and for their future potential to be recycled. Materials will be sourced from the local area, where possible.

15.35. The Development will include a number of measures to reduce potable water demand and improve water conservation including: Water efficient sanitary ware such as low flow WCs and showers in all elements of the scheme (including a commitment to achieve a design specification to achieve consumption of 105 litres per person a day for the residential dwellings); and water metering. The design of the landscaping will aim to minimise the need for potable water use.

15.36. Energy efficiency measures are discussed in the 'Energy Use and Carbon Emissions' section above. Waste minimisation is discussed below in the 'Waste' section.

15.37. Based on the above commitments, the proposals are in accordance with the applicable sustainability policy and objectives, and are likely to meet some of the policies relating to resource efficiency contained within PPW and the emerging Local Development Plan. Accordingly the proposals are predicted to have a **minor beneficial** effect on resource efficiency.

Waste

15.38. A Site Waste Management Plan (SWMP) is now a legal requirement under the Site Waste Management Plans Regulations 2008 (Ref. 15.14). Initiated by the Client, the appointed Principal Contractor will then be required to develop and implement a SWMP. In line with Barratt's policies

and sustainability guidelines waste generated during the construction phase will be minimised with the rate of recycling and re-use maximised in line with their corporate objectives.

- 15.39. TCBC operates a Twin Bin recycling scheme, which provides a black bin for general non recyclable waste, a green bin for garden waste and kitchen food scraps, and a black box for dry recyclable items such as tins, cans, empty aerosols, paper, glass, textiles and shoes and plastic bottles. Adequate space will be provided within the masterplan for the storage and collection of these vessels, within close proximity of the entrance to the property.
- 15.40. Based on the above commitments, the proposals are in accordance with the applicable sustainability policy and objectives, and are likely to meet some of the policies relating to waste management contained within PPW and the emerging Local Development Plan. Accordingly the proposals are predicted to have a **minor beneficial** effect on resource efficiency.

Pollution

- 15.41. As detailed in Chapters 11, 12, 13 and 14, the construction phase of the Development could generate an increase in the concentrations of some pollutants, in particular surface water pollution from suspended solids from the mobilisation of silts and sediments during earth works and from the movement of heavy plant; dust emissions from earthworks; and noise emissions from site activities. During construction, potential contaminative sources will be present on-site, e.g. fuel tanks, cement etc. Appropriate construction site protocols will be implemented to ensure that potential sources of pollution are contained and managed so as to minimise any potential effects.
- 15.42. The proposed end users of the Site are not likely to give rise to sources of future ground contamination. Surface water runoff from areas of hardstandings such as car parking or highways will pass through interceptors or trapped gullies prior to discharging to the watercourses.
- 15.43. As detailed in Chapter 14: Air Quality, the increased traffic generated by the proposed Development will have a minor adverse effect on local air quality. However, as outlined in Chapter 9: Transportation and Access, Residential and Commercial Travel Plans have been produced as part of the Transport Assessment for the masterplan. The implementation of the Travel Plans will encourage travel by modes of transport that are more sustainable than the private car and measures to facilitate walking and cycling within the Development. By minimising vehicle trips associated with the Development this will reduce the predicted effect on local air quality.
- 15.44. It is considered that the Development proposals are in accordance with the applicable sustainability policy and objectives, and are likely to meet some of the policies relating to pollution contained within PPW and the emerging Local Development Plan. Accordingly the proposals are predicted to have a **minor beneficial** effect on pollution.

Transport

- 15.45. The proposals for South Sebastopol will create an integrated mixed use neighbourhood where people can walk or cycle to a range of facilities. Facilities on the Site will include playing fields and play spaces, and a Village Centre.
- 15.46. The aim is to make South Sebastopol a safe and convenient place for pedestrians and cyclists while accommodating the motorcar in a traffic calmed environment in accordance with the latest version of Manual for Streets. The two principal vehicular access points are in the east of the Site in Cwmbran Drive, with possible secondary access to the residential areas north and south of the Site.
- 15.47. The existing footpath and cycle network which runs from north to south and east to west on the

Site will be incorporated into the scheme with the aim of safeguarding existing routes and providing new linkages within the Site, especially to the village centre and open space areas, and to adjoining routes and areas. They will be attractive routes which are direct, safe and convenient. New footpath and cycle ways will reinforce the linkages with the existing surrounding housing, especially to the north. The overall footpath cycleway network will be designed to link the individual housing areas with each other and specific attractions such as the Village Centre, linear park and the bus route. It will also retain the National Cycle Route along the canal towpath. No pedestrian access through the areas of wet woodland is proposed in order to protect this area of ecological value. Residential and Commercial Travel Plans have been produced as part of the Transport Assessment. The implementation of the Travel Plans will encourage travel by modes of transport that are more sustainable than the private car and measures to facilitate walking and cycling within the Development.

- 15.48. The ability for the Development to be well served by public transport is fundamental if the Development is to be sustainable in transportation terms. It is proposed that the existing bus route will be redirected through the Site. The Main Street will be designed to accommodate the bus route, and any traffic management features which may be provided within the Site will be 'bus friendly'. The internal Site layout will be designed such that no dwelling will be more than 400m from a bus stop, and in general most dwellings will be within 300m. Bus stops will have shelters, information boards and easy access kerbs for use with low floor buses.
- 15.49. As the Development proceeds, it is expected that public transport provision will be extended, with bus services ultimately using all four accesses into the Masterplan site. The provision of bus services upon completion of, and through early phases of the Development, will be agreed with TCBC following the production of a detailed phasing plan (who will subsequently liaise with bus service providers). Bus routes servicing the Site would provide a link to both the bus and train stations at Cwmbran.
- 15.50. Based on these commitments, the proposals are in accordance with the applicable sustainability policy and objectives, and are likely to meet some of the policies relating to transport within PPW and the emerging Local Development Plan. Accordingly the proposals are predicted to have a **minor beneficial** effect on transport.

Natural Environment

- 15.51. As detailed in Chapter 5: Nature Conservation and Ecology, the Site has many existing features of ecological value. The proposed Development has endeavoured to retain as much of the existing higher value habitats and features of the Site as possible. All areas of woodland will be retained and the hydrological continuity with the wet woodlands will be maintained. The hedgerows identified as being of high ecological quality will be retained on the Site. The canal will be preserved as a navigable waterway and all aspects of the Development that will impact upon it will be given the highest consideration with regard to ecological impacts. Principal wildlife corridors associated with the Site will be maintained wherever practicable.
- 15.52. The areas to be retained will create substantial blocks of mixed habitats that can be sustainably managed for wildlife in the long term. The long term preservation and management of some areas of scrub vegetation and grassland associated with locally important invertebrate species will be supported.
- 15.53. The areas to be retained will comply with the Local Plan requirement for a 'green wedge' through the proposed Development. The design will place infrastructure at points of minimum ecological impact.

15.54. The proposed Development's landscape strategy would create new areas of hedgerows, semi-improved grassland and tree planting. This would be done using native species and/or species of benefit to wildlife indicative of the local area. The landscape strategy would increase the botanical biodiversity of the Site. Once fully established, deciduous trees would provide habitat for invertebrates, and therefore foraging opportunities for birds and bats and other wildlife.

15.55. As detailed in Chapter 5, the overall impact of the proposals on Ecology and Nature Conservation is predicted to be negligible due to the ability to mitigate against any loss of disturbance of habitat and species. The landscape strategy would ensure there is an increase in botanical biodiversity of the Site depending on the landscape design within each plot. At this stage the predicted effect of the proposals on this sustainability objective is **negligible** to **minor beneficial**, dependant on final detailed landscape design.

Community and Social Needs

15.56. The Development will respond fully to the principles set out in the ODPM document 'Safer Places: The Planning System and Crime Prevention (2004)' (Ref. 15) which states that 'designing out crime and designing in community safety should be central to the planning and delivery of new development'.

15.57. A Village Centre will be provided in later phases in the northern part of the Site, providing a range of facilities. The proposed Village Centre is in close proximity to the existing housing to the north of the Site and will be connected to the proposed housing within the Development via several pedestrian and cycle routes, as well as a vehicular route from Oaklands Drive. This will help to integrate the proposed Development into the existing community. The Village Centre streets and the loop road as it passes the centre will be traffic calmed to give pedestrians priority.

15.58. A range of housing types are proposed, including affordable housing, which will help to create a balanced community of all ages and incomes. A total of 199 residential dwellings are proposed and will achieve the following mix:

- 1.5% 1 and 2 bed apartments;
- 10% 2 bed houses;
- 7% 3 bed houses;
- 69% 4 bed houses;
- 7% 5 bed houses; and
- 5.5% 6 bed houses.

15.59. Two areas of play space are proposed on the Site and these areas will link to the wider green network and cycle and footways, to key locations and will provide opportunities to provide both informal kick about areas and picnic spaces as well as areas managed for their nature conservation interest. Existing sport facilities are located to the west of the Site.

15.60. Based on the above commitments and proposals, the Development is in accordance with the applicable sustainability policy and objectives, and are likely to meet some of the policies relating to community and social needs contained within PPW and the emerging Local Development Plan. Accordingly the proposals are predicted to have a **minor beneficial** effect on community and social needs.

Economic Prosperity

- 15.61. The proposed Development will provide employment opportunities during the construction period, which will last at least 10 years. The local work force will also have a secondary benefit of spending in local businesses and there is the potential for benefits to the local supply chain depending on where materials are sourced from. It is likely that a proportion of materials will be sourced from the local area to help meet Barratt's sustainability policy objectives relating to energy and materials.
- 15.62. The proposed Village Centre will provide employment opportunities in proposed shops and businesses. The proposed residential population at the Site will provide additional customers to existing and proposed local businesses and service providers, underpinning the viability of existing and proposed local businesses.
- 15.63. Based on the Development proposals and the above commitments, the proposals are in accordance with the applicable sustainability policy and objectives, and are likely to meet some of the policies relating to economic prosperity contained within PPW and the emerging Local Development Plan. Accordingly the proposals are predicted to have a **minor beneficial** effect on the sustainability objective of economic prosperity.

Climate Change Adaptation

- 15.64. Scientists predict an increase in wet and windy weather in the UK in future as a consequence of climate change. A landscaping belt will be provided around the majority of the perimeter of the Site and within the Site itself, such as along the edges of internal roads. This will dissipate wind that may be funnelled into the more open areas. Long straight roads have been avoided and an irregular street pattern favoured to avoid channelling of wind.
- 15.65. As detailed in Chapter 12: Water Resources, the Environment Agency's Flood Map indicates that the Site is not at risk of fluvial flooding from main rivers (i.e. the Afon Lwyd and the Blaen Bran). The TAN 15 Development Advice Map shows parts of the eastern boundary of the Site around the A4051 to lie within Zone B, denoted as areas known to have been flooded in the past. This Zone B classification appears to relate to the Streams crossing the Site, and is likely to be based on historical fluvial deposits as the flood zone does not correlate with the existing topography. There is no knowledge of any history of flooding to the Site, however any risk of flooding will be mitigated through maintenance and improvements to the on-site water courses.
- 15.66. It is proposed to provide separate foul and surface water drainage systems, and to implement a Sustainable Urban Drainage System (SUDS) for the surface water drainage. One of the key aims of utilising SUDS is to replicate the quantity and quality of existing Site runoff, to ensure that the hydrological status quo is retained and thereby ensuring that the flood risk to third parties is not exacerbated.
- 15.67. Runoff from impermeable areas will be discharged via a controlled and attenuated discharge to the on-site watercourses, which then subsequently discharge into the Afon Lwyd. This will require attenuation balancing ponds to ensure that the rate of runoff from the Development is not increased. The proposed surface water strategy includes for three storage ponds to provide attenuation located within the Site. Surface water runoff from areas of hardstandings such as car parking or highways will pass through interceptors or trapped gullies prior to discharging to the watercourses.
- 15.68. Three storage ponds are proposed to attenuate stormwater runoff. Storage pond 1 has been designed to allow for a 100 year return period with 20% climate change for a small sub catchment

area within the Site and attenuated to Greenfield runoff rates. A storage allowance of 625m³ has been estimated for the balancing pond volume. Storage ponds 2 and 3 serve the same catchment area and have been designed to the same criteria as pond 1. The catchment area for ponds 2 and 3 is much larger at 4,140m³ and accounts for additional catchment areas outside of the Site boundary, which are to be developed in a later phase of the overall masterplan.

- 15.69. With regards to adapting to increased temperatures, the dwellings will be designed for natural ventilation and to consider opportunities for solar shading to ensure that occupant comfort is achieved.
- 15.70. Based on the above proposals, the Development is in accordance with the applicable sustainability policy and objectives, and are likely to meet some of the policies relating to economic prosperity contained within PPW and the emerging Local Development Plan. Accordingly the proposals are predicted to have a **minor beneficial** effect on the sustainability objective of adapting to climate change.
- 15.71. The introduction of formalised drainage on-site would effectively prevent surface water discharging off-site and as such the risk of downstream flooding in the sewers would be prevented. This is a significant improvement on the existing situation and the works will also accommodate the proposed Development. In this case the likely significant effect following completion of the Development can be regarded as a **major beneficial**.

Mitigation Measures

- 15.72. To maximise sustainability during the construction phase the contractor will prepare and implement an Environmental Management Plan (EMP), which will include monitoring and reporting requirements. A full Site Waste Management Plan (SWMP) will also be prepared and implemented, which will include targets for waste minimisation and recycling.
- 15.73. The assessment of likely significant effects during the operational phase, as detailed in the sections above, largely relies on mitigation measures which are inherent to the Development, and consequently these mitigation measures have been taken into consideration when establishing the significance of the effect. Such measures include the retention of areas of ecological value, the provision of community facilities such as public open space and play spaces, and the connectivity of the Site to the local area through pedestrian and cycle links.
- 15.74. When considering the predicted effect of detailed design items, reference has been made to Barratt's and corporate sustainability policies and guidelines. Adhering to these policies and guidelines will maximise the sustainability of the proposals, specifically in relation to sustainable resource use.

Residual Impacts

- 15.75. With the exception of the 're-use of land and buildings' objectives no adverse impacts are proposed. This minor adverse impact cannot be mitigated as it is due to the use of greenfield land, which cannot be altered. However, as set out above the Site is allocated for development in the Local Plan and the Site's selection for inclusion within the Plan was the result of a sequential assessment of all potentially suitable/sustainable development sites. Therefore it is considered that Site suitable for residential development.
- 15.76. As detailed in the 'Mitigation' section the majority of mitigation measures are inherent to the Development Site. Consequently the residual impacts are those detailed in the assessment of likely significant effects.

Summary

- 15.77. This Chapter presents an assessment of the extent to which the Development accords with national, regional and local sustainable development policies and guidance. It also describes the approach of the Applicant towards achieving a more sustainable development, in relation to a range of key sustainability issues.
- 15.78. The importance of sustainable development is highlighted by a number of Welsh Assembly Government strategies and planning policy documents and there is a growing acceptance of an imminent need to consider and tackle climate change. Many definitions of sustainable development exist, although the common objective for all is the integration of economic, social and environmental issues, to ensure a better quality of life for people today, without compromising the needs of future generations. A key mechanism for delivering the principles of sustainable development within Wales lies within the national, regional and local planning system.
- 15.79. An assessment has been undertaken of the Development proposals against the key applicable sustainability policy and objectives. The proposals have been found to be generally in accordance with applicable sustainability policy and objectives, and also accord with some of the more recent and emerging sustainability policy objectives. The main non-compliance, and consequent minor adverse impact, with sustainability policy is the use of greenfield land opposed to previously developed land, however, the Site is allocated for development under the adopted Local Plan. Negligible and minor beneficial effects are predicted for all other sustainability issues. Sustainable design and construction would be implemented through the use of an EMP and SWMP and through application of Barratt sustainability policies and guidelines at the detailed design stage.

References

1. Welsh Assembly Government (May 2009) 'One Wales: One Planet - The Sustainable Development Scheme of the Welsh Assembly Government'.
2. Welsh Assembly Government (July 2010) 'Planning Policy Wales, Edition 3'
3. Welsh Assembly Government (November 2010) 'Policy Clarification Letter cl-04-10 Planning for Sustainable Buildings – Update to the Code for Sustainable Homes'
4. Welsh Assembly Government (June 2010), Technical Advice Note 22: Planning for Sustainable Buildings (TAN 22)
5. Torfaen County Borough Council (2000) 'Torfaen County Borough Adopted Local Plan'
6. Torfaen County Borough Council (2004) 'South Sebastopol Adopted Development Framework (2004)'
7. Gwent County Council (1996) 'Gwent Structure Plan 1991 – 2006'
8. Torfaen County Borough Council (2008) 'Torfaen County Borough Council Local Development Plan (LDP) 2006 – 2021, Preferred Strategy'
9. Barratt Developments Plc 'Corporate Responsibility' and 'Environmental' Policies ' available from <http://www.barrattdevelopments.co.uk/barratt/en/csr/planet>
10. HMSO (2010) Approved Document L1A: Conservation of fuel and power (New dwellings) (2010 edition) Part L
11. HMSO (2008) Site Waste Management Plans Regulations 2008
12. ODPM (2004) 'Safer Places: The Planning System and Crime Prevention'

16. Non-Technical Summary

Ecology and Nature Conservation

- 16.1. A comprehensive sweep of ecological surveys have been undertaken at the site (type and scope agreed with CCW and TBC) have concluded that the site is currently of negligible to County ecological value.
- 16.2. Though there would be change to the existing habitats of ecological value at the site as a result of the Development, the extent and nature of the proposed enhancement inherent to the Development design and additional mitigation including the production of an Ecological Management Plan during construction and a Landscape and Ecological Management plan post construction would result in a negligible and beneficial effect to the biodiversity of the site. This would include the introduction of habitats for suitable new species, whilst protecting the existing species of ecological value.
- 16.3. A number of potential and residual effects have been identified for the demolition and construction phases of the Development and once the Development is completed and operational. These are summarised below in Table 2.

Services and Utilities

- 16.4. This document has provided a Strategic Services Option Review of the principal services to facilitate the proposed development. The Strategic Options review is the first phase of the Utilities Strategy. Subsequent sections of the Utilities strategy will deal with detail design elements and procurement of the various services supplies through discussions with the Services Providers.
- 16.5. This chapter on Utilities has assessed the likely impact of the proposed development on the existing services provision to the site and the distribution of services on the site.
- 16.6. The enhancements proposed to the services supplies will result in considerable betterment (considered to be **major beneficial**) in the **long term**.
- 16.7. Table 5 contains a summary of the likely significant effects of the Proposed Development.

Landscape Character and Visual Assessment

- 16.8. The landscape of the site and its surrounds demonstrate many characteristics associated with the landscape of South Wales. The elevated uplands provide attractive settings to linear, southerly orientated settlements within the valleys. In relation to the site itself, the undulating topography, mature vegetative network and isolated cottages combine to create an attractive, semi-rural landscape. However, the presence of urban features, such as settlement and industrial works within the Afon Lwyd valley mean that it cannot be regarded to be devoid of urbanising influences entirely.
- 16.9. Due to the extensive nature of the Development, construction works within the site are likely to have a considerable impact on the site and its immediate environments. However, construction activities will not be seen in isolation and will be viewed in the context of existing built form and industrial works located within Afon Lwyd valley. Furthermore, as a result of the vegetative network, impacts will be largely limited to the site and its immediate surrounds and not be significant to more distant receptors. Impacts to the character and visual amenity are assessed to be of **direct, short-term of negligible to major adverse significance**.

- 16.10. The principles detailed as part of the outline application for Sebastopol have been followed for this detailed planning application for the site. The completed development will see the extension of development into currently agricultural farmland. This is not considered to be out of place with the overall historic development pattern within the Afon Lwyd valley and read as a logical extension to built form of Sebastopol.
- 16.11. The Development has sought to retain and enhance features of value, such as existing buildings, woodland blocks and hedgerow networks, all of which contribute to the sense of place and local distinctiveness of the site and will aid assimilation of the Development into the existing context. As the site within a General Development Area (GDA) as designated within the local plan, the Development will contribute significantly towards policy aspirations for the area, which envisage substantial change to the area. Impacts concluded as part of this assessment must therefore be considered within this policy context. The significance of impacts to landscape and visual receptors as a result of the completed development is assessed to be **direct, long-term of negligible to major/moderate adverse significance**.
- 16.12. Cumulative effects to landscape character and visual amenity of the development in addition to the Avesta II scheme and outline application for the wide Sebastopol site are assessed to be **negligible**.

Archaeological, Built and Cultural Heritage

- 16.13. A number of listed buildings and other non-designated structures are identified as lying close to or surrounded by the site. The setting and fabric of these designated heritage receptors would be safeguarded in the main.
- 16.14. A number of hedgerows and lanes survive within the site and are likely to be of some age. These are incorporated as far as practical within the new plan for development.
- 16.15. The undesignated remains of the old Pontrhydyrun Railway Station House will be retained, but if they have to be removed as part of development, a full record should be made of their fabric, as agreed with the Council and their advisors.
- 16.16. There are no significant remains of earlier than post-medieval date known within the site area and the records for the surrounding area suggest relatively low archaeological potential. However, the paucity of hitherto recorded remains may reflect the dominance of pasture across the site and the absence of past archaeological investigation. Further archaeological investigation will be completed in advance of construction in order to minimise any adverse impact of the proposals.

Water Resources (Water Quality, Hydrology, Flood Risk and Drainage Assessment)

Hydrological Regime

- 16.17. It is considered that, across the site, groundwater is unlikely to be encountered at shallow depth in the cohesive strata. However where bands of sandstone are present, a limited groundwater body may be present. This groundwater is likely to be recharged where the sandstone is exposed at the ground surface or in stream channels. In general, the surface soils of the site commonly weather to a fine grained consistency which significantly reduces the permeability of the strata. Therefore generally the scope for surface water infiltration is limited.
- 16.18. The investigations into the existing hydrological regime have established the natural drainage

patterns for surface water flow between the site and the ultimate points of outfall at the Afon Lwyd. The local Streams convey the surface water either directly to the Afon Lwyd or Blaen Bran or alternatively discharge waters to the Canal. The Canal conveys surface water to the south and excess water is released via overflows to ultimately discharge to the main rivers.

- 16.19. The hydraulic analysis of the surface water flows has established that distinct parts of the site are vulnerable to flooding during extreme rainfall events. The flooding comprises shallow overland flow and the flooding appears to initiate from capacity inadequacies in the main channels. Partial blockages of culverts have also been identified as a cause of localised flooding.
- 16.20. This assessment has identified areas where remedial work is required to channels, culverts, etc and has recommended measures to improve the efficiency of the existing surface water regime.
- 16.21. High level leakage has been identified along some sections of the embankment that retains the Canal. Due to the undesirable effects of the high-level leakage (and the potential for overland flow affecting the development site), it is recommended that the existing section of sheet piling be replaced. The reduced factor of safety against shallow failure, combined with localised internal erosion, may also be responsible for the apparent 'relaxation' of the embankment which has led to loss of freeboard and a noticeable slope across the crest in places.
- 16.22. The water quality in the streams is considered to be reasonably good and the quality of water in the Canal is considered to be fair. The philosophy of approach to be adopted in the detail design of the Master Plan works in general and the application site in particular is to ensure that the quality levels in the streams and the canal do not deteriorate on account of the development works.

Flood Risk

Baseline

- 16.23. The Environment Agency's Flood Maps and the TAN 15 DAM's indicate that the site is not liable to flooding from the Afon Lwyd and Blaen Bran's fluvial regimes.
- 16.24. The various watercourses that pass through the wider Master Plan area do however pose the potential to flood parts of the proposed development areas (through overland flow and in this case, as described in the previous section, a hydraulic model has been constructed to determine the risks.
- 16.25. The steep topography of the existing site and the relatively low permeability of the ground means that there may be potential for sheet flow to develop in the undeveloped agricultural land. In this case, appropriately sized and located land drainage systems should be installed on the up-slope side of each development parcel. This should be considered at each phase of the development.
- 16.26. There are several issues and springs in the vicinity of the site, which indicate the emergence of groundwater at ground level just above the outcrop of an impermeable strata. The treatment of groundwater has been carefully considered and appropriate mitigation works will be undertaken before any terracing of the existing terrain is carried out. Without appropriate mitigation, groundwater flooding could be an issue for future residents.
- 16.27. A combined public sewer exists within the north-east boundary of the site, however the topography of this area is such that should there be a blockage or lack of capacity in this combined sewer then floodwater would escape from a manhole and flow in an easterly direction off-site. The Master Plan layout and drainage design is such that the proposed dwellings would be unlikely to be affected by sewer flooding.

- 16.28. As identified earlier in this report the land to the east of the canal (including the application site) would be affected by flooding should a breach of the eastern bank of the canal occur. The probability of such a failure causing an immediate breach of the canal is considered to be low (this is helped by the relatively wide crest to the embankment), however due to the undesirable effects of the high-level leakage, it is recommended that steps are taken to prevent this from occurring.

Development Options and Flood Mitigation Measures

- 16.29. The flood risk in the wider Master Plan area has been found to be minor with flooding being initiated by current capacity inadequacies in the fluvial regime. Such inadequacies can be effectively addressed by the implementation of appropriate mitigation measures. In this case, fluvial flood risk can be managed and as such should not be a constraint to development.
- 16.30. The existing fluvial regime is in need of some maintenance, which would assist in regularising flood risk, and in this respect several general maintenance/mitigation measures are recommended in this report.
- 16.31. The maintenance/mitigation works relevant to the Phase 1 development should be completed before the commencement of any development works on site. The design and implementation of the maintenance/mitigation measures must be such as not to adversely affect the hydrological status quo.
- 16.32. Flood mitigation measures required to address the potential of a breach occurring in the eastern bank of the canal are described in the Section entitled 'Monmouthshire and Brecon Canal' of this chapter.
- 16.33. Given that there will be an increase in impermeable surfaces as a result of the development proposals it is inevitable that there will be an increase in the rate and volume of surface water runoff unless appropriate mitigation measures are implemented.

Surface Water Drainage Strategy

- 16.34. It is proposed to provide separate foul and surface water drainage systems, and to implement a Sustainable Urban Drainage System (SUDS) for the surface water drainage wherever possible.
- 16.35. Runoff from impermeable areas will be discharged via a controlled and attenuated discharge to the various streamcourses which then subsequently discharge into the Afon Lwyd. This will require attenuation storage ponds to ensure that the rate of runoff from the development is not increased. The proposed surface water strategy includes for three storage ponds to provide attenuation to serve the Master Plan developments. Surface water runoff from areas of hardstandings such as car parking or highways will pass through interceptors or trapped gullies prior to discharging to the watercourses.
- 16.36. It is of primary importance to ensure that the proposed development does not adversely affect areas of ecological sensitivity and in this respect a mitigation strategy has been recommended in this assessment.

Foul Water Drainage Strategy

- 16.37. Two options for a method of connection to the nearby public foul sewerage system are currently being considered by DCWW. A requisition scheme has already been prepared for one of these options, however there are benefits associated with the alternative point of connection. Either options would satisfactorily accommodate the Phase 1 development which is the subject of this

current application.

- 16.38. Where possible the sewage will be conveyed by gravity sewers to avoid the future maintenance costs and liability associated with foul water pumping stations. Due, however, to the topography of the site and the surrounding area and the likely point of connection to the public sewerage system, it is anticipated that a minimum of 2no. on-site foul water pumping stations will be required to serve the Master Plan area.
- 16.39. The enhancements proposed to the on-site drainage system will result in considerable betterment (considered to be **major beneficial**) in the **long term**.
- 16.40. Table 13 contains a summary of the likely significant effects of the Proposed Development.

Noise and Vibration Assessment

- 16.1. An assessment of the potential noise and vibration impacts of the Development has been undertaken. The assessment included a noise monitoring survey at the site to measure the existing noise levels to assess whether the site is suitable for residential development. It also included an assessment of any potential increase in noise or vibration resulting from the Development on local existing and future receptors that are sensitive to noise and vibration.
- 16.2. The most sensitive existing receptors to noise and vibration near to the site are residential properties including those farm buildings which are contained within the boundaries of site but outside of the redline application area.
- 16.3. .During the demolition and construction works a number of steps would be taken to minimise the amount of noise and vibration, which would be implemented through planning conditions and would form part of the agreed Environmental Management Plan. This would include careful selection of modern and quiet plant and machinery, agreed working hours, traffic management measures and monitoring of construction vibration levels. However given the proximity of existing NSRs to the site boundary construction activities would inevitably give rise to some noise and vibration impacts to the receptors closest to the site.
- 16.4. The assessment found that, taking account of existing noise sources, the majority of the site is suitable for residential use. However, proposed residential dwellings located immediately adjacent to the eastern site boundary, would require appropriate choice of materials and design to façades, windows and ventilation to meet guidance; but with these design measures, internal noise would be sufficiently reduced such that residents would be unlikely to be affected by road traffic noise.
- 16.5. The assessment showed that given the adoption of suitable mitigation the Development would generate a negligible amount of additional road traffic noise.
- 16.6. As such, given the adoption of suitable mitigation measures it is considered that the development would be suitable for the proposed use.

Sustainability

- 16.7. This Chapter presents an assessment of the extent to which the Development accords with national, regional and local sustainable development policies and guidance. It also describes the approach of the Applicant towards achieving a more sustainable development, in relation to a range of key sustainability issues.
- 16.8. The importance of sustainable development is highlighted by a number of Welsh Assembly Government strategies and planning policy documents and there is a growing acceptance of an imminent need to consider and tackle climate change. Many definitions of sustainable development exist, although the common objective for all is the integration of economic, social and environmental issues, to ensure a better quality of life for people today, without compromising the needs of future generations. A key mechanism for delivering the principles of sustainable development within Wales lies within the national, regional and local planning system.
- 16.9. An assessment has been undertaken of the Development proposals against the key applicable sustainability policy and objectives. The proposals have been found to be generally in accordance with applicable sustainability policy and objectives, and also accord with some of the more recent and emerging sustainability policy objectives. The main non-compliance, and consequent minor adverse impact, with sustainability policy is the use of greenfield land opposed to previously



developed land, however, the Site is allocated for development under the adopted Local Plan. Negligible and minor beneficial effects are predicted for all other sustainability issues. Sustainable design and construction would be implemented through the use of an EMP and SWMP and through application of Barratt sustainability policies and guidelines at the detailed design stage.

services

- buildings services
- civil engineering
- energy & environmental
- secondment & outsourcing
- structural engineering
- transport planning

sectors

- aviation
- commercial
- communication & technology
- conservation / historic
- education
- energy
- government & defence
- healthcare
- highways
- hotels
- industrial
- marine
- rail
- residential
- retail
- sports & leisure
- transportation
- urban regeneration
- waste
- water

united kingdom

- belfast
- birmingham
- brentwood
- bristol
- cardiff
- cirencester
- derby
- dundee
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- leeds
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- nottingham
- sheffield
- solihull
- warrington



