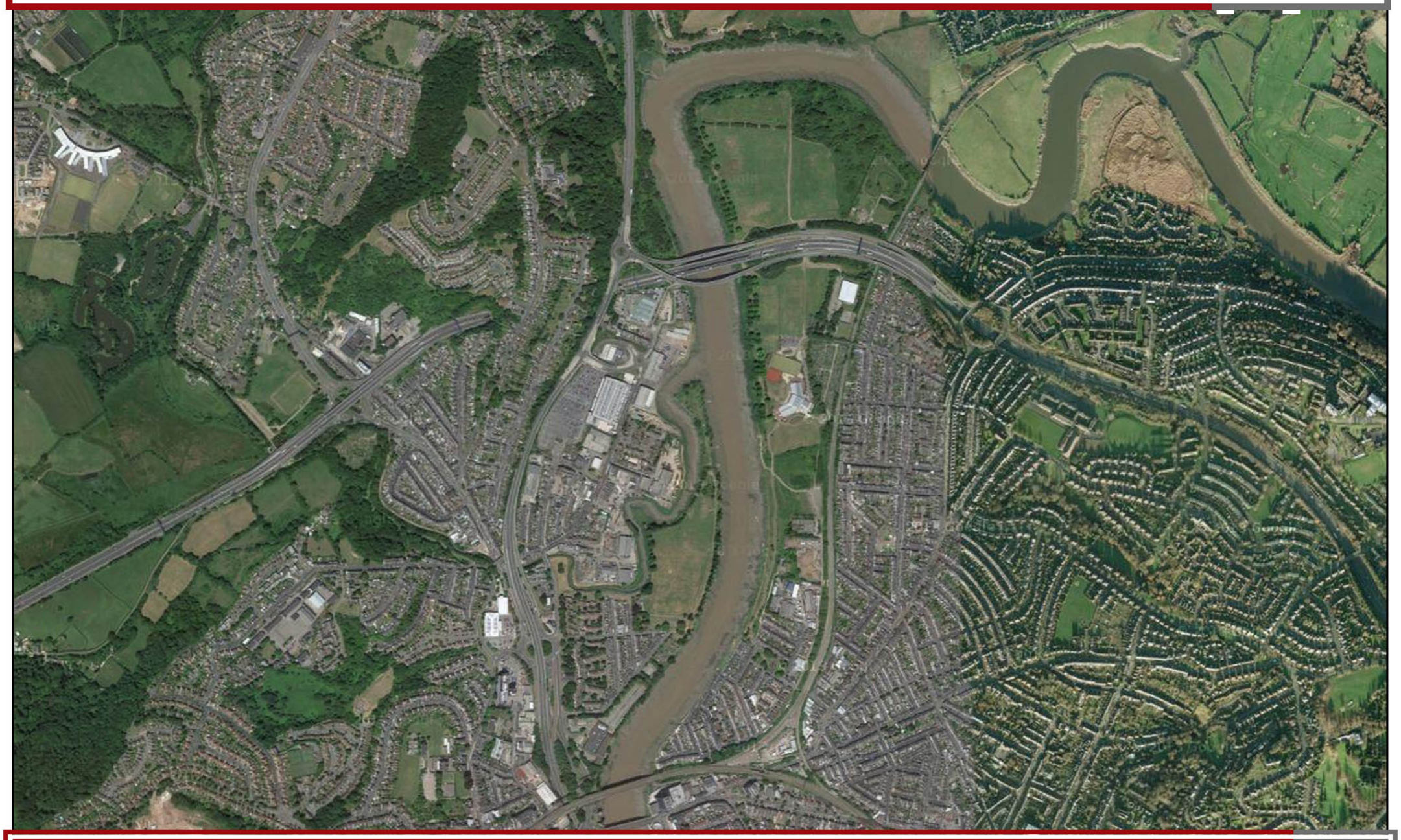
# addendum to environmental statement
# land south of glan usk, newport

april 2014



## addendum

volume 2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# PREAMBLE

Asbri Planning Ltd. has been appointed by the applicant, Greenhill Ltd., to co-ordinate and collate an Environmental Statement (ES) as part of the EIA process for residential development at the land south of Glan Usk Primary School, Herbert Road. The application is in full and was submitted in December 2013 accompanied by an ES. The Local Planning Authority (LPA) reference number is: 13/1279.

This document (entitled 'Addendum to the Full Environmental Statement' hereafter Addendum) relates to the whole of the application site presenting additional information that was requested from internal and external consultees in respect of the planning application. The Addendum also provides additional information in reaction to Newport City Council change in stance in relation to the prediction of future flooding risk following a Welsh Government letter to all Chief Planning Officers.

This Addendum has also been prepared to provide a comprehensive account in regards to the assessment of cumulative impacts of the proposed development together with other recent development in the area. To clarify, cumulative impacts were assessed as an integral part of original ES and the purpose of this addendum is provide further detail as to how this assessment was carried out.

This addendum does not replace the submitted ES but is intended to be read alongside that document in order to deal specific points as summarised above. In some instances there were fundamental changes to the chapter therefore they have been replaced. Where this is the case it has been detailed in the table below.

Since the submission of the application and original ES the proposals have be revised to include two additional units and incorporate changes to the site layout. The total number of dwellings proposed in relation to this application is now 250no. units. It is requested that where 248no. units is referenced in the original ES this now replaced by 250no. units by virtue of this Addendum.

For clarity the chapters of the ES are listed below including a summary of the changes, if any, within the relevant chapter:

| CHAPTER | TOPIC | REVISIONS |
|---|---|---|
| **Chapter 1:** | **Introduction:** | Introduction to the Cumulative Impacts |
| **Chapter 2:** | **EIA Process:** | Brief description of the legislative requires and inclusion of Cumulative Impacts Methodology. |
| **Chapter 2A:** | **Cumulative Impacts** | Additional chapter |
| **Chapter 3:** | **Site Context**: | No Change |
| **Chapter 4:** | **Project Description:** | Description of revised site layout including additional unis, additional drainage mitigation and description of |

| | | |
|---|---|---|
| | | offsite roadworks. |
| **Chapter 5:** | **Planning Policy Context:** | No Change |
| **Chapter 6:** | **Landscape and Visual Impact Assessment:** | Inclusion Cumulative Impact Assessment |
| **Chapter 7:** | **Ecology and Nature Conservation:** | Inclusion Cumulative Impact Assessment |
| **Chapter 8:** | **Site Investigation:** | Inclusion Cumulative Impact Assessment |
| **Chapter 9:** | **Flood Risk:** | Replacement Chapter |
| **Chapter 10:** | **Drainage:** | Replacement Chapter |
| **Chapter 11:** | **Traffic, Transport and Movement:** | Inclusion Cumulative Impact Assessment |
| **Chapter 12:** | **Noise and Vibration:** | Inclusion Cumulative Impact Assessment |
| **Chapter 13:** | **Air Quality:** | Inclusion Cumulative Impact Assessment |
| **Chapter 14:** | **Socio-Economic Context:** | Inclusion Cumulative Impact Assessment |
| **Chapter 15: (Renumbered to allow for additional Chapter):** | **Summary and Conclusions:** | Cumulative Impact Summary and Conclusion |

To avoid any unnecessary duplication but to avoid confusion, this addendum will follow the structure of the original ES including the same chapter names and numbering and where the chapter content remains unchanged a small note will be included.

In order to comply with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, article 19 the submission of the Addendum will be advertised in the local paper, the 'South Wales Argus', and a site notice will also be displayed be on site by the LPA.

# 1. INTRODUCTION

**1.1** Following a review of Chapter 1: Introduction of the ES it is considered it still remains relevant with regards to this addendum.

**1.2** The following are considered necessary additions between paragraphs 1.18 and 1.19 of the ES in order to introduce the consideration of Cumulative Impacts. It is considered appropriate to refer to these as paragraph 1.118a to 1.118h.

## CUMULATIVE IMPACTS

*1.118a* The impacts from a single development may not be significant on their own but when combined with the effect of other past, present and future development could collectively become significant.

*1.118b* The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, Schedule 4, Part 1, paragraph 4 states:

***A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from:***

***(a)the existence of the development;***

***(b)the use of natural resources;***

***(c)the emission of pollutants, the creation of nuisances and the elimination of waste,***

***and the description by the applicant of the forecasting methods used to assess the effects on the environment.***

*1.118c* To accord with the Regulations the ES and this Addendum has clearly and thoroughly assessed the cumulative impacts of the proposed development with any relevant past, present and future projects within the locale.

*1.118d* To summarise the following projects have been considered the most relevant projects in the surrounding area, these developments are now all built out and completed:

- **Outline - 00/0078** – Replacement Primary School, all weather pitch, soft and hard play areas and residential development which includes part of the application site.
- **Reserved Matters - 03/1531** – Erection of replacement primary school, all weather pitch, soft and hard plan and residential development. The school has been built out and therefore this permission is part implemented and remains extant.
- **Full Application 10/1322** – Installation of replacement flood defences, together with the construction of a new section of walling, this permission has been implemented.
- **Full application – 11/0843** - Redevelopment of site comprising 32no. residential units consisting 2, 3 and 4 bedroom houses and flats together with external works at former Evans Halshaw, Turner Street, Newport, NP19 7XH, this planning

permission has been implemented.

*1.118e* There are no permitted developments in the area which are yet to be commenced. Future developments, therefore, are not a relevant consideration of this Addendum.

*1.118f* Notwithstanding the above, it is acknowledged that Crindau on the west banks of the River Usk opposite the Site is identified for future development, evidenced by the publication of a Development Brief by Newport City Council. The development of this site has not been progressed in recent years and therefore no proposed plans could be assessed in terms of this ES.

*1.118g* Should Crindau come forward for development in the future its impacts on the environment would be assessed as part of the planning process. It is at this stage that the cumulative impact of the Crindau development together with the proposed development would be assessed, along with any other relevant developments at that time.

*1.118h* A review of the cumulative impacts will be made in each chapter and the assessment process thoroughly reviewed in Chapter 2A: Cumulative Impacts.

# 2. EIA PROCESS

**2.1** Following review of Chapter 2: The EIA Process of the original ES submitted in support of the full application at land south of Glan Usk Primary School, Herbert Road, Newport the chapter remains relevant with regard to this Addendum however the following paragraphs have been amended so replace the equivalent paragraphs in the original ES.

*2.4* The main steps in the assessment procedure leading up to the publication of the ES are as follows:-

- Scoping;
- Description of the project/development;
- Complete detailed baseline surveys;
- Identification of potential environmental impacts;
- Identification of potential cumulative impact
- Prediction of impacts;
- Evaluation and assessment of significance;
- Identification of mitigation measures and modifications to the design;
- Identification of residual impacts and cumulative impacts; and
- Presentation of results of the EIA in the ES (up to 16 week decision period).

*2.5* The approach involves a close working partnership between those undertaking the EIA and the engineering / design teams. Key stages in the process can be summarised as follows:-

- Identify relevant natural and man-made processes that may change the character of the site;
- Consider the possible interactions between the proposed development and both existing and future site conditions;
- Consider the possible interactions between the proposed development and other recent development and future development the vicinity of the site;
- Using the initial designs of the development, predict the possible environmental effects of construction and operation, both direct and indirect;
- Recommendations can then be made to avoid, minimise or mitigate adverse effects and enhance positive effects. Alterations to the design can then be reassessed and the effectiveness of mitigation proposals determined; and
- Any uncertainties inherent in the methods used, impact predictions made and conclusions drawn would be identified during the course of the assessment process.

*2.7* The determination of the significance of the impacts arising from the proposed development is a key stage in the EIA process. It is this judgement that is crucial to informing the decision-making process. However, defining what is significant is not a simple task. The following criteria have been used (where appropriate to the issue being addressed) in the EIA to inform the assessment of the significance of an impact:-

- Type of impact (adverse/beneficial);
- Extent and magnitude of impact;

- Duration of impact (short term/long term);
- Sensitivity of receptor;
- Impact of development together with other relevant developments;
- Comparison with legal requirements, policies and standards;
- Comparison with applicable environmental thresholds; and
- Effectiveness of mitigation

*2.11* Regulation 2(1) of the Town and Country Planning (EIA) Regulations 1999 (as amended) emphasise the need for the consideration of cumulative effects at a project level. Cumulative impacts relate to 'other' projects and plans and not different aspects of the proposal. However, best proactive guidelines recommend that an EIA should assess the effects of the development cumulatively with other developments when there are likely to be significant effects.

The following paragraphs are additional to following paragraph 2.11.

*2.12* The assessment of cumulative impacts has been integral throughout the EIA process and has been assessed within all study areas of the ES. For clarity, each chapter has assessed the environmental impacts of the development along with other relevant developments and their associated environmental impacts from the outset of the preparation of the ES however this Addendum seeks to report potential cumulative impacts in more detail than presented in the original ES.

*2.13* There is no prescribed approach to assess cumulative impacts in legislation and assessments are defined on a case by case basis. The process used in this ES is unique to this proposed scheme whilst drawing on good practice guidance. The following chapter set outs clearly the methodology in regards to cumulative impacts which has been applied when preparing this ES and provides an overview of the cumulative impacts associated the development in relation to each environmental discipline. The following chapter is an additional chapter and to avoid any confusion in chapter numbering will be entitled 'Chapter 2A: Cumulative Impacts'. The topic specific chapters succeeding chapter 2A will elaborate on the findings of that chapter.

# 2A. CUMULATIVE IMPACTS

## INTRODUCTION

2A.1 Cumulative impacts have been defined as 'impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together the project' (Hyder, May 1999). It is possible the proposed development and other developments in the area together have an impact on the environment. As such is it necessary to assess whether the development of the Site would, when considered with other development, have a cumulative impact on the environment which is adverse and may combined require mitigation.

2A.2 It is acknowledged the assessment of cumulative impacts plays an important role in achieving and demonstrating developments are sustainable and aids decision making for the relevant authority, Newport City Council, in this case.

2A.3 The assessment of cumulative impacts has been integral throughout the EIA process and has been assessed within all study areas of the ES. For clarity, each chapter has assessed the environmental impacts of the development along with other relevant developments and their associated environmental impacts from the outset of the preparation of the ES however this Addendum seeks to report potential cumulative impacts in more detail that presented in the original ES.

2A.4 There is no prescribed approach to assess cumulative impacts in legislation and such assessments are defined on a case by case basis. The process used in this ES is unique to this proposed development whilst drawing on good practice guidance, this is discussed in more detail in the methodology section.

In terms of the criteria of significance, cumulative impacts are assessed in each chapter against the significance of criteria relevant to each environmental topic.

## METHODOLOGY

2A.5 There is no legislative assessment process for reviewing cumulative impacts and the methodology used in relation to this ES has been devised uniquely to react to the impact and possible cumulative impacts of the proposed development. As a guide the 'Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions' published by the European Commission, May 1999 has been referred to indicate good practice.

2A.6 To provide an overview, the assessment methodology used in relation to this scheme was:

- Identification of Impact Area;
- A desk based data collection exercise was carried out which identified other relevant developments in the local area that required review;
- An expert technical team was appointed to assess each environmental topic identified as relevant to the proposed scheme;
- The likely cumulative impacts were scoped with the relevant authorities in the first instance;

- Information sharing within the technical team;
- Topic specific methodology was identified in terms of how they enabled the methodology of cumulative impacts;
- The cumulative impacts were then assessed separately in each topic chapter; and
- Summary and conclusions of cumulative impacts included in this chapter.

## Definition of Impact Area

2A.7 The area of impact in terms of cumulative impacts are considered to be:

- The Development Site;
- Recently completed development relevant to the development site; and
- Future development site within the vicinity of the development site

## Desk Based Data Collection

2A.8 A desk based assessment was carried out which initially assessed all of the development which has taken place within the vicinity of the Site. To carry out this assessment a review of Newport City Council's 'My Newport' mapping system was utilised which highlights all of the development in the vicinity of the site.

Desk based data collection has also been carried out in regards to the following chapters:

- Ecology
- Ground Conditions
- Flood Risk
- Ground Conditions
- Socio-Economic

## Expert Opinion

2A.9 The technical input of the project team members has formed an intrinsic part of the environmental assessment of the proposed scheme.

2A.10 The project manager, Asbri Planning, along with the applicant assessed a number of experts in the environmental disciplines identified in the scoping opinion received from Newport City Council, dated 26th November 2012 and included in Appendix 2A.1A. The following experts were considered to have the appropriate expert knowledge to carry out the topic assessments and their associated cumulative impacts:

- Planning Policy Context- Asbri Planning Ltd.
- Ecology & Nature Conservation- Peter Sturgess Ecology
- Landscape and Visual Impact Assessment- WYG
- Ground Conditions- Terra Firma Wales Ltd.
- Flood Risk – Watermans Group
- Drainage – Watermans Group
- Traffic, Transport & Movement – Asbri Transport
- Noise & Vibration – Watermans Group
- Air Quality – Watermans Group
- Socio-Economic Context – Asbri Planning Ltd.

2A.11 As can be seen from the list above, where appropriate the same consultants have been

appointed to carry out the different assessments. It was considered by the project managers appropriate to use the same consultants as they would have an extensive knowledge of the Site and information sharing would be easier.

## Scoping

2A.12 As described in Chapter 1 the content of the EIA was scoped with Newport City Council prior to the preparation ES, this established the content and structure of the ES.

2A.13 Scoping was then carried out by each consultant on a topic specific basis with the relevant authority and statutory consultees to ascertain the assessment required for each chapter including the extent of assessed needed in relation to other developments in the area. The scoping of each chapter is discussed in more detail in each chapter.

## Information Sharing

2A.14 The project managers facilitated regular technical team meetings to enable information sharing through the ES preparation. Throughout the preparation of the ES the project managers ensures a clear line of communication with the team including circulating relevant information to technical team.

2A.15 Pre-application meetings were also held on site and at Newport City Council offices to ensure early consultation and information sharing with the key stake holders with an interest in the site. The following meeting took place:

- On-site meeting with the following attendees:
    - LPA Planning Officers
    - NCC Ecologist
    - CCW (now NRW) representative
    - Project Managers
    - Applicant
- Meeting with LPA with following attendees:
    - Project Managers
    - Applicant
    - Development Team (including representatives from Terra Firma, Sturgess Ecology and Asbri Transport)
    - Newport City Council (department representatives from Planning, Highways, Landscape, Ecology and Environmental Health)

2A.16 The development team also had clear, continual lines of communication with the relevant third party stakeholders with the Countryside Council for Wales (now Natural Resources Wales), the Environment Agency (now Natural Resources Wales) and Dwr Cymru Welsh Water.

## Topic Specific Methodology

*Mapping*

2A.17 A review of the relevant base mapping was carried out where appropriate in relation to each topic as detailed below:

- Planning Policy Context:
  - Unitary Development Plan Proposals; and
  - Constraints Map
- Ecology & Nature Conservation:
  - NRW Mapping
  - Ordnance Mapping
  - Aerial Photographs
- Landscape and Visual Impact Assessment:
  - LA.03-1 LANDMAP Visual and Sensory Overall Evaluation
  - LA.03-2 LANDMAP Historic Landscape Overall Evaluation
  - LA.03-3 LANDMAP Geological Landscape Overall Evaluation
  - LA.03-4 LANDMAP Landscape Habitats Overall Evaluation
  - LA.03-5 LANDMAP Cultural Landscape Overall Evaluation
  - LA.04-1 LANDMAP Visual and Sensory Classification
  - LA.04-2 LANDMAP Historic Landscape Classification
  - LA.04-3 LANDMAP Geological Landscape Classification
  - LA.04-4 LANDMAP Landscape Habitats Classification
  - LA.04-5 LANDMAP Cultural Landscape Classification
- Ground Conditions:
  - Environment Agency online 'What's in Your Back Yard' database
  - Ordnance Survey historical plans
  - Geological Maps
- Flood Risk:
  - TAN 15 maps
  - NRW maps
  - Soilscapes dataset
- Drainage:
  - Soilscapes dataset
  - TAN 15
- Traffic, Transport & Movement:
  - Ordnance Survey Mapping
- Socio-Economic Context:
  - Unitary Development Plan Proposals
  - Constraints Map

2A.18 The review of mapping enabled the existing conditions at the site be reviewed which would, unless stated otherwise, have taken account of the recently developed sites in the area. Further details in relation to the mapping sources referred to in each individual chapter.

*Modelling*

2A.19 Modelling used in relation to the Flood Risk chapter including:

- NRW hydrodynamic 1d/2d ESTRY-TUFLOW model for the River Usk was obtained

and re-run for the appropriate scenarios relating to the proposed;

- flow monitoring survey of the ordinary watercourse running through the Herbert Road Site was carried out Trueflow Surveys Ltd, with the aim of providing information regarding flow rates in the watercourse; and
- The results of the flow monitoring survey were input into WinDES in order to derive peak flow hydrographs for selected return periods for this watercourse.

*Capacity Analysis*

2A.20 A capacity analysis was used in order to inform the Transport, Traffic and Movement chapter, including the following:

- National Traffic Model - to assess the future growth in traffic data including committed development in the area
- TRICS database- to predict the vehicular trip generation associated with the proposed development

2A.21 The data outputted from the above detailed capacity analysis was shared with Watermans group to inform the air quality and noise assessments.

*Matrices*

2A.22 Each assessment chapter included a Matrix summarising the potential effects, mitigation and residual effect and, if relevant, cumulative impacts.

## Limitations

2A.23 The prediction and evaluation of cumulative impacts is complex and subject to change should new projects come forward after the ES is completed. For this reason, the assessment is based on the identified recent and future developments at the time of writing.

# LEGISLATIVE & PLANNING POLICY CONTEXT

2A.24 EC Directive 85/337/EEC requires the EIA of certain public and private projects on the environment. The aforementioned Directive requires the direct and indirect effects of the project on a range of factors including the interaction between the environmental effects.

2A.25 EC Directive (85/337/EEC) (as amended) 0 Annex III Selection Criteria Referred to in Article 4 (3) requires the consideration of the project to include, amongst other things, the impact of the development cumulatively with other projects.

2A.26 Annex IV information referred to in Article 5 (1) of the above mentioned amended Directive states that the inter-relationship between environmental effects of the project and other development. It is required that the ES should cover the direct effect and any indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects of the project.

2A.27 The EC Directive has been transcribed in to UK legislation in the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999,

Schedule 4, Part 1, paragraph 4., which states:

***A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from:***

- ***a) the existence of the development;***
- ***b) the use of natural resources;***
- ***c) the emission of pollutants, the creation of nuisances and the elimination of waste,***

***and the description by the applicant of the forecasting methods used to assess the effects on the environment.***

This ES has undertaken the necessary steps to access information and carry out necessary surveys to access the scheme along with other relevant development and their potential combined environmental impacts to accord with the relevant legislation.

## BASELINE CONDITIONS

### Desk Based Data Collection

2A.28 The desk based data collection indicated the following developments at the Site and the surrounding area were relevant and could potentially have an have a cumulative effect together:

- **Outline - 00/0078** – Replacement Primary School, all weather pitch, soft and hard play areas and residential development.
- **Reserved Matters - 03/1531** – Erection of replacement primary school, all weather pitch, soft and hard plan and residential development.
- **Full Application - 10/1322** – Installation of replacement flood defences, together with the construction of a new section of walling
- **Full application – 11/0843** - Redevelopment of site comprising 32no. residential units consisting 2, 3 and 4 bedroom houses and flats together with external works at former Evans Halshaw, Turner Street, Newport, NP19 7XH.

2A.29 There are no committed developments in the area which are yet to be commenced. There are no future developments that can be considered in relation to the proposed development.

2A.30 Notwithstanding the above, it is recognised that the west banks of the River Usk opposite the Site, Crindau, is identified for future development. This is evidenced by the development of a Development Brief by Newport City Council.

2A.31 The development of this site has not been progressed in recent years and therefore not likely to come forward in the short term. Should Crindau come forward for development in the future its impacts on the environment would be assessed as part of the planning process. It is at this stage that the cumulative impact of the Crindau development together with the proposed development would be assessed, along with any other relevant developments at that time.

## Scoping

2A.32 The scoping response received from the LPA on the 26th November 2012, included at appendix 2A.1A of the ES, made no specific mention of other developments that require consideration. Despite this cumulative impacts were assessed as part of the EIA process, as described throughout this addendum.

2A.33 The technical team undertook scoping exercises with the relevant authorities in relation to their aspects of the work. This ensured the approach undertaken in relation to each chapter comprehensively dealt with the environmental effects of the scheme with other developments in the area.

## Topic Specific Methodology

2A.34 Each chapter individually assessed the likely cumulative impacts associated with the development and other relevant schemes in the area and these are discussed in more detail in each chapter in the ES and this Addendum.

## Potential Impacts

2A.35 The table below sets out predicted impacts cumulative impacts on the environment, where there is no predicted cumulative impacts 'N/A' is included within the table.

***Table 2A.1 Cumulative Effects Summary Table***

| Effect | Cumulative Effect | Duration | Mitigation | Residual Impact |
|---|---|---|---|---|
| Planning Policy Context | Negligible | N/A | N/A | Negligible |
| Landscape and Visual Impact Assessment | Negligible | N/A | N/A | Negligible |
| Ecology and Nature Conservation | Negligible | N/A | N/A | Negligible |
| Site Investigation | Negligible | N/A | N/A | Negligible |
| Flood Risk | Negligible | N/A | N/A | Negligible |
| Drainage | Negligible | N/A | N/A | Negligible |
| Traffic, Transport and Movement: | Negligible | N/A | N/A | Negligible |
| Noise and Vibration | Negligible | N/A | N/A | Negligible |
| Air Quality | Negligible | N/A | N/A | Negligible |
| Socio-Economic Context | Negligible | N/A | N/A | Negligible |

## Residential Impact

2A.36 The residential impacts of the accumulation of environmental effects of the development at the proposed site together with surrounding relevant development have been considered as part of each individual chapter and summarised in the table 2A.1 above.

## Summary

2A.37 As the table indicates there are no identified cumulative impacts that would result in residual impacts over and above those identified in each relation to the proposed development in each individual chapter. As previously discussed there are no relevant future developments that require consideration as part of the ES.

This chapter identifies the assessment of cumulative impacts in insolation in order to demonstrate the assessment of cumulative impacts was comprehensively undertaken as an integral part of the ES.

2A.38 In reality the cumulative impacts were assessed integrally within each different study area of the ES and will be discussed separately in each environmental discipline in the topic specific chapters (Chapters 5 to 14).

# 3. SITE CONTEXT

**3.1** Following review of Chapter 3: Site Context of the original ES submitted in support of the full application at land south of Glan Usk Primary School, Herbert Road, Newport the chapter is unchanged in this Addendum.

# 4. PROJECT DESCRIPTION

**4.1** Following review of Chapter 4: Project Description of the original ES submitted in support of the full application at land south of Glan Usk Primary School, Herbert Road, Newport it is considered the chapter remains relevant with regard to this Addendum however the following paragraphs have been amended and additional paragraphs included as detailed below.

**4.2** Paragraph 4.1 of the original ES has been amended to read as follows:

*4.1* The development comprises a full planning application for the construction of 250no. dwellings at land south of Glan Usk School, Herbert Road, Newport. The description of development as presented to Newport City Council as the local planning authority (LPA) on the application forms is as follows:

***'Development of 250no. dwellings and associated works'***

**4.3** Paragraph 4.15 of the original ES has been amended to read as follows:

*4.15* Full planning permission is sought for 250no. dwellings and associated works including parking, new highways, ecological areas, landscaping and the provision of a riverside walkway.

**4.4** The following paragraphs (paragraphs 4.24 to 4.32) have been amended to read as follows:

*4.24* The furthest land parcel to the north accommodates a mix of terrace and semi-detached houses. The houses proposed to the north, in three sets of 4 linked terraces, are separated from the railway line by their associated gardens and the existing trees and vegetation which provides a convenient natural buffer between the proposed development, railway line and the existing residential development on the opposite side of the railway.

*4.25* The houses in this location are orientated away from the school to prevent an overbearing or dominating relationship. These will, however, provide natural surveillance of the footpath being retained along the northern boundary which leads to the subway which links the site to Charnwood Road. The subway is a known area for anti-social and criminal activity and therefore increased over looking will improve local community safety.

*4.26* Further west to the linked dwellings described above a mixture of terrace and semi-detached dwellings are proposed. These dwellings are proposed in a perimeter block formation lined by a loop road, which to the south is adjacent to the reen and to the north adjacent to the school boundary.

*4.27* This area has been designed with particular consideration of the school and all dwellings are orientated, as far as possible, away from direct views towards the school whilst mindful that the existing footpath is well overlooked. It is considered the positions of the dwelling in these areas successfully balance the amenity of the school whilst also improving community safety.

*4.28* The houses proposed furthest west on this parcel of land are a row of terraced and semi-detached dwellings orientated towards the river Usk to take advantage of the views of the river and expanse of open green area in this area leading to the Glebelands. These dwellings also provide an active frontage to the river to encourage the use and accessibility of the river front walkway, a key aim of Newport City Council as discussed further in Chapter 5: Planning Policy Context.

*4.29* The land parcel discussed above is separated from wider site to the south by Lottery's Reen.

*4.30* The proposed layout incorporated Lottery's Reen and enlarges it to enhance and protect its ecological value whilst also providing green break within the development to enhance the visual amenity of the scheme. The enlargement of Lottery's Reen also has benefits in terms of providing flood storage and this is discussed in more detail in Chapter 9: Flood risk.

*4.31* The land south of Lottery's Reen is the largest land parcel of the application site and provides the greatest opportunity within the Site to mirror the existing urban grain through more uniform perimeter form development served by a series of interlinking loop roads.

*4.32* The dwellings located to the west of this area are orientated towards the River Usk. These dwellings include predominantly houses with two apartment blocks located on the corner of the perimeter blocks, please refer to site layout included in Appendix 4.1A. The benefit of dwellings fronting the river Usk has been discussed above.

**4.5** The following paragraphs are in addition and are most appropriate between 4.50 and 4.51 to avoid confusion with paragraph numbering are number 4.50a – 4.5d

*4.50a* Offsite works are also proposed to improve the pedestrian network in the surrounding area. These works provide enhanced pedestrian facilities within the vicinity to accommodate the increase footfall in the local area generated by the proposed development. The improvements will include:

- Dropped kerb with uncontrolled tactile crossings at northern end of Collier Street
- Dropped kerb with uncontrolled tactile crossings at eastern end of Courtney Street on northern side of the road
- Dropped kerb with uncontrolled tactile crossings and build out to improve visibility at eastern end of Courtney Street on southern side of the road
- Extend footway across scrub land in front of palisade fence, inclusion of radius kerb and uncontrolled tactile crossing along Tuner Street
- Build out to improve visibility, attention to levels to ensure crossfall to gully tactile crossings

*4.50b* All of the above improvements are shown on Plan 'Offsite Roadworks Improvements Agreement in Principle' Appendix 11.1A to this Addendum.

*4.50c* A Pelican Crossing is also proposed along Caerleon Road. The Pelican Crossing will have all associated markings, signs, lighting, pavement surfaces and road safety audits. The proposed location of the Pelican Crossing is shown on on Plan 'Offsite Roadworks Improvements Agreement in Principle' Appendix 11.1A to this Addendum.

*4.50d* The offsite works have been discussed and agreed with Newport City Council Highway Authority.

**4.6** The following alterations are made to paragraphs 4.66, 4.67, 4.68 and 4.69.

*4.66* The surface water drainage strategy comprises two distinct disposal methods.

*4.67* The southernmost end of the site access road is of permeable block paving construction.

*4.68* The remainder of the development to the north is served by a proposed piped surface water drainage system with no inherent flow/source control, which collects all impermeable area runoff and discharges to Lottery's reen at three separate points.

*4.69* Notwithstanding the above, the watercourse is to be locally widened and reshaped as part of the development landscaping proposals to provide a wetland area, as discussed earlier. In addition to the enhanced ecological and amenity value afforded by this area, the additional flood storage provided will help to mitigate future flood risk in storm conditions.

**4.7** The following paragraphs are in addition and are most appropriate between 4.69 and 4.70 and to avoid confusion with paragraph numbering are number 4.69a to 4.69c.

*4.69a* Hydraulic modelling indicates the existing Site is at risk of minor flooding from the ordinary watercourse during a 1.0%+CC APE when the fluvial and tidal hydrographs peak simultaneously. The modelling shows that the peak water level reaches circa 8m AOD which is some 1.8m lower than the level of the proposed development

*4.69b* It is proposed to increase the 2m diameter circular culvert that conveys the watercourse beneath the pedestrian walkway to 2.5m diameter. In addition, a flap-valve will be installed at the outlet of the circular culvert to prevent the backflow of tidal waters from the River Usk during large tidal events. The installation of a flap valve is considered to be a minor beneficial impact in terms of to surface water drainage when compared to both the existing and the consented scenarios.

*4.69c* Due to the tidal nature of the outfall of the ordinary watercourse into the River Usk and the large capacity of the river at this location, the unrestricted discharge of the proposed drainage system into the ordinary watercourse and ultimately into the River Usk will not affect downstream properties.

# 5. PLANNING POLICY CONTEXT

**5.1** Following a review of Chapter 5: Planning Policy Context of the original ES submitted in support of the full application at land south of Glan Usk Primary School, Herbert Road, Newport the chapter remains unchanged with regard to this Addendum.

# 6. LANDSCAPE/TOWNSCAPE AND VISUAL IMPACT ASSESSSMENT

6.1 Following review of Chapter 6: Landscape/Townscape and Visual Impact Assessment of original ES submitted in support of the full application at land south of Glan Usk Primary School, Herbert Road, Newport it is considered the chapter remains relevant with regard to this Addendum. It is, however, necessary to include the following paragraphs after 6.114. It is considered appropriate to number these paragraphs 6.114a to 6.114g.

## CUMULATIVE IMPACTS

*6.1114a* The surrounding past, present and potential future developments have been reviewed in the context of the proposed development.

*6.114b* There are no identified imminent developments within the vicinity of the Site that could have an impact on the landscape in combination with the proposed development. Should a development come forward in the future the merits of that scheme in terms of its impact on the landscape/townscape and visual amenity would be considered at that time. If necessary, future development would also be need to be assessed together with the proposed scheme in terms of its potential cumulative impacts. This assessment is beyond the remit of this ES.

*6.114c* Following a comprehensive review of the past and current developments it is considered the only prominent development in close proximity to the Site which could, together with the proposed development, potentially result in a cumulative impact on the landscape and townscape qualities is the Glan Usk school development.

*6.114d* The school, however, has been open since 2010 and has therefore become an established feature of the landscape and townscape over the last four years. Given the establishment of the school it is considered its impact together with the proposed development is **negligible.**

*6.114e* In addition to this the site has an extant planning permission for 153no. dwellings which is currently being implemented albeit in the early stages. The principle of residential development juxtaposed to the School and River Usk has already been accepted by NCC.

*6.114f* Furthermore, the contribution of the school to the landscape and townscape qualities has been accounted for within the baseline conditions identified in the following section. An appropriate assessment of the proposed school and residential development has therefore been carried out in this chapter.

*6.114g* The cumulative impacts together with the proposed scheme have therefore been assessed as an integral part of this chapter are **negligible** and have, as mentioned above, have been picked up in the existing baseline conditions.

# 7. ECOLOGY AND NATURE CONSERVATION

7.1 Following a review of Chapter 7: Ecology and Nature Conservation ES submitted in support of the full application at land south of Glan Usk Primary School, Herbert Road, Newport it is considered the chapter remains relevant with regard to this Addendum. It is, however, necessary to include the following paragraphs between 7.84 and 7.85. It is considered appropriate to number these paragraphs 7.84a to 7.84j.

## CUMULATIVE IMPACTS

*7.84a* The ecological and nature conservation assessment of the site considered the existing conditions at the site and surrounding area therefore taking full account of the all surrounding development including the recent development of Glan Usk school and the flood defences.

*7.84b* Notwithstanding this, the development of Glan Usk has been investigated in detail to ascertain what measures were carried in respect of that scheme to protect ecological features, namely the River Usk.

*7.84c* The school scheme was subject to an Appropriate Assessment carried out by Newport City Council which detailed the final development of the site for a school and residential development would not result in an adverse impact on the river bank and would remain undisturbed.

*7.84d* The Appropriate Assessment recognised the possibility of the works and operation associated with the scheme proposed under planning permission (00/0768) could impact on the River Usk primarily in relation to the contamination, remediation, transportation of materials for raising levels, the formation of the riverside walk and drainage arrangements.

*7.84e* The Appropriate Assessment considered the impacts of the scheme could be successfully dealt with by planning conditions. Conditions were imposed in relation to the following, full list of planning conditions imposed in relation to outline consent included on the Decision Note for planning permission 00/0768 included in Appendix 7.1A:

- Contamination
- Stockpiling material near River Usk
- Limiting hours of construction
- Drainage
- Provision of a buffer zone
- Construction Method Statement;
- Control of works along the river bank.

*7.84f* All of the relevant conditions were successfully discharged in relation to the school scheme confirming Newport City Council and the relevant statutory consultees were satisfied the development of the school site using the methods proposed would not have an adverse impact on the River Usk. The school development was implemented in accordance with the information produced for the discharge of conditions and the conditions were fully discharged on completion of the school.

*7.84g* In light of the above, it appears the school scheme was delivered without an adverse impact on the River Usk and all potential risks were successfully prevented through the successful discharge of conditions.

*7.84h* Notwithstanding this, the baseline conditions have assessed the existing conditions at the Site which would include any environmental impacts that could potentially be attributable to the school development.

*7.84i* At the time of writing, there is no future development that would require assessment in terms of cumulative impact together with the proposed scheme in relation to the ES and this associated Addendum. Should any future EIA development be progressed following the submission of this Addendum then that scheme would be required by legislation to assess the cumulative impacts of that scheme together with the proposed scheme at land south of Glan Usk School, Herbert Road.

*7.84j* The assessment to inform this chapter looked at the Site anew. Any impacts that may have resulted from School site have been identified within the baseline conditions and therefore considered within the potential impacts and subsequent mitigation measures recommended take account of any potential cumulative impacts of past development together with the proposed scheme. This is considered a robust approach to assessing cumulative impacts and addressing them through the delivery of this scheme. The cumulative impacts of the identified developments together with the proposed scheme are **negligible** and have, as mentioned above, been picked up in the existing baseline conditions.

7.2 The following paragraphs replace the equivalent paragraphs in the original ES:

*7.120* The mitigation measures that would be incorporated into the scheme include the following key features:-

- The site layout and all works related to the construction would be outside the top of river-bank level, i.e. outside of the SAC/SSSI boundary.
- There would be no new outfall points to the river, and discharge of surface water would be limited to rates and water quality parameters defined by NRW. If any maintenance or modification of the outfall point is required (this would be within the SAC), construction would be restricted to the minimum possible working area, with no vehicle access, and using only hand-held equipment. NRW would be consulted to discuss any specific requirements for the work.
- Off-site habitat enhancement would be provided on the riverbank between the north of the site and the M4 bridge, to provide habitat enhancement within the SAC margins to off-set habitat losses within the development site. The primary off-site measure would be provision of three 30m sections of dog-proof weld-mesh fencing, to create undisturbed bays on the riverbank that could provide resting sites for Otters. Additional off-site habitat enhancement mitigation that would be provided in this section of river bank includes provision of an Otter holt, eradication of extensive Japanese Knotweed, and replanting gaps with native thorny trees and shrubs. The fencing would be installed during the initial enabling works phase of the construction period, outside of the bird nesting season.
- A buffer strip/ series of bunds would be constructed and retained

between the new road and the top of the river bank. Thorny shrubs would be planted to form a continuous hedge along the top of the bund. A dog-proof fence would also be installed to the height of at least 1m. The additional planting proposed and dog-proof fencing is shown on the Landscaping Plan which accompanies the application. These measures would restrict access to the riverbank by people and dogs; provide shading from artificial lighting, reduce noise at river level, and prevent the possibility of diffuse run-off to the river during construction and in the long term

- The buffer strip and bunds would be constructed as initial enabling works before the main construction period begins. Fencing would be provided around the buffer strip throughout the construction phase, to allow the vegetation to establish and to provide additional protection to the SAC.
- No construction works that would result in ground vibration affecting the river (e.g. boring/ piling) would take place between 1 March and 30 June, when Shad and Lamprey would be migrating past the site. If any such works are unavoidable at this time of year, they would be regulated so that migration can occur during this period.
- Fencing would be installed around the whole site at the start of the site clearance phase, to prevent accidental damage to the SAC during construction. At the same, the existing footpath would be diverted, to keep pedestrians and dogs away from the SAC boundary and the construction site.
- If trenches are required in any areas potentially accessible to Otters, these would not be left open overnight, or an escape route would be provided for them (e.g. plank of wood or sloping end of trench).
- Construction working within 10m of the top of the riverbank would be restricted to daylight hours.
- Construction lighting and operational street lighting would be directional; fitted with cowls to minimise light-spill over the river.
- External lighting on the new houses on the street adjacent to the river would have bulkhead fittings that would restrict the illumination to the area immediately around the doors. The lighting would be controlled by movement sensors, so that it cannot be left on permanently.
- Care would be taken to minimise risk of construction debris entering the river. Checks of the riverbank would be made at least weekly through the construction phase, and any construction debris found would be removed.
- Japanese Knotweed and any other Schedule 9 plants would be eradicated from all parts of the development site. A programme for treatment or removal of the plants would be agreed with the local authority prior to commencement of construction.
- Lottery's Reen would be retained, connecting to the Usk by its existing outfall. The new bridging point would be designed to achieve minimum loss of ditch length. The low-lying ground beside the ditch would be planted with reed to develop into reedbed habitat. The base of the low-lying area would include several additional ditches, so that there is an overall increase in the area of open water and marginal habitat. The reedbed area would be securely fenced to prevent disturbance during the operational phase.
- The off-site mitigation area, the SAC buffer strip, Lottery's Reen and the

landscape planting would be subject to a 5-year management plan that would ensure that they establish favourably for biodiversity. The developer would be responsible for the maintenance of these areas.

- The buffer strip between the road and top of the river bank would vary in width between 4 and 16m. A thorny hedge would be planted along the top of the bund beside the footpath. Wider areas would incorporate additional bunds to discourage access along the river-bank. The bunds would be approximately 1m tall and 2m wide, formed using soil from within the site. The soil would be free from contamination, well drained, with a high proportion of stones/ rubble, and suitable for a range of native plants. Any plants considered significant for nature conservation in a county context would be transplanted to the unshaded bunds in the widest parts of the buffer strip (or if the habitat would not be suitable, to an appropriate location off-site, to be agreed with NCC). The buffer strip would be designed to provide a series of sunny, undisturbed slopes that would offer potential habitat for ruderal plants, reptiles and a range of invertebrates. An appropriate wild-flower seed mix would be sown on the buffer strip if there is insufficient diverse grassland habitat available from within the site.
- Prickly Lettuce would be encouraged to grow on the unshaded bunds in the widest parts of the buffer strip, to ensure that the site is potentially suitable habitat for Small Ranunculus Moth (even if the moth does not occur on the site at present). Prickly Lettuce plants would be established by seed or transplanting from a site nearby.
- Additional off-site mitigation would be undertaken on land within the Glebelands SINC to the north of the M4. Some of the areas which currently support species-poor grassland would be ploughed and seeded to encourage flower-rich and ruderal vegetation, to help off-set the impact on invertebrates.
- The retaining wall at the eastern site boundary would include crevices which can become colonised by plants and invertebrates. Ivy would be planted beside the retaining walls, to grow over the wall providing cover and flowers that would be beneficial for invertebrates.
- The planting scheme for the new residential area would include a high proportion of native tree species and shrub and flower species known to have value to invertebrates.
- Slow Worms would be translocated to suitable habitat off-site, subject to agreement with NCC. Potential receptor habitat is present in the Glebelands SINC, and this would be enhanced if necessary, by introducing raised areas of rubble that would provide suitable basking and overwintering sites. (NCC may be able to suggest other potential receptor sites, where introduction of reptiles would be beneficial to local biodiversity objectives.)
- Site clearance would be programmed during the winter (between November and February). No potential bird nesting sites would be affected during the bird nesting season (typically between late-March and the end of July).
- Nest-boxes would be provided in the design of the new buildings. These would include at least 10 Swift and 10 House Martin boxes on the eaves of several of the taller buildings near to the river, to introduce a new feature of local nature conservation value to the site. A further 10 nest

boxes suitable for garden birds (such as House Sparrow, Blue Tit, Robin etc) would be sited on the houses at the eastern boundary, on the sides closest to the railway line.

- Bat boxes would be installed near the eaves of at least 10 of the taller buildings, to provide new roosting opportunities as a habitat enhancement. The boxes would be positioned near to the margins of the site, especially those beside the reed-bed and the scrub habitats associated with the railway line and eastern margin. The boxes would be of a maintenance free design, built into the wall or roof structure, carefully sited so they will not cause problems to occupants of the new houses.
- An appropriate site clearance methodology would be agreed with the local authority, to minimise potential harm to protected species (such as wild mammals, or reptiles). This is likely to involve hand-searching and sequential removal of cover by scrub clearance and strimming, before any ground reprofiling is undertaken using heavy machinery.
- A project management plan would be prepared by the contractor, with input from the project ecologist, landscape architect and engineers as required. It would include the practical measures that would be taken to manage potential environmental effects during construction, including ecology and a range of other aspects such as drainage, consents, noise, waste, etc. The environmental elements of the plan would be agreed with NCC and NRW prior to the commencement of site clearance. The construction site manager would have responsibility for implementing the management plan.

*7.128* The buffer strip beside the SAC would be reinforced by creation of a steep-sided bund and several steep ridges along the top of the river-bank, to discourage access to the river by people and dogs, which currently contribute high levels of disturbance to this habitat. The bund would be planted with a continuous thorny hedge along its length. The bund would also be lined by a galvanized chain-link fence at least 1m high to further prevent access to the river bank. The presence of the bund would reduce light-spill over the river, as well as levels of sound from the road and residential area. In addition, it would help to protect the SAC from litter and any risk of diffuse pollution.

**Table 7-2: Summary of residual effects of the proposal together with mitigation measures**

| Ecological Feature & Value | Description of Impact before mitigation | | Description of Mitigation Measures | Description of Residual Impact | |
|---|---|---|---|---|---|
| | **Description** | **Significance** | | **Description** | **Significance** |
| **River Usk SAC/ SSSI** International value | No direct impact within SAC. | Significant impact unlikely. | Management Plan to be produced and agreed prior to any site clearance. | No direct impact within SAC. Potential for accidental and indirect effects minimised. | Probable neutral impact during construction. No significant impact at international level. |
| **Construction Impacts** | Potential for water quality pollution. | Significant impact unlikely, as all discharge would be regulated and use existing outfall. | Bund on buffer strip would prevent any diffuse pollution down the river-bank. | Potential pollution risk minimised. | Probable neutral impact during construction. No significant impact at international level. |
| | Potential for disturbance of Otters during construction. | Probable adverse impact in the short term. | EMP to set out good working practices, including fencing of construction area, restriction of working hours near to river and regulation of construction lighting. Establishment of buffer strip bund between construction site and river bank will reduce noise and light from site. Pedestrians and dogs would be diverted away from riverbank. | Potential disturbance impacts minimised and controlled. | Probable neutral/ beneficial impact at local level during construction. No significant impact at international level. |
| | Potential vibration disturbance of migratory fish during construction. | Possible adverse impact in the short term. | EMP to set out strict guidance on ground works, to prevent or regulate possible vibration impacts on fish. | Possible disturbance impacts reduced, and avoided at key times. | Probable neutral impact during construction. No significant impact at international level. |

| Ecological Feature & Value | Description of Impact before mitigation | | Description of Mitigation Measures | Description of Residual Impact | |
|---|---|---|---|---|---|
| | **Description** | **Significance** | | **Description** | **Significance** |
| **River Usk SAC/ SSSI** International value | No direct impact within SAC. | Significant impact unlikely. | Off-site habitat work in SAC north of site, including creation of three fenced bays and additional planting of dense scrub, and local control of Japanese Knotweed. | Habitat enhancement for Otters. Reduced numbers of people and dogs on river bank. | Significant beneficial impact likely at local level in the long term. No significant impact at international level. |
| **Operational Impacts** | Potential for disturbance of Otters by people, dogs, noise and lighting. | Likely significant adverse impact. | Ridges and bushes on buffer strip will reduce incidence of people and dogs accessing the river bank beside the site. A bund will be constructed approximately 1 metre high and 2 metres wide and being planted with thorny shrubs for its continuous length. In addition a 0.9m galvanized chain-link fence will line the whole length of the bund to further prevent access to the river bank. Bunds and trees would also reduce noise and light reaching river. Street lighting and external lights on houses would be screened to avoid light-spill to river. | Potential disturbance impacts minimised and controlled. Numbers of people and dogs disturbing SAC would be lower than existing situation. | Significant beneficial impact at local level. Probably insignificant at international level. |
| | Potential vibration disturbance of migratory fish. | Probable neutral impact during operation. | No additional measures proposed. | | Probable neutral impact during construction. No significant impact at international level. |
| | Potential for water quality pollution. | Significant impact unlikely, as all discharge would be regulated and use existing outfall. | Surface water would flow through reedbed prior to discharge, which would provide further screening of silt and pollutants. | Reedbed would provide additional regulation of quality and quantity of discharge. | Probable neutral impact during operation. No significant impact at international level. |

| Ecological Feature & Value | Description of Impact before mitigation | | Description of Mitigation Measures | Description of Residual Impact | |
|---|---|---|---|---|---|
| | **Description** | **Significance** | | **Description** | **Significance** |
| **Wet ditch/ reedbed** District value | Permanent reduction of 11m ditch length due to new culvert. | Certain permanent significant adverse impact, even after minimising bridge width and removing footbridge. | Reeds would be encouraged to expand / planted into low-lying ground south of ditch, to form a wider reedbed. New branches from the ditch would be created to provide additional ditch length within the reedbed. | Expanded reedbed width and new ditch branches would compensate for permanent loss of ditch length. | Enhanced habitat will neutralise impacts in long term. No significant impact at district level. |
| **Construction impacts** | Short term loss of habitat as ditch is dredged to remove silt and litter. | Certain temporary significant adverse impact due to removal of vegetation. | None proposed other than vegetation removal outside bird breeding season. Cleaning out ditch will provide a long term benefit by removing rubbish and any contaminants. | Temporary adverse impact, but not affecting bird nesting. | Temporary significant adverse impact, reducing to neutral as reeds and scrub establish. |
| **Wet ditch/ reedbed** District value<br><br>**Operational impacts** | Habitat isolation and disturbance of ditch within new site layout.<br>Occasional disruption during maintenance operations. | Probable significant adverse impact due to water quality and isolation effects. | Ditch would be reprofiled with shelved profile on at least one side. Scrub would be allowed to grow on the northern bank to provide cover for wildlife.<br>Ditch and reedbed would be fenced to prevent access by people and dogs.<br>Establishment maintenance work would take place outside bird nesting season. | Enhanced ditch profile, reedbed and provision of fencing and scrub will help to mitigate isolation and disturbance effects. | Probably neutral, with ditch remaining of District value. |
| **Grassland** Local value<br><br>**Construction impacts** | Removal of all grassland habitat within site. | Certain significant adverse impact. | Vegetation removal outside bird breeding season.<br>Most valuable grassland habitat, soil and plants would be translocated to new buffer strip between site and riverbank.<br>If required supplementary wildflower seeding would be used to create flower-rich grassland in buffer strip. | Loss of existing habitat resource would be partially compensated for by creation of enhanced, but smaller, grassland area. | Probable significant adverse impact at Local level, but reduced in severity, and new grassland would be of Local value for nature conservation. |

| Ecological Feature & Value | Description of Impact before mitigation | | Description of Mitigation Measures | Description of Residual Impact | |
|---|---|---|---|---|---|
| | **Description** | **Significance** | | **Description** | **Significance** |
| **Grassland**<br>Local value<br><br>**Operational impacts** | Grassland would be subject to trampling and disturbance, and nutrient enrichment by dogs. | Certain significant adverse impact, unlikely to maintain Local value in long term. | The bunds in the buffer strip would provide protection from trampling and disturbance and create conditions suitable for a diverse range of plants. Establishment maintenance would ensure that grassland habitat develops favourably for biodiversity. | Habitat would be protected and maintained. | Probable significant adverse impact but reduced in severity, and grassland would still be of Local value for nature conservation. |
| **Ruderal vegetation**<br>Local value<br><br>**Construction impacts** | Removal of all ruderal habitat within site. | Certain significant adverse impact. | Vegetation removal outside bird breeding season. Most valuable parts of habitat, soil and plants would be translocated to new riverbank buffer strip. Any Prickly Lettuce plants would be transplanted to new buffer strip. New ruderal habitat would be provided off site in Glebelands SINC. | Loss of existing habitat resource would be compensated for by creation of enhanced, but smaller, ruderal area by Usk, and new ruderal patches within Glebelands SINC. | Temporary adverse impact at local level, but reducing to neutral as mitigation establishes. |
| **Ruderal vegetation**<br>Local value<br><br>**Operational impacts** | Ruderals would be subject to trampling and nutrient enrichment by dogs. Decline in value through natural succession to grassland and scrub in long term. | Certain significant adverse impact, unlikely to maintain Local value in medium term. | The bunds in the buffer strip would provide protection from access by dogs. The brown-field soil and steep sides to the bunds would provide good conditions for ruderal plants, and management during first 5 years would slow successional processes. | Habitat would be protected and maintained for first 5 years, but would still be subject to natural succession in the long term. | Probable adverse impact but not significant. Habitat will still change through natural succession in the long term. |

| Ecological Feature & Value | Description of Impact before mitigation | | Description of Mitigation Measures | Description of Residual Impact | |
|---|---|---|---|---|---|
| | **Description** | **Significance** | | **Description** | **Significance** |
| **Trees and scrub**<br>Local value<br><br>**Construction impacts** | Removal of all trees and scrub within site. | Certain significant adverse impact. | Vegetation removal outside bird breeding season.<br><br>New landscape planting would include a high proportion of trees and shrubs known to be of value for biodiversity.<br><br>Offsite mitigation work and planting in buffer strip would use native spiny trees and shrubs. | Loss of habitat would be partially compensated for by new planting.<br>Use of beneficial species would enhance habitat quality. | Probable significant adverse impact at local level, but reduced in severity, and new tree and scrub vegetation would still be of Local value. |
| **Trees and scrub**<br>Local value<br><br>**Operational impacts** | Disturbance effects and lack of management, or inappropriate management leading to degradation of new landscape planting. | Probable significant adverse impact. | Offsite mitigation work and planting in buffer strip would use native spiny trees and shrubs. Bunds and fencing in these areas would reduce risk of disturbance.<br><br>Establishment management would ensure new off-site / buffer-strip planting develops favourably for biodiversity. | New planting would develop favourably for biodiversity. | Probable neutral impact. Not significant at higher than site boundary level. |
| **Otter**<br>(Discussed as SAC feature above) | | | | | |
| **Bats**<br>Value within application boundary (foraging habitat)<br>**Construction impacts** | Loss of feeding habitat after vegetation clearance. | Probable temporary significant adverse impact during construction.<br>Neutral impact in longer term after new planting matures. | New planting would restore foraging habitat after construction, and would be designed to be beneficial for biodiversity. Installation of bat boxes would provide new roosting opportunities. | Temporary loss of feeding habitat would be unavoidable, but new planting would replace this, and new roosting sites would be beneficial. | Probably beneficial impact due to provision of bat roosts. Not significant at higher than site boundary level. |

| Ecological Feature & Value | Description of Impact before mitigation | | Description of Mitigation Measures | Description of Residual Impact | |
|---|---|---|---|---|---|
| | **Description** | **Significance** | | **Description** | **Significance** |
| **Bats**<br>Value within application boundary (foraging habitat only)<br>**Operational impacts** | Disturbance by increased human presence, traffic and artificial light. | Adverse impact on light intolerant species, but unlikely to be significant. Impact probably neutral. | Design of street lighting to minimise light-spill over vegetated habitats and river-bank. | Potential for light pollution minimised. | Impact probably neutral during operation. Not significant at higher than site boundary level. |
| **Amphibians**<br>Value within application boundary<br>**Construction impacts** | Loss of all potential cover and breeding habitat during site clearance. | Probable adverse impact on a small number of individuals of common species, but not significant. | Reinstated ditch and reedbed would be available as foraging habitat in long term. | Reinstated wetland would be available in long term, but there would be less terrestrial foraging habitat. | Adverse impact certain, but probably not significant at more than site boundary level due to small number of individuals. |
| **Amphibians**<br>Value within application boundary<br>**Operational impacts** | Residential area is poor quality habitat for amphibians. High risk of mortality by traffic, pets and in drains. | Adverse impact likely, but not significant given low numbers of amphibians likely to be present. | No specific measures proposed for amphibians, but they are likely to benefit from landscape planting which includes a high proportion of species known to have value for wildlife, and enhanced ditch/ reedbed habitat. | Slight reduction in severity of impact. | Adverse impact likely, but not significant at more than site boundary level given likely low numbers of amphibians. |
| **Reptiles**<br>Value within application boundary<br>**Construction impacts** | Loss of all potential reptile habitat during site clearance. | Certain adverse impact without mitigation, but unlikely to be significant due to low numbers. | Reptiles would be rescued prior to site clearance, using refugia and manual searches, and taken to safe habitat nearby. Enhanced grassland and scrub habitat would be provided on sunny bunds and sheltered grassland in the River Usk buffer strip. | Reptile population would be rescued.<br>Enhanced habitat in river Usk buffer strip would provide partial compensation for loss of existing reptile habitat. | Certain adverse impact likely, but not significant due to low numbers of animals affected.<br>Impact would reduce in medium term as new habitat matures. |

| Ecological Feature & Value | Description of Impact before mitigation | | Description of Mitigation Measures | Description of Residual Impact | |
|---|---|---|---|---|---|
| | **Description** | **Significance** | | **Description** | **Significance** |
| **Reptiles**<br>Value within application boundary<br>**Operational impacts** | Poor quality reptile habitat in and adjacent to residential area.<br>Increased disturbance and predation by pets. | Reptiles unlikely to be present in residential area so no impact likely.<br>Adverse impacts on any reptiles in railway land and Usk buffer strip probably not significant. | No specific reptile mitigation proposed.<br>River Usk buffer strip would be managed for first 5 years to ensure that it develops habitat suitable for reptiles. | Habitat connectivity to wider area would not be affected.<br>Habitat in buffer strip would provide suitable condition for reptiles. | Probable adverse impact, but unlikely to be significant at more than site boundary level. |
| **Birds**<br>Local value<br><br>**Construction impacts** | Temporary loss of all cover and breeding habitat within site. | Certain significant impact due to loss of habitat. | Vegetation clearance outside the breeding season.<br>Off-site enhancement beside Usk; new scrub planting and fences to reduce disturbance of scrub and reeds.<br>Reinstated and enhanced reedbed habitat.<br>New landscape planting would provide additional habitat for birds. | Risk to nests would be avoided by timing of work.<br>Temporary loss of breeding and feeding habitat would be compensated by new planting, habitat enhancements and nest boxes. | Certain significant adverse impact at local level in short term, but reducing towards Neutral impact as mitigation is implemented and planting matures. |
| (Birds using river Usk: District value)<br><br>**Construction impacts** | Disturbance of birds using river Usk, by machinery, traffic, people and dogs. | Construction works unlikely to have a significant impact on birds using the river, but there would be a likely significant adverse impact if people and dogs are diverted closer to river. | Construction site would be fenced, and buffer strip would be provided to reduce disturbance.<br>Pedestrians and dogs would not be permitted to walk along the top of the river-bank during construction phase. | Potential disturbing influences controlled. | Significant impact at District level unlikely. |

| Ecological Feature & Value | Description of Impact before mitigation | | Description of Mitigation Measures | Description of Residual Impact | |
|---|---|---|---|---|---|
| | **Description** | **Significance** | | **Description** | **Significance** |
| **Birds**<br>Local value<br><br>**Operational impacts** | Disturbance by increased traffic people and dogs. Increased predation by cats. | Likely adverse impact due to disturbance effects and predation. | New landscape planting would include a high proportion of trees and shrubs beneficial to birds. Reedbed area would be fenced to prevent access by dogs.<br>New bund and off-site fences would minimise disturbance of river Usk and bank habitats.<br>Nest boxes would be positioned high up, out of reach from people and cats. | Potential effects of disturbance reduced but not eliminated. | Adverse impact likely, but unlikely to be significant at more than site boundary level. |
| (Birds using river Usk: District value) | Disturbance by increased traffic, people and dogs. | No effect on birds on migration. Possible adverse impact on some species due to disturbance, but significant impact unlikely. | New bunds and off-site fences would minimise disturbance of river Usk and bank habitats. | Potential effects of disturbance reduced but not eliminated. | Adverse impact possible, but not significant at District level. |
| **Invertebrates**<br>District value<br><br>**Construction impacts** | Complete loss of habitat during site clearance. | Certain adverse significant impact due to loss of habitat. | Attempts would be made to establish Prickly Lettuce in the buffer strip to provide habitat for Small Ranunculus moth, and a flower-rich sward provided for Shrill Carder Bee.<br>Enhanced habitat provided in river Usk buffer strip and reedbed.<br>New ruderal habitat in Glebelands SINC north of M4.<br>New planting would support high proportion of species known to be beneficial for invertebrates. | New habitat would be small in area but favour high invertebrate diversity, including notable species. | Certain significant adverse impact at local level, but reducing in severity in time, and Usk buffer strip would still be of Local value. |

| Ecological Feature & Value | Description of Impact before mitigation | | Description of Mitigation Measures | Description of Residual Impact | |
|---|---|---|---|---|---|
| | **Description** | **Significance** | | **Description** | **Significance** |
| **Invertebrates**<br>District value<br><br>**Operational impacts** | Invertebrate habitat small in size and vulnerable to degradation by successional processes and disturbance. | Likely adverse impact, but only significant if uncommon invertebrates are present. | New and translocated invertebrate habitats provided as mitigation would be subject to 5 years of management to ensure that they establish suitable habitat for invertebrates. | New habitats would continue to support diverse invertebrate community, including uncommon species. | Impact probably neutral, buffer strip remaining of Local Value. |

# 8. GROUND CONDITIONS

8.1 Following review of Chapter 8: Ground Conditions of the original ES submitted in support of the full application at land south of Glan Usk Primary School, Herbert Road, Newport it is considered the chapter remains relevant with regard to this Addendum however the following paragraph should be considered as additional, supplementary information to be included between paragraphs 8.69 an 8.70 in the original ES. It is considered the additional paragraphs should be number 8.69a to 8.69cc.

## CUMULATIVE IMPACTS

### History

*8.69a* The most relevant development in the surrounding area that requires assessment for the potential cumulative impacts is the development of Glan Usk School, north of the Site.

*8.69b* Glan Usk school along with a residential scheme was granted outline planning permission on the 31st October 2000 (planning reference number: 00/0768) and reserved matters planning permission was granted on the 19th May 2005 (planning reference number: 03/1531).

*8.69c* The two applications in relation to the school (detailed above) were accompanied by a number of site investigations which examined the ground conditions at the site. A list of the previous site investigations carried out at the site are listed below:

1. EAU investigation (1994) of the proposed school area.
2. Integral Geotechnique investigation (date not supplied) of the site.
3. Exploration Associates investigation (April 2000) if the Greenhill and School site.
4. Ground conditions desk top study, August 2003 (WYGE reference E3808/PG/Aug03GCIA/V2)
5. Report on a Ground Investigation at Durham Road Newport (Volumes 1,2 & 3), October 2003 (Norwest Holst Soil Engineering Ltd, ref.F13041)
6. 'Site investigation interpretative report', October 2003 (WYGE report reference E3808/CBP/GIR/OCT2003/V1)
7. 'Quantitative risk assessment of ground conditions recorded during the 2000 and 2003 site investigations', October 2003 (WYGE report reference E03808/JV/SP/Oct03/QRA/V1)
8. 'Enhanced ground conditions risk assessment and remediation strategy', February 2005 (WYGE report ref.E3808/GO/Remstrat/Feb05/V1.
9. 'Site investigation factual report, Durham Road School', February 2005 (WYGE report reference E3808/AE/FacRep/Feb04/V1)
10. 'Planning Support – Land gas Monitoring and Risk Assessment Report' issued in July 2005 by White Young Green.
11. 'Summary Report with Proposals for Land Remediation/ Reclamation Works' (Report Ref: 9579/RB/07/REV A) issued by Integral Geotechnique in March 2007.
12. Glan Usk School 'Remediation Validation Report (Volume 1 of 2) issued by White Young Green in November 2009.

*8.69d* The most recent reports (numbered 10, 11 and 12 above) were referred to prior to carrying out the Site Investigations in respect of this development and to inform the preparation of this chapter.

*8.69e* The previous Site Investigation reports confirmed that the site subject to planning consents 00/0768 and 03/1531 had evidence of contamination and the hotspots' detected outside the Site on land along the river embankment north of Lottery's reen. There were traces across the Site of heavy metals, hydrocarbons, asbestos, amosite and chrysotile. Of the contaminants detected the most hazardous to human health was identified as amosite. There was no evidence of radioactive contamination at the Site that would be adverse to human health.

*8.69f* It is clear from the site investigation works carried out in relation to the Site that the previous uses have affected the quality of the soils and groundwater and required remediation to enable the site to be developed. The Site Investigation reports produced in support of the outline planning permission indicated the contaminants on Site could be successfully remediated.

*8.69g* In order to secure the remediation of the site subject to application 00/0768 a suite of planning conditions were attached to the planning permission to ensure this was carried out. The conditions imposed are listed below:

## Planning Conditions Imposed in relation to Ground Conditions on Planning Permission 00/0768

*8.69h* The following conditions were imposed in relation to ground conditions on Planning Permission 00/0768:

- *Condition 5 - Site Contamination*

***Details provided in accordance with condition (1) and pursuant to discharging siting as a reserved matter shall include a quantitative risk assessment that assesses levels of contamination on site and their potential to impact controlled water (groundwater and surface water) identified end receptors. The risk assessment will have regard to the layout and design of the end development/use, particularly the foundation works required on site.***

***Such a risk assessment must be based upon information acquired following an investigation of the mobility of contamination on site in addition to the results of the site investigation entitled "Durham Roads Schools PFI Project Contamination Investigation Interpretative Report (June 2000) and previous investigations of the area. The risk assessment must identify any/all clean up levels required to ensure the integrity of controlled waters and identified end receptors.***

***A remediation strategy shall be formulated and approved in writing by the local planning authority and the agreed scheme shall be implemented in accordance with the approved detail.***

***Reason: To safeguard the aquatic environment and prevent pollution from the physical disturbance associated with construction works in the short term and re-development of the site in the longer term, and to protect the integrity of the River Usk candidate Special Area of Conservation.***

- *Condition 6 - Site Investigation*

***Prior to the commencement of development on the site (including any demolition or land raising works) the following shall be conducted:***

***(a) a site investigation consisting of at least 3 months duration of monitoring to ascertain the presence of gas having regard to the end use of the site. This shall include an analysis of the source of any gas and a report on the investigation shall be submitted for the consideration and approval of the local planning authority. This assessment must include the results of the survey and recommendations regarding any structural precautions to be incorporated into the buildings,***

***(b) a quantitative risk assessment of the ground conditions on the site having regard to the end use***

***of the site Such a risk assessment must use both the results of the site investigation entitled "Durham Road Schools PFI Project Contamination Investigation Interpretative Report" (June 2000) and previous investigations in the area, together with any additional ground investigation as required to carry out a comprehensive risk assessment.***

***A remediation strategy in relation to both (a) and (b) above shall be formulated and approved in writing by the local planning authority and the agreed scheme shall be carried out prior to the commencement of any works on site.***

***Reason: To ensure that the site is comprehensively investigated, the presence of contamination clearly identified and its impacts appropriately mitigated in the interest of residential amenities and to safeguard the interests of future users of the site.***

- *Condition 7 - Certification Report*

***On completion of the works of remediation the applicant shall provide a certification report, compiled by a suitably qualified engineer who has supervised the works, which confirms that the remediation works have been completed fully in accordance with the approved remediation strategy.***

***Reason: To ensure that the remediation strategy is effectively implemented in the interest of residential amenities and to safeguard the interests of future users of the site*.**

*8.69i* Following the grant of planning permission it became clear the school would be delivered in advance of the residential element of the scheme and therefore it was agreed between the developer of the school and Newport City Council that the planning conditions could be discharged on a phased basis to enable the school development to commence. It was agreed in a letter between the developer of the school and the Development Control Manager that remediation of land south of the reen was to be completed in association with future residential development, a copy of this letter is included at Appendix 8.1A.

*8.69j* The planning conditions in relation to the contamination (listed in paragraph 8.69h). were all successfully discharged in relation to the school development. According to the review of the historic planning files it appears Condition 5 was discharged as part of the Reserved Matters application (03/1531). Condition 6 was discharged under three separate discharges of condition submissions (reference numbers 06/0170, 07/0820 and 07/0939). Condition 7 was discharged under discharge of condition submission reference number 09/0591.

*8.69k* The following reports were produced in order to discharge the relevant conditions:

*Reserved Matters*

- Report on a Ground Investigation at
- Durham Road Newport Works 1 and 2,
- Quantitative Risk Assessment of Ground Conditions,
- Outline Remediation Strategy Report,
- Ground Conditions Desk Top Study Assessment
- Site investigation
- Interpretive Report.

*Condition 6:*

- Method Statement for Removal of PCB Contaminated Material - Revision A",
- Method Statement for Capping of the Northern Area- Revision A",
- Method Statement for Enabling and Filling Works in the Southern Area - Revision A"
- Method Statement for Installation of Vertical Band Drum - Revision A" all prepared by Norwest Holst
- Land Contamination Planning Support Statement" and Appendices A-H

(inclusive) all prepared by White Young Green Plan reference 5041855/CSD/200/SK001, El/169 revD and 1289/DET188A, 129/DET/189

- E03808 4406 ENV 102 01, and ref 42/1.9579/RB/07/REV A, and letter ref: 9579/HP/KEF dated 6 July 2007

*Condition 7*

- Vinci Construction UK Limited: Glan Usk School Newport Remediation Validation Report volumes 1 and 2 (November 2009)
- E3808/GO/PSS-REMSTRAT/JAN06/V2 prepared by White Young Green.
- The strategy forms Appendix G of the document entitled "Report on a Ground Investigation at Durham Road" Volumes 1 to 3 prepared by Norwest Holst.

## Remediation Strategy carried out in relation to Planning Permission 00/0768

*8.69l* To summarise, the remediation strategy included within the reports signed off by the LPA in order to address the relevant conditions relating to ground conditions proposed the following:

1. **Removal of identified drummed PCB waste and associated residues** – excavation and off-site disposal of the identified drummed PCB waste and associated contaminated soils to meet the remedial target values accepted by the Environment Agency.
2. **Capping layer** – construction of a clean capping layer built up from existing site levels to a minimum thickness of 600mm across the areas of the site not capped by buildings or hardstandings, namely soft landscaping and playing fields with a visible barrier at the base of the cap.
3. **Gas Protection Measures** – installed in line with 'Planning Support – Land gas Monitoring and Risk Assessment Report' (WYG 2006).
4. **Lining and Realignment of Lottery's Reen** – to prevent leachate moving from landfill water into reen and outfalling into the River Usk

*8.69m* Below describes the remediation measures required and confirms its implementation.

### *1. Removal of identified drummed PCB waste and associated residues*

*8.69n* A total of 778 drums containing PCB type material were removed prior to the construction of the school during the remediation. They were disposed of off Site. In addition over 2000 tonnes of impacted soil type materials were also removed. Each excavation was also chemically validated on each pit face and base to ascertain if all PCB impacted soil material had been removed. The entire PCB identified area was then subject to another Geophysical survey which aimed to identify if any undiscovered drums remained. The results of that survey showed a large decrease in the presence of metallic objects indicating that all the PCB removal has been conducted successfully.

### *2. Site Capping*

*8.69o* To reduce risk from the remaining contaminants identified within the buried waste the site was remediated by capping of hardcover layer (roads structures, etc.) or imported clean inert material in all soft landscaped areas.

*8.69p* This capping layer was required to reach a minimum thickness to 600mm and was

separated from the underlying waste by a geotextile membrane which provides a visual indicator of the cap interface. Following the identification (during validation) of naturally mineral enriched limestone material being imported to site which contained elevated levels of heavy metals (Lead Arsenic Cadmium) this material was not used as capping material. It was used instead to prepare ground levels for roads and buildings and therefore placed under hardcover Gravel material.

*8.69q* Topsoil was imported from a second source and tested prior to import to site and largely found to contain levels below remediation targets and therefore considered fit for purpose.

*8.69r* Once the imported gravel material and topsoil layer had been placed a number of trial pits dug across all landscaped areas to record the capping material depth. All locations recorded the capping layer to have a minimum 600mm thickness with the majority of the locations demonstrating a depth significantly more than the 600mm required

### *3. Gas Protection Measures*

*8.69s* The original ground gas assessment suggested that a two phase gas mitigation method would be sufficient to reduce the risk of ground gas and vapour ingress to buildings located on the site. This would have included an impermeable gas membrane above a vented void cavity below the concrete slab to allow the dispersal of any gases that may accumulate.

*8.69t* It was decided, however, that active rather than passive gas protection measures were required and therefore a Clean Air Blanket Gas Protection System was installed. This system pumps clean air through a layer of gravel material below the concrete slab at a positive pressure which reduces the upward movement of ground gases and removes any gases that do accumulate below the slab laterally around the edges of the building. The system contains a probe which can be used to periodically test its effectiveness. This measure has been tested and certified that it is working correctly.

### *4. Lining and realignment of Lottery's Reen*

*8.69u* The controlled waters risk assessment in relation to the presence of the reen was based on the assumption that the reen would be lined with an impermeable layer preventing leachate moving from the landfill waste into the reen and then into the River Usk.

*8.69v* These works have not been undertaken yet. It is probable this was due to the phased approach of the site development.

*8.69 w* It is acknowledged that the relining of the reen was never carried out. It is considered (as mentioned above) the lining of the reen was not carried out since it did not form part of the school site.

*8.69 x* Whilst it is not confirmed it is also considered it was not carried out as a part of the school site remediation since following its successful remediation the lining of the reen was no longer being necessary. This is confirmed by the more recent Site Investigations carried out to support this ES and is discussed in more detailed later in this chapter.

*8.69 y* The remediation of the site was signed off by Newport City Council and the Environmental Health Officer confirmed in an email to the Planning Officer that he was satisfied the remediation measures carried out accorded with the requirements of the agreed remediation strategy and were carried out to a satisfactory level. The Environmental Health Officer acknowledges the reen was not realigned but since the residential development was not being progressed this measure could be carried out in the future and was not imperative in relation to the end use of the school. A copy of this email is in Appendix 8.2A. There is no doubt the site in relation to the school was successfully remediated to the required standards and all relevant conditions were signed off.

*8.69 z* The school site was therefore effectively remediated and contamination successfully removed or treated. There is not considered to be any residing impacts that could, together with the proposed development, lead to a cumulative impact on the wider environment. The cumulative impact of the school site together with the proposed development is considered to be **negligible.**

*8.69 aa* Terra Firma was instructed to carry out the site investigation works to inform the ES and was aware of the extensive investigative and intrusive work carried out in relation to the Site pursuant of the previous planning consent including the remediation works carried out.

*8.69 bb* To ensure the site investigation works were thorough and had due regard to the potential cumulative impacts of the adjacent site the Site Investigation was carried out on the land north of the reen (previously remediated) and land to the south of the reen. The site investigations have effectively 'overlapped' with the previously remediated land to the north of the reen which has previously been signed off by Newport City Council as satisfactorily remediated. The site investigation in respect of this scheme re-investigated this area to ensure the findings of the Ground Conditions Chapter of this ES was comprehensive and robust in its assessment of the scheme on ground conditions together with any potential cumulative impacts borne from the adjacent school development. Furthermore, the Site Investigation has enabled verification of the remediation carried out at the Site.

*8.69 cc* This approach is considered robust and successful in assessing the potential cumulative impacts of the Glan Usk school development and the baseline conditions detailed in the next section indicate the existing ground conditions at the site including consideration of the already remediated land. It is considered the cumulative impacts of the identified developments together with the proposed scheme are **negligible** and have, as mentioned above, been picked up in the existing baseline conditions.

# 9. FLOOD RISK

This chapter replaces Chapter 9: Flood Risk of the original ES.

## INTRODUCTION

9.1 This chapter presents the Flood Consequences Assessment associated with the proposed development. It has been prepared by Waterman Transport & Development Ltd (WTD).

9.2 This Chapter has been completed following a Flood Consequences Assessment, a detailed assessment of the site and a review of the planning history. The planning history indicates that the Site benefits from an extant consent for 169no. dwellings and the development of a new school (outline planning consent 00/0768 and reserved matters consent 03/1531) which is conditioned to be built at a level of 9.8m AOD with a finished floor level of 10.4m AOD.

9.3 The previous consent has been implemented by virtue of the construction and completion of the school and thus represents a feasible fall-back position in terms of developing the site. The applicant has, in parallel to the preparation of the proposed scheme, commenced facilitating the completion of the extant consent. The development of 169no. dwellings at 10.4m AOD represents what will be delivered at the Site through the extant consent.

9.4 Therefore, the completion of the extant consent will form the 'baseline' scenario. Throughout this chapter, the 'proposed' scenario will therefore be compared to this 'baseline' scenario in order to assess the impact of the proposed development. A meeting with the Development Control Manager at Newport CC has confirmed that this approach is appropriate. Hence the environmental impacts of the proposals should be assessed by comparing the existing plus consented (baseline) scenario and not with the current undeveloped site.

9.5 The following chapter will, where necessary, carry out essential comparisons between the proposed scheme and the extant scheme to demonstrate the impacts in each scenario.

9.6 This chapter begins by setting out the hydrological regimes that currently exist and assesses the risk of flooding to the Site. The impact of the previous extant consent is then quantified. This is then compared with the impact of the proposed development. Due to a smaller degree of ground raising as part of the 'proposed' scheme, it will be shown that this offers betterment in terms of flood risk to surrounding properties when compared to the scheme that is currently being implemented.

9.7 The proposed flood mitigation measures and the residual risk/compliance with relevant planning policies are also assessed.

9.8 A comprehensive Flood Consequences Assessment (FCA) has been prepared by WTD, which is located in Appendix 9.9A. The findings of the FCA are summarised in this chapter.

## ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

### Data Sources

9.9 The assessment of the Site is based on the data and information provided by Greenhill Construction and their appointed technical team, as presented in the description of the development (Chapter 4) and includes a detailed topographic survey of the existing Site and a proposed development layout.

9.10 The Soilscapes dataset, produced by the National Soil Resources Institute, at a 1:250000 scale, provides a simplified soils dataset covering England and Wales. This was examined in order to provide information relating to the hydrogeology of the Site.

9.11 Information pertaining to the Groundwater regime at the Site was obtained from Natural Resources Wales and their National Groundwater datasets which include Groundwater Source Protection Zones; Aquifer Maps- Superficial Deposits Designation; Aquifer Maps- Bedrock Designation; and Groundwater Vulnerability Zones.

9.12 The Welsh Government TAN15 Development Advice Map was assessed to establish the flood risk designation for the Herbert Road Site.

9.13 In order to establish the likely extent of the extreme floodplain the Natural Resources Wales Flood Map was obtained as part of a Request for Information, which is based on the 'Newport SFRM Modelling – Update of Newport Tidal Model v3.1 study'.

9.14 Extreme sea levels were also provided by NRW as part of the initial Request for Information. The peak level estimates were derived for England and Wales using a national tidal model calibrated to UK tidal gauge data. 95% confidence bounds for the calculated values were also derived using the confidence intervals for each node location. The baseline estimations are for the year 2008, so climate change is calculated relative to this year.

9.15 Climate change was applied to the baseline tide level estimations using the current guidance on sea level rise provided by Department for Environment, Food and Rural Affairs (DEFRA).

9.16 In order to provide a site-specific assessment of flood risk, the NRW hydrodynamic 1d/2d ESTRY-TUFLOW model for the River Usk was obtained and re-run for the appropriate scenarios.

9.17 Liaison with NRW agreed the potential mechanisms of flooding and confirmed the appropriate scenarios required to satisfy the criteria in TAN15.

9.18 A Site Walkover verified the topographical survey and confirmed that the hydraulic model was representing actual conditions appropriately.

9.19 A flow monitoring survey of the ordinary watercourse running through the Herbert Road Site was carried out by Trueflow Surveys Ltd, with the aim of providing information regarding flow rates in the culverted watercourse.

9.20 The results of the flow monitoring survey were input into WinDES in order to derive peak flow hydrographs for selected return periods for this watercourse.

9.21 A small hydraulic model was constructed for the ordinary watercourse in order to understand the hydrological regime and to quantify the flood depths at the Site associated with this stream.

## Consultation

9.22 Consultation has been undertaken with Natural Resources Wales (in terms of flood risk) and the Local Authority and Dwr Cymru Welsh Water (in terms of existing drainage arrangements at the site).

9.23 This study has also referred to the existing Planning Permission for the Site which states that '*the site shall be raised to a level of 9.8 metres Above Ordnance Datum with the finished floor levels of all development set 600mm above the 9.8 metres standard…*' (Notice of Decision: Replacement Primary School, All Weather Pitch, Soft and Hard Play Areas and Residential Development; Glebelands, St Julians, Newport; App. No.: 00/0768). A supporting document also details the proposed layout which appears to show the ordinary watercourse that flows through the Site as being culverted beneath the development.

9.24 Consultation with Newport Local Authority has confirmed that they consider the 'consented' scheme as the 'baseline' scenario. Therefore, the site-specific Flood Consequences Assessment compares the proposed scheme with the scheme currently being implemented when presenting the key flood risk issues.

# LEGISLATIVE & PLANNING POLICY FRAMEWORK

## National Planning Policy

*Planning Policy Wales (November 2012)*

9.25 Planning Policy Wales' (2012) (PPW) is the overarching policy document that deals with planning matters in Wales. Chapter 4 of PPW confirms the Welsh Government's commitment to sustainable development. Chapter 12 of PPW deals with Infrastructure and paragraph 12.1.1 explains that adequate and efficient infrastructure is crucial for the economic, social and environmental sustainability of all parts of Wales.

9.26 Planning Policy Wales and its associated Technical Advice Note 15 (TAN 15) requires that consideration be given to the potential for flooding both to and from development of the Site. TAN 15: *Development and Flood Risk*, published in July 2004 by the Welsh Government, provides a framework for risks arising from all potential sources of flooding, as well as the potential for an adverse impact on third party flood risk as a result of the proposed development. 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 unless appropriately mitigated.

9.27 The provision of drainage is fundamental to any development and in order to comply with general sustainability objectives the proposed type and level of drainage provision for any development must be sustainable.

## Local Planning Policy

*Newport Unitary Development Plan (UDP) (1996- 2011)*

9.28 The Newport Unitary Development Plan (UDP) 1996 -2011 was formally adopted by Newport City Council in May 2006.

9.29 UDP Policy SP24 relates to flood risk and seeks to ensure that development does not result in an unacceptable risk of flooding, either on or off the site.

9.30 Policy SP27 sets out the requirement for Flood Consequence Assessments to be prepared to support planning applications where proposals are constrained by flood risk.

9.31 Policy U6 requires that development which could increase the risk of flooding due to additional surface water run-off includes appropriate and environmentally sympathetic mitigation measures.

*Draft Newport Local Development Plan (LDP) (2011- 2026)*

9.32 Reference to the draft Newport Local Development Plan (LDP) 2011 – 2026 (Deposit Plan, April 2012) indicates that the Herbert Road Site has been previously committed and is carried forward into the LDP.

9.33 The proposed Site is located within the 'Glebelands' site H(5), which is designated as a main source of housing land within the Newport Deposit Plan 2011-2026. It is detailed in the Deposit Plan that the Glebelands Site has 'existing commitments for residential development', to include 153 dwellings. The replacement primary school has now been constructed. This planning consent has been implemented by virtue of the construction of the primary school.

9.34 An extract from the Newport LDP is included as Appendix 9.1A herewith. This defines the proposed Site (H(1)) as 'Housing Commitment'.

9.35 Drawing No. TP-01 Rev A, included as Appendix 9.2A herewith, was submitted with Application No. 03/1531 for the 'Erection of a replacement Primary School, all weather pitch, soft and hard play areas and residential development' and which was granted permission in May 2004. It can be seen that the proposed layout does not include the ordinary watercourse, and it is assumed that it would have been culverted as part of the proposals.

# BASELINE CONDITIONS

## Baseline Surveys

9.36 Reference to the Welsh Government TAN 15 Development Advice Map (2009), which is included in Appendix 9.3A herewith, indicates that part of the Site is located within

Zone C1. This risk designation suggests that the existing site is at risk from an extreme flood event, namely the 0.5% probability flood event (tidal). However the Zone C1 designation signifies this part of the Site as being served by significant infrastructure including defences. There are also some areas within the Site which lie within Zone A i.e. considered to be at little or no risk of fluvial or coastal/tidal flooding.

9.37 The Natural Resources Wales Flood Map, which is included in Appendix 9.4A herewith, also indicates that the southern part of the existing site is at risk of flooding in both 0.5% and 0.1% probability events. However, the affected area of the Site is shown to be located within an Area benefitting from defences.

9.38 A topographical survey of the Site indicates that the existing ground levels in the north east portion of the Site are at around 6.9m AOD and rise to the east to approx. 7.4m AOD.

9.39 The Site is located (at least in part) on a former industrial /domestic landfill site. This is reflected in the topography of the main part of the Site which varies between 7.0m AOD and 8.0m AOD. The ground running immediately adjacent to the River Usk along the western boundary of the Site is generally higher, with levels rising from 9.0m AOD in the north to approx. 10.0mAOD halfway along the Site, before dropping to 9.5m AOD at the southern extent.

9.40 The site walkover verified the topographical survey and considered the potential for further mechanisms of flooding.

9.41 There are no known records of flooding at the proposed development site.

9.42 The scheme currently being implemented proposes to raise the Site to 9.8m AOD, with the finished floor levels of all development set 600mm above the 9.8 metres standard. This will form the baseline scenario for comparison with the proposed scenario.

## Hydrogeology

9.43 Historically, the site was operated as a landfill between the 1930s and 1960s. Imported material is known to have raised this low lying part of Newport by about four metres.

9.44 The Soilscapes dataset, produced by the National Soil Resources Institute, is a 1:250000 scale simplified soils dataset covering England and Wales. This shows the Site as being located in an area where 'freely draining slightly acid loamy soils' dominate. An extract from the Soilscapes dataset is included in Appendix 9.5A herewith.

9.45 According to Natural Resource Wales data, the made ground at the Site is likely to be sufficiently permeable so as to allow the limited lateral and vertical migration of water to the underlying aquifer and offsite receptors. The underlying strata are both classified as Secondary A Aquifers which may be capable of supporting water supplies at a local rather than strategic scale.

9.46 NRW data confirms the Site is not located within a Groundwater Protection Zone. The Site is deemed to be a Minor Aquifer, according to the Groundwater Vulnerability Zones.

## Hydrology

*Fluvial Regime*

9.47 The Site is located within the tidal reaches of the River Usk. This major watercourse rises in the mountains of Mid Wales and flows in a southerly direction through several major urban areas including Monmouth and the eastern valley towns to outfall into the Severn Estuary at Newport. To the north of Newport the River Usk meanders as it flows along the river valley of relatively flat gradient.

9.48 At Newport the natural geological features channel the river between the high ground occupied by Allt Yr Yn (near Newport Civic Centre) to the west of the river and Summerhill to the east. Downstream of this channel restriction the river again meanders across formerly estuarine mud flats to the Estuary. The former mud flats extend along the coast to Caldicot in the east.

*Ordinary Watercourse*

9.49 A small watercourse flows through the Herbert Road Site. An assessment of the catchment area of this ordinary watercourse indicates that it drains an area of circa 4.865 ha.

9.50 The catchment area is heavily urbanised and drains the residential area of St Julians to the east of the Herbert Road Site. The watercourse is culverted for a length of some 500m between St Julians Avenue and the Site, to which it enters via a culvert beneath the railway embankment.

9.51 The watercourse flows through the Herbert Road Site in open channel for a length of approx. 180m before discharging into the River Usk via a flapped pipe of 0.575m diameter. Along the open channel section, the watercourse is conveyed beneath the newly constructed pedestrian access route into the Glan Usk School Site via a circular culvert of 2m diameter.

9.52 It is assumed that the area to the north of the Site encompassing the 'Glebelands' and the new Glan Usk School site drains into this watercourse, although the exact location of the connection cannot be established.

9.53 In order to better understand the flow regime for the ordinary watercourse, a flow monitoring survey was carried out.

9.54 The flow data indicated that during dry weather the flow rate in the culvert is generally less than 5 l/s. In storm conditions the flow rates reached a maximum of 225 l/s.

9.55 The Site walkover indicated that there is no flap valve at the outlet of the 2m circular culvert. The invert level of the culvert is 6.03m AOD. This suggests that with a peak MHWS Tide Level of 6.45m AOD for the present-day, and 7.5m AOD for 2114, water levels in the River Usk will back up this watercourse and the ditch is therefore considered to be tidally influenced.

9.56 According to the consented scheme layout, the ordinary watercourse will be culverted for the section between the eastern and western Site boundary. No details pertaining to the size of the culvert or exact details of the drainage arrangements are available.

*Tidal Regime*

9.57 The City of Newport is located in the upper part of the Severn Estuary. The coastal geomorphology of the Bristol Channel and Severn Estuary encourages the development of high tidal ranges. Tidal water is constricted as it propagates up the Estuary and as such, the tidal range is greater with distance up the Estuary.

9.58 In this case, the coastal fringe to the south and south east of Newport is potentially at risk from tidal flooding in the event of a high return period tide.

9.59 Flood defences in the Newport area vary in form and protection level but generally the defences on the west bank of the river are of a higher protection level than on the east.

9.60 The formal defences along the left bank of the River Usk end at the downstream boundary of the proposed Site, adjacent to Courtney Street. However, there is a raised embankment with a formed pathway on top that runs along the left bank of the River Usk from the southern extent of the proposed Site to beyond the M4 Motorway Bridge and Glebelands Park to the north. The crest level of this embankment is ~9.5mAOD at the downstream extent. This rises to approx. 10.3mAOD for a short section before returning to levels of generally 9.3-9.5mAOD. The lowest section of the bank is located at the outfall of the small drainage ditch to the River Usk where ground levels are ~9.1m AOD.

9.61 There is no operational flap valve at the downstream end of the small 0.575m diameter culvert outfall, which conveys the ordinary watercourse into the River Usk

*Hydrological Calculations*

9.62 The current NRW Flood Map in this area is derived from the Newport SFRM Modelling- Update of Newport Tidal Model Study v3.1, which is based on a hydrodynamic 1d/2d ESTRY-TUFLOW model completed in December 2011.

9.63 The modelling exercise assessed the flood risk from the River Usk and major tributaries, and included the major flood defences as well as the newly constructed East Bank defence along the River Usk.

9.64 The hydraulic modelling confirmed that the Site will remain unaffected by floodwaters during the extreme fluvial flood in the River Usk.

9.65 The model was also run for the defended and undefended tidal flood events as well as the defended scenario with climate change. QMED was applied to the fluvial inflows for all model runs.

9.66 Following consultation with NRW, it was agreed that they would supply the River Usk tidal model in order to inform the Site-specific FCA.

*Peak Tide Level Estimation*

9.67 The NRW model was supplied with the peak tide levels for the 0.5% APE and the 0.1% APE for the current-day scenario (2011).

9.68 There is increasing scientific evidence to suggest that the global climate is changing. It is therefore necessary to consider the potential impacts of Climate Change in terms of tidal flood risk. Global sea level is predicted to rise with the onset of Climate Change.

9.69 In this case, DEFRA has produced guidance regarding potential sea level rise. Table 1 provides a summary of the net sea level allowances in the vicinity of the proposed development site.

9.70 In 2011, DEFRA carried out a 'Technical Report Design sea levels' study which was designed to produce a nationally consistent set of extreme sea levels. These levels were derived using a tidal model calibrated to UK tidal gauge data, and produced estimates for the extreme tidal events for the baseline year (2008). In order to derive the 0.5% and 0.1% probability tidal levels for the year 2014 and 2114, the 2008 year levels have been extrapolated based on current DEFRA guidance for sea level rise. The tidal levels used to inform this FCA are summarised in Table 1.

**Table 1: Regional Net Sea Level Rise Allowances**:

| **Administrative Region** | **Net Sea Level Rise (mm/yr)** | | | |
|---|---|---|---|---|
| | 1990 to 2025 | 2025 to 2055 | 2055 to 2085 | 2085 to 2115 |
| Wales | 3.5 | 8.0 | 11.5 | 14.5 |

The extreme tide levels calculated for the FCA are included in Table 2 below.

**Table 2: Peak Tide Level Estimates**:

| | **0.5% APE, 2114** | **0.1% APE, 2014** |
|---|---|---|
| Tide Level (m AOD) | 9.545 | 8.76 |
| Confidence Interval | +/-0.4m | +/-0.6m |

*Peak flow estimate for the Ordinary Watercourse*

9.71 The data collected from the monitoring survey was used to estimate the return periods for the two storm events that occurred during the monitoring period.

9.72 Using the estimated return periods, and the relevant FEH catchment descriptors for the estimated catchment extent, peak flow estimates for the 1.0% and 0.1% annual probability storm events were calculated using Windes. An increase of 30% was then added to the peak flow estimates for the 1.0% annual probability storm events (to account for climate change).

9.73 Peak flow estimates were also generated to account for the contribution from the Glan Usk School Site. Connectivity between the open channel and the school development has been assumed in order to provide a conservative estimate of the watercourse's capacity. An assessment of OS data indicated that the Glan Usk School Site comprises an impermeable area of 1.85ha.

9.74 The peak flow estimates are detailed in Table 3 below.

**Table 3: Peak Flow Estimates**:

| **Peak flow estimates for the 1.0% probability storm + 30% / 0.1% probability storm** | | |
|---|---|---|
| | **Summer** | **Winter** |
| Ordinary Watercourse | 0.90 / 1.17 cumecs | 0.99 / 1.29 cumecs |
| Glan Usk School Site* | 0.69 / 0.88 cumecs | 0.56 / 0.72 cumecs |
| * The hydrographs for the 60min storm have been used so as to coincide with the peak baseflow | | |

*Hydraulic Modelling of the River Usk*

9.75 In order to investigate the flood mechanisms in more detail and assess the degree of tidal flooding to the proposed development, WTD obtained a copy of the NRW hydraulic model.

9.76 Advice was sought from NRW with regard to the scenarios required for assessing tidal flood risk for the proposed development. The NRW Flood Risk Analysis Team considered the development proposals in line with interim guidance relating to the application of the Upper Bound Confidence Limits to tidal scenarios. With specific reference to the NRW Data Request (Ref Q3_133, dated 14th Nov 2012) and the March 2014 FCA Report (Issue F), the scenarios recommended and subsequently modelled are:
- 0.5% probability event plus allowance for climate change (DESIGN EVENT)
- 0.1% probability event (present-day) (DESIGN EVENT)
- 0.5% probability event plus allowance for climate change plus Upper Confidence Limit (SENSITIVITY EVENT)

9.77 Based on these recommendations, the NRW model was re-run for the 0.5% APE event in 2114, and the 0.1% APE in 2014. This assumes a Lifetime of Development of 100 years in line with Newport City Council current advice. The appropriate values were added to the hydraulic model boundary to account for the anticipated sea-level rise.

9.78 The model outputs indicate that the Site is affected by maximum flood depths of up to 2m during the 0.5% probability tidal events in 2114 in the DEFENDED scenario. Peak water levels within the River Usk channel adjacent to the Site are circa 9.6m AOD. Scrutiny of the topographic survey data indicates that the raised embankment along the left bank of the River Usk at this location ranges between 10.38m AOD and 9.12m AOD.

9.79 The Site will not be affected during the 0.1% probability tidal event for the present-day (2014) in the DEFENDED scenario. The model output data indicates that the modelled peak water levels within the River Usk channel are approx. 8.97m AOD.

9.80 With the application of the upper confidence interval to the peak tidal levels, the existing Site is shown to experience maximum flood depths of circa 2m.

9.81 The results of the model can be seen in graphical form in Drawing No. CIV13980-C-SA-90-1001-A01 and Drawing No. CIV13980-C-SA-90-1002-A01, included in Appendix 9.6A herewith, which show the existing floodplain for the 0.5% (2114) (with upper confidence interval) and 0.1% (2014) probability events respectively.

*Hydraulic Modelling of the Ordinary Watercourse*

9.82 The model was based on the larger River Usk model, which was supplied to WTD to assess the flood risk from extreme tidal events in the adjacent River Usk. The model was trimmed to encompass the Herbert Road Site and the ordinary watercourse.

9.83 Modelling has shown that the floodwaters spill out of bank to locally affect the existing site. However the depth of this flood water is shallow in both a 1%+CC and a 0.1% probability flood event.

9.84 This modelling is summarised in the report entitled 'Hydrological Study of the on-site Ordinary Watercourse', which is included in Appendix 9.7A herewith.

9.85 Topographic survey data is used to represent the channel for the existing and the proposed scenario, as well as the consented scheme (refer to FCA for more details).

## Cumulative Impacts

9.86 The Site itself benefits from an extant planning permission which is in the process of being implemented by the applicant which permits the Site to be raised to 9.8m AOD, with building slabs set at 10.4m AOD. The Site is allocated as a committed housing site for residential purposes in the adopted Unitary Development Plan for 169 dwellings.

9.87 There are also a number of developments within the area that may have an impact on the Herbert Road development. Further details are provided below.

9.88 Outline Planning Permission (Application No. 00/0078) for a Replacement Primary School, all weather pitch, soft and hard play areas and residential development exists for the area to the immediate north of the Site, as well as the Site itself.

9.89 The replacement primary school and associated play area has now been constructed, and has been included within the assessment of flood risk at the Herbert Road Site. Hydraulic modelling has accounted for the school building, as well as the contribution of the school site to storm flood flows. Therefore, the cumulative impact of this development is considered to be **negligible**.

9.90 Following completion of the replacement primary school, the planning consent (00/0078) has been implemented by virtue of the construction. However, it is now proposed to construct the proposed buildings at 9.95m AOD rather than 10.4m AOD. Therefore, the cumulative impact in terms of flood risk is considered to be **minor beneficial.**

9.91 Reserved Matters (Ref. 03/1531) for the Erection of replacement primary school, all weather pitch, soft and hard play and residential development. As explained above, the primary school has now been constructed, and the Site has been incorporated into the Flood Consequences Assessment. Therefore, the cumulative impact of this development is considered to be **negligible**.

9.92 Application Ref. 10/1322 proposes the installation of replacement flood defences, together with the construction of a new section of walling. This seeks to replace the existing flood defences. The applicant for this work is Natural Resources Wales/Environment Agency. The application confirms that the proposed flood wall structure will be a flood risk management structure and will be an asset, and remain the property, of Natural Resources Wales. As such the structure will be maintainable by the Natural Resources Wales. The proposals will serve to maintain the existing standard of protection to the Herbert Road Site. Therefore, the cumulative impact of this development is considered to be **negligible.**

9.93 A full application has been submitted (No. 11/0843) for the Redevelopment of the former Evans Halshaw, Turner Street, Newport, NP19 7XH site which will comprise of 32no. residential units consisting 2, 3 and 4 bedroom houses and flats together with external works. A detailed FCA was submitted with this application which sought to address the flood risk at the Site. This report has assessed the likelihood of flooding at the Site and has been reviewed by NRW. NRW have confirmed that the Site is unlikely to be significantly affected by the extreme tidal event in 2061 due to the presence of the Newport Riverside flood alleviation scheme. Therefore, the cumulative impact of this development is considered to be **negligible.**

9.94 It should be noted that all proposed development within the floodplain must submit a Flood Consequences Assessment with a planning application. All FCAs are subsequently reviewed and checked by Natural Resources Wales who are statutory consultees for planning applications. NRW review FCAs to ensure that the proposed developments remain compliant with the requirements of Planning Policy Wales and specifically TAN15. TAN15 demands that new development causes 'No flooding elsewhere'.

9.95 One of the key technical requirements for assessing flooding consequences is to assess 'the likely impact of any displaced water on neighbouring or other locations which might be affected subsequent to development'. The implications of 'no flooding elsewhere' will have undergone a comprehensive review recently by NRW.

9.96 As a result, the cumulative impact of committed and future development will be **negligible**.

## ASSESSMENT OF POTENTIAL IMPACTS

9.97 As explained in paragraph 9.3, the extant consent is currently being implemented and will be progressed if the proposed scheme is not permitted. The extant consented scheme involves raising ground levels to a maximum of 10.4m AOD compared to 9.95m AOD for the proposed scheme. The FCA for the Site shows that third party detriment is reduced as a result of progressing the proposed scheme rather than the extant consented scheme.

### Construction

9.98 Construction impacts are considered to occur as a consequence of the actual development (preliminary earthworks and construction operations) itself, and are all considered as being potentially adverse in nature. The following potentially significant impacts are typically associated with construction works and are considered relevant to this site.

- Site drainage;
- Surface water outfalls (existing and proposed);
- Delivery/storage of construction materials;
- Storage/handling of materials/oils/chemicals;
- Siltation;
- Concrete mixing; and
- Cross contamination of geological strata due to piling.

9.99 It is required that current site levels are raised to ensure that the risk of flooding is manageable for the lifetime of the development. Peak flood levels for the 0.1% probability tidal event in 2014 are not sufficient to affect the development Site; therefore, the raising of ground levels within the floodplain without mitigation is considered to have a **negligible** impact in respect of tidal flooding.

9.100 Floodwater from the Ordinary Watercourse is shown to spill out of bank onto the existing site. By raising the ground levels within the Site, floodwaters spilling out of the existing channel are prevented from flowing overland in a southerly direction. In this respect the raising of ground levels within the floodplain without mitigation could have a **minor adverse** impact in respect of fluvial flooding from the Ordinary Watercourse.

9.101 However, the scheme currently being implemented proposes to culvert the length of watercourse through the Site. By retaining the ordinary watercourse in open channel, the capacity of the channel is increased, and the potential for blockage is greatly reduced. Therefore, when compared to the scheme currently being implemented, it is considered that the construction of the plateau will result in a **moderate beneficial** impact.

9.102 During construction, there is flood risk associated with the period during which construction works are being undertaken prior to completion of the proposed mitigation measures. Sudden rainfall events can mobilise silt and materials held within the site, and if not controlled these could be conveyed to the tidally influenced River Usk channel. Without mitigation could have a **moderate adverse** impact.

9.103 The inappropriate siting of stockpiled material may have an adverse effect on the current hydrological regime by diverting flood water and/or surface water flow generated from rainfall events into previously unaffected third party property. Considering the limited flooding associated with the Ordinary Watercourse the potential impact of this would be **negligible**.

9.104 The proposed development will generate additional surface water flows from the increased impermeable areas. The resulting pressure on the downstream system could potentially cause flooding in extreme rainfall events. The impact of the construction phase of the proposed development (i.e. increased impermeable areas and therefore increased rate of runoff) on the existing hydrological regime, without mitigation, could be **minor adverse**

9.105 The risk of groundwater flooding due to excavation below the water table could cause injury to site workers and delay works. In this case, the impact is deemed to be **minor adverse.**

## Operation

9.106 There is potential for tidal and fluvial flooding to occur on the Site post construction unless appropriate mitigation measures are implemented.

9.107 By raising Site levels to 9.8m AOD and finished floor levels to 9.95m AOD, this will ensure that the proposed buildings will remain unaffected by tidal floodwaters for all modelled scenarios and thereby the potential impact of tidal flooding is **negligible**.

9.108 Floodwater from the Ordinary Watercourse is shown to spill out of bank onto the existing site during the 1.0%+CC and 0.1% APE fluvial events, which occur simultaneously with the peak of the mean high water spring tide event. By raising the ground levels within the Site and retaining an area of ground either side of the watercourse for both environmental benefits and flood storage, floodwaters spilling out of the existing channel are prevented from flowing overland in a southerly direction. In this respect the raising of ground levels within the floodplain without mitigation would have a minor adverse impact in respect of localised fluvial flood levels in the Ordinary Watercourse.

9.109 By maintaining an open channel section for the ordinary watercourse rather than a culverted section (as shown in the consented design layout), the available flood storage and the ecological benefit is significantly improved. Therefore, the proposed layout is considered to have a moderate beneficial impact when compared to the scheme currently being implemented.

9.110 The proposed development would result in increased impermeable areas, which in turn would result in higher levels of surface water run-off. The resulting increase in discharge could cause the downstream system to flood in extreme rainfall events.

9.111 Surface water generated from an extreme rainfall event, however, will enter the drainage system for the proposed development, details of which are provided in Chapter 10: Drainage. It is proposed to discharge surface water from the development into the ordinary watercourse. The proposed development will result in increased impermeable areas, which in turn would result in higher levels of surface water run-off.

9.112 The reach of ordinary watercourse running through the site and its outfall into the River Usk is tidally dominated. In this case, the additional surface water flows are considered to have a **negligible** impact during 'normal' flow conditions.

9.113 The resulting increase in discharge may increase water levels locally within the ordinary watercourse during coincident periods of tidal locking and extreme rainfall events. Hydraulic modelling has however shown that there is sufficient capacity within the channel to accommodate this additional flow. Therefore, the potential impact of increased surface water flow is considered to be **negligible**.

9.114 The impact of raising ground levels within the proposed development site on the existing hydrological regime, without mitigation, would be **negligible / minor adverse** for tidal / fluvial flooding respectively.

9.115 The proposed access/egress arrangement is shown to be affected by floodwaters during the 0.5% probability event in 2114. Notwithstanding this, a flood-free route from the proposed site is available during the first and second modelled tidal cycles. The access would be from the North through the Glan Usk School grounds.

9.116 This would allow residents, once alerted to the extreme tidal levels, to make their way off the Site onto Bank Street. Flood waters are shown to flow through the School Site during the third tidal cycle, with flood waters generally not exceeding 0.6m and associated velocities of circa 0.2m/s. Whilst this is compliant with the maximum flood depths and velocities recommended within TAN15, it is noted that this area is also only affected for a short period of 2 hours.

9.117 Therefore, the safest course of action during an extreme flood event would be to remain on-site and wait for floodwaters to recede before attempting to gain access to/from the Site. The preceding two tidal cycles would act as a warning for a potential extreme tidal event, and would allow residents to take appropriate action. With approx. 12 hours between each tidal peak, there is sufficient time to make arrangements if necessary.

9.118 Therefore, the risk to residents is deemed to be **Negligible.**

## MITIGATION MEASURES

9.119 This section provides a description of the proposed measures, which have been designed into the scheme to reduce/minimise adverse environmental effects.

9.120 The general philosophy of approach to the development has been to create proposals which are sympathetic to the site topography and environmental setting. Where specific further mitigation is desirable, such measures are described below.

### Construction

9.121 Hydraulic modelling has shown that the Site will remain flood-free during the current-day (2014) extreme tidal events up to the 0.1% APE. Whilst the existing Site is shown to flood during the 0.5% APE in 2114, hydraulic modelling for preceding studies has indicated that the site remains unaffected by floodwaters during the 0.5% APE in 2064. Assuming that the Site will be constructed in the next 2 years, there is limited scope for tidal flooding during the construction phase.

9.122 In order to accommodate the floodwater associated with the ordinary watercourse that runs through the Site, it is proposed to retain an area of ground either side of the watercourse for both environmental benefits and flood storage. All proposed ground-raising is outside this area.

9.123 A separate hydraulic modelling exercise has shown that the existing Site is at risk of minor flooding (from this ordinary watercourse) during a 1.0%+CC APE.

9.124 This is due to the fact that the fluvial inflow has been modelled so that the hydrograph peaks simultaneously with the peak of the tidal cycle. During periods of tidal locking, the fluvial flow backs up in the channel and spills onto the existing Site. Modelling shows that the peak water level reaches circa 8m AOD which is some 1.8m lower than the level of the proposed development plateau.

9.125 It is also proposed to increase the 2m diameter circular culvert that conveys the watercourse beneath the pedestrian walkway to 2.5m diameter. In addition, a flap-valve will be installed at the outlet of the circular culvert to prevent the backflow of tidal waters from the River Usk during large tidal events. The risk associated with the installation of a flap valve is considered to be **moderate beneficial** when compared to both the existing and the consented scenarios. This is illustrated by Drawing No. C-SA-90-2007-A01 in Appendix 9.8A.

9.126 Due to the tidal nature of the outfall of the ordinary watercourse into the River Usk and the large capacity of the river at this location, the unrestricted discharge of the proposed drainage system into the ordinary watercourse and ultimately into the River Usk will not affect downstream properties.

9.127 The agreed construction protocols will be included as part of the Construction Environment Management Plan, to be approved prior to commencement of the construction works.

9.128 Other measures will also be adopted to minimise the impacts of surface water discharges during the construction phase and these will include the following as a minimum:

- Where feasible, site-specific construction techniques will be adopted to ensure that no migration pathways are created to jeopardise groundwater quality. Where deeper foundations are required, proposed appropriate pilling techniques (i.e. non driven techniques) will be considered to minimise the associated risk;
- The use of appropriate measures as outlined in PPGs to prevent spillage of potentially polluting substances, including:
    - Appropriate storage and handling measures for all hydrocarbon fuels and lubricating oils, including the use of bunded storage areas or the use of double-skinned storage tanks;
    - The use of drip trays for static plant and designated refuelling areas for mobile plant;
    - The implementation of appropriate spillage contingency measures to mitigate the impact of such spillages on the surface water; and
    - Appropriate personnel awareness training of the potential environmental implications of all construction work on site.
- The prevention of silt-laden run-off and mud entering the surrounding surface water drains and watercourses by:
    - Timely site phasing and engineering, thus minimising un-surfaced and un-vegetated areas of the site to as small as practicably possible;
    - The provision of measures to intercept and treat such run-off prior to it leaving the site, including the use of peripheral cut-off ditches, settlement facilities, filtration and/or use of flocculants to effect the removal of water borne particulates; and
    - The provision of wheel-cleaning equipment for site plant to prevent the tracking of mud onto the public highway and therefore into the off-site surface water drainage systems.

## Operation

9.129 The previous sections of this Chapter described the local flood regime and potential mechanisms of flooding.

9.130 The proposed layout and levels have been designed to ensure that the risk of flooding to the proposed development is acceptable for the lifetime of the development.

9.131 In order to comply with the threshold and maximum depth of flooding criteria in TAN 15 it is proposed to raise ground to form a development plateau set at 9.8m AOD and building FFLs at 9.95m AOD, which will ensure that the development remains flood free during the 0.5% probability tidal event in 2114, with the Upper Confidence Interval applied to peak tide level estimates.

9.132 It is also proposed to increase the size of the existing 2m diameter circular culvert along the ordinary watercourse and to install a flap valve at the downstream end to increase the capacity of the pipe during periods of tide lock.

9.133 Hydraulic modelling has shown that when compared to the scheme currently being implemented, the risk will be minor beneficial, as an overall reduction in peak water levels is observed for the proposed scheme.

9.134 Natural Resources Wales has confirmed agreement with the principle of raising ground levels in this instance.

9.135 The proposed buildings have been shown to remain flood-free during all tidal design events/modelled scenarios for the present-day (2014) and the future (2114).

9.136 Surface water generated from an extreme rainfall event will enter the drainage system for the proposed development, details of which are provided in Chapter 10: Drainage. This will improve the existing situation by capturing surface water run-off and preventing potential overland flow affecting existing adjacent properties. It is proposed that the drainage system will discharge into the ordinary watercourse.

9.137 In order to accommodate the fluvial floodwater associated with the ordinary watercourse, the proposed development will retain an area of ground either side of the watercourse for both environmental benefits and flood storage. All proposed ground raising is outside this area.

9.138 Due to the tidal nature of the outfall of the ordinary watercourse into the River Usk and the large capacity of the river at this location, the unrestricted discharge of the proposed drainage system into ordinary watercourse will not affect downstream properties.

## RESIDUAL IMPACTS ASSESSMENT

### Construction

9.139 Modelling has shown that the Site will remain flood-free during all extreme tidal events up to the 0.1% APE for the present-day scenario. Therefore, the risk of increasing flooding to downstream properties during the construction phase of the development is deemed to be **Negligible**.

9.140 The retention of an area of unraised land adjacent to the ordinary watercourse will provide flood storage in the event that an extreme fluvial flood flow in the watercourse should coincide with a high tide (i.e. a Mean High Water Spring tide). It is noted that peak flood levels are raised locally within the Herbert Road Site, however, due to the conservative nature of the hydrology used in the model, the restricted capacity of the upstream culvert and the elevated ground levels the other side of the railway it is considered that the increased water surface elevations at this location will have a **Negligible** impact on flood levels upstream.

9.141 The implementation of the construction phase protocols will temporarily enhance the management of surface water on the site and will significantly reduce the risk of off-site flooding caused by the discharge of surface and near surface waters emanating from the site. In this case, the residual impact is deemed to be **Negligible.**

9.142 With implementation of all mitigation measures the impact of the construction phase of the proposed development on the existing hydrological regime would be **Negligible**.

## Operation

9.143 The method of impact assessment for the operational phase is similar to that for the construction phase.

9.144 It is proposed that the Site will be raised to 9.8m AOD and that minimum ground floor slab levels applicable to the new development should be 9.95m AOD, which ensures that the proposed buildings remain dry during the 0.5% probability tidal event (with Upper Confidence Interval applied) throughout the lifetime of the development, and is therefore compliant with TAN 15.

9.145 The elevated development plateaux will ensure that the proposed housing remains dry during a 0.1% probability fluvial event with a MHWS tidal event.

9.146 In this case, the risk of flooding to the occupants of the new development proposed on-site is considered to be low. In this case, the residual impact of flooding to the developed Site is deemed to be **Negligible**.

9.147 The FCA has demonstrated that the proposed scheme offers betterment in terms of third party flood risk when compared to the scheme currently being implemented. Maximum flood levels are decreased by circa 30mm for the proposed scheme.

9.148 In terms of ecological impacts to the River Usk, there will be minimal disturbance of the current hydrological regime within the estuary. The resulting residual impact is deemed to be **Negligible.**

9.149 In terms of emergency access/egress during a large tidal event, it has been shown that during the 0.5% APE in 2114 (with upper confidence level applied), the main access/egress route will not be compliant with TAN15 in terms of depth and velocity. However, an alternative pedestrian access/egress route is available at the northern part of the Site through the Glan Usk School.

9.150 The proposed buildings will not be affected by the 0.5% probability tidal event in 2114. Therefore, the most appropriate course of action should the main access/egress be affected by floodwaters would be to remain on the Site until floodwaters on the surrounding land has subsided.

9.151 The principal mechanism of flooding is an extreme tidal event in the River Usk Estuary. NRW can provide reliable tidal flood warnings as part of their Floodline Direct Service. Furthermore, a tidal event has a limited duration and floodwaters will recede once the peak of the tidal cycle has passed, thus allowing normal access/egress to resume.

9.152 Surface water generated from an extreme rainfall event will enter the drainage system for the proposed development, details of which are provided in Chapter 10: Drainage. This will improve the existing situation by capturing surface water run-off and preventing potential overland flow towards existing adjacent properties. It is proposed that the drainage system will discharge into the ordinary watercourse. Hydraulic modelling has shown that this will raise water levels within the ordinary watercourse when compared to the existing scenario; however, this does not cause floodwaters to spill out of bank and initiate an overland flood flow route towards third party property. In this respect, the residual impact will be **minor adverse**.

9.153 In order to accommodate the fluvial floodwater associated with the ordinary watercourse, the proposed development will retain an area of ground either side of the watercourse for both environmental benefits and flood storage. All proposed ground raising is outside this area. Together with this, the increased culvert size and the insertion of a flap valve on the outfall of the downstream culvert creates betterment and in this respect, the residual impact will be **minor beneficial** when compared to the existing scenario.

9.154 The scheme currently being implemented proposes to culvert this section of the ordinary watercourse. It is general policy to retain watercourses in open channel due to the risk associated with blockage, the potential ecological degradation, and the responsibility for maintenance when in culvert. Therefore the impact of the proposed scheme is considered to be **moderate beneficial** when compared to the consented scheme.

9.155 Due to the tidal nature of the outfall of the ordinary watercourse into the River Usk and the large capacity of the river at this location, the unrestricted discharge of the proposed drainage system into ordinary watercourse will have a **negligible** impact on downstream properties.

## Recommendations

*Construction*

9.156 The Construction Management Plan should include advice on the risk of flooding and the appropriate locations for the storage of construction materials, so as to avoid the diversion of potential surface water flow.

*Operation*

9.157 An Emergency Flood Plan should be compiled in order to identify the risk of flooding posed to the site and the appropriate course of action should the flooding of this area become a reality.

## Summary and Conclusions

*Baseline*

9.158 The Natural Resource Wales Flood Map and the TAN 15 DAM's indicate that part of the Site is at risk of flooding.

9.159 The hydraulic analysis of potential mechanisms of flooding has established that the Site will not be affected by an extreme fluvial flood event in the River Usk.

9.160 Hydraulic modelling shows that an extreme fluvial event in the Ordinary Watercourse would cause shallow flooding to the currently low lying site.

9.161 Hydraulic modelling shows that an extreme tidal event in the River Usk Estuary will not affect the Site for the present-day scenario up to the 0.1% probability tidal event.

9.162 The existing Site will be affected by floodwaters during the 0.5% APE in 2114 when the Upper Confidence Interval is applied to the peak level estimates.

9.163 The extant consented scheme has already been implemented by virtue of the construction of the Glan Usk School. Therefore, the consented scheme is assumed as the 'baseline' scenario when assessing the impacts of the proposed scheme.

*Development Options and Mitigation Measures*

9.164 The proposed development has been shown to be unaffected by the 0.5% probability event (2014) and the 0.1% probability event (2014).

9.165 The existing Site is affected by the 0.5% probability tidal event (2114) when the Upper Confidence Interval is applied to the peak level estimate.

9.166 In order to ensure that the proposed Site remains dry during the 0.5% APE, even with the Upper Confidence Interval applied, it is proposed to raise Site levels to 9.8m AOD with FFLs of 9.95m AOD.

9.167 This creates betterment in terms of third party impact, by decreasing maximum flood levels by circa 30mm for the residential areas around the Site when compared to the scheme currently being implemented.

9.168 The proposed development site will require a new surface water drainage network. The proposed development will be drained via separate surface and foul water systems.

9.169 The safest option for emergency access/egress during the 0.5% probability tidal event in 2114 (with Upper Confidence Interval applied) is to remain on-Site until flood waters recede. An alternative pedestrian access/egress route is available at the northern boundary of the Site, which provides access to road infrastructure to the east.

9.170 Details pertaining to the proposed on-site drainage system are dealt with in the drainage chapter of this ES.

*Likely Significant Effects*

Table 8.3 below, contains a summary of the likely significant effects of the Proposed Development.

**Table 8.3: Table of Significance –Flood Risk**

| **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** | | | | | | | | | | | |
| Risk of groundwater flooding due to excavation beneath the groundwater table. | Temporary and potentially Permanent | Minor Adverse | Careful consideration in the design of drainage/sub-structures prior to the construction phase will be carried out such that deep excavations are minimised. De-watering system to be employed where necessary | | | | | | | L | Negligible |
| Accidental spillages of contaminants and increase in concentrations of pollutants such as suspended solids during earthworks and heavy plant movement during construction, affecting groundwater and quality of surface water (overland flow) | Temporary | Moderate 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 to off-site properties by overland flow from the site could be exacerbated by the increase in surface water runoff | Temporary | Negligible | Programme construction/completion of drainage works early in the construction programme. Contractor method statement to include temporary site drainage proposals and require approval prior to site start. | | | | | | | L | Negligible |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Completed Development** | | | | | | | | | | | |
| Risk of Tidal Flooding to the proposed Site and its main vehicular access | Permanent | Major Adverse | Proposals to create a raised development plateau within the Site. Compilation and adoption of an Emergency Flood Plan to advise future occupants of the appropriate course of action during a flood event. Identification of an emergency access/egress route during a large tidal event | | | | | | | L | Negligible |
| Adverse effect on third party flood risk for tidal flooding due to the requirement to raise ground levels within the Site. | Permanent | Negligible | When compared to the consented scheme, the proposed ground-raising within this area reduces the maximum flood level by ~30mm for the surrounding residential properties, thus providing betterment in terms of third party impact. | | | | | | | L | Minor Beneficial |
| Risk of Fluvial Flooding from the Ordinary Watercourse to the proposed Site | Permanent | Minor Adverse | Proposals to create a raised development plateau within the Site, which has been shown to be flood free during a 0.1% probability fluvial flood event | | | | | | | L | Negligible |
| Adverse effect on third party flood risk for fluvial flooding for the Ordinary Watercourse due to the requirement to raise ground levels within the Site. | Permanent | Minor Adverse | Proposals to create a raised development plateau within the Site include the retention of some of the existing/potential floodplain within the existing site for flood storage as well as enlarging the existing culvert dimensions and installing a flap valve on the downstream culvert. Provides betterment in terms of third party impact when compared to the consented scheme. | | | | | | | L | Minor Beneficial |
| Increased surface water run-off from impermeable areas could (without mitigation) cause an increased flooding to downstream property. | Permanent | Minor Adverse | Discharge into the tidally dominated waters of the Ordinary Watercourse and the River Usk | | | | | | | L | Minor Beneficial |

*** Geographical Level of Importance**

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

# 10. DRAINAGE

This Chapter replaces Chapter 10: Drainage of the original ES.

## INTRODUCTION

10.1 This Chapter of the Environmental Statement (ES), written by Waterman Transport & Development Ltd (WTD), presents the Drainage assessment for the proposed development. It includes the relevant:

- assessment methodology and significant criteria;
- legislation and policy;
- baseline conditions;
- cumulative impact;
- identification of potential impacts;
- assessment of the construction and operational phases of the project;
- design / mitigation measures and
- residual impact assessment and recommendations.

10.2 The existing brownfield site is to be developed for residential use and will be drained by separate new surface water and foul water drainage systems.

10.3 The Natural Resource Wales Flood Map and the TAN 15 Development Advice Map both indicate that part of the site is at risk of flooding. A Flood Consequences Assessment (FCA) has been prepared by WTD, which is appended to the Flood Risk chapter of this ES. The findings of the FCA are summarised in the Flood Risk chapter.

10.4 This Drainage chapter sets out the drainage regimes that currently exist, and comments on the future site drainage proposals as illustrated on the site drainage plan provided by Greenhill Construction.

## ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

### Assessment Methodolgy

10.5 This assessment is based on Drainage Plan no. SW49(ENG)101 and supporting comments on the drainage strategy, provided by Greenhill Construction. This plan is included herewith as Appendix 10.1. In order to carry out the assessment, further data have been obtained relating to:

Dwr Cymru Welsh Water (DCWW) sewerage records;
Ordnance Survey maps, topographical surveys, historical maps and Natural Resources Wales (NRW) floodplain and groundwater vulnerability maps.

10.6 The Soilscapes dataset, produced by the National Soil Resources Institute, at a 1:250000 scale, provides a simplified soils dataset covering England and Wales. This was examined in order to provide information relating to the hydrogeology of the Site.

10.7 A Site Walkover verified the topographical survey. and confirmed that the hydraulic model was representing actual conditions appropriately.

10.8 A flow monitoring survey of the ordinary watercourse running through the Herbert Road Site was carried out as part of the flood study, with the aim of providing information regarding flow rates in the culverted watercourse. Refer to the Flood Risk chapter of this ES for full details of the watercourse monitoring and conclusions.

10.9 TAN 15 requires that consideration be given for any potential for flooding to occur from surface water emanating from the developed site. TAN 15 requires that betterment is achieved through the redevelopment of such sites.

10.10 Surface water runoff was therefore investigated to determine the effect of the development on surface water resources and the potential risk of flooding elsewhere. Refer to the Flood Risk chapter of this ES for full details relating to flood risk.

10.11 This study has also referred to the existing Planning Permission for the Site (Outline Planning Permission: Replacement Primary School, All Weather Pitch, Soft and Hard Play Areas and Residential Development; Glebelands, St Julians, Newport; App. No.: 00/0768 and Reserved Matters Planning Permission: 03/1531). Appendix 9.2A details the proposed layout in which the ordinary watercourse that flows through the Site appears to be culverted beneath the development.

10.12 Consultation with Newport City Council has confirmed that they consider the 'consented' scheme as the 'baseline' scenario.

## Significance Criteria

10.13 The relative significance of potential and residual drainage issues is outlined in Table 10.1 below, based upon professional experience and judgement.

| Significance Criteria | Description of Criteria |
|---|---|
| Major beneficial | Major permanent improvement in water quality leading to upward reclassification of water quality according to national criteria<br>Major increase in capacity of foul drainage |
| Moderate beneficial | Moderate permanent improvement in water quality but not leading to upward reclassification of water quality according to national criteria<br>Moderate increase in capacity of foul drainage |
| Minor beneficial | Minor temporary local scale improvement in water quality<br>Minor increase in capacity of foul drainage |
| Negligible | No appreciable effect on humans or surface water resources<br>Demand for foul drainage can be met within existing capacity |
| Minor adverse | Moderate temporary local scale reduction in surface water quality, |

| | |
|---|---|
| | reversible with time<br><br>Minor increase in demand for foul drainage above capacity of services |
| Moderate adverse | Severe temporary reduction or minor permanent reduction in quality of the surface water resource that does not affect the classification of water quality according to national criteria<br><br>Moderate increase in demand for foul drainage above capacity of services |
| Major adverse | Permanent reduction in the quality of the surface water resource that causes downward reclassification of water quality according to national criteria<br><br>Major increase in demand for foul drainage above capacity of services |

**Table 10.1** Significance Criteria for Drainage Effects

## LEGISLATIVE AND PLANNING POLICY FRAMEWORK

10.14 National Legislation

*Water Framework Directive, 2000/60/EC*

This Directive applies to all EU waterbodies and aims to ensure they are protected from harm, and that water quality improvements can be made. The Directive contains no specific flood risk management objectives but in general terms does place an onus on developers to protect and if possible enhance waterbodies close to developments.

*Land Drainage Act, 1991*

10.15 This Act sets out the responsibilities and powers of NRW, Internal Drainage Boards, LPAs and riparian land owners. Under the Act, NRW and the LPA have discretionary powers for management and maintenance of main rivers and ordinary watercourses respectively. However, the riparian owner, i.e. landowner through which the watercourse flows, who is ultimately responsible for its maintenance.

*Water Resources Act, 1991*

10.16 This Act relates to the control of the water environment. The main aspects relevant to development include land drainage, flood mitigation and pollution prevention. In particular:

- NRW consent is required for any works affecting, or within 16m of, any tidal defence structure;
- NRW consent is required for structures constructed across a 'main river' as defined by NRW maps;
- Land drainage consent is required for surface water discharge to a main river or tidal water .

*Water Industry Act, 1991*

10.17 This Act covers a wide range of provisions that the privatised Water Companies must follow. Under the Act, discharge of effluent to the public sewer can only take place with

the agreement or consent of the sewerage undertaker (i.e. water company), in this case Dwr Cymru Welsh Water (DCWW).

*Water Act 2003*

10.18 This Act amends the WRA1991 and WIA 1991, bringing about a number of changes including streamlining arrangements for flood defence organisation and funding; changes to the types of abstraction licences; and places a duty on water companies to conserve water and prepare for drought.

*Flood and Water Management Act, 2010*

10.19 This Act removes the automatic right of connection to public sewers, and places the onus on the LPA to adopt Sustainable Drainage Systems. Secondary enacting legislation is not yet in place (currently anticipated to be enacted in 2015-2016). However, LPAs and water companies currently consider the requirements of this Act when considering planning applications.

## National Planning Policy

*Planning Policy Wales – 5th Edition, 2012*

10.20 Planning Policy Wales' (2012) (PPW) is the overarching policy document that deals with planning matters in Wales. Chapter 2 of PPW confirms WAG's commitment to sustainable development.

10.21 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.

10.22 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.

10.23 The provision of Drainage is fundamental to any development and in order to comply with general sustainability objectives the proposed type and level of drainage provision for any development should be sustainable.

## Local Planning Policy

*Newport Unitary Development Plan (UDP) (1996- 2011) Adopted Plan (2006)*

10.24 The Newport Unitary Development Plan (UDP) 1996 -2011 was formally adopted by Newport City Council in May 2006.

10.25 UDP Policy U4 states that SuDS should be incorporated into new developments wherever possible.

10.26 The quality and quantity of surface water and groundwater resources, including related nature conservation interests, are protected through Policy U5 Water Supply; development would not be permitted which has an unacceptable impact on these resources.

10.27 Policy U6 requires that development which could increase the risk of flooding due to additional surface water run-off includes appropriate and environmentally sympathetic mitigation measures.

10.28 Newport City Council has produced a Supplementary Planning Guidance document on Flood Risk and Sustainable Urban Drainage Systems. This provides further detail on the assessment required and possible mitigation measures to ensure that any proposed development will not be adversely affected by flooding or which will worsen flood risk to third parties or put lives at unacceptable risk.

*Newport Local Development Plan (LDP) (2011- 2026)*

10.29 Reference to the Newport Local Development Plan (LDP) 2011 – 2026 (Deposit Plan, April 2012) indicates that the Herbert Road Site has been previously committed and is carried forward into the LDP.

10.30 The proposed Site is located within the 'Glebelands' site H(5), which is designated as a main source of housing land within the Newport Deposit Plan 2011-2026. It is detailed in the Deposit Plan that the Glebelands Site has 'existing commitments for residential development', to include 153 dwellings. The replacement primary school has now been constructed. This planning consent has been implemented by virtue of the construction of the primary school.

10.31 An extract from the Newport LDP is included as Appendix 9.1A herewith. This defines the proposed Site (H(1)) as 'Housing Commitment'.

10.32 The Development accords with both national and local plan policies, as demonstrated in the following assessment.

## BASELINE CONDITIONS

10.33 Reference to the Welsh Government's TAN 15 Development Advice Map (revised 2013), indicates that the Site is partly located within Zone C1. This risk designation suggests that the existing site is at risk from an extreme flood event, however the Zone C1 designation signifies this part of the Site as being served by significant infrastructure including defences. There are also some areas within the Site which lie within Zone A i.e. considered to be at little or no risk of fluvial or coastal/tidal flooding. Refer to the Flood Risk chapter of this ES for full details relating to flood risk

10.34 A topographical survey of the Site indicates that the existing ground levels in the north east portion of the Site are at around 6.9m AOD and rise to the east to approx. 7.4m AOD.

10.35 The Site is located in part on a former industrial /domestic landfill site. This is reflected in the topography of the main part of the Site which varies between 7.0m AOD and 8.0m

AOD. The ground running immediately adjacent to the River Usk along the western boundary of the Site is generally higher, with levels rising from 9.0m AOD in the north to approx. 10.0mAOD halfway along the Site, before dropping to 9.5m AOD at the southern extent.

10.36 Newport City Council has confirmed that they consider the 'consented' scheme (App. No.: 00/0768) as the 'baseline' scenario. The consented scheme proposes to raise the Site to 9.8m AOD, with the finished floor levels of all development set 600mm above the 9.8 metres standard.

10.37 Furthermore it can be seen that the proposed layout of the consented scheme does not include the ordinary watercourse, and it would have been culverted as part of the proposals.

## Hydrogeology

10.38 Historically, the site was operated as a landfill between the 1930s and 1960s. imported material is known to have raised this low lying part of Newport by about four metres.

10.39 The Soilscapes dataset, produced by the National Soil Resources Institute, is a 1:250000 scale simplified soils dataset covering England and Wales. This shows the Site as being located in an area where 'freely draining slightly acid loamy soils' dominate. An extract from the Soilscapes dataset is included in Appendix 9.5A herewith.

10.40 The narrow southern strip of development area has been elevated with man-made material to form a bund, with potential to improve the permeability of the soils here by importation of granular fill material.

10.41 According to Natural Resource Wales data, the made ground at the Site is likely to be sufficiently permeable so as to allow the limited lateral and vertical migration of water to the underlying aquifer and offsite receptors. The underlying strata are both classified as Secondary A Aquifers which may be capable of supporting water supplies at a local rather than strategic scale.

10.42 NRW data confirms the Site is not located within a Groundwater Protection Zone. The Site is deemed to be a Minor Aquifer, according to the Groundwater Vulnerability Zones.

## Hydrology

*Fluvial Regime*

10.43 The Site is located within the tidal reaches of the River Usk. This major watercourse rises in the mountains of Mid Wales and flows in a southerly direction through several major urban areas including Monmouth and the eastern valley towns to outfall into the Severn Estuary at Newport. To the north of Newport the River Usk meanders as it flows along the river valley of relatively flat gradient.

10.44 At Newport the natural geological features channel the river between the high ground occupied by Allt yr yn (near Newport Civic Centre) to the west of the river and Summerhill to the east. Downstream of this channel restriction the river again meanders across formerly estuarine mud flats to the Estuary. The former mud flats extend along the coast

to Caldicot in the east.

*Ordinary Watercourse*

10.45 A small watercourse flows through the Herbert Road Site. The catchment area is heavily urbanised and drains some of the residential area of St Julians to the east of the Herbert Road Site. The watercourse is culverted for a length of some 500m between St Julians Avenue and the Site, to which it enters via a culvert beneath the railway embankment.

10.46 The watercourse flows through the Herbert Road Site in open channel for a length of approx. 180m before discharging into the River Usk via a flapped pipe of approx. 0.575m diameter. Along the open channel section, the watercourse is conveyed beneath the newly constructed pedestrian access route into the Glan Usk School Site via a circular culvert of 2m diameter.

10.47 It is assumed that the area to the north of the Site encompassing the 'Glebelands' and the new Glan Usk School site drains into this watercourse, although the exact location of the connection cannot be established.

10.48 The River Usk is designated as a Site of Special Scientific Interest (SSSI) and a Special Area of Conservation (SAC).

10.49 In order to better understand the flow regime for the ordinary watercourse, a flow monitoring survey was carried out. The flow data indicated that during dry weather the flow rate in the culvert is generally less than 5 l/s. In storm conditions the flow rates reached a maximum of 225 l/s. Refer to the Flood Risk chapter of this ES for full details of the watercourse monitoring and conclusions.

10.50 The Site walkover confirmed that there is no flap valve at the outlet of the 2m circular culvert. The invert level of the culvert is 6.03m AOD. This suggests that with a peak MHWS Tide Level of 6.45m AOD for the present-day, and 7.5m AOD for 2114, water levels in the River Usk will back up this watercourse and the ditch is therefore considered to be tidally influenced.

10.51 The Site walkover also confirmed there is no operational flap valve at the downstream end of the small 0.575m diameter culvert outfall, which conveys the ordinary watercourse into the River Usk.

10.52 The consented scheme layout indicates that the ordinary watercourse will be culverted for the section between the eastern and western Site boundary. No details pertaining to the size of the culvert or exact details of the drainage arrangements are available.

*Sewer Flooding*

10.53 Local residents have reported existing problems with sewer flooding in properties to the west of the railway line (including Orchard Street) during certain periods of rainfall. This is an existing problem for which it is understood DCWW have temporary alleviation measures in place which are activated when required.

*Foul Water Drainage*

10.54 There are currently no foul flows generated by the existing site, although DCWW public combined sewers are present within the development boundary, including a 2.1m trunk sewer crossing the northern part of the development area. A plan showing DCWW's existing sewer network within the vicinity of the site is included herewith in Appendix 10.2A.

10.55 The existing sewers crossing the site convey flows from adjacent developed areas and contain no known incoming connections from on-site flow sources.

10.56 With regard to water quality, the preferred method of foul drainage disposal is a connection to the public sewerage network. DCWW will need to confirm capacity within the local sewer network and wastewater treatment works as part of their connection approval process prior to connection of flows.

## CUMULATIVE IMPACT

10.57 A number of developments within the area that may have an impact on the Herbert Road development are described below.

10.58 Outline Planning Permission (Application No. 00/0078) for a Replacement Primary School, all weather pitch, soft and hard play areas and residential development exists for the area to the immediate north of the Site, as well as the Site itself.

10.59 The replacement primary school and associated play area has now been constructed, and has been included within the drainage assessment at the Herbert Road Site. Hydraulic modelling has accounted for the school building, as well as the contribution of the school site to storm flood flows. Therefore, the cumulative impact of this development is considered to be **negligible**.

10.60 Reserved Matters (Ref. 03/1531) for the Erection of replacement primary school, all weather pitch, soft and hard play and residential development. As explained above, the primary school has now been constructed, and the Site has been considered in this drainage assessment. Therefore, the cumulative impact of this development is considered to be **negligible**.

10.61 A full application has been submitted (No. 11/0843) for the Redevelopment of the former Evans Halshaw, Turner Street, Newport, NP19 7XH site which will comprise of 32no. residential units consisting 2, 3 and 4 bedroom houses and flats together with external works. Surface water drainage from this site is designed to infiltrate wholly to ground via porous road and driveways resulting in a minor benefical impact compared to the undeveloped site. Conversely the additional foul loading on the public sewer represents a minor adverse impact. Therefore overall, the cumulative impact of this development is considered to be **negligible**.

## ASSESSMENT OF POTENTIAL IMPACTS

### Construction Phase

*Surface Water Runoff*

10.62 During the construction phase of the works and prior to the operation of the proposed site drainage, the status quo will prevail in areas of the site that are neither heavily tracked or paved over. In this respect, surface water runoff emanating from the existing site will continue to infiltrate to ground and shed naturally overland to the open watercourse within the site.

10.63 Construction works including earthworks and temporary site drainage would have the potential to give rise to changes in the surface water runoff regime during storms. In the absence of mitigation the risk of surface water flooding from overland sources could increase because discharge rates would not be controlled.

10.64 Stockpiled material in particular has the potential to divert surface water runoff towards third parties or otherwise adversely affect the existing regime.

10.65 Without mitigation the effects of construction activities on surface water runoff are considered to be **moderate adverse**.

*Contamination of Surface Water and Groundwater*

10.66 The construction process will generate an increase in the concentrations of some pollutants, in particular suspended solids, from the mobilisation of silts and sediments during earthworks 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 the watercourse. The majority of these pollutants would be mobilised during surface water run-off and would enter the existing/partially completed proposed drainage system such that flows are mitigated.

10.67 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 the watercourse. The greatest risk of oil spillage occurs during vehicle re-fuelling.

10.68 Any potential piling activities in particular could introduce new pathways for any contaminants to migrate into the groundwater.

10.69 The risk of pollution of the downstream watercourse without the provision of suitable mitigation measures is considered to be **moderate adverse**.

*Sewer Flooding*

10.70 Several public combined sewers including a deep large bore tunnel sewer are present within the development area. Any blockage or malfunction of the existing sewers within the development area due to construction activity will potentially adversely affect neighbouring existing residents, unless appropriate mitigation measures are implemented.

10.71 It should be noted that the precise nature of the existing sewer problem affecting Orchard Street and the surrounding area is not known and as such it cannot be stated with any certainty that the proposed development will exacerbate this particular existing problem. Furthermore DCWW has not raised any existing sewer problems during discussions regarding proposed foul connection points for the new development.

10.72 Without appropriate mitigation the potential risk of damage to the sewers during the construction process is considered to be **moderate adverse**.

## Operational Phase

*Surface Water Runoff*

10.73 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

10.74 The ordinary watercourse outfall to the River Usk is tidally dominated at this location. Due to the tidal nature of the outfall and the very large capacity of the Usk, the proposed unattenuated discharge of site surface water drainage to the ordinary watercourse will not affect downstream properties.

10.75 Flood flow from the Ordinary Watercourse is shown to spill out of bank onto the existing site. By raising the ground levels within the Site, floodwaters are prevented from flowing overland in a southerly direction. In this respect the raising of ground levels within the floodplain without mitigation could have a detrimental impact in respect of fluvial flooding from the ordinary watercourse and surface water runoff from the proposed Site.

10.76 Notwithstanding the above, the consented scheme proposes to culvert the length of watercourse through the Site. By retaining the ordinary watercourse in open channel, the capacity of the channel is increased, and the potential for blockage is greatly reduced. Therefore, when compared to the consented scheme, it is considered that the construction of the plateau will result in a moderate beneficial impact.

10.77 As such, the impact of the development (i.e. increased rate of runoff) on the existing hydrological regime is considered to be **negligible**.

10.78 Notwithstanding the above, an appropriately designed surface water drainage scheme with an appropriate disposal strategy and details will be required to mitigate against flooding of the sewers/drainage system.

10.79 The system will also need to be designed to cater for exceedance and emergency blockage scenarios. Exceedance occurs when agreed design rainfall parameters are exceeded, and is typically mitigated by the incorporation of appropriately routed overland flow-paths within the layout.

10.80 Overland flowpaths as part of the 3D modelling exercise will need careful consideration at detailed design stage in parallel with development of the drainage design to ensure that flooding due to blockages anywhere within the network can be safely conveyed away from and have minimal impact on the proposed development.

*Water Quality*

10.81 The operational phase will generate an increase in the concentrations of some pollutants. It is however unlikely that the development would generate any diffuse pollution sources, which could leach into the sub-soil and find their way into the groundwater regime and subsequently the watercourse.

10.82 There is some risk of point source pollution of oils and hydrocarbons occurring from spillages or leaks, particularly from the car parking areas, which could lead to a contamination of the surface water system and consequently the watercourse. The risk of pollution of the downstream watercourse without the provision of appropriate mitigation measures is considered to be **moderate adverse.**

*Sewer Flooding*

10.83 Any blockage or malfunction of the existing sewers within the development area will require unrestricted maintenance access in perpetuity to prevent potential problems for both new development residents and neighbouring existing residents when the site is developed.

10.84 It should be noted that the precise nature of the existing sewer problem affecting Orchard Street and the surrounding area is not known and as such it cannot be stated with any certainty that the proposed development will exacerbate this particular existing problem. Furthermore DCWW has not raised any existing sewer problems during discussions regarding proposed foul connection points for the new development.

10.85 Without appropriate mitigation, the risk of sewer flooding due to lack of maintenance access is considered **moderate adverse**.

*Foul Water Drainage*

10.86 The most sustainable method of disposal of foul water discharge from the proposed development is via the mains sewerage network.

10.87 Three points of connection to the existing sewer network are proposed:

i) a new manhole connection in the rear garden of plot 164/165 near the eastern site boundary
ii) connection to an existing manhole on the footpath in front of the adjacent primary school at the northern site boundary

iii) a new manhole connection in the proposed estate road along the western site boundary near block 229-234.

These connection points have been discussed and agreed in principle with DCWW.

10.88 Pre-application informal discussions have indicated there is capacity in DCWW's existing infrastructure to accommodate the proposed development. DCWW will need to confirm capacity within the local sewer network and wastewater treatment works as part of their connection approval process prior to connection of flows.

10.89 As such, it is considered that the development would give rise to a **negligible** effect in terms of foul drainage.

## MITIGATION MEASURES

10.90 This section provides a description of the proposed mitigation measures which have been designed into the scheme to reduce / minimise adverse environmental effects.

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

10.92 The proposed site drainage plan is included herewith as Appendix 10.1A. This plan shows the site layout and arrangements for future drainage provision.

10.93 The southern most end of the site access road is of permeable block paving construction. The remainder of the development to the north is served by a proposed piped surface water drainage system which collects all impermeable area runoff from both highways and plots, and discharges to the ordinary watercourse at three separate points.

10.94 Discharge to the watercourse is unattenuated on the basis that downstream properties will not be affected due to the tidal nature of the watercourse outfall to the River Usk and the large capacity of the river at this location.

10.95 Notwithstanding the above, the watercourse is to be locally widened and reshaped as part of the development landscaping proposals to provide a wetland area. In addition to the enhanced ecological and amenity value afforded by this area, the additional flood storage provided will help to mitigate future flood risk in storm conditions.

### Construction Phase

*Surface Water Runoff*

10.96 During the construction phase protocols would need to be put in place to ensure that any surface water runoff risk is not exacerbated. This would include the appropriate siting of stockpiled material to avoid the potential diversion of floodwaters and any subsequent exacerbation to third party flooding that may occur.

10.97 The contractor should be required to produce a method statement detailing any dewatering, temporary land drainage installations, and other contingencies deemed necessary to facilitate the necessary earthworks movement and terrace formation works.

10.98 Care should also be taken to avoid the release of construction materials into the drainage systems, as this material may have the potential to block the downstream system.

*Contamination of Surface Water and Groundwater*

10.99 A piling risk assessment will ensure that any piling would be conducted in a way that minimises introduction of pathways to the groundwater.

10.100 Groundwater quality should also be monitored during the works.

10.101 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;

It is recommended that a temporary petrol interceptor be incorporated into the proposed system (downstream of proposed trafficked areas) 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 spillages.

*Sewer Flooding*

10.102 The surveyed line and level of the existing sewers within the development area should be made available to the contractor. Construction activities should be carefully planned with due consideration of the proximity of the surveyed drainage.

10.103 The developer has agreed with DCWW that a 'no-build' easement zone is not required directly over the large diameter tunnel sewer, subject to agreement of foundation details and construction methods. These details will need to be agreed prior to construction.

## Operational Phase

*Surface Water Runoff*

10.104 It is proposed to retain an area of ground either side of the ordinary watercourse for both environmental benefits and flood storage. All proposed ground-raising is outside this area.

10.105 Hydraulic modelling indicates the existing Site is at risk of minor flooding from the ordinary watercourse during a 1.0%+CC APE when the fluvial and tidal hydrographs peak simultaneously. The modelling shows that the peak water level reaches circa 8m AOD which is some 1.8m lower than the level of the proposed development

10.106 It is proposed to increase the 2m diameter circular culvert that conveys the watercourse beneath the pedestrian walkway to 2.5m diameter. In addition, a flap-valve will be installed at the outlet of the circular culvert to prevent the backflow of tidal waters from the River Usk during large tidal events. The installation of a flap valve is considered to be a minor beneficial impact in terms of to surface water drainage when compared to both the existing and the consented scenarios.

10.107 Due to the tidal nature of the outfall of the ordinary watercourse into the River Usk and the large capacity of the river at this location, the unrestricted discharge of the proposed drainage system into the ordinary watercourse and ultimately into the River Usk will not affect downstream properties.

*Water Quality*

10.108 The inherent filtration qualities of the permeable paving solution proposed for the southern strip of development will assist the breakdown and dilution of pollutants.

10.109 The use of trapped gullies and oil interception in the piped surface water system to the north will mitigate the pollution risk in this area.

10.110 In addition, a carefully designed wetland area into which the surface water discharges will have an inherent filtration function to assist the breakdown of contaminants.

*Sewer Flooding*

10.111 The layout has been designed to ensure maintenance access to the existing public sewers within the site, with the exception of the large bore tunnel sewer crossing the northern part of the development.

10.112 The developer has agreed with DCWW that a 'no-build' zone is not required directly over this particular asset, subject to agreement of foundation details and construction methods. These details will need to be agreed prior to construction.

## RESIDUAL EFFECTS

10.113 This section provides a description of the residual impacts which will remain following implementation of the mitigation measures described in the previous section.

10.114 The residual impact is considered in order to identify a deterioration or improvement in the environmental impact.

### Construction Phase

*Surface Water Runoff*

10.115 With the effective implementation of the controls described in the previous section, the residual impact of the construction phase of the proposed development on the existing hydrological regime is considered to be **minor beneficial**.

*Contamination of Surface Water and Groundwater*

10.116 With mitigation in place as described in the previous section, the risks in relation to groundwater and surface water contamination would be considered **negligible**.

*Sewer Flooding*

10.117 With mitigation as described in the previous section, the risks in relation to the existing sewers would be considered **negligible**.

## Operational Phase

*Water Quality*

10.118 With mitigation as described in the previous section, the risk of pollution of the downstream watercourse is considered to be **negligible**.

*Sewer Flooding*

10.119 With mitigation as described in the previous section, the risks in relation to the existing sewers would be considered **negligible**.

## SUMMARY

10.120 The potential effects, mitigation measures and likely residual effects of construction and operational use of the development on drainage, are summarised in Table 10.2 below.

**Table 10.2 Summary of Potential Effects, Mitigation and Residual Effects**

| Description of Effect | Potential Effect / Significance | Mitigation | Likely Residual Effect / Significance |
|---|---|---|---|
| **Construction** | | | |
| Surface Water runoff increase | **Moderate adverse significance** | Method statement for temporary works, appropriate siting of stockpiled material | **Negligible** |
| Surface Water contamination | **Moderate adverse significance** | Piling risk assessment, groundwater monitoring, designated storage and refuelling areas | **Negligible** |
| Sewer flooding | **Moderate adverse significance** | Method statement and details for foundation construction to be agreed with DCWW | **Negligible** |
| **Operation** | | | |
| Surface Water runoff increase | **Negligible** | Increase flood storage/ecology value of onsite watercourse. Upsize and install flap valve to existing culvert. | **Minor Beneficial** |

| | | | |
|---|---|---|---|
| Surface Water quality | **Moderate adverse significance** | Incorporation of permeable paving, trapped gullies, oil interception and a well designed wetland area. | **Negligible** |
| Sewer flooding | **Moderate adverse significance** | Agreed easement strips to ensure maintenance access. Method statement and details for foundation construction to be agreed with DCWW | **Negligible** |
| Foul drainage | **Negligible** | None required | **Negligible** |

# 11. TRAFFIC, TRANSPORT AND MOVEMENT

Following review of Chapter 11: Project Description of the original ES submitted in support of the full application at land south of Glan Usk Primary School, Herbert Road, Newport it is considered the chapter remains relevant with regard to this Addendum however the following text should be considered as additional, supplementary information to be included between paragraphs 11.64 and 11.65 of the original ES. It is considered the additional paragraphs should be number 11.64a to 11.64e.

## CUMLUATIVE IMPACTS

*11.64a* The preparation of the Traffic, Transport and Movement chapter assessed potential cumulative effects of the scheme in relation to transportation and the proposed development.

*11.64b* Recent developments that could, together with the proposed development, have a cumulative impact on the traffic generation of the proposed development are identified as the development of Glan Usk School (Planning permission 00/0768 and 03/1531) and the residential development of 32no. dwellings at the former Evans Halshaw garage along Turner Street (11/0843). This information was obtained through information sharing with the project managers, Asbri Planning Ltd.

The following capacity analysis was undertaken which included the above mentioned developments.

*11.64c* The school site and the residential development at the Evans Halshaw site are both constructed and in use. The traffic generated by these developments has therefore been included within the traffic surveys undertaken for the Transport Assessment and the corresponding ES chapter. The baseline conditions have therefore taken account of these recently developed schemes.

*11.64d* In terms of predicting future traffic flows, the National Traffic Model growth factors take account of all committed development within the local area. The future traffic flows are therefore robust in their forecast of existing and committed developments, including the identified schemes.

There are no known future developments at the time of writing which can be assessed within the remit of this ES.

*11.64e* In light of the above, the cumulative effects on the existing highway network traffic of the recent development and the associated traffic generation has been assessed within the baseline conditions of the ES chapter. It is considered the cumulative impacts of the identified developments together with the proposed scheme are **negligible** and have, as mentioned above, been picked up in the existing baseline conditions.

The above approach was agreed with Newport City Council Highways Authority as an appropriate method of assessment.

Following the submission of the ES the Highways Authority raised concerns with regard to the mitigation measures in the original ES relating to the pedestrian movement. The

Highway Authority considered the intensification of pedestrian movements generated by the proposed development required offsite works to improve pedestrian facilities. To address the concerns in relation to pedestrian movement the following amendments and additional paragraphs are to be added to the Traffic, Transport and Movement chapter. A Travel Plan has been prepared to accompany the application on request of the Highway Authority and is submitted separately to this Addendum.

## MITIGATION MEASURES

The following paragraphs replace paragraph 11.106 in the original ES:

*11.106* In order to reduce the impact of traffic generated by the development a site-wide Travel Plan has been prepared, which will seeks to reduce the number of Single Occupancy Vehicle use and promote the use of more sustainable modes of transport including:

- Walking;
- Cycling;
- Public Transport; and,
- Car sharing.

The following paragraph is added to the original ES chapter between 11.107 and 11.108. It is appropriate 11.107a to 11.107c.

### Pedestrian Movement

*11.107a* The pedestrian facilities in the area will be improved to provide enhance pedestrian facilities within the vicinity to accommodate the increase footfall in the local area generated by the proposed development. The improvements will include:

- Dropped kerb with uncontrolled tactile crossings at northern end of Collier Street
- Dropped kerb with uncontrolled tactile crossings at eastern end of Courtney Street on northern side of the road
- Dropped kerb with uncontrolled tactile crossings and build out to improve visibility at eastern end of Courtney Street on southern side of the road
- Extend footway across scrub land in front of palisade fence, inclusion of radius kerb and uncontrolled tactile crossing along Tuner Street
- Build out to improve visibility, attention to levels to ensure crossfall to gully tactile crossings

*11.107b* All of the above improvements are shown on Plan 'Offsite Roadworks Improvements Agreement in Principle' Appendix 11.1A to this Addendum.

*11.107c* A Pelican Crossing is also proposed along Caerleon Road. The Pelican Crossing will have all associated markings, signs, lighting, pavement surfaces and road safety audits. The proposed location of the Pelican Crossing is shown on Plan 'Offsite Roadworks Improvements Agreement in Principle' Appendix 11.1A to this Addendum.

# 12. NOISE AND VIBRATION

**12.1** Following review of Chapter 12: Noise and Vibration of the original ES submitted in support of the full application at land south of Glan Usk Primary School, Herbert Road, Newport it is considered the chapter remains relevant with regard to this Addendum however the following paragraph should be included after paragraph 12.58. It is considered the additional paragraphs should be number 12.58a to 12.58e.

**12.2** To address specific concerns raised by the Environmental Health Officer in respect of noise level that could potentially be generated from the site adjacent to the southern boundary of the larger land parcel at the site an additional noise assessment relating specifically to that area has been carried out and its findings presented below in paragraphs 12.112 to 12.152.

## CUMULATIVE IMPACTS

*12.58a* The noise assessment baseline conditions took account of all the recent development in its surveys since all of the identified relevant planning permissions are now built out.

*12.58b* The assessment of the future noise generation was carried out using the traffic flow data provided by the Asbri Transport. The baseline traffic flows and future growth traffic flows include the past development and committed development thus the baseline conditions is a sufficient assessment of the effects of the surrounding development together with the proposed development.

*12.58c* The noise assessment was carried out using the baseline traffic flows and future traffic growth and therefore the baseline conditions relation to noise take account of the effects of surrounding development, thus the cumulative impacts, if there are any are dealt with by the proposed mitigation proposed in relation to this ES.

*12.58d* There is no known future developments that require assessment and any future development being progressed would requires its own air quality assessment and if sufficiently related to the proposed development would be required to include the impacts of the proposed development in its assessment of the cumulative impacts of that development.

*12.58e* The assessment of air quality was scoped with Newport City Council Environmental Health Department and the approach carried out was considered appropriate.

**12.3** The Environmental Health Officer requested that further survey work be carried out in order to assess potential noise generation should the vacant land south of the wider land parcel of the Site (immediately adjacent to the north of the J.S.Payne site) be used as a good yards associated with an industrial use. For clarity and ease of reading in conjunction with Chapter 7: Noise of the ES chapter it is proposed that an additional section entitled 'Additional Noise Survey, April 2014' is included to follow on from the end of that chapter, after paragraph 12.111.

## Additional Noise Survey, April 2014

*12.112* An additional noise survey was carried out by Acoustics and Noise Ltd. to supplement the work undertaken by Watermans which informed Chapter 12: Noise. The method followed in order to carry out the noise assessment followed the same Assessment Methodology carried out for the ES chapter. The criteria of significance identified in the Assessment Methodology will be applied in relation to the additional noise survey. Similarly, the Legislative and Planning Policy Context Framework also remains the same. Please refer back to these sections of Chapter 7: Noise of the ES for further information.

### Scope

*12.113* Following review of the ES the Environmental Health Officer indicated the survey work carried out to inform the original ES did not fulfil the necessary requirements and there are concerns of the vacant industrial land to the south could be brought into use as a goods yards with unrestricted operations and have a detrimental noise impact on the proposed scheme. Further work was requested to measure potential noise generation should the adjacent site be used as a good yard.

*12.114* The EHO considered this hypothetical assessment is carried out since concern has been raised that there is a possibility the vacant site has an unrestricted industrial use enabling an industrial use at the without planning permission.

*12.115* It is not considered the vacant site benefits from an unrestricted use and strong evidence has been provided to accompany this planning application demonstrating the site has been abandoned and therefore any use at the site would require planning permission and therefore could be restricted accordingly to protect the proposed residential development.

*12.116* Nonetheless, in the interests of thoroughness an assessment has been carried out to demonstrate the noise levels should the vacant site be used as a goods yard.

## BASELINE CONDITIONS

*12.117* The existing baseline conditions were described in the original ES Chapter7: Noise which correctly assessed the site as having no noise generating activity and this formed the basis of the assessment.

*12.118* The EHO has requested that artificial baseline conditions are proposed to enable assessment of potential noise levels should the vacant site to the south of proposed development be brought into use as a goods yard associated with industrial use.

*12.119* The EHO requested the noise generated by the following operations are assessed as the baseline conditions:

- Fork Lift Truck x 2
- Truck x 1 (<20km/h)
- Hammering and Banging

*12.120* Noise levels from these operations have been obtained from the Source DB v2.02 database of industrial noise sources.

*12.121* The EHO considers the vacant site may benefit from unrestricted use, although this hasn't been concerned and is an assumption based on the site's previous use. Despite this to ensure the calculations robust the worst case scenario has been modelled which measures activity noise continuously throughout the assessment.

*12.122* The baseline conditions for the additional survey work were measured including the mitigation measure of a 2.6 metre acoustic fence which was proposed in the ES. It is considered appropriate to make the assessment including the identified mitigation required but earlier survey work.

*12.123* The assessment took measurements from two receivers positioned at heights of 1.5 metres and 4.5 metres which represent the ground floor and first floor respectively.

## POTENTIAL IMPACT

*12.124* It has been identified the potential impact is likely to impact the following proposed plots since they are the most well related plots to the vacant land:

- Plots 1-44 to the west and south west of the noise source
- Plot 101-102 to the north of the noise source
- Plots 103 to 107 to the north of the noise source
- Plots 148 to 157 to the north of the noise source

*12.125* Properties further north of these plots will be significantly less exposed to the potential noise generated due to increased propagation loss due to distance and acoustic shielding from the properties along the boundary of the site (listed above).

### Construction

*12.126* The vacant site does not currently have a noise generating use and therefore there are no immediate noise implications that could impact on the construction phase or existing residential properties. The impact on the construction phase is **negligible.**

### Operational

12.127 The impact of construction noise has been assessed as part of the Chapter 7: Noise of the original ES.

*Internal Noise*

*12.128* The assessment was based on applying the sensitive night time criteria only since this is a more onerous requirement and satisfying them will, by default, ensure daytime standards are met. The night time standard requires an internal noise level of 35dB lAeq for 8 hours this requires an external noise level of 50 dB lAeq since it is accepted by the World Health Organisation that noise reduction from outside to inside is 15 dB.

*12.129* The noise modelling has indicated the majority of the site would not be impacted upon adversely by the hypothetical noise generated good yards. The impact on following plots 45 to 98, plots 108 to 147 and plots 158 to 250 is considered **negligible**.

*12.130* The assessment identifies that the noise levels for the following plots would be in excess of 50 dB lAeq:

- Plots 1-44
- Plots 99-107
- Plots 148-157

*12.131* It is considered the likely impact on internal noise in the plots identified above is **moderate adverse.**

*External Noise*

*12.132* The majority of the site (plots 45 to 98, plots 108 to 147 and plots 158 to 250) are not adversely impacted upon by the hypothetical goods yard operation and fall within acceptable noise standards. The impact on these plots is negligible.

*12.133* The assessment indicates the following plots are adversely impacted by noise:

- Plots 37-40 by noise levels between 50 and 52 dB
- Plots 103-107 and 148 by noise levels between 51 and 52 dB
- Plots 151 by noise levels between 50 and 52 dB

*12.134* The impact on the external areas is considered **minor adverse.** The above plots represent the units with outside amenity space which are impacted by increased noise levels.

## MITIGATION MEASURES

*Internal Noise*

*12.135* There is a negligible impact on plots 45 to 98, plots 108 to 147 and plots 158 to 250) therefore no mitigation measures are required.

*12.136* Plots 1 to 44, 99 to 107 and 148 to 157 are adversely impacted by the hypothetical noise source and therefore mitigation measures are required. The mitigation measures required on the basis of the most effected plot, which is plot 102, therefore the mitigation suggested will be suitable for all other affected plots.

*12.137* Mitigation measure proposed are 'standard thermal' 4mm, 20mm air, 4 mm glazing units (hereafter 4/20/4 glazing units) when in the closed position and that necessary ventilation rates will need to be provided via a mechanical ventilation system.

*12.138* This glazing unit is proposed on the basis that 30% of the total wall area for a typical habitable room is 30% and then applying the chart presented in 'Sound and Control for Homes' (2) the composite sound insulation for sound insulation for the façade can be calculated. The full calculations which have been undertaken ascertain the necessary mitigation measures are included in full detail in Appendix 5 Additional Noise Impact Assessment Report included in Appendix 12.1A of this Addendum.

*12.139* Plot 102 is predicated to have an external noise level of 59dB based on the continual activity of hypothetical goods yard on the vacant site. Table 12.1A presents the sound reduction that would be realised should hereafter 4/20/4 glazing units are installed in the closed position:

***Table 12.1A Calculations for reduction in noise with thermal 4/20/2 glazing***

| **Description** | **External Noise Level LAeq, 1 hour (dB)** |
|---|---|
| Plot 102 | 59 |
| Composite Sound Reduction | 31 |
| Internal Noise Level | 28 |

*12.140* The mitigation of 4/20/2 glazing in the closed position is proposed for every plot affected by noise levels above 50dB.

*External Noise*

*12.141* The unaffected plots (plots 45 to 98, plots 108 to 147 and plots 158 to 250) do not require mitigation measures.

*12.142* Plots 37 to 40, 103 to 107, 148 and 151 are considered to be adversely affected by the noise generated by the hypothetical goods yard by at most 2dB above the 50 dB $l_{Aeq}$ required criteria.

*12.143* The plots are affected by noise levels as follows:

- Plots 37-40 by noise levels between 50 and 52 dB
- Plots 103-107 and 148 by noise levels between 51 and 52 dB
- Plots 151 by noise levels between 50 and 52 dB

*12.144* A maximum of 11 plots are impacted by external noise levels which are between 1 and 2 dB above the maximum standards.

*12.145* The noise measurements are based on a continual noise source without cessation which represents a worst-case scenario which in reality is extremely unlikely to occur at the site.

*12.146* Moreover, it is firmly believed the use of the site as an industrial use has been abandoned and for an industrial use to be reinstated a planning application would be required. The planning application would enable the LPA and Environmental Health Officer to restrict this the use as necessary to protect the future residential occupiers associated with this development. A statement discussing the abandonment of the site is included in Appendix 12.2A of this Addendum.

*12.147* It is considered the hypothetical noise sources measured, representing an unrealistic continuous noise source, together with use of the vacant site being abandoned the need for mitigation measures in relation to these plots over and above the 2.6 metre acoustic fence proposed in Chapter 7: Noise if the original ES is unnecessary.

## RESIDENTIAL IMPACT

**Construction**

*12.148* The impact of construction noise has been assessed as part of the Chapter 7: Noise of the original ES.

*Internal Noise*

*12.149* There would be a negligible impact on internal noise of the proposed dwellings. Plots 45 to 98, plots 108 to 147 and plots 158 to 250 do not require mitigation.

*12.150* Plots 1-44, 99-107 and 148-157 with the mitigation proposed, 4/20/4 glazing will reduce internal noise levels to an acceptable level and therefore there will be a **negligible** residual impact.

*External Noise*

*12.151* The noise sources measures and the abandonment of the vacant land result the no mitigation measures being required and the residual impact being negligible.

SUMMARY

*12.152* A summary of potential impacts, mitigation measures and resulting residual impacts in relation to noise are summarised in Table 12.2A below.

***Table 12.2A Summary of Potential Effects, Mitigation and Residual Effects***

| Issue | Potential Effect | Mitigation Measures | Residual Effect |
|---|---|---|---|
| **Completed Development** | | | |
| Site Suitability for Noise and Vibration Sensitive Development | Moderate Adverse Internal Noise Impact | Installation of 4/20/4 glazing in a closed position for affected plots | Negligible |
| Site Suitability for Noise and Vibration Sensitive Development | Minor Adverse External Noise Impact | No additional mitigation measures required | Negligible |

# 13. AIR QUALITY

13.1 Following review of Chapter 13: Air Quality of the original ES submitted in support of the full application at land south of Glan Usk Primary School, Herbert Road, Newport it is considered the chapter remains relevant with regard to this Addendum however the following paragraph should be included between paragraphs 13.53 and 13.54. It is considered the additional paragraphs should be number 13.53a to 13.53e.

*13.53a* The assessment of the air quality was carried out using the traffic flow data provided by the Transport Consultants (Asbri Transport). The baseline traffic flows and future growth traffic flows include the past development and committed development thus the baseline conditions is a sufficient assessment of the effects of the surrounding development together with the proposed development. The recent development in the area has been identified as the school development (planning permission 00/0768 and 03/1531) and the development 32no. dwellings at the former Evans Halshaw site ( planning permission 11/0843) as detailed in the Traffic, Transport and Movement chapter.

*13.53b* The air quality assessment was carried out using the baseline traffic flows and future traffic growth and therefore the baseline conditions relation to air quality take account of the effects of surrounding development.

*13.53c* There is no known future developments that require assessment and any future development being progressed would requires its own air quality assessment and if sufficiently related to the proposed development would be required to include the impacts of the proposed development in its assessment of the cumulative impacts of that development.

*13.53d* The assessment of air quality was scoped with Newport City Council Environmental Health Department and the approach carried out was considered appropriate in its assessment of Cumulative Impacts.

*13.53e* The cumulative impacts of the identified developments together with the proposed scheme are **negligible** and have, as mentioned above, been picked up in the existing baseline conditions.

# 14. SOCIO – ECONOMIC CONTEXT

Following review of Chapter 14: Socio-Economic Context of the original ES submitted in support of the full application at land south of Glan Usk Primary School, Herbert Road, Newport it is considered the chapter remains relevant with regard to this Addendum.

# 15. SUMMARY AND CONCLUSIONS

15.1 This Environmental Statement (ES) has been prepared on behalf of Greenhill Construction Ltd. in support of a full planning application submitted to Newport City Council in respect of a proposed residential development and other associated works. The planning application description is as follows:

***'Development of 250no. dwellings and associated works at land south of Glan Usk Primary School, Herbert Road'***

15.2 A screening opinion was requested from Newport City Council on the 19th October 2013 to ascertain whether the proposed development of the application site (hereafter the Site) was considered to be an Environmental Impact Assessment (EIA) development.

15.3 On the 26th November 2013 Newport City Council provided an opinion that the proposed scheme did constitute EIA development. Newport City Council, with consultation with the statutory consultees, identified key issues which should be included within the ES.

15.4 The key issues identified which are the subject of this Environmental Impact Assessment are as follows:-

- Ground Conditions;
- Access and Highways
- Landscape and Visual Impact;
- Ecology and Nature Conservation;
- Flood Risk;
- Drainage;
- Noise;
- Socio-economic; and
- Air Quality

15.5 The assessment described in this Environmental Statement (ES) relates to the design of the scheme as it stands in December 2013. The ES is published in three volumes:-

- Volume 1: Non-Technical Summary
- Volume 2: Written Statement; and
- Volume 3: Appendices to Written Statement

15.6 The Environmental Impact Assessment was managed by Asbri Planning Ltd. with guidance from an expert consultant team.

## THE EIA PROCESS

15.7 In the UK, EIA's have been undertaken for certain major developments since the implementation of the European Council Directive on Environmental Assessment in 1985. The requirements of the Directive are implemented into UK legislation through the Environmental Impact Assessment (England and Wales) Regulations 1999, as amended in 2000. The main stages of the ES are:

- Description of the project/development;
- Complete detailed baseline surveys;
- Identification of potential environmental impacts;

- Prediction of impacts;
- Evaluation and assessment of significance;
- Identification of mitigation measures and modifications to the design;
- Identification of residual impacts and cumulative impacts; and
- Presentation of results of the EIA in the ES (up to 16 week decision period).

15.8 The EIA has been undertaken, and the ES prepared, taking into account UK Environmental Legislation and guidance, including the published 'Environmental Impact Assessment: A Guide to Good Practice and Procedures' and The Institute of Environmental Management and Assessment (IEMA) 'Guidelines for Environmental Impact Assessment (2004)'.

15.9 The residual significance of impacts is assessed taking into account mitigation, i.e. the assessment applies to the residual impacts. A residual impact is any impact that would remain following the implementation of proposed mitigation measures.

15.10 Using these criteria, the significance of the impacts arising from the proposed development have been categorised (where appropriate) throughout the ES using a seven point scale, as follows:-

- Insignificant;
- Minor (adverse or beneficial);
- Moderate (adverse or beneficial); and
- Major (adverse or beneficial).

15.11 The above criterion was not appropriate to assess the significance of impacts of all issues assessed in the ES. Where this criterion is not suitable a significance of impact criteria appropriate to the particular topic has been applied and this has been identified to the reader.

15.12 Impacts are assessed for all phases of the development. Construction impacts are considered to be temporary, short term impacts which occur during the construction phase only. Permanent impacts are those long terms effects which would occur as a result of the proposed development once it is in operation.

## SITE CONTEXT

15.13 The Site measures 5.83 hectares and is a brownfield site, previously in industrial use.

15.14 The Site is an irregular shape comprising of three distinct land parcels. To the north of the Site are two larger land parcels which are accessed via the third land parcel which is a narrow strip of land that lies between the river bank and the adjacent industrial units and residential dwellings along Courtney Street and Morgan Street. The Site has a right of way along the western edge of the site, adjacent to the river Usk.

15.15 The Site does not have any ecological designations. It does, however, lie adjacent to the river Usk which is a Special Area of Conservation (SAC) and a Site of Special Scientific Interest (SSSI). The Site does not have any landscape designations but the river Usk front is considered to be an important vista.

15.16 The site is bounded to the north by the Glan Usk Primary School, a new constructed school with associated play grounds to the north and beyond is the Glebelands Park.

15.17 The eastern boundary lies immediately adjacent to the Newport to Hereford railway line separated by a tree planted buffer. Beyond the railway line the land use is predominantly in residential use and interspersed with typical mixed uses, for example, community halls, shops and places of worship.

15.18 The River Usk is immediately adjacent to the western boundary and although there is no formal demarcation between the site and the river Usk, the top of the river banks are clearly defined. As mentioned above, the river Usk is a SAC and SSSI.

15.19 The south of site is bounded by industrial units and associated yards and the residential streets of Morgan Street, Courtney Street and Collier Street.

15.20 The main access to the site is gained via an access point located at the convergence of the north of Collier Street and north-west of Courtney Street. A pedestrian only access to the site is available to the north via the Glebelands Park which is access via Bank Street.

## PROJECT DESCRIPTION

15.21 The development comprises a full planning application for the construction of 250no. dwellings and associated works at land south of Glan Usk School, Herbert Road, Newport.

15.22 The vision for the application site is to develop a well-integrated residential development that responds to its riverside location, promotes national and local planning policy aims whilst providing an attractive place to live for future occupiers with particular regard given to the enhancement of the existing public right of way and ecological features to benefit existing and future local residents.

15.23 The proposals comprise a mix of houses and apartments blocks within two, three and four storey units. All of the proposed houses are two storeys in height and this represent the majority of the units. The apartment are contained within 11 blocks between three and four storeys, with a total of 108 apartments proposed.

15.24 The existing right of way located across the Site will be retained and enhanced as part of this proposal. The enhancements include the formalising the right of way by surfacing it, widening it to 3 metres and lighting it will appropriate street lighting. This will provide an attractive riverside walkway and link the site to the Glebelands Park to the north and the residential streets to the south including the local area of play (LAP) located centrally to Turner street, Collier Street and Courtney Street.

## ASSESSMENT METHODOLOGY AND IMPACT ASSESSMENT

15.25 The determination of the significance of the impacts arising from the proposed development is a key stage in the EIA process. It is this judgement that is crucial to informing the decision-making process. However, defining what is significant is not a simple task. The following criteria have been used (where appropriate to the issue being addressed) in the EIA to inform the assessment of the significance of an impact:-

- Type of impact (adverse/beneficial);
- Extent and magnitude of impact;
- Duration of impact (short term/long term);
- Sensitivity of receptor;

- Comparison with legal requirements, policies and standards;
- Comparison with applicable environmental thresholds; and
- Effectiveness of mitigation.

15.26 It should be noted that the residual significance of impacts is assessed taking into account mitigation, i.e. the assessment applies to the residual impacts. A residual impact is any impact that would remain following the implementation of proposed mitigation measures.

### Impact Assessment

15.27 Potential impacts identified as a result of the development can be split into two distinct categories: those leading from the construction and those from the subsequent occupation of the development.

15.28 Mitigation measures are proposed to avoid, reduce, compensate, remediate or even enhance potential impacts. The assessment outlines mitigation measures to ensure that the local environment is adequately protected from adverse impacts during the construction and operational phases of the proposed development.

15.29 The following sub-sections summarise the impact assessment that has been undertaken for each of the key issues as summarised under paragraph 1.4.

## LANDSCAPE AND VISUAL IMPACT

15.30 The townscape and visual appraisal has considered the character of the townscape and visual amenity within the context of the Site. It is considered the proposed development would be consistent in scale to the existing residential properties in the area and would not appear out of character with adjacent land uses. The site is able to accommodate the scale of the development proposed without harm to the character of the townscape. The main reasons for this conclusion are outlined in the following paragraphs.

15.31 The Site appears in public views from a number of locations, the proposed development would be viewed within the context of the built development of Newport and would not be inconsistent with the surrounding character of the area.

15.32 The appearance and scale of the proposed development would not appear incompatible with existing development in terms of massing, ridge height or proximity to adjacent buildings; and would be generally consistent with the building spacing of existing properties to the south of the site in East Usk.

15.33 The development allows the site to become better integrated with the River Usk, proposes improvement to Lottery's Reen and will improve the amenity of recreational access. This results in a beneficial impact on the landscape and townscape character of the area.

15.34 The proposed landscaping scheme will assist in integrating the development into views by supplementing existing vegetation patterns within and outside the site boundary.

15.35 Visual impacts have generally been assessed to be low since the scale of the changes resulting from the proposed development are not considered to have an adverse impact on the most relevant vantage points in the local area. Despite this there are opportunities to mitigate visual impacts by screening or filtering views of the development with planting

along the river and within and around Lottery's Reen.

15.36 There is a considered to be a slight impact on the amenity of nearby residential properties but once the site establishes itself as part of the urban character of Newport, particularly once vegetation has established across the site this impact is considered to reduce and the permanent impact is considered to be acceptable.

15.37 Overall the development of the site will not have an adverse impact on the landscape and townscape of the area and will have a beneficial impact on the character of the River Usk, Lottery's Reen whilst also safeguarding the sensitive habitats along the River Usk.

## ECOLOGY AND NATURE CONSERVATION

15.38 The ecological conditions of the site were assessed, a valuation of the ecological features provided and an indication of impacts/mitigation associated with the construction and operation of the proposed residential development.

15.39 The assessment indicated that the most important of ecological features associated with the Site in the River Usk SAC and SSSI, which lies immediately adjacent to the site and supports Otters, migratory fish and saltmarsh habitat.

15.40 Valued habitat features within the site include Lottery's reen, grassland, ruderal vegetation and trees and scrub. These support a moderately diverse flora, a variety of breeding birds and common amphibians and reptiles. They also support invertebrates and provide foraging habitat for bats.

15.41 During the construction phase habitats within the site would be lost including grassland, ruderal and scrub habitats of local value for nature conservation which would have a significant adverse impact on these habitats because they would be lost during construction. These losses would be reduced in severity as the new landscape planting as part of the final development matures.

15.42 Adverse impacts on some protected and notable species are possible during construction, but with adoption of appropriate mitigation measures these are mostly assessed as not significant. Key mitigation measures include the methods and timing for vegetation clearance, enhancement of the ditch and river-bank strip, new landscape planting, provision of bat roost boxes and bird nest boxes, and translocation of reptiles to safe habitat nearby. In addition, parts of the Glebelands Site of Importance for Nature Conservation (SINC) to the north of the M4 would be converted from species-poor grassland to flower-rich and ruderal vegetation, which would help off-set losses to the ruderal flora and invertebrate communities.

15.43 The design of the proposed development has endeavoured to protect the features of highest biodiversity value as a priority to ensure they are enhanced and retained once the development is completed. To protect the SAC/SSSI, a barrier strip of grassland and scrub habitat would be constructed as a series of ridges beside the top of the river-bank, to discourage people and dogs from accessing the saltmarsh on the banks of the river Usk. Off-site mitigation would also be provided to the north of the proposed development, fencing off part of the river-bank to give additional protection for Otters, and constructing an Otter holt. The long term beneficial effects of the measures to protect the river would help to compensate for the losses of less valuable habitats within the site.

15.44 The habitat of highest value within the site is the reed-fringed ditch at Lottery's Reen. The ditch would be retained, but would be temporarily affected during the construction phase while it is cleaned out and reprofiled. It would be reinstated with an enhanced profile and a widened reedbed to its southern side once the development is completed. The loss of ditch length caused by a new culvert would be mitigated by provision of new ditch habitat within the widened reed-bed.

15.45 The combination of protection and enhancement of the SAC features and Lottery's Reen, and adoption of appropriate mitigation measures would retain the most highly valued ecological features. However, there will be an unavoidable loss of the less valuable habitats and species within the site, valued at a local or within site level, due to the need for provision of the residential units and associated infrastructure.

## GROUND CONDITIONS

15.46 An assessment of the ground conditions indicates the likely significant effects of the proposed development on the ground conditions of the development site. A Site Investigation Report has been prepared to enable an appraisal and the site has been subject to a comprehensive contamination assessment, with risk being assessed in accordance with current best practice standards.

15.47 The assessment has indicated that there is a risk to the environment including human health from contaminated soils and gas at the Site during both the construction phase and operational phase should no mitigation measures be implemented.

15.48 Mitigation measures recommended during the construction phase include good working practices are recommended in order to ensure that no contamination risk to construction works, passers-by, neighbouring site users and surface watercourses occurs. This includes good health and safety practices, dust suppression and site screening. It is considered the risk following the successful implementation of these measures is low.

15.49 To ensure the development, once completed does not pose a risk to end users or the environment, it is proposed to cap the site with 2 metres of imported materials, gas protection measures incorporated into all new buildings and inclusion of a radon/gas barrier. These mitigation measures will eliminate the risk to the environment and site end users.

15.50 The nature of the development will require a change to the features of the site, with the current proposals intending for some cut and fill earthworks and retaining structures. The site investigation identified that piled foundations is suitable for the dwellings and that the floor slabs should be designed as suspended.

15.51 The completed development does not include any end site uses which could cause potential significant harm to the groundwater environment and there would be no additional risk to the groundwater from the proposed development.

15.52 Chapter 8 concludes that the impact of the development on the ground conditions is negligible and the development of the Site poses a negligible risk to site end users.

## FLOOD RISK

15.53 Part of the Site is located within Zone C1 which suggests that the existing site is at risk from flooding however has significant infrastructure including flood defences. There are also some areas within the Site which lie within Zone A i.e. considered to be at little or no risk of fluvial or coastal/tidal flooding.

15.54 The site has an ordinary watercourse located across it, Lottery's reen, which provides drainage to approximately 4.865 hectares of the local area eventually draining to the river Usk.

15.55 The impact on flood risk during the construction phase is temporary and attributed to:

- the risk of groundwater flooding following excavation beneath the groundwater table; and
- risk of flooding to off-site properties by overland flow from the Site.

15.56 To mitigate against this an area of ground either side of Lottery's reen will be retained for flood storage, this will not be raised during the construction. It is not considered the construction phase would pose a risk to increased flooding to the Site or local area with the recommended mitigation measures in place. Impacts of flooding will further be mitigated though agreed construction protocols included within the Construction Environmental Management Plan that will be prepared for the Site.

15.57 The flood risk of the site once developed has been assessed against the existing flood information and predicted flood risk for the future.

15.58 It is predicted the site including the access could be vulnerable from tidal flooding in the future and to protect the future dwellings the development plateau will be raised to 8.4 metres AOD and the embankment along the western cite boundary will be improved. There will also be an emergency flood plan to advise future occupants of the appropriate course of action during a flood event. The raising of the Site will have a negligible impact on the third party tidal flooding.

15.59 There is potential risk the raising of the Site could have an adverse impact on fluvial flooding of Lottery's Reen on third parties. Some of the floodplain however will be retained, i.e. not all of the site will be raised, therefore, the impact on third parties is likely to be negligible. The reen will be enlarged to provide storage to the flood waters in these events thus having a negligible impact on flood risk to third parties.

15.60 The retention of some of the floodplain together with enlargement of Lottery's reen is considered to be adequate mitigation against flooding and will not exacerbate risk of third party flooding.

15.61 The completed development will have larger areas of impermeable areas which will increase the level of surface water being discharged into the river Usk on third party flooding downstream. This is considered to have an overall negligible impact since the surface water will be discharged into tidally dominated waters.

15.62 It is concluded the completed development with have a negligible impact on flood risk at the site and surrounding area.

## DRAINAGE

15.63 The drainage regime at the site was investigated and a drainage strategy has been devised to indicate the most suitable method of draining the site through the construction phase and once the development is completed.

15.64 During construction the status quo of surface water drainage will prevail by continuing to infiltrate to the ground and shed naturally over land to Lottery's reen. To avoid any adverse impact on the existing drainage regime stockpiled materials should be appropriately sited, blockages prevented and an Environmental Construction Management Plan put into place. These measures will ensure the construction phase will have little, if any, impact on the surface water to negligible.

15.65 The site currently does not have any foul drainage thus this is not a relevant consideration during the construction phase other than to ensure that development work would not impact on the existing sewer crossing the Site.

15.66 There are two disposal techniques in relation to surface water once the development is completed.

15.67 The narrow strip forming the southern half of the development is an infiltration based design, with all impermeable areas such as roofs and footpaths draining to ground via soakaways or other forms of infiltration. The estate road and plot driveways in the southern strip are of permeable block paving construction.

15.68 The remainder of the development to the north is served by a proposed piped surface water drainage system with no inherent flow/source control, which collects all impermeable area runoff and discharges to the ordinary watercourse at three separate points. Discharge to the watercourse is unattenuated on the basis that downstream properties will not be affected due to the tidal nature of the watercourse outfall to the River Usk and the large capacity of the river at this location.

15.69 Notwithstanding the above, the watercourse is to be locally widened and reshaped as part of the development landscaping proposals to provide a wetland area. In addition to the enhanced ecological and amenity value afforded by this area, the additional flood storage provided will help to mitigate future flood risk in storm conditions.

15.70 Once the development is completed foul drainage from the residential dwellings will be disposed of via the main sewers. Three points of connection have been agreed in principle with Dwr Cymru Welsh Water (DCWW). DCWW will need to confirm capacity within the local sewer network and wastewater treatment works as part of their connection approval process prior to connection of flows. DCWW will only allow connection to the main sewer if there is capacity, if there is an issue with capacity the developer will be required to fund upgrading works that are necessary to ensure there is no adverse impact on the foul drainage network.

15.71 In terms of sewer drainage the existing efficiency of the sewer is unknown and DCWW have not highlighted any problems with the existing sewer. To avoid the proposed development impacting on the existing sewer operations mitigation is proposed during the construction phase to avoid any blockages. Once the development has been completed an easement will be retained over the sewer to ensure access for maintenance.

15.72 The drainage strategy for the proposed development will not negatively impact on the existing drainage network and with have neutral on the environment.

## TRAFFIC, TRANSPORT AND MOVEMENT

15.73 The purpose of chapter 11 is to assess the likely travel characteristics of the proposed development, identify the impact of this travel on the surrounding transport network, and identify any measures required to mitigate the impact of the proposed development. The scope of the assessment was agreed with Newport City Council Highways Department to ensure the assessment was appropriate and also indicated what junctions in the local area required assessment.

15.74 The development will generate a total 133 two way vehicle movements in the morning peak and 145 two way vehicle movements in the evening peak. Capacity analysis of junctions within the locality has been undertaken. The analysis has indicated that there will be increased traffic at all the junctions once the development is completed and mitigation would be required to reduce this impact. The implementation of a Travel Plan to promote the use of more sustainable modes of transport including walking, cycling, public transport, and car sharing is considered to reduce the impact of the development to an acceptable level.

15.75 The proposed development proposes a total of 348 parking spaces. A sustainability assessment in relation to the site was carried out in accordance with the Newport City Council Parking Standards 2012' which indicated a reduction in parking provision was acceptable at the Site. The level of parking provided has agreed with Newport City Council Highways Department and is considered acceptable given the highly sustainable location of the Site. It is proposed to provide 2 parking spaces per three bedroom unit and 1 space for one or two bedroom units.

15.76 The development once completed will have an improved vehicle and pedestrian access on to Collier Street/Courtney Street via a simple priority junction, with pedestrian facilities. Additional pedestrian links are proposed to the north of the Site which provide a connection between the Site and the St Julian's area of Newport.

## NOISE AND VIBRATION

15.77 The potential impacts of noise and vibration from the construction and subsequent operation of the proposed Development upon sensitive uses on and around the Site has been assessed together with an assessment of the suitability of the Site in relation to the proposed residential uses.

15.78 Noise and vibration from the construction phase of the development would have a temporary adverse impact upon the sensitive receptors within the locality including existing residents and Glan Usk School. It is considered the use of Construction Environmental Management Plan to minimize potential adverse impacts including restricted working hours, quiet periods through day and using screen around any static plant machinery.

15.79 The site was assessed in terms of its suitability for the end use for residential properties. It was considered the potential noise levels from adjacent industrial estate would result in areas of the site exposed to unacceptable noise levels however these could be reduced to

an acceptable level with the erection if a 2.6 metre façade to the effected boundaries. The incorporation of appropriate ventilation to dwellings to avoid the opening of windows is also suggested.

15.80 The noise generated by the increased traffic of the completed development is considered to be mostly negligible across the Site with a minor adverse impact on the dwellings at Turner Street. The implementation of a Travel Plan to encourage the reduction in travel by the private care will reduce this impact to negligible.

## AIR QUALITY

15.81 This assessment focuses on the impact of the proposed development on air quality and pays particular regard to existing sensitive receptors and future residents following occupation of the development. It considers the impacts of potential emissions from construction activities and the impact of the road traffic associated with the completed development.

15.82 The Site was identified as being located within the Air Quality Management Area on Caerleon Road therefore it is essential the development does not adversely impact on the air quality of this area.

15.83 During the construction phase it was recognised that dust emissions from demolition and construction activities and emissions from construction vehicles could have a negative impact on the air quality of the area for a temporary period of time. This can be successfully reduced to an acceptable level if routine management control measures to prevent and control dust and the implementation of a Construction Environmental Management Plan are implemented. This is considered satisfactory in reducing the impact on air quality to an acceptable level.

15.84 Once the development is completed the source of the risk to air quality is emissions from the traffic generation associated with development however this risk is small even without mitigation. Mitigation measures in the form of a Travel Plan to encourage the reduction of private car trips will reduce this risk even further.

## SOCIO ECONOMIC

15.85 It is possible that the development will have an impact on existing residents living in the local area as well as businesses and services. The potential socio-economic and community impact of the Herbert Road development has been assessed in Chapter 14.

15.86 The land use will be permanently changed however this is not considered negative since the land is currently vacant, derelict land and will be replaced with a high quality housing scheme. Furthermore, the existing right of way across the site will be retained and enhanced for local residents to continue to use. The existing right of way will be markedly improved through the new development by its formation and added natural surveillance.

15.87 During the construction phase the development is considered to have a beneficial impact on the local economy by creating approximately 1,452 employment opportunities, using locally sourced materials whilst also helping increase the skills sets of the workers employed.

15.88 It is acknowledged there will be an impact on local residents during the construction phase which will include the change in outlook from adjacent dwellings and the temporary nuisance to these dwellings of living in close proximity to a construction site. The impact of this on local residents can be reduced through ongoing consultation between the developer and the local community. Other measures that will be adopted to reduce the impact of the development on the local community include retention of ecological areas, adoption of a Construction Environmental Management Plan and the end use of the site as a high quality residential scheme.

15.89 The scheme once completed and occupied will place additional pressure on social services including schools, refuse services and recreational facilities. The developer will be required to enter a Section 106 agreement which legally obliges them to pay contributions towards local services to reduce increased pressure and improve these services. The improvement of capacity and facilities of local facility funded through Section 106 agreement is a positive impact on the local community.

15.90 The future occupants of the completed development will marginally increase the local population numbers this is not considered to such an extent that it would have an adverse impact on the community or change the demographics of the area. The future occupiers of the development are likely to support the local economy by increasing patronage to local businesses and increasing memberships to sport clubs and community groups.

15.91 The completed development and associated construction phase will have positive impact on the local economy and the St. Julian's area.

## CUMULATIVE IMPACTS

15.92 Regulation 2(1) of the Town and Country Planning (EIA) Regulations 1999 (as amended) emphasises the need for the consideration of cumulative effects at a project level. Cumulative impacts relate to 'other' projects and plans and not different aspects of the proposal. However, best practice guidelines recommend that an EIA should assess the effects of the development cumulatively with other development only when there are likely to be significant effects.

15.93 The scoping response received from the Local Planning Authority has not advised that any cumulative impact assessment will be necessary. As such, no assessment is included as part of this Environmental Impact Assessment.

## CONCLUSION

15.94 Overall, it is considered that any adverse impacts of the proposed development, identified in the process of Environmental Impact Assessment, can be mitigated against during the construction and operational phases as far as practically possible to reduce the impact to an acceptable level. It is, therefore, concluded that the proposed scheme will have a negligible impact on the wider environment. As such, it is considered that the proposed development is acceptable and, assuming other material considerations dictate otherwise, should be considered favourably by the Local Planning Authority.