

Dartmoor National Park Authority



Level 2 Strategic Flood Risk Assessment Chuley Road, Ashburton

CONTRACT

THIS CONTRACT is made this *28th* day of *May* 2013

BETWEEN:

- (1) Dartmoor National Park Authority of Parke, Bovey Tracey, Newton Abbot, Devon TQ13 9JQ ("the Authority"); and
- (2) Parsons Brinckerhoff of Queen Victoria House, Redland Hill, Bristol BS6 6US ("the Consultant")

WHEREAS:

1. The Authority wishes to commission a Level 2 Strategic Flood Risk Assessment (SFRA) in respect of land at Chuley Road, Ashburton
2. The Consultant has by written tender dated 7 February 2013 (Appendix 1) undertaken to provide consultancy services for the work, to include:
 - a. Assessment of existing and future flood risk
 - b. Development of an appropriate SFRA evidence base
 - c. Assessment of the robustness of existing flood management infrastructure and its impact upon reducing flood risk in the area
 - d. Assessment of the impact of flooding on the area and surrounding areas

- e. Proposals for ways in which flood risk in the area and surrounding areas can be managed and mitigated
- f. Guidance on the potential for spatial redevelopment in the area in ways which will minimise flood risks

for the fixed price of £25,250 (twenty five thousand two hundred and fifty pounds) including all costs, expenses, disbursements and contingencies.

The detailed specification for the work is contained in the Invitation to Tender (Appendix 2).

NOW IT IS HEREBY AGREED that:

1. The Consultant will upon and subject to: -

- i. this contract
- ii. the Consultant's written quotation (Appendix 1)
- iii. the Invitation to Tender (Appendix 2)
- iv. the Authority's Conditions of Contract in relation to this contract (Appendix 3)

provide the agreed consultancy support and the Authority will pay to the Consultant the sums as shall become due in accordance with this contract.

2. The Authority will pay to the Consultant the sum of £25,250 (twenty five thousand two hundred and fifty pounds) excluding VAT but including all disbursements and expenses in respect of proper performance of the work as specified in this contract.

3. Payment will be made in stages as follows:

(a) A lump sum payment of £4,000 (four thousand pounds) will be paid to the Consultant upon the execution of this contract by both the Authority and the Consultant.

(b) A further lump sum payment of £16,250 (sixteen thousand two hundred and fifty pounds) will be paid to the Consultant upon submission of a satisfactory draft SFRA

(c) A final lump sum payment of £5,000 (five thousand pounds) will be paid to the Consultant within 30 days of satisfactory completion of work under the contract.

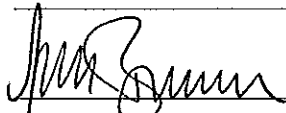
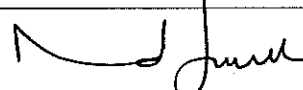
Work and progress under the contract shall be deemed satisfactory unless the Authority has stated reasoned dissatisfaction within 15 days of the matter causing concern arising.

4. Unless sooner terminated in accordance with clause 16 of the Conditions of Contract, this contract shall terminate on the 31 May 2013 and shall be capable of extension on the same or varied terms by agreement between the parties.

5. In the event of any conflict, discrepancy or dispute between this contract, the Tender Brief, the Consultant's written quotation and the Conditions of Contract, the provisions shall apply in the following order of precedence:

- 1 the Contract;
- 2 the Authority's Conditions of Contract
- 3 the Consultant's written quotation
- 4 the Contract Brief

AS WITNESS the hands of the said parties:

For	Dartmoor National Park Authority	Parsons Brinckerhoff
Signed		
Name	LORNA BROWN	DAVID GULLICK
Position	DIRECTOR OF COMMUNICATIONS & BUSINESS SUPPORT	DIRECTOR CIVIL & STRUCTURES

Dartmoor National Park Authority

Level 2 Strategic Flood Risk Assessment,
Chuley Road, Ashburton

February 2013



Canonteign Country Park

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APPENDIX 01 - CVs of Team Members

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1 Background

1.1 Introduction

This proposal has been prepared by Parsons Brinckerhoff in response to the Invitation to Tender for the 'Level 2 Strategic Flood Risk Assessment, Chuley Road, Ashburton' as published by Dartmoor National Park Authority ('the Authority') in January 2013.

This proposal sets out our methodology for completing the works, a summary of our experience relevant to this tender, our proposed team of engineers and hydrologists, a breakdown of our tender costs, and our forecast programme for completing the works.

Joanna Goodwin, Senior Engineer and appointed Project Manager, is responsible for the delivery of this tender and will be able to answer any queries regarding our proposals. Joanna is based in our Bristol office and can be contacted at:

Parsons Brinckerhoff Ltd
Queen Victoria House
Redland Hill
Bristol
BS6 6US

T: 0117 933 9394
E: Joanna.Goodwin@pbworld.com

1.2 Our proposed team

Parsons Brinckerhoff has partnered with specialist modelling consultants Edenvale Young to successfully deliver the Level 2 Strategic Flood Risk Assessment (SFRA) for Chuley Road, Ashburton. Our two companies have an excellent working relationship with one another and together we have delivered similar projects over recent years within programme and within budget. We bring together our complimentary strengths in flood risk management and hydraulic modelling and will provide the Authority with a strong project team drawing on our particular areas of expertise.

Parsons Brinckerhoff's strengths lie in the assessment and management of flood risk, in particular the mitigation of flood risks through development planning and the design of flood alleviation schemes, flood defence structures and sustainable surface water management schemes. Edenvale Young are experts in the use of ISIS, TUFLOW and ISIS-TUFLOW and have an excellent reputation in the delivery of complex hydraulic models to inform flood risk assessment and flood risk management.

As an example of our ongoing successful relationship, Parsons Brinckerhoff and Edenvale Young have recently worked together to analyse flood risks associated with the proposed TRAC4 cycleway and footbridges in Bude and Launceston on behalf of Cornwall County Council. Hydraulic modelling was undertaken by Edenvale Young to inform the flood risk assessment and subsequent mitigation measures that were developed by Parsons Brinckerhoff to inform the design.

We will apply the same successful formula which was delivered on other projects for this tender. A summary of the different aspects of work to be lead by each of our organisations is provided in the table below.

Organisation	Key skills	Project role
Parsons Brinckerhoff	Project leadership Flood risk assessment; flood alleviation and defence; infrastructure and drainage design; SUDS; development planning; environmental assessment; GIS capability; local knowledge; stakeholder consultation.	Project management, client liaison and contract management. Flood risk assessment; flood management; SUDS design; development planning; GIS mapping. Stakeholder engagement. Preparation of the Level 2 SFRA report.
Edenvale Young	Pluvial, fluvial, tidal and coastal modelling; expertise in ISIS and TUFLOW; flood forecasting; GIS capability; external training.	1D-2D ISIS-TUFLOW modelling; model verification; analysis of extent, onset, depth & velocity; overland flow. Survey specification and supervision. GIS mapped outputs.

1.3 Our selected staff

A brief summary of our selected staff and the roles they will take in the delivery of the Level 2 SFRA is provided below. Detailed CVs that include a summary of qualifications and project experience are provided in Appendix 01.

Both Parsons Brinckerhoff and Edenvale Young have additional staff members beyond those listed below. Parsons Brinckerhoff also has an established office located in Exeter from where many of our Devon-based projects are coordinated. We appreciate that the resilience of our workforce is of key interest to the Authority. We can confirm without doubt that both of our organisations have more than sufficient staff with the relevant skills to deliver the Level 2 SFRA within the required programme. Additional CVs can be provided if further evidence of our qualified and experienced team members is required.

Parsons Brinckerhoff



The contract will be lead by **Jonathan Ralph** who is the Head of Water Engineering for Parsons Brinckerhoff. As Project Director, Jonathan is responsible for all contractual arrangements including those between Parsons Brinckerhoff and the Authority; Edenvale Young as a sub-consultant to Parsons Brinckerhoff; and our preferred topographic survey contractors. Jonathan will also ensure appropriate personnel resources are available throughout the appointment to meet the project requirements within the required programme.



Quality assurance will be provided by **Jon Price** who has over 30 years experience in the assessment and management of flood risk. Jon will review all outputs and deliverables prepared by the combined project team of Parsons Brinckerhoff and Edenvale Young to meet our internal quality assurance procedures. Jon has managed the delivery of many projects within Devon and is an excellent choice to take on this role.



The day-to-day delivery of the project will be led by **Joanna Goodwin** as appointed Project Manager. Joanna has over ten years experience in the assessment and management of flood risks and, in particular, the mitigation of flood risks to support new development. Joanna will manage and coordinate all works required to deliver the Level 2 SFRA including those items led by Edenvale Young. Joanna will be the key point of contact for the Authority and will represent the unified project team of Parsons Brinckerhoff and Edenvale Young.



Joanna will be supported by **Charles Bennett** who is experienced in flood risk assessment, hydraulic modelling and hydrological analysis. Charles has lead much of the technical work delivered by Parsons Brinckerhoff within Devon in recent years, including hydrological analysis, modelling studies, flood risk assessments and surface water management. Charles has also undertaken a considerable amount of stakeholder consultation, particularly with communities and residents to discuss the local impacts of flooding and to ensure that we offer solutions that can be delivered on the ground to meet local requirements.

Edenvale Young



John Young will be responsible for leading the team of hydrologists and hydraulic modellers from Edenvale Young. John will ensure that Edenvale Young's contractual arrangements to Parsons Brinckerhoff are met and that appropriate personnel resources are available throughout the appointment to meet the project requirements within the required programme. John will also be responsible for verification and quality assurance of all modelled outputs.

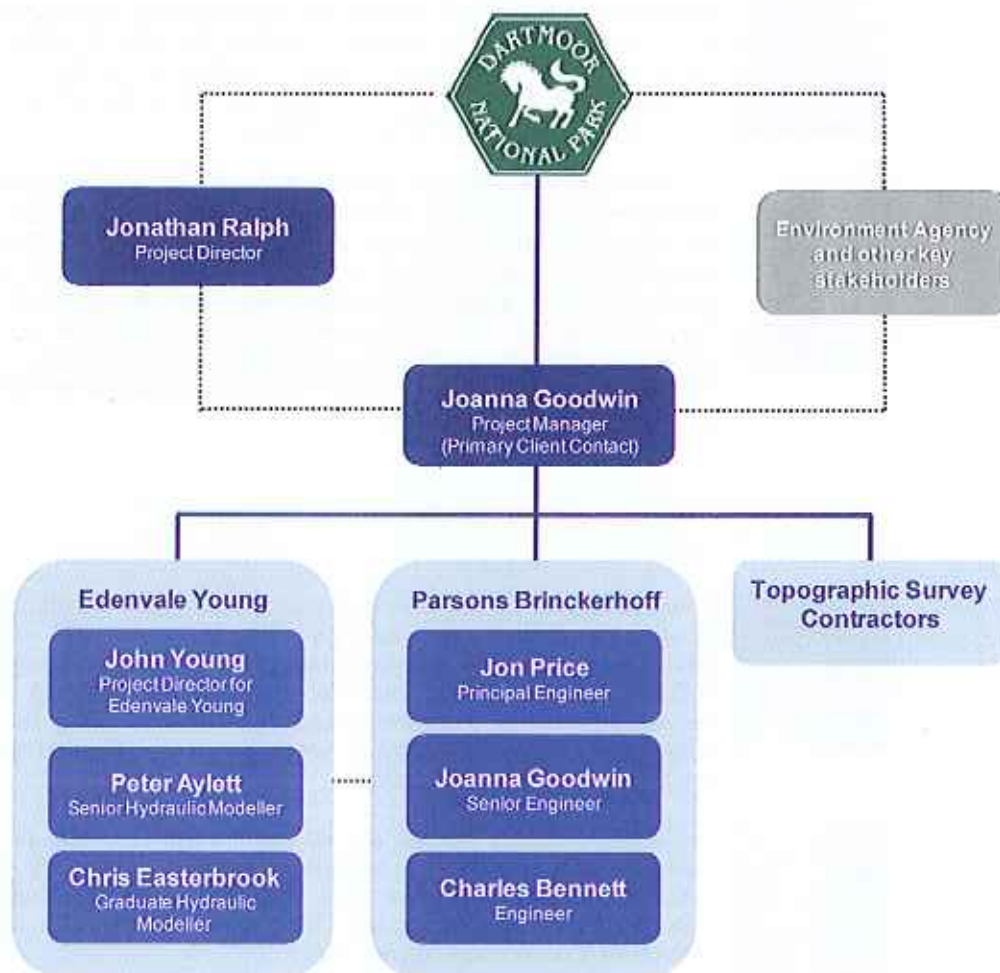


Hydraulic modelling will be led by **Peter Aylett**. Peter is a Senior Modeller with considerable experience of ISIS, TUFLOW and ISIS-TUFLOW. Peter has also been involved in the development and presentation of training courses using these packages to clients that include the Environment Agency (EA).



Peter will be supported by Graduate Engineer **Chris Easterbrook**. Chris has been responsible for undertaking fluvial, coastal, flood defence and flood forecasting projects that have included the preparation of GIS data, construction of hydraulic models, analysis and report writing.

1.4 Organogram



1.5 Relevant project experience

Parsons Brinckerhoff has completed a large number of projects in Devon in recent years, predominantly on behalf of Devon County Council with whom we have a successful and long standing relationship. Over the past three years these projects have included the Exeter Science Park, works at Junction 29 of the M5 including Redhayes Bridge, Ide Park and Ride, and the Teign Estuary Cycleway. The Redhayes Bridge was also winner of the 2011 British Construction Industry (BCI) Local Authority Award.

Parsons Brinckerhoff currently sits on the Framework for the Devon and Cornwall Constabulary and under this appointment we are currently providing flood risk and drainage services for the construction of the Air Support Base at Exeter Airport and the proposed redevelopment of the Devon and Cornwall Police Middlemoor Headquarters.

Edenvale Young has considerable experience in the use of hydraulic modelling to inform flood risk assessment and the design of flood management measures. Much of their work has been undertaken in partnership with other consultants in a manner similar to that proposed for this tender.

A brief summary of recent projects for both Parsons Brinckerhoff and Edenvale Young that demonstrate our skills and experience relevant to this tender is provided below.

We are proud of the reputation we have established for delivering projects within programme and budget whilst meeting our client's needs entirely. References can be provided for the projects discussed below should the Authority wish to discuss our ability to deliver projects within programme and budget with our previous clients.

Parsons Brinckerhoff

Exeter Science Park and M5 Junction 29, Devon



Parsons Brinckerhoff is leading the multi-disciplinary design of the £7m Exeter Science Park at Junction 29 of the M5. As part of this commission by Devon County Council, Parsons Brinckerhoff prepared a Flood Risk Assessment and surface water drainage strategy to support the planning application. The site is bordered by several watercourses with documented flood history, one of which was deemed to be at critical capacity.

The Flood Risk Assessment identified that surface water runoff generated by the development was an issue and could potentially increase the risk of flooding to property and land downstream of the development. Parsons Brinckerhoff undertook hydrological analysis of the site and catchment area to determine greenfield runoff rates and developed a drainage strategy for the Science Park incorporating a range of sustainable drainage systems comprising surface water attenuation and natural infiltration through swale ditches and soakaways.

Ide Park and Ride, Devon

Parsons Brinckerhoff completed a Flood Risk Assessment on behalf of Devon County Council for the proposed Ide Park and Ride scheme on the southern outskirts of Exeter. The site lies on land adjacent to the Alphin Brook, a tributary of the River Exe, and part of the site was classified as Flood Zone 3 with a high risk of flooding.



Parsons Brinckerhoff analysed flood contours generated by a hydraulic model of the Alphin Brook for the 100 year and 1000 year events and made comparisons against recorded flood levels of the 1960 flood event – reported to be the most severe flooding recorded in the area and subsequently shown to be greater than the modelled 1000 year event. Following consultation with the EA it was agreed that the Park and Ride could be located outside of the 1000 year event flood extent and be reclassified as low risk Flood Zone 1.

Parsons Brinckerhoff subsequently developed a surface water management strategy to limit surface water runoff to greenfield rates. The strategy was informed by hydrological analysis of the catchment and incorporated sustainable drainage techniques to attenuate flow prior to discharge to Alphin Brook.

Hydraulic Modelling of the River Stour at Long Melford, Suffolk



The River Stour and its adjoining watercourses surrounded a parcel of potentially developable land near the town of Long Melford on the border of Suffolk and Essex. The EA's model placed this land within the floodplain, thus reducing options for development. Through the completion of detailed hydraulic modelling of the watercourse using ISIS software, Parsons Brinckerhoff determined that the flood levels were lower than previously estimated and that the site could be

removed from the floodplain. This has since been agreed with the EA and the indicative flood maps revised.

Parsons Brinckerhoff commissioned a detailed topographic survey to inform the complex hydraulic model, including an adjacent spillway, culverts, bridges, weirs, mill leat, and additional watercourses. The survey provided valuable information for developing the model and was instrumental in determining the extents of the revised floodplain.

Rheola Estate Hydrological Modelling, South Wales

Parsons Brinckerhoff was commissioned by Neath Port Talbot County Borough Council to prepare a site specific Flood Consequence Assessment to support an Outline Planning Application for the development of a mixed-use leisure and tourism facility at the Rheola Estate in the Vale of Neath.



Parsons Brinckerhoff undertook ISIS hydraulic river modelling of the Rheola Brook to improve understanding of flood risks and to assess the impact of a range of alleviation measures.

The model was informed by a topographic survey of the river corridor and surrounding land, commissioned by Parsons Brinckerhoff, and included the complex 22 step cascade structure within the engineered channel, a number of bridges and a culverted section.

Taunton Urban Extensions, Somerset

Parsons Brinckerhoff provided a range of specialist consultancy services to Taunton Deane Borough Council to support the delivery of sustainable urban expansion of circa. 12,000 homes in and around Taunton by 2027.



Our hydrology and flooding services included:

- Review of existing flood risk to potential development sites from all sources of flooding including surface water runoff and groundwater emergence;
- Review of development and access vulnerability to guide development to suitable locations based on flood risk probability;
- Recommendation of measures to mitigate and manage flood risk where necessary;
- Recommendation of measures to provide betterment, including suitability of SUDS and opportunities for amenity and biodiversity.

Our studies informed the development of design codes and the draft masterplans, and contributed to the Taunton Deane Core Strategy, Urban Extensions SPD, Strategic Flood Risk Assessment and Surface Water Management Plan.

Bruton Flood Study, Somerset



Parsons Brinckerhoff was appointed by Somerset County Council to undertake an assessment of surface water flood risk in Bruton following the flooding of 17 properties in November 2011. Parsons Brinckerhoff assessed the causes of the 2011 surface water flooding using a combination of publicly available information and consultation with residents, landowners and other key stakeholders. This information was used to develop a

hydraulic model of the catchment and to identify areas at a raised risk of flooding.

Parsons Brinckerhoff analysed a variety of approaches to manage the identified flood risks and proposed an approach that was considered to have lower capital costs and less negative impact on residents during construction.

Parsons Brinckerhoff used the Environment Agency Partnership Funding Calculator Tool to assess the benefit to cost ratio of the proposed works and to identify the potential funding for the scheme available under the Flood Defence Grant in Aid funding mechanism.

Edenvale Young

Tregynon Flooding Project Appraisal Study, Wales

Edenvale Young was appointed by Powys County Council to complete a Project Appraisal Study (PAS) to address existing flood risks within the village of Tregynon. The works required a topographic survey and hydrological analysis to inform the ISIS-TUFLOW model of the three key watercourses believed to cause localised flooding. The topographic survey was completed in accordance with Edenvale Young's survey specification in a format compatible with ISIS software.



The Bechan Brook at Tregynon is classified as an ordinary watercourse and is a tributary of the River Severn. Two other watercourses, Church-House Dingle and the Fachwen, discharge into the Bechan Brook to the south of the Tregynon village centre. Tregynon has been subject to a number of flood events in the recent past. In July 2007 approximately forty-four properties were reported to have been internally and/or externally flooded. During this event flow from the watercourses entered the residential areas using the road layout as the main water conveyance route.

Edenvale Young assessed the likely causes of flooding through review of historic records and anecdotal evidence. This assessment, combined with ISIS-TUFLOW modelling, enabled Edenvale Young to calculate preliminary cost estimates and economic assessments for a range of engineering options to manage the identified risks.

Cambridgeshire Surface Water Management Plan, Cambridgeshire



Edenvale Young (in conjunction with Hyder Consulting) was appointed by Cambridgeshire County Council to undertake the Cambridgeshire Surface Water Management Plan and Preliminary Flood Risk Assessment. Edenvale Young developed a web based GIS system for the Preliminary Flood Risk Assessment and the Phase 2 assessment for the Cambridge and Milton Wet/Hot Spot.

Edenvale Young completed a direct rainfall 2D TUFLOW model of Cambridge based on LIDAR information. The modelling included varying ground roughness across the model domain to take account of roads, parkland and buildings, as well as sewer assets, watercourses, culverts and other assets affecting flooding.

The modelled output was used to inform a multi-criteria analysis in order to prioritise the wet/hot spots for further investigation. Nine wet/hot spots for surface water flooding were identified within Cambridge based upon the Multi-Criteria Analysis and three were brought forward for more detailed consideration. This included:

- The development of engineering options including surface water reduction strategies to mitigate the risk of surface water flooding in Cambridge.
- Preparation of cost estimates for Engineering Options.
- Consideration of long term policy strategies (planning & highway) to address surface water flooding in Cambridge.

Bristol City Council Phase 3 City Docks Study, Bristol

Edenvale Young (in conjunction with Mott MacDonald) was appointed by Bristol City Council to undertake the Phase 3 City Docks Study in order to prepare a strategy for the maintenance and replacement of key hydraulic structures in the City Docks. The scope of the study included historical assessment, visual condition survey, laser survey and risk / fragility assessment, and hydraulic modelling.



Edenvale Young completed the visual condition survey in accordance with the Environment Agency's Asset Inspection methodology. This was used as the basis for the development of a risk assessment for each structure. The objective was to evaluate the likelihood and consequence of failure in the short term, medium term, long term and the very long term. Consequences included the impact of flooding and rapid drawdown of the harbour.

The study was informed by an ISIS model of the Rivers Frome and Avon with the downstream extent at Avonmouth. Edenvale Young completed a total of 2,048 runs to assess the relative influences of the hydrological boundaries for a matrix of return periods. Edenvale Young also created a 1D-2D ISIS-TUFLOW model of central Bristol to assess operational failure of sluices at Underfall yard, blockage of the Frome culverts and the impact of raising defences at a number of locations along the Avon.

Talgarth Flood Consequence Assessment, Wales



Edenvale Young were appointed to undertake a Flood Consequence Assessment for a visitors and education centre at Talgarth Mill. The proposed works comprised the restoration of the original mill and its workings, as well as the installation of a small 3.5kw hydro unit, refurbishment of the mill leat and installation of a sluice which originally drew water off the Cwm Rhyd-Ellywe upstream of the weir on the river. The development also included a café, education, exhibition and office facilities.

Edenvale Young used ISIS-TUFLOW modelling to ensure that the configuration of the development was sustainable in terms of flooding by:

- Assessing the risk of flooding to the site in a 1 in 100 year event in order to provide for any potential EA flooding area remapping;
- Assessing the risk of flooding to the site in a 1 in 100 year plus climate change event and determining whether the site is flood free;
- Assessing the risk of flooding to the site in a 1 in 1,000 year event and evaluating the impact of flooding on the site via the justification tests.

1.6 Relevant survey experience

Both Parsons Brinckerhoff and Edenvale Young are accustomed to appointing independent survey contractors to undertake topographic surveys to inform our modelling and flood risk assessment works. With reference to the project examples provided above, Parsons Brinckerhoff and Edenvale Young commissioned complex topographic surveys to inform the modelling and flood risk analysis of our projects at the Rheola Estate, River Stour at Long Melford, and in the village of Tregynon.

Parsons Brinckerhoff and Edenvale Young are also experienced in undertaking visual condition surveys in accordance with the EA's Asset Inspection methodology. With

reference to the project examples provided above, Edenvale Young completed visual condition surveys that were essential for informing the Bristol City Docks study and in particular the likelihood and consequence of asset failure.

The topographic surveys commissioned by Parsons Brinckerhoff and Edenvale Young are, at minimum, in accordance with EA 'National Survey Specification' and EA 'The Preparation of Survey Data for Flood Risk Assessments' (document ref 195_05). We also specify our own survey requirements that are tailored to the project at hand. These typically include access requirements, the content and extent of the survey, ISIS and GIS compatible data, and a health and safety risk assessment.

For this project Parsons Brinckerhoff has approached our preferred survey contractor, Merrett Survey, based near Exeter. During our past experiences of working with Merrett Survey we have been impressed by their services and are confident of their abilities to undertake the required topographic surveys of the River Ashburn and Balland Stream. Merrett Survey are an established contractors who are experienced in all manner of survey requirements including topographic survey, river cross sections, flood plain mapping and asset survey, as well as requirements for GIS and ISIS compatibility.

The relatively tight programme for completing the topographic survey to inform the Level 2 SFRA has been discussed with Merrett Survey and they have confirmed that our programme can be achieved. This programme assumes that our appointment with Merrett Survey will be confirmed on 25 February 2013 (following confirmation of our appointment with the Authority) and that the topographic survey of the River Ashburn and Balland Stream can commence the following Monday. This allows one week for all access arrangements and health and safety protocols to be put in place. It is assumed that access arrangements will have been investigated and confirmed by the Authority prior to the start of the project.

The survey field work will be completed within 7 working days. Digital outputs will be provided in an ISIS compatible format along with digital photographs and summary report within 5 working days of completing the field work.

A more detailed description of our methodology is provided in Section 2.4, Task 2.

2 Methodology

2.1 Our understanding of the development

The land at Chuley Road in Ashburton offers a prime opportunity for sustainable mixed use development close to the existing town centre.

The redevelopment of this former railway site will assist the Authority in meeting their vision for Ashburton as set out in the Core Strategy Development Plan Document, namely to enhance opportunities for business and commercial development, improve parking in the town centre, provide a wider range of accommodation opportunities, and conserve the town's character and heritage.

The Development Management and Delivery (DMD) Development Plan Document sets out specific objectives and policies for the redevelopment of land at Chuley Road. These progress the vision as set out within the Core Strategy, including the conservation and enhancement of the site's railway heritage and the provision of a pedestrian link between Bulliver's Way and the recreation ground.

A detailed Flood Risk Assessment is required to inform the redevelopment of the 3.5ha site at Chuley Lane because of the site's location within areas identified to be at flood risk, the site's proximity to two main rivers and the size of the area to be redeveloped. Redevelopment of this site also has the potential to affect existing and future flood risk within Ashburton and further downstream. The Level 1 SFRA concluded that a Level 2 SFRA would be required to better understand existing and future flood risks within Ashburton and subsequently inform the application of the Sequential Test, Exception Test and measures to facilitate development of the Chuley Road site.

2.2 Our understanding of existing flood risk in Ashburton

Broad scale JFLOW modelling of the watercourses within close proximity to the site, namely the River Ashburn and its tributary Balland Stream, indicate that a significant area of Ashburton (including much of the proposed development site) is at significant flood risk from fluvial flooding. This is reaffirmed by historic reports of flooding within Ashburton from exceedence of the watercourses and associated flood alleviation schemes.

Significant areas of Ashburton, including within the proposed site boundary, have also been identified to be susceptible to surface water flooding. New Surface Water Flood Maps have recently been developed by the EA using an alternative methodology to identify surface water flooding. The Level 1 SFRA and Preliminary Flood Risk Assessment suggest that these updated maps indicate a reduction in the extent of area identified to be at risk surface water flooding than previously mapped.

A range of flood alleviation and flood defence measures have been constructed since the 1980's to offer flood protection to Ashburton. These measures were designed to offer a standard of protection up to the 1 in 50 annual probability event, although records show

that the capacity of these schemes has been exceeded and has caused flooding to streets and buildings within Ashburton.

It is unlikely that the existing JFLOW modelling can provide sufficiently robust flood data that takes into consideration the presence of existing flood alleviation and flood defence measures. The broad-scale nature of JFLOW modelling also makes it hard to accurately assess flood risks within the proposed development site, or the potential impacts of proposed development on existing flood risk within Ashburton.

2.3 Our understanding of the project requirements

A more detailed understanding of flood risk within Ashburton and within the site at Chuley Road is required to inform the potential for mixed-use development of the site. Whilst fluvial flooding is considered to be the most significant form of flood risk within Ashburton, consideration will also be given to other sources of flood risk. This includes surface water runoff which has been identified to be a potentially significant risk.

The Level 2 SFRA will assess the potential for flood risk to any new development proposed at the Chuley Road site. The Level 2 SFRA will subsequently recommend measures for reducing, managing and mitigating this risk, including likely residual risks. For example, consideration could be given to development vulnerability, development layout and the inclusion of measures to manage flood risks within the development proposals. Consideration will also be given to the potential impacts of development at Chuley Road on existing and future flood risk within Ashburton, taking the potential effects of climate change into account.

The Level 2 SFRA will provide a detailed and robust evidence base against which a masterplan for the land at Chuley Road can be developed and the subsequent planning applications can be assessed. The Level 2 SFRA will provide more clearly defined flood zones that take into account the benefits served by the existing flood alleviation and flood defence schemes.

2.4 Proposed methodology

As previously discussed, Parsons Brinckerhoff has partnered with Edenvale Young as sub-consultants to maximise our complimentary strengths in flood risk management and hydraulic modelling. Our proposed methodology for completing the works is discussed in detail below. This has been broken down into five key tasks to ensure clarity and to align with the format of the Invitation to Tender.

We will ensure regular consultation with the Authority including at our proposed inception meeting, scoping study meeting, fortnightly progress updates during the course of the study and deliverables meeting at the end of the study. We will also be undertaking regular consultation with the EA and other key stakeholders (as discussed in our proposed methodology below) and will ensure that the Authority is notified and kept up to date with all of these discussions.

Our proposed programme for completing these works is set out in Section 3.

Task 1: Scoping study

During the first 3 weeks of our appointment we will undertake a scoping study in consultation with the Authority and other relevant stakeholders. During this study we will:

- i. Obtain and review available data, including existing JFLOW modelling data, Surface Water Flood Maps, details of existing flood alleviation and flood defence schemes, hydrological and hydrometric information, filtered and unfiltered LIDAR data, master mapping, and anecdotal and historic flood data.
- ii. Undertake a site walkover of the watercourses to be included in the hydraulic model and Chuley Road site to identify infrastructure, walls and buildings which may influence flood risk and which may not be shown by the existing mapping or survey.
- iii. Meet with the Authority and EA to discuss existing flood risk from all sources within Ashburton and the Chuley Road site, discuss the development proposals in more detail and discuss our proposed methodology and range of investigations required to address data gaps and complete the Level 2 SFRA.
- iv. Consult with other key stakeholders including Teignbridge District Council, Devon County Council, the Highways Authority and South West Water to discuss assets that could affect flood risk and better understand existing local flood risk issues.
- v. Prepare a brief technical note (including meeting minutes) of the scoping study and key outcomes.

Task 2: Assess existing and future flood risk and develop an appropriate SFRA evidence base

Through review of available data obtained during the scoping study we will build an understanding of existing flood risk from all sources including from fluvial, surface water runoff, sewer overflow, groundwater emergence and artificial sources.

Existing broad-scale JFLOW modelling has identified that fluvial flooding is a key risk to Ashburton and the Chuley Road site. This is reaffirmed by records of historic flooding that has affected roads and buildings within Ashburton in recent years. We propose to construct a more detailed 1D-2D hydraulic model using ISIS-TUFLOW software to refine the outputs generated by the JFLOW model. As stated in the Invitation to Tender, the model will encompass the River Ashburn and Balland Stream and is to extend from upstream of the flood relief culvert on the River Ashburn and upstream of the culvert inlet in Love Lane, to downstream of Castle Bridge at Peartree Cross.

Hydrological analysis

The model will be informed by hydrological analysis of the urban and rural catchments that drain to the River Ashburn and Balland Stream. Where available, we will assess quality of flow data for the River Ashburn and Balland Stream using publicly available data including the EA 'HiFlows-UK' dataset. Hydrological analysis will subsequently be undertaken in accordance with EA best practice as set out in the EA document 'Flood Estimation Guidelines' (Version 4, issued June 2012) using FEH Statistical, ReFH and loH 124 methodologies.

We will calculate peak flows in both the River Ashburn and Balland Stream for a range of key return periods. Inflow hydrographs will be generated for each return period to be used in the ISIS-TUFLOW model, using the appropriate ISIS Boundary Unit.

We will undertake a sensibility check of the flow estimates produced, using comparison against historical records where possible. On completion of our internal verification we will issue the completed assessment to the EA for review and approval.

Topographic survey

The 1D-2D ISIS-TUFLOW hydraulic model will be informed by a detailed topographic survey of the River Ashburn and Balland Stream. We will appoint a suitably qualified and experienced sub-consultant to complete the topographic survey with whom we have an established working relationship and confidence in the quality of service they will provide. For this project we propose to appoint, Merrett Survey, based near Exeter.

The relatively tight programme for completing the topographic survey to inform the Level 2 SFRA has been discussed with Merrett Survey and they have confirmed that our programme can be achieved. The programme assumes that our appointment with Merrett Survey will be confirmed on 25 February 2013 and that the topographic survey of the River Ashburn and Balland Stream can commence on 04 March 2013. This allows one week to finalise all access and health and safety arrangements. The field work will be completed within 7 working days and all outputs will be provided within 5 working days of completing the field work. It is assumed that access will have been investigated and confirmed by the Authority prior to the start of the project as any delay to starting the topographic survey may cause delay to the delivery of the hydraulic model. It is also assumed that suitable EA benchmarks will be close by.

The survey will be undertaken in accordance with the EA 'National Survey Specification', EA 'The Preparation of Survey Data for Flood Risk Assessments' (document ref 195_05) and our own Topographic Survey Specification that clearly sets out our generic and site specific survey requirements such as access requirements, the content and extent of the survey, the format in which data must be supplied to inform ISIS modelling, and management of health and safety risks.

The topographic survey will comprise a river corridor survey and survey of structural features within the River Ashburn and Balland Stream that will, at minimum, include:

- Cross sections at 25-50m spacings and immediately upstream and downstream of structural features to record water level on the day of the survey and bed level at the centre and side of the channel;
- Structural features including bridges, culverts, weirs, screens and walls, with a plan, elevation/cross section and photographs provided for all structural features;
- Shoals, deposition, erosion and scour features;
- Foreshore and channel sides;
- Revetments, piles, pile caps, walls and training features;
- Ground level at the bank top;
- Crest widths, toe and crest levels of flood defences or informal embankments;
- Trees, hedges, fences etc.

In accordance with best practice, high resolution LIDAR data will be used to inform the 2D domain outside of the river corridor. We will review the availability and quality of LIDAR data during the scoping study and advise the Authority of any other survey works that may be required beyond the scope of this proposal. However, at this stage (and based on review of information provided within the Level 1 SFRA and Preliminary Flood Risk Assessment) we believe that the existing LIDAR data is of appropriate quality and detail to inform the assessment.

1D-2D hydraulic modelling

Hydraulic modelling is a crucial piece of the works required to inform the Level 2 SFRA and facilitate sustainable development of the site at Chuley Road. We propose to build the model using ISIS-TUFLOW software and run the model for the following standard scenarios:

- 1 in 10 (10%) annual probability event
- 1 in 20 (5%) annual probability event
- 1 in 50 (2%) annual probability event
- 1 in 75 (1.3%) annual probability event
- 1 in 100 (1%) annual probability event
- 1 in 100 (1%) annual probability event plus climate change effects
- 1 in 200 (0.5%) annual probability event
- 1 in 1000 (0.1%) annual probability event
- 1 in 1000 (0.1%) annual probability event plus climate change effects

The key issues associated with the construction of the hydraulic model will be the representation of the existing watercourses including existing flood alleviation schemes.

The model for this study will be an integrated 1D-2D ISIS-TUFLOW model. The river channels will be represented as 1D elements in an ISIS 1D hydraulic model and interlinked with a TUFLOW 2D hydraulic model to assess out of bank flow paths. The height of the land within the 2D domain will be specified using the DTM data.

It is anticipated that the grid size will be 4m which is commensurate with width of roads and is appropriate with modelling flow paths. The use of this resolution has been validated on numerous occasions when compared to historical flood information and gauge data. Buildings within the TUFLOW domain will be represented as stubby buildings and the ground surface mapped to represent roughness including variations associated with roads, fields, playing field, urban areas, trees and other forms of terrain.

The model representation of roughness will include depth varying Manning's coefficients. This enables shallow depths associated with the flow across fields in direct rainfall conditions to be modelled. For example for playing fields the manning's roughness for depths of flow less than 0.05m (= d1) is 0.3 (= n1). Similarly for depths greater than 0.1m (= d2) manning's roughness is 0.04 (= n2).

We will verify and check the model outputs using our own internal review processes and against historic flood records and level data from EA level gauging stations. We will subsequently issue the model and resulting outputs to the EA for review and approval.

The outputs of the 1D-2D hydraulic modelling exercise for all existing and climate change scenarios (including a description of the parameters and methodology adopted) will be summarised in the Level 2 SFRA report along with maps for all scenarios showing the flood extents, depths and hazards in GIS MapInfo format.

Other sources of flood risk

Although fluvial flooding has been identified as a key source of flood risk within Ashburton and the Chuley Road site, consideration must be given to other potential sources of flooding including surface water runoff, sewer overflow, groundwater emergence and artificial sources.

Surface water runoff has been identified as a potentially significant source of flood risk within Ashburton and the Chuley Road site. Historic and anecdotal records of flooding

incidents support this assessment. Previous ASTSWF mapping as summarised in the Level 1 SFRA shows large areas of the catchment at risk. New 2nd generation Surface Water Flood Maps have recently been developed by the EA and indicate a reduction in the extent of area identified to be at risk from surface water flooding.

As part of this study we will obtain and review available data on surface water flood risk (including that associated with exceedance of the sewerage system and highways drainage) and provide an assessment of the likely causes and likelihood of surface water flooding within Ashburton and at the Chuley Road site. During our proposed consultation with the Highways Authority, Devon County Council, Teignbridge District Council and South West Water (proposed as part of our scoping study) we will discuss surface water flood risks associated with assets in their ownership and known capacity and/or blockage issues.

During our site walkover we will consider potential flow paths that could arise from surface water runoff, fluvial flooding or exceedance of the sewerage system and migrate towards the Chuley Road site. This will allow us to advise on the most appropriate options for managing surface water flood risk, as well as identify the need for further study.

As part of this study we will also obtain and review available data on groundwater emergence and any risks from artificial sources. Flood risks from these sources are not identified to be a significant risk within the Level 1 SFRA or Preliminary Flood Risk Assessment, but we will undertake a detailed review of all available data to identify potential risks, advise on the most appropriate options for managing these risks and identify the need for further study if deemed required.

We will summarise identified flood risks from surface water runoff, sewer overflow, overland flow paths, groundwater emergence and artificial sources in the Level 2 SFRA report along with maps identifying key risks in GIS MapInfo format. We will also summarise our recommendations for more detailed analysis if considered necessary to support sustainable development of the Chuley Road site.

Task 3: Assess the robustness of existing flood management infrastructure and its impact on the reduction of flood risk in the area

The existing flood defence schemes within Ashburton are reported to provide protection up to a 1 in 50 (2%) annual probability event and comprise flood alleviation culverts and masonry walls. However, there are also reports of flooding occurring with Ashburton even with these schemes in place. This may be because of fast flows building up within the constricted channels and overtopping at the lowest point, or it may be due to blockages within the culverted sections. Flooding may also be a result of insufficient capacity or blockage within the sewerage systems and surface water management infrastructure.

We will assess the existing flood defence infrastructure through consultation with the Authority and EA, during our site walkover, review of the completed topographic survey data and through review of the National Flood and Coastal Defence Database (NFCDD) and recent condition surveys.

With regards to fluvial flooding, it is unlikely that the existing JFLOW modelling can provide sufficient detail of existing flood defence schemes to accurately assess the protection served and accurately map the consequences of flooding for different scenarios. The proposed 1D-2D ISIS-TUFLOW model will provide a much more detailed understanding of flood risk within Ashburton, including the protection served by the existing flood defences. This will be augmented by review of recorded flood events within Ashburton.

We will assess and map the protection served by the existing flood defences by running the model for a range of scenarios. The outputs from the model will subsequently be compared against recorded flood events and information sourced from the Authority, EA, site walkover and topographic survey regarding the condition of the assets.

We will discuss the extent, condition and nature of other surface water management infrastructure with Teignbridge District Council, Devon County Council, the Highways Authority and South West Water. Through this we will ascertain the likely flood risk issues and compare this information against recorded flooding incidents and predicted flood hot spots. This assessment will include an assessment of the capacity of surface water management infrastructure and, in particular, the capacity of infrastructure that may have an effect on development of the Chuley Road site and/or be affected by development of the Chuley Road site. At this stage we propose to undertake a purely qualitative assessment based on information held by relevant stakeholders and from the site walkover. It is considered unlikely that a hydraulic model of surface water management assets or a pluvial direct rainfall model will be required to support development of the Chuley Road site, but any recommendations for further quantitative analysis will be summarised in the Level 2 SFRA.

Task 4: Assess the impact of flooding on the area and surrounding areas and propose ways in which flood risk impacts can be managed and mitigated

We will use the outputs of the 1D-2D ISIS-TUFLOW model to analyse the likely rate of onset, duration, depth and velocity of flooding within the Chuley Road site and surrounding land, as well as the order in which the Chuley Road site is likely to flood. We propose to complete this analysis for the 1 in 20, 1 in 100 and 1 in 1000 annual probability events and considering the potential effects of climate change. Our findings will be summarised in the Level 2 SFRA report and illustrated in GIS MapInfo software.

Based on our discussions with relevant stakeholders, review of surface water management infrastructure and review of historic flood records, we will analyse likely flood risks associated with surface water runoff affecting the Chuley Road site and surrounding land. This will include an analysis of the likely frequency and extent of flood risk within different parts of the Chuley Road site and the potential effects of climate change on existing flood risk. As discussed above, we do not propose to undertake a quantitative assessment of flood risk from surface water sources at this stage and believe that a good understanding of flood risks from surface water sources can be achieved through qualitative assessment.

We will assess potential flood risks to the Chuley Road site and surrounding land from other sources of flood risk as discussed in 'Task 2' above, namely groundwater emergence and artificial sources. However, our initial review suggests that the greatest risks are from fluvial flooding and potential overland flow paths from surface water runoff, blocked drainage assets and/or sewer overflow.

Our analysis will highlight the cause and location of significant flood risks which in turn can be used to prioritise action and investment. For example, priority may need to be given to those areas at the most frequent risk of flooding. Alternatively, priority may need to be given to those areas that are most vulnerable to flooding. Based on our analysis of flood risks we will make high level recommendations for key actions going forward. These may include recommendations to increase the level of protection served by existing flood defences along certain stretches of watercourse, proactive inspection and regular maintenance of certain assets, or even opportunities to reduce the risk at source through the use of SUDS features.

Any new development has the potential to affect existing flood risk through loss of flood plain storage, impact to existing flood defence systems or from an increase in the volume

and/or rate of surface water runoff. We will assess the potential implications of development at the Chuley Road site on existing flood risk within and downstream of Ashburton. This will include consideration of land that is identified to be located within the modelled high risk flood zones (based on the outputs of the ISIS-TUFLOW hydraulic modelling), the location and potential impacts to existing flood defences, and a potential increase in surface water runoff associated with increased impermeable surfaces. We do not propose to undertake quantitative analysis or model these scenarios at this stage as we feel that this would form part of the detailed Flood Risk Assessment for the site to be submitted alongside a planning application. However, consideration of these risks will allow us to advise the Authority on the likely impacts of development at Chuley Road and make recommendations as to how these impacts could be managed.

Task 5: Provide guidance on the potential for spatial redevelopment of the area in ways that minimise flood risks, indicating how flood risks can be reduced in achievable and sustainable ways

Based on our review and analysis of all identified sources of flood risk to the land at Chuley Road and our analysis of the potential impacts that development at Chuley Road could have on existing flood risk, we will provide guidelines on the most sustainable ways to protect the development against flooding and prevent the increase in flood risk elsewhere as a result of development. Measures could include development location, management of surface water runoff, density and permeability, ground and threshold levels, resilience measures or flood defences.

Our recommendations will be in accordance with National Planning Policy and the Core Strategy, taking into account the aspirations for the redevelopment of the site as set out in the DMD and as discussed with the Authority. We will consider the vulnerability of the different forms of development proposed on the site and the suitability of their location based on identified flood risks. We will also consider primary and emergency access and egress routes and their vulnerability to flood risk. Our recommendations can be used to inform a site specific sequential test and creation of a masterplan for redevelopment of the site.

Our review to date suggests that flood risk and surface water runoff is predominantly managed through the use of hard engineered solutions. The redevelopment of the site offers the opportunity to improve existing flood risk and the potential impact of the development on flooding through the use of softer measures. For example, integrating SUDS features into the development and potentially providing betterment over existing conditions. There may be an opportunity to integrate SUDS features into areas of public open space and into the proposed pedestrian link between Bulliver's Way and the recreation ground. Not only could this reduce the rate and volume of surface water runoff to adjacent watercourses, but it could also provide additional amenity benefit and improve the quality of surface water runoff.

Opportunities may also include opening up the existing culverted watercourse that passes through the Chuley Road site and integrating this watercourse with public open space and the proposed pedestrian link. Natural channels (as well as SUDS features) are generally more adaptable to changes in volume or flow and the potential impacts of climate change, as well as posing less risk through culvert blockage or collapse.

2.5 Verification

Data verification is essential to ensure that the calculated outputs from the hydrological analysis and hydraulic modelling exercises are a true representation of conditions within the catchment. We undertake verification in three ways:

1. Comparison against historic data: On completion of the hydrological analysis, we will undertake a sensibility check of the flow estimates produced using comparison against historical records where available. We will also verify and check the model outputs against historic flood records and level data from EA level gauging stations where available.
2. Internal review of all outputs: Edenvale Young approach internal verification as a continuous process undertaken throughout the study, rather than a 'bulk review' of outputs on completion of the study. No work will be issued until it has passed through these internal review procedures. All outputs will be reviewed by John Young of Edenvale Young, as well as by Jon Price of Parsons Brinckerhoff.
3. External review: On completion of our internal verification procedures as discussed above, we will issue the completed hydrological analysis and hydraulic modelling outputs to the EA for review and approval.

2.6 Deliverables

Level 2 SFRA

Parsons Brinckerhoff will prepare a Level 2 SFRA report that summarises:

- The methodology adopted to complete the assessment including the use of ISIS-TUFLOW modelling and the parameters used;
- Baseline flood risk data obtained to inform the assessment;
- Flood risks associated with the watercourses within Ashburton as modelled by the ISIS-TUFLOW model for a range of scenarios;
- Other analysed flood risks from surface water runoff, sewer overflow, groundwater emergence and artificial sources;
- The robustness of existing flood management infrastructure and the level of protection provided;
- Potential future flood risks considering the potential effects of climate change;
- Opportunities for the management of flood risk and recommendations for further study;
- Detailed flood risks to the site at Chuley Road to include likely rate of onset, duration, depth and velocity of flooding;
- The potential impacts of development at Chuley Road on existing flood risks;
- Guidelines for the redevelopment of Chuley Road considering development vulnerability and opportunities to manage identified risks;
- Opportunities to integrate mitigation into the development proposals, in particular the use of open space and sustainable drainage systems.

Three hard copies and an electronic copy (in PDF format) of the Level 2 SFRA and supporting mapped outputs will be provided to the Authority on completion of the works. Survey data will also be provided on CD.

The completed 1D-2D ISIS-TUFLOW model will be given to the Authority on completion of the works, along with outputs from the 1D-2D ISIS-TUFLOW modelling of all scenarios including flood extents, depths and hazards in MapInfo format.

Please note that we are not able to hand over the intellectual property rights of any third party data obtained and used to inform the hydraulic modelling or Level 2 SFRA. For example, LIDAR data that has been procured through a license agreement or OS master mapping.

Interim reports and data

The following interim reports and data will be provided during the course of the study:

- Technical note and meeting minutes on completion of the Scoping Study to be issued to the Authority;
- Outputs of hydrological analysis to be issued to the EA for review and approval;
- Outputs of 1D-2D ISIS-TUFLOW model to be issued to the EA for review and approval;
- Draft report and maps of hydraulic modelling exercises and assessment of flood risks to be issued to the Authority on completion of the hydraulic modelling exercises.

3

Programme

Parsons Brinckerhoff will complete the Level 2 SFRA and associated topographic survey and hydraulic modelling within the 11 week programme as required by the Authority. An illustration of our proposed programme is provided in Appendix 02.

Key dates are as follows:

Activity	Date
Confirmation of our appointment	25 February 2013
Inception meeting with the Authority	06 March 2013
Scoping study meeting	15 March 2013
Topographic survey and outputs	04 March – 22 March 2013
Hydrological assessment issued to EA for review	15 March 2013
Hydraulic model issued to EA for review	11 April 2013
Summary report of model outputs and maps issued to the Authority	12 April 2013
Level 2 SFRA report issued to the Authority	03 May 2013
Review meeting with the Authority and EA	w/c 06 May 2013

We propose to appoint our preferred topographic survey contractor within the week immediately following confirmation of our appointment. We have already confirmed costs and timescales with our preferred contractor to facilitate a quick response and start time. We have allowed one week within our programme for mobilisation and access arrangements from the date from which our appointment is confirmed. It is assumed that access to the watercourses will be available and that any required access arrangements will be obtained by the Authority prior to the start of the topographic survey, currently programmed to start on the 04 March 2013. We propose to complete the field work within 7 working days. Digital outputs will be provided in an ISIS compatible format along with digital photographs and summary report within 5 working days of completing the field work. The survey must be completed and outputs prepared before the ISIS-TUFLOW modelling can be progressed.

The 2D modelling will be informed by existing LIDAR data. It is assumed that LIDAR data will be provided within three weeks of the contract start date. LIDAR data must be made available before the ISIS-TUFLOW modelling can be progressed.

OS master mapping will be required to inform the topographic survey, hydraulic modelling and GIS outputs. It is assumed that this will be provided by the Authority at the start of the project.

4 Risk Management

Risk management is key to the timely and successful delivery of this study. By addressing potential risks early on in the project we can ensure that the correct measures are in place to prevent the risk from occurring and causing impact to the deliverables or programme. A preliminary risk register has been developed for this project and we will discuss and update this risk register, as necessary, during the proposed inception meeting with the Authority and during the course of the study.

Key potential risks identified to date include:

Risk	Mitigation
Misinterpretation of client requirements and scope of works	Inception meeting to clarify DNPA's requirements and objectives. Regular communication with DNPA throughout the works to ensure works are meeting requirements – to include preparation of fortnightly progress reports.
Completion of topographic survey delays hydraulic modelling and preparation of Level 2 SFRA	Agreement of project timescales with preferred survey contractor prior to appointment. Timely confirmation of appointment once contract let. Topo data provided in ISIS compatible format. Access arrangements to be in place and confirmed by DNPA on confirmation of appointment.
Delay to receiving data required to inform the assessment.	Data requirements submitted to DNPA at project inception meeting. Required data to be provided within 3 weeks of contract let (including LIDAR data and master mapping). Contact will be made with other key consultees within 3 weeks of contract let to obtain the required information.
Insufficient staff resources to deliver the scope of works	All staff required to deliver this scope of works are aware of the programme and level of commitment required. Additional suitably qualified and experienced resources are available to the project delivery team beyond that listed within the proposal which can be called upon at short notice if required to deliver the scope of works.
Quality and availability of data insufficient to prepare robust Level 2 SFRA	Early consultation with key stakeholders will enable early identification of potential issues and information gaps. Issues will be raised to DNPA as soon as possible. Recommendations for further study will be made and undertaken if necessary.

The majority of risks will be managed through regular engagement with the Authority, EA and other key stakeholders; the close working relationship of the project delivery team; and the experience and knowledge of the project team in delivery of projects of a similar nature.

5 Commercial Proposal

5.1 Pricing schedule

Parsons Brinckerhoff proposes to undertake the works set out in this proposal for a lump sum fee of **£19,500**, excluding VAT, plus an additional sum of **£5,750.00**, excluding VAT, for procurement of the survey information, travel and subsidence expenses.

A breakdown of this fee is provided below.

Table 6.1 Fee breakdown for the Level 2 Strategic Flood Risk Assessment

Activity	Price (£)
Internal project management activities	1,291.11
Inception meeting, site familiarisation, stakeholder consultation, scoping study and scoping study meeting	3,203.65
Hydrological analysis of catchment	1,655.48
1D-2D ISIS-TUFLOW hydraulic modelling	4,829.24
Assessment of flood risks from all sources and issue draft summary report and maps	3,705.06
Review of impacts and guidelines for development	1,036.67
Prepare Level 2 SFRA report and maps, with post-issue review meeting	3,778.29
Total Cost	£19,500

Additional Costs	Price (£)
Topographic survey	5,300.00
Travel and subsidence expenses	450.00
Additional Costs	£5,750

The costs for any additional works required from Parsons Brinckerhoff, Edenvale Young or our preferred topographic survey contractor outside of this scope will be agreed prior to the works as an amendment to the above lump sum.

5.2 Terms and Conditions

Parsons Brinckerhoff confirms that the General Conditions of Contract as set out in the Invitation to Tender terms are acceptable subject to the addition of a limitation of liability provision as below, recommended as new clause 16:

"Notwithstanding any provision in this Contract the Contractor shall have no liability, whether in contract, tort, or otherwise, for loss of use, loss of contract, loss of profit, or indirect or consequential loss or damage of any kind howsoever arising, and other than in the case of death or personal injury the Contractor's total liability hereunder for legally enforceable and mitigated direct losses shall not exceed ten times the Contract price."

APPENDIX 01

CVs of Team Members

JONATHAN RALPH BEng (Hons) CEng MICE

Company:	Parsons Brinckerhoff		
Position:	Technical Director, Head of Water Engineering		
Years of Experience:	22	Technical Specialism:	Civil Engineering, Rivers and Coastal, Flood Risk Assessments, Hydraulic Modelling of River and Piped Systems, Structural Design, Engineering Contract Advice and Dispute Resolution, Site Supervision, GIS/CAD systems
Education:	BEng (Hons) Civil Engineering, Plymouth Polytechnic, 1990		
Professional Registrations	Member of the Institution of Civil Engineers (MICE) Chartered Engineer (CEng): United Kingdom (507997) 1998		

Jonathan Ralph has over 20 years experience in all aspects of civil engineering both in the UK and overseas. His extensive experience includes flood risk, rivers and coastal, ports and marine, navigation, brownfield, water and wastewater, minewater treatment and remediation, solid waste landfill, highway and site infrastructure design, and airport engineering.

Jonathan leads the Water Engineering team in Parsons Brinckerhoff that specialises in the assessment and management of flood risk, drainage systems (including SUDS), water and wastewater systems, GIS and CAD. As Head of Water Engineering, Jonathan is responsible for ensuring that all our contractual obligations are fulfilled and that all appropriate resources are available to the project delivery teams. Jonathan provides quality assurance review of all deliverables and support to technical delivery teams.

Selected Experience

Client	Project Description
Long Melford Flood Risk Assessment, Suffolk	Project Manager and Lead Technical Flood Specialist for this large potential development on a brownfield development site. Project included development advice, flooding modelling using ISIS and successful flood map amendment by the EA and adoption of model.
Severn Tidal Power Study	Deputy Project Manager, Civil Engineering Specialist and Navigation Topic Lead for this study on behalf of the Department of Energy and Climate Change (DECC) to investigate whether Government could support a tidal power scheme in the Severn Estuary. Works included examining the potential tidal resource within the River Severn, the engineering requirements and the potential effects based on SEA guidance.
Review of BA74 - Assessment of Scour at Highway Bridges	Technical Flood Risk Specialist on behalf of the Highways Agency for this project which examined scour, a primary cause of bridge failures. The revised standard will contain a scour management strategy that is consistent with the Agency's Climate Change Adaptation Strategy also developed by PB. The flooding in November 2009 causing the collapse of six bridges in Cumbria has further highlighted the urgency and importance of such a strategy in the UK.
Fingal County Council, Inland	Water and Waste Water Asset Management GIS for Greater Dublin Regional Water Service, Fingal County Council, Ireland. Project Manager and Principle Advisor to the council for the procurement and specification of the GIS system for the combined water and drainage assets within the Greater Dublin Area. The scope of the works included providing advice and reports on the appropriate forms of contract and overall scope of contract including industry best practice.
Various, Throughout UK	Project Manager for a large range of Flood Risk Assessments from small scale assessment, through to larger river modeling assessments both in HEC-RAS and ISIS.

JON PRICE BSc (Hons)

Company:	Parsons Brinckerhoff		
Position:	Principal Engineer		
Years of Experience:	32	Technical Specialism:	Project Leader, Civil Engineering, Flood Risk Assessments, Hydraulic Modelling of River and Piped Systems, Structural Design
Education:	BSc (Hons) Civil Engineering, University of Southampton, 1979		

Jon has over 30 years experience working in the civil engineering and water sectors of the UK. He is an experienced project manager and has managed the design of a wide range of engineering projects, including flood alleviation works, river and coastal engineering works, water retaining structures for water treatment schemes and sewage treatment works, flood defence asset surveys, sewerage infrastructure and general civil engineering works.

Jon has also managed a considerable number of hydrological and hydraulic assessments of river catchments, either as part of specific catchment management studies or flood risk assessments, or as part of cross-catchment studies such as highway schemes, utilities infrastructure and private developments.

Jon leads the civil engineering design team on a wide range of multi-discipline projects. Jon's knowledge and experience of surface water management has been instrumental to the successful integration of sustainable drainage systems in many of Parsons Brinckerhoff's building projects.

Selected Experience

Client	Project Description
Mwrog Street Flood Alleviation Scheme, Ruthin, Denbighshire	Jon managed the design and implementation of this £1.5m flood alleviation scheme for Denbighshire County Council. The scheme was developed following public consultation meetings and comprised approximately 2.8km of both lined and unlined flood channels, culverts, flow control structures, a farm access bridge and several public footbridges.
Tory Brook Diversion, Portworthy, Devon	Jon managed the design of approximately 3km of river diversion works and flow control structures for ECC International Ltd. in Devon. This £1.2m scheme formed the enabling works for a tailings dam and included the formation of settling lagoons, both lined and unlined river channels, weirs and penstock control structures.
River Pliall, Devon	Jon undertook the engineering design of a 1.5km diversion of the River Pliall to enable tipping facilities to be extended at Lee Moor for ECC International Ltd. As part of the design development, Jon liaised closely with the client and officers of Dartmoor National Park to produce a scheme of high aesthetic and engineering value.
Newcastle Schools, Building Schools for the Future	Jon led the civil engineering design team for the Building Schools for the Future programme, providing drainage design and flood risk advice for 8 schools in Newcastle.
Area Road Network	Jon was the Water Environment coordinator for a number of highway schemes and has managed the design of surface water drainage and flood storage requirements for highway schemes in Areas 1, 3 and 8 as part of the national road networks improvements programme.
Bideford, North Devon	As part of the Bideford Bypass Scheme, Jon undertook the engineering design of major road embankment culverts, including inlet and outlet headwalls and energy dissipation structures.

JOANNA GOODWIN MEng (Hons) PGDIP MCIWEM C.WEM

Company:	Parsons Brinckerhoff
Position:	Senior Engineer
Years of Experience:	10
Technical Specialism:	Civil Engineering, Flood Risk Assessment, Surface Water and Foul Water Drainage Design, Environmental Impact Assessment (EIA), Environmental Water Quality
Education:	MEng (Hons) Civil Engineering Design and Management, University of Wales, Cardiff, 2002 Post Graduate Diploma (Distinction) Water and Environmental Management, University of Bristol, 2009
Professional Registrations	Member of the Chartered Institute of Water and Environmental Management (MCIWEM), 2012

Joanna is a Chartered Water and Environment Manager with over ten years experience of water engineering and environmental consultancy. Joanna has been responsible for the detailed design of surface water and foul water drainage systems; preparation of Flood Risk Assessments; development of sustainable water management systems; preparation and coordination of EIA and planning documents; and development of water conservation practices including rainwater harvesting and grey water reuse. She has been involved in both UK and overseas projects from feasibility through to construction. Joanna is an approved CEEQUAL assessor and water specialist for the development of Version 5 of the CEEQUAL manual.

Selected Experience

Client	Project Description
Taunton Urban Extension, Taunton	Provision of flood risk and surface water management advice to Taunton Deane Borough Council to guide future urban development in Taunton. Works comprised an assessment of current and future flood risk; recommendations for sustainable surface water management to reduce the impacts of development and provide betterment where practicable, and input into the development of the masterplan layouts.
Brixham Regeneration, Brixham	Preparation of a Flood Risk Assessment on behalf of Torbay Development Agency to guide mixed use development at Brixham Harbour. Development at Brixham Harbour forms part of a wider regeneration scheme for Brixham. Part of the proposed development sites is located in the high risk Flood Zone 3 from coastal flood risk. The Flood Risk Assessment recommended measures by which flood risk and surface water could be managed to facilitate mixed use development.
Aberdare Hospital Redevelopment, Aberdare	Preparation of an Environmental Statement chapter and surface water management plan on behalf of Cwm Taff Health Board to assess the potential effects of a circa 400 home development on surface water quality and flood risk. The surface water management strategy informed the preparation of the masterplan layout to ensure sufficient land allocation for SUDS and above ground storage prior to an attenuated discharge to the adjacent watercourses.
Callander Charrette, Scotland	Provision of flood risk and development advice during an interactive workshop with key stakeholders and community groups to inform the preparation of a masterplan for the town of Callander. The Charrette and subsequent summary documents were undertaken on behalf of the Scottish Sustainable Communities Initiative and Scottish Government to develop truly sustainable development that meets local community needs.

CHARLES BENNETT MEng (Hons)

Company: Parsons Brinckerhoff

Position: Engineer

Years of Experience: 5 **Technical Specialism:** Civil Engineering, Flood Risk Assessment, Surface Water and Foul Water Drainage Design, Hydraulic Modelling

Education: MEng (Hons) Civil Engineering, University of Wales, Cardiff, 2007

Charles is experienced in the preparation of Flood Risk Assessments and development of sustainable water management systems to support new development, often supported by modelling in HECRAS, ISIS and MicroDrainage software. This includes the analysis of flood risk to potential development sites and the subsequent recommendations to mitigate and manage these risks. Charles is also knowledgeable of Property Level Flood Protection surveys and the development and implementation of associated measures.

Charles is experienced in the detailed design of surface and foul water drainage systems, including the design of complex systems involving foul and surface water pumping station design and interfaces with multiple stakeholders. Charles gained site experience with a 12 month secondment to the Channel Tunnel Rail Link (High Speed 1) project, working as a Design Engineer on the refurbishment and extension of St Pancras International, and has experience of working overseas in Papua New Guinea, New Zealand and Kuwait.

Selected Experience

Client	Project Description
Exeter Science Park, Devon	Design of foul and surface water drainage for a large mixed use development in accordance with Sewers for Adoption. The scheme included wide ranging use of sustainable drainage methods (SUDS) and included two packaged foul pumping stations, adopted under Section 104 agreement with South West Water.
Middlemoor Headquarters, Devon	Preparation of the Flood Risk Assessment and drainage strategy for the new Devon and Cornwall Police Middlemoor Headquarters. It is proposed that all surface water runoff will be managed using SUDS techniques and infiltration to ground.
A30 Junction 29 Amendments, Devon	Design of modifications to surface water highway drainage in accordance with the Design Manual for Roads and Bridges (DMRB). Significant coordination with utility providers was necessary due to the highly congested nature of the site.
Rheola Estate, Wales	Preparation of a site specific Flood Consequence Assessment to support an Outline Planning Application and masterplan for the development of a mixed-use leisure and tourism facility at the Rheola Estate in the Vale of Neath. Works supported by ISIS hydraulic river modelling.
Bruton Flood Study, Somerset	Assessment of surface water flood risk using publicly available information and consultation with key stakeholders. Assessment was supported by hydraulic modelling to identify areas at a raised risk of flooding. Variety of options to manage flood risks assessed and selected approach considered to have lower capital costs and less negative impact. The Environment Agency Partnership Funding Calculator Tool was used to assess the cost benefit ratio and to identify potential funding through the Flood Defence Grant in Aid.
Pitcombe Property-level Flood Protection Surveys, Somerset	Property-level flood protection surveys at 10 properties in Pitcombe to evaluate flood risk and determine what flood protection and resilience measures would be required. Recommendations considered cost-effectiveness, the requirements of the occupiers and planning/heritage issues.

JOHN YOUNG BEng (Hons) MSc MICE MCIWEM CEng

Company:	Ederwale Young		
Position:	Director & Founding Partner, Project Reviewer		
Years of Experience:	30	Technical Specialism:	Flood Risk Assessments, Asset Condition Assessment, Hydraulic Modelling, River Engineering, Scour Analysis, Contract Management.
Education:	BEng (Hons) Civil and Structural Engineering MSc Maritime Civil Engineering		

John Young is a chartered civil engineer with 30 years experience that includes port and harbour works, flood alleviation schemes and the condition assessment of historic structures. He has particular expertise in the use of risk based techniques within civil, coastal and fluvial engineering techniques.

John is an Ove Arup Foundation / Royal Academy of Engineers visiting lecturer in design at Bath University on the Hydraulics, Offshore and Coastal Engineering module of the Civil Engineering MEng degree course. He is actively involved in sponsorship of PhD research on breach failure of flood defences in extreme events.

Selected Experience

Client	Project Description
Rhiwbina Flood Alleviation Scheme, Cardiff	Project Director for the development designs of flood alleviation works associated with mitigating the risk of flooding to the suburb of Rhiwbina in Cardiff. Proposed works include river restoration involving widening and re-aligning the watercourse; the introduction of 4,500m ³ of landscaped attenuation in Cadylyn Park and the introduction of trash screens (incorporating water level monitoring) at strategic locations.
Talgarth Flood Alleviation Scheme, Wales	Project Director for hydraulic modeling and the development of engineering works to mitigating the risk of flooding to the village of Talgarth. Proposed works include re-profiling of the invert of the River Ennig, construction of flood walls, the demolition of two weirs and the introduction of a third weir in conjunction with bridge demolition and replacement. The work was part funded under the European Union Competitiveness Fund.
Bristol Harbour Strategy & CARFRA Workstream 4, Floating Harbour	Ederwale Young Technical Director (in conjunction with Mott MacDonald) for the development of a long term strategy for the renewal/maintenance or removal of hydraulic assets associated with the Floating Harbour (e.g. locks, sluices, weirs and culverts). The project included asset condition appraisal survey, laser survey of underground assets, hydraulic modelling to assess asset vulnerability and an evaluation of environmental constraints. In addition, the project included the development of 1D ISIS and 1D-2D ISIS-TUFLOW models of the Avon and Frome including the Floating Harbour and tidal boundary at Avonmouth.
Pont Brewit 3D Modelling, Wales	Project Director for the development of a 3D Open Foam model to evaluate bridge pier scour and hydraulic loading on the existing and the replacement structure. Modelling included the existing and proposed configurations and two temporary work scenarios. The existing Pont Brewit is a multiple span timber road and rail bridge crossing the Afon Dwyryd Estuary in north Wales which was constructed in the 1860s. The estuary is a SAC. It will be replaced with a new structure supported by larger diameter piles.
Welshpool Flooding Project Appraisal Study, Wales	John was the project Director for the delivery of the Welshpool Flooding Project Appraisal Study. This included hydraulic modelling, preliminary engineering design and economic analysis. This has resulted in the construction of the phase 1 works comprising the installation of multi-level trash screens on the Lledan and Geunant Brook.

PETER AYLETT BEng (Hons)

Company:	Edenvale Young		
Position:	Fluvial and Coastal Technical Analyst, Senior Modeller		
Years of Experience:	5	Technical Specialism:	ISIS, TUFLOW and ISIS-TUFLOW Hydraulic Modelling, Software Training, Flood Risk Assessment, Hydraulic Analysis, Spatial Data Analysis.
Education:	BEng (Hons) Mathematics		

Peter is a Senior Modeller with five years experience working extensively with ISIS, TUFLOW and ISIS-TUFLOW for various different project types. More recently, he has begun to work with 3D modelling using OpenFOAM / InterFoam.

For the past five years Peter has been involved in the development and presentation of modules for training sessions using the above packages to clients including the Environment Agency, Scott Wilson, Hyder, Arup AMEC, BWB and Create Consulting. Peter has also presented ISIS-TUFLOW linking and boundary workshops at the UK EVY/WBM TUFLOW workshops.

Selected Experience

Client	Project Description
Neath & Port Talbot SFCA	Preparation of ISIS-TUFLOW model for the development of a Strategic Flood Consequence Assessment for Neath & Port Talbot encompassing the Afon Afan, Baglan Brook and Ffrwd Wylt.
Stoke Canon Flood Alleviation Scheme, Devon	Improved ISIS-TUFLOW model for optioneering of flood defences for the village to evaluate the impact of a range of flood alleviation options.
Sainsbury's Bath	Developed ISIS-TUFLOW modelling to inform a flood risk assessment for a large development site adjacent to the River Avon in Bath. This included improvements to existing hydraulic model including representation of key hydraulic structures and recalibration.
East Whitney, Oxfordshire	Development of ISIS-TUFLOW model of the Windrush and Hardwick Brook associated with the Cogges Link Road Public Inquiry to assess the extent and impact of flooding to third parties as a result of the construction of the road.
Lower Severn Flood Forecasting Improvements Project	Undertook the development of a new flood forecasting model for the Lower Severn between Bewdley and Avonmouth which included calibration, NFFS configuration and verification work for 6 events. He also undertook the testing of the CALIBRE genetic algorithm based software to determine hydraulic roughness and has developed complex Excel spreadsheets to analyse performance of forecasting models, including POD and FAR analysis.
Reading RMG Modelling Flood Risk Mapping Study	Preparation of an ISIS-TUFLOW model to determine the extent of flooding at the Royal Mail Group site in Reading. The site is situated close to the River Thames and an existing ISIS Flood Forecasting model of the region used by the Environment Agency was adapted to undertake this study.
River Nene – Tidal Breach Modelling	1D-2D ISIS-TUFLOW multi domain breach modelling and mapping for 36 breach locations on the River Nene, from Rings End upstream of Wisbech, downstream to Sutton Bridge. The production of hazard mapping, flood progression maps and animations.
Darwen Strategy – Flood Risk Mapping	Reviewed and made improvements to the 1D-2D ISIS-TUFLOW model of the Rivers Darwen and Blakewater and major tributaries through Darwen and Blackburn. This includes hydrological calibration and hydraulic calibration for a number of historic events.

CHRIS EASTERBROOK MEng (Hons)

Company: Edenvale Young

Position: Graduate Engineer, Hydraulic Modeller

Years of Experience: 1 **Technical Specialism:** Hydraulic Modelling, Flood Risk Assessment, GIS

Education: MEng (Hons) Civil and Coastal Engineering

Chris is a graduate engineer with Edenvale Young. He has been responsible for undertaking fluvial, coastal, flood defence and flood forecasting projects. This includes, preparation of GIS data, constructing hydraulic models, analysis and report writing. His key skills lie in the use of 1D Modelling with ISIS, 2D Modelling with TUFLOW, 1D-2D Modelling with ISIS-TUFLOW, and Geographic Information Systems.

Selected Experience

Client	Project Description
Somerset Surface Water Management Plan	Graduate Engineer and Modeller for the preparation of the Surface Water Management Plan in Taunton, Somerset. Detailed work has included preparation of GIS data and pluvial analysis using TUFLOW and ESTRY for a range of scenarios and engineering elements to alleviate the problems which are present including an assessment of the existing sewer network.
SEPA Coastal Flood Warning	Chris constructed an ISIS module in preparation of FEWS configuration. The work has involved updating the rating curves used for the derivation of model time series data, and corresponding boundary conditions. Using the updated data the model was calibrated against historical events.
Brynmenyn - Flood Consequence Assessment	Flood Consequence Assessment for the proposed development which consisted of changing land use from industrial to residential. Analysis was undertaken using the constructed ISIS-TUFLOW model results and the report included definition of flood zones and the corresponding flood consequence to the surrounding area according with TAN 15 requirements.
Stuart Farm - Flood Risk Assessment	Preliminary Flood Risk Assessment for a proposed retail development. Chris developed a multi domain 1D-2D hydraulic model using ISIS-TUFLOW. The report included the definition of flood extent and conditions required for suitable protection of the proposed site.
Hyder Brent Forecasting - Flood Forecasting	The project involved constructing rating curve equations to fit a modelled stage flow relationship from ISIS results. The rating curves were then applied to real time series stage data for the purpose of hydrological analysis and existing rating curve assessments.
Eastville Ashton Blockage - Flood Forecasting	Chris assisted in a project to develop a method of estimating percentage blockage based on real time stage data. This could determine how much percentage blockage should be input into an ISIS model during a live event for the purpose of a flood warnings system.
Blackpool and Flyde - Tidal Overtopping Modelling	The project involved amending coastal flood defences in an existing TUFLOW model and assessed the impact caused by tidal inundation, including embankment breach scenarios.
Derwent Flood Forecasting - Flood Forecasting	Chris prepared GIS and ISIS data files. He organised and documented all incoming data.

APPENDIX 02

Programme

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Dartmoor National Park Authority



Level 2 Strategic Flood Risk Assessment Chuley Road, Ashburton

INVITATION TO TENDER

1. Background

Dartmoor National Park Authority ('the Authority') wishes to commission a Level 2 Strategic Flood Risk Assessment (SFRA) in respect of land at Chuley Road, Ashburton.

A Level 1 SFRA for Dartmoor National Park was published in November 2010 (*URS/Scott Wilson*). The report contained a focused assessment for Ashburton and a recommendation that further work on flood risk assessment would be required to support development in Ashburton.

The Level 1 SFRA notes that a FRA will be needed where the development site is located in an area known to have critical flooding problems from any flood source, and where the development is located within 10m of any watercourse. Those conditions apply to the Chuley Road site.

Understanding the flood risk for the Chuley Road site demands an understanding of the conditions applying in a broader local area. This means that a small-scale Level 2 SFRA is required.

2. Aims

The aims of commissioning the assessment are:

- To develop an appropriate SFRA evidence base
- To assess current flood risk and existing flood risk management infrastructure

- To assess future flood risk
- To assess the impact of flooding on the area and off-site and how impacts can be managed and mitigated.
- To provide guidance on the potential for spatial redevelopment of the area in ways that minimise flood risks, reflecting any reductions in that risk that are considered achievable and sustainable.

3. Contract Specification and Requirements

A detailed specification for the proposed contract is set out at Appendix 1

4. Timing

Work under the contract is to be completed and finalised reports and maps submitted to the Authority by Friday 3 May 2013.

Time is of the essence in this contract.

The following milestones are proposed for the contract:

- Deadline for return of tenders: 12.00 midday Friday 8 February 2013
- Contract let by: Monday 25 February 2013
- Inception Meeting: Wednesday 6 March 2013
- Scoping Meeting: Friday 15 March 2013
- Report and maps in draft form: Friday 12 April 2013
- Completion and submission of finalised maps and report: Friday 3 May 2013

5. Tender Price

Tender submissions must include a fixed price (excluding VAT), for the delivery of a report in accordance with the detailed specification at Appendix 1. Payments will be made at agreed stages. The following stages are proposed:

M1 - Inception	15%
M2 - Production of draft study	65%
M3 - Production of final detailed study	20%

Tenders must be submitted in writing, marked **CONFIDENTIAL – TENDER** addressed to Mr C.R.Walledge, Head of Legal & Democratic Services and should be sent either electronically to tenders@dartmoor.gov.uk or by post to: Dartmoor National Park Authority, Parke, Bovey Tracey, NEWTON ABBOT, TQ13 9JQ, together with supporting information, to arrive no later than **12.00 midday on Friday 8 February 2013**.

6. Selection of Contractor

The contract will be awarded on the basis of confidence in the contractor achieving a high standard of work, completing the work in accordance with an agreed written scheme of investigation and delivering good value for money.

Selection criteria will include:

- methodology – approach to task; data validation and checking process;
- evidence of successful delivery of comparable survey work;
- evidence of delivery of comparable work in accordance with an agreed timetable;
- resilience – ability to deliver in the event of unplanned unavailability of key staff etc;
- value for money.

Criteria will be scored in line with the following:

Criteria	Potential score	Weighting	Max score
Understanding of the brief and the scope of the project	1-5	x1	5
Method statement proposes a sound project programme to deliver the required outputs (Appendix 1: section 14)	1-5	x3	15
Evidence of successful delivery of similar work	1-5	x3	15
Resilience – ability to deliver in a timely manner in the event of unplanned unavailability of key staff etc	1-5	x1	5
Affordability and value for money	1-5	x2	10
TOTAL			50

7. Contract Award

Please note that any costs incurred in preparing your quotation are entirely at your own risk. The Authority reserves the right not to make any appointment and not to accept the lowest quotation.

The successful Contractor will be invited to enter into a formal contract with the Authority in the terms of this invitation to quote, the submitted quotation and the Authority's standard conditions of contract (at Appendix 2). Until the formal contract has been completed, the successful quotation together with the Authority's written acceptance will form a binding agreement between the Authority and the successful Contractor based on the terms specified in this invitation to quote.

The details and timings of payment(s) will be discussed with the selected contractor and specified in the contract.

8. Contract Management

The contract will be let and managed by the Authority. All matters concerning the scope of the study, contract matters and data requirements should be directed to the Authority.

The contractor will be required to give fortnightly progress reports to the Authority's responsible officer.

9. Intellectual Property Rights

It is the Authority's intention that all raw elevation and derived data, text, illustrations, information, correspondence and all documents acquired, created or otherwise obtained in any work under this Contract shall be the sole property of the Authority which shall be free to use such material or any part thereof as it sees fit.

10. Freedom of Information

Contractors should be advised that information relating to any contract or procurement exercise to which the Authority is party, including information about price and performance, is covered by the Freedom of Information Act 2000 (the Act). The Authority is under a legal obligation to disclose such information if requested unless an exemption under the Act applies.

Any person submitting a quotation or entering into a contract with the Authority should, as part of the contract process, inform the Authority of any information which it regards as being eligible for a claim for exemption from disclosure by the Authority under the Act. The final decision as to what information can be disclosed rests with the Authority.

11. Clarification and Queries

If clarification is required on any issue within this Invitation to Tender, all questions should be directed to the Responsible Officer, David Lillington (01626) 831053 dlillington@dartmoor.gov.uk , or Head of Legal & Democratic Services, Christopher Walledge (01626) 831068 cwalledge@dartmoor.gov.uk who are the authorised persons for the purposes of this Contract.

Appendix 1

Contract Specification

1 Dartmoor National Park Authority ("the Authority") is the local planning authority for Dartmoor National Park. The Authority has an adopted *Core Strategy Development Plan Document (CS)* and is now preparing a *Development Management and Delivery Development Plan Document (DMD)*. The DMD provides the more detailed development management policies and site allocations to underpin the CS. The DMD was submitted to the Secretary of State in May 2012 and is undergoing independent examination by a planning inspector with hearing sessions in December 2012.

2 Proposal ASH2 of the DMD looks to redevelopment of an area of land 3.5ha in extent at Chuley Road, Ashburton to deliver a range of mixed uses and community and environmental benefits. Redevelopment has to accord with an area masterplan prepared in association with the local community, relevant stakeholders and the National Park Authority. Annex 1 sets out proposal ASH2 along with the relevant sections from the DMD's written statement.

3 Approximately 75% of the ASH2 site lies within Flood Zone 3a (high risk) and 3b (functional floodplain). Two main rivers, the Ashburn and the Balland Stream, lie within this part of Ashburton and there is a history of flooding. A flood risk assessment for the entire area is needed to inform the masterplanning process and assist in the determination of relevant planning applications. Further background information on the site and surrounding area is shown in Annex 2.

4 A Level 1 Strategic Flood Risk Assessment for Dartmoor National Park was published in November 2010 (*URS/Scott Wilson*). The report contained a focused assessment for Ashburton (*section 8.2*) and a recommendation (*section 12.1.6*) that further work on flood risk assessment would be required to support development in Ashburton.

5 Devon County Council (DCC) is the Lead Local Flood Authority (LLFA) as defined by the Flood and Water Management Act 2010 and the Flood Risk Regulations. Under its obligations as LLFA, DCC has to prepare a strategy to deal with local flood risks, involving flooding from surface water, 'ordinary watercourses', groundwater, canals, lakes and small reservoirs. A preliminary flood risk assessment for the Devon was published in May 2011¹.

6 The Level 1 SFRA notes that a FRA will be needed where the development site is located in an area known to have critical flooding problems from any flood source, and

¹ Devon County Council. Preliminary Flood Risk Assessment - Final Report. May 2011

where the development is located within 10m of any watercourse. Those conditions apply to the Chuley Road site. The minimum requirements for a FRA are:

- Consideration of the risk of flooding arising from proposed development in addition to the risk of flooding to the development;
- Identification and quantification of the vulnerability of the development to flooding from different sources, and identification of potential flood risk reduction measures;
- Assessment of the remaining 'residual' risk after risk reduction measures have been taken into account, and demonstration that this is acceptable for the particular development;
- Consideration of the vulnerability of those that could occupy and use the development, taking account of the Sequential and Exception Tests and the vulnerability classification, including arrangements for safe access;
- Consideration of the ability of water to soak into the ground, which may change with development, along with how the proposed layout of development may affect drainage systems; and,
- To fully account for current climate change scenarios and their effect on flood zoning and risk.

7 Understanding the flood risk for the Chuley Road site demands an understanding of the conditions applying in a broader local area, meaning that a small scale Level 2 Strategic Flood Risk Assessment is required. These minimum requirements form the foundation for the preparation of that assessment, along with further outputs as specified further on in this document.

8 Production of the SFRA report will benefit from a Scoping Study. That Study will enable the available data to be reviewed. It should include a meeting with the Environment Agency and the Authority to aid understanding of how flood sources affect the site and development opportunities, and review the range of investigations that will be needed to enable a robust assessment to be prepared.

9 Although the Level 1 SFRA indicates that modelling data for the two main rivers (Ashburn and Balland Stream) is available, and that other data (e.g. LiDAR and flooding incidents) is also available, it is the view of the Environment Agency that range, quantity and quality of information relating to flood risks affecting the area will be insufficient to enable a robust assessment to be made of the flood risks and that further investigations will be required. Investigations of hydrology and hydraulic modelling will ensure that details of flood flow velocity, onset of flooding and depth of floodwater are fully understood, including through provision of information on any additional defences that are required, and thereby ensuring that development in the area is located with due regard to current and future flood risks. The Environment Agency has provided a plan of the geographical extent of the modelling that is considered necessary. (See Annex 1)

Modelling will need to start upstream of the flood relief culvert on the River Ashburn and upstream of the culvert inlet in Love Lane. The modelling should extend downstream just beyond Castle Bridge at Peartree Cross.

Key Tasks

10 To assess existing and future flood risk and develop an appropriate SFRA evidence base

The SFRA should provide the essential information on flood risk in the defined area (shown in Figure 1) at Chuley Road, Ashburton, identifying areas at risk of flooding from all known sources (fluvial, groundwater, urban drainage and overland flow), collating and utilising existing information for the Ashburton area. The evidence base should investigate the hydrology of the area, and should include detailed 2d hydraulic modelling studies to refine the JFLOW data and enable a more robust definition of the flood zone extents. (See Annex 1.) New topographic data, covering river channels and structures, will also be required for the assessment. The potential effects of climate change scenarios on flood risk in the identified area of Ashburton should be examined.

11 To assess the robustness of existing flood management infrastructure and its impact on the reduction of flood risk in the area

The SFRA should assess the flood risks that currently apply to the area, the existing flood protection infrastructure already in place and its condition and performance, using datasets such as those available from the EA National Flood and Coastal Defence Database (NFCDD) and recent asset condition surveys. Recent significant flooding events and locally significant flooding issues should be reviewed. This information should be mapped and, where possible, should show the condition of the assets and the effects on flood risk reduction. It is important that the assessment covers off-site drainage infrastructure that affects conditions in the study area. Relevant information from the drainage authority (Teignbridge DC), Devon County Council, as the Lead Local Flood Authority and the highway authority, and South West Water should be utilised. There should be an indication of how much of the area is defended by flood risk management infrastructure.

12 To assess the impact of flooding on the area and surrounding areas and propose ways in which flood risk impacts can be managed and mitigated

Based on the framework provided by the Level 1 SFRA including evidence on the extents of Flood Risk Zones 2, 3a and 3b, to consider the impact of flooding on the site, including:

- The likely rate of onset of fluvial and surface water flooding;
- The order in which various parts of the area might flood;

- The likely duration of flood events;
- Information on the extent and depth of previous flood events or on flood predictions;
- The effect of flooding on activities and uses that are currently operational on the site or which may be developed in the future, having regard to those uses highlighted in proposal ASH2;
- The need for any new flood management infrastructure and the scope for achieving environmental improvement and public realm enhancement;
- The potential for development to add to flood risk locally or at a distance, and any effects on third parties.

13 To provide guidance on the potential for spatial redevelopment of the area in ways that minimise flood risks, indicating how flood risks can be reduced in achievable and sustainable ways

Taking into consideration the aspirations for the redevelopment of the area set out in DMD proposal ASH2, provide an evidenced and robust framework to underpin consideration of the disposition of:

- Housing;
- Commercial uses (B1 light industry, offices, small workshops, A2 financial and professional services, A2 shops, A3 restaurants and cafes);
- Car parking
- Access arrangements including via vehicular, cycle and pedestrian modes.
- The location, type and extent of any additional flood defence schemes that may be necessary or desirable should be shown and opportunities for partnership funding should be fully explored.

Outputs

14 The key requirement is for a comprehensive, user-friendly end product that assesses the flood risk factors that are relevant to development and management of the local area of Ashburton. The assessment should provide a reasonable level of information and detail on the following:

- the flood risks from all sources in the study area, showing depths, velocity and hazard mapping and videos of the various scenarios in a standard format;
- modelling to cover a range of scenarios of current flood risks (including 10, 20, 50, 75, 100 and 1000 year storms) and future flood risks (100 and 1000 year climate change scenarios);
- the scope and opportunities for the management of flood risks bearing in mind existing infrastructure and potential climate change scenarios;

- the appropriateness of a range of measures to reduce flood risk, such as flood storage, ground raising and the construction of new defences, and the feasibility and viability of new flood management infrastructure,
- options for surface water management and for sustainable drainage (within the ambit of an overall drainage plan);
- specific features and factors that would need to be considered or adopted in redevelopment to decrease flood risks and increase flood resilience;
- the scope, including spatial options, for new development of differing vulnerabilities in the study area bearing in mind the flood risk and the opportunities for reducing those risks to acceptable levels and the aspirations for redevelopment of the area set out in proposal ASH2 of the Development Management & Delivery DPD;
- the scope for the introduction of soft (green) infrastructure that can help manage flood risk whilst securing environmental improvement of the river corridor and public realm enhancement;
- clear and evidenced guidance to assist stakeholders, agencies, urban designers and the local community in planning a sustainable future for the study area. It should act as a framework both for the immediate task of assisting in the production of a masterplan for this area and as a tool to inform relevant planning determinations.

Detailed content of the FRA

15 The FRA will provide an assessment of:

- (i) potential and historic sources of flooding including mapping identifying existing water bodies and flood defences, with information on the likely return periods;
- (ii) all potential causes of flooding – groundwater flooding, surface water and overland flows, flooding through artificial drainage systems (e.g. culverts), including an assessment of features that would convey flood flows to other areas not considered to be directly at risk from the source;
- (iii) existing flood risk management infrastructure and the standard of existing flood defences;
- (iv) the potential effects of an extreme flood event (0.1% probability);
- (v) the scope for sustainable drainage systems (SuDS) to reduce flood risk;
- (vi) the potential increases in flood risk having regard to climate change, assuming flood defences are maintained to current standard;
- (vii) the potential increase in flood risk to existing development and to other areas due to increased run-off from any future development;

- (viii) details of the measures that could be employed that would enable development within higher flood risk zones to be delivered in safe and resilient ways;
- (ix) the key components of an integrated flood risk management and local surface water management strategy, to manage and reduce flood risks within the study area to enable redevelopment to take place within acceptable flood risk limits.

Deliverables

16 One of the main products of the assessment should be an interactive map on a GIS base. Other outputs will comprise paper maps at appropriate scale and a printed report. The complete 1D/2D model should be submitted to the Authority and to the Environment Agency for assessment and approval.

GIS

17 As much as possible of the data should be presented in GIS form, ideally MapInfo format, although other formats such as ArcGIS would be acceptable. The format should enable easy access via desk top computers and updating as new data becomes available.

Paper maps

18 Paper maps should be produced to show historic flooding and flood defences, existing flood risks and future flood risks. Any areas where mitigation measures could be introduced to reduce flood risk should be highlighted.

Reporting

19 Draft reports and paper maps are to be delivered to the Authority, with additional copies for the Environment Agency, as hard copy and in Microsoft Word format for fact checking and consistency review. Interactive mapping should be supplied in a GIS format that is compatible with MapInfo. Following any amendment, a final version is to be presented to the Authority in hard copy along with electronic versions in Word (editable, not read-only) and PDF format and with the accompanying GIS files.

Particular Considerations

20 The assessment must:

- be consistent and fully compliant with published national guidance on flood risk assessment, in particular PPS25 Practice Guide Updated (December 2009) and the Technical Guidance to the National Planning Policy Framework (March 2012);

- follow current methodologies and employ recognised best practice. The Environment Agency specifications for flood modelling/mapping should be used if at all possible;
- have regard to relevant advice, guidance and evidence from South West Water, Devon County Council and Teignbridge District Council (land drainage);
- adopt a Plain English style of writing to ensure that the report is appropriate for employment as part of a masterplanning exercise, while providing data and other technical material for relevant bodies and agencies.

Appendix 2

General Conditions of Contract

1 Definitions

In these General Conditions of Contract the following terms shall have the following meanings:

"Authority" Dartmoor National Park Authority

"Contractor"

"Contract" The contract for the provision by the Contractor of services to the Authority

"Responsible Person"

"Contract Brief" The invitation to quote issued by the Authority on

2 Provision of the Services

The Contractor shall perform work under the contract in accordance with the Contract Brief together with such written or oral instructions as may from time to time be given by or on behalf of the Authority.

The Contractor warrants that the Contract will be performed with all due skill, care and diligence, and in accordance with good industry practice and legal requirements.

Any failure to provide correctly formatted, accessible copies of reports, text, drawings, illustrations, plans and other documents in a Microsoft Office compatible electronic format capable of further editing (not read only) shall be taken to be a failure to deliver proper performance under this contract.

Where any conflict arises between these General Conditions of contract, the provisions of the Contract, the Contract Brief, or the Contractor's quotation, the provisions shall apply in the order of precedence specified in the Contract.

3 Quality and Description

The Contractor's work shall conform as to the quantity, quality and description with the particulars stated in the Contract.

The Authority reserves the right to amend the contract specification including the substitution, deletion and addition of conditions and requirements, **PROVIDED ALWAYS** that no amendment shall be made without the Contractor first being afforded the right to make representations to the Responsible Officer **AND** also given the opportunity to indicate whether there will be a supplemental charge in respect of any additional work consequent upon the proposed amendment which the Contractor believes was not in the contemplation of the parties at the date of signing this contract.

4 Invoicing & Payment

Unless otherwise agreed in writing, payment will be made upon satisfactory completion of the work, as specified in the Contract, within 30 days of receipt of a written invoice.

It shall be open to the Authority to agree other arrangements for invoicing and payment, for example: to provide for an inception payment, stage payments and/or retentions.

5 Confidentiality

The Contractor shall not disclose to any person, firm or company any information of a confidential nature obtained in any work under this Contract and for the avoidance of doubt this obligation of confidentiality shall continue beyond the termination of this contract, without limit of time.

6 Assignment or Sub-Contracting

The Contractor shall not assign, sub-rogate or transfer the Contract or any part or parts thereof to any other person, firm or company, except with the prior written consent of the Authority.

7 Intellectual Property Rights

For the avoidance of any doubt it is hereby agreed and declared that all data, text, illustrations, information, correspondence and all documents acquired, created or otherwise obtained in any work under this Contract ('the work') shall be the sole property of the Authority who shall be free to use the work as it sees fit

The Contractor agrees and undertakes that the Authority's organisational name, logo or other identifying mark shall not be used without prior written approval from the Responsible Officer.

8 Data Protection Act 1998

In respect of any "personal data" which may come into its possession through its work on this contract, the Contractor shall comply in all respects with the provisions of the Data Protection Act 1998 and will indemnify the Authority against all actions, costs, expenses, claims, proceedings and demands which may be brought arising from the use, disclosure, transfer or other processing of personal data by the Contractor or any person employed by the Contractor or acting on the Contractor's behalf (whether with or without the knowledge of the Contractor).

9 Freedom of Information

This Contract shall be subject to the provisions of the Freedom of Information Act 2000 and the parties acknowledge that the Authority shall comply in all respects with the provisions of the Act and in particular shall communicate to any persons making a request under the Act all and any information contained in or relating to this Contract where required by and in accordance with the provisions of the Act.

10 Health & Safety at Work

The attention of the Contractor is directed particularly to the responsibilities of employers under the Health and Safety at Work Act 1974 (as amended) and Codes of Practice issued by the Health and Safety Executive. The Contractor shall at all times be responsible for ensuring safe systems of work, suitable and safe equipment and a safe working environment for all activities coming under the scope of this contract.

11 Bankruptcy/Liquidation etc.

In the event of the Contractor becoming bankrupt or making a composition or arrangement with its creditors or having a proposal for a voluntary arrangement for a composition of debts or scheme or arrangement approved in accordance with the Insolvency Act 1986, the Authority shall be at liberty to cancel the Contract by notice in writing without compensation to the Contractor.

12 Corruption

The Authority shall be entitled to cancel the Contract and to recover from the Contractor the amount of any loss resulting from such cancellation if the Contractor shall have offered or given or agreed to give any person a gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to any action in relation to the obtaining or execution of the Contract or any other Contract with the Authority or for showing or forbearing to show favour or disfavour to any person in relation to the Contract or any other contract with the Authority or if the like acts shall have been done by any person employed by him or acting on his behalf (whether with or without the knowledge of the Contractor) or if in relation to any contract with the Authority, the Contractor or any person employed by or acting on its behalf shall have committed any offence under the Bribery Act 2010, Prevention of Corruption Acts 1889 & 1916 or shall have given any fee or reward the receipt of which is an offence under Section 117(2) Local Government Act 1972.

13 Force Majeure

Neither the Authority or the Contractor shall be liable to the other for any delay or failure by either party to perform its obligations under the Contract if any such delay or failure arises from any cause or causes beyond the reasonable control of either party, including, but not limited to lightning, earthquakes, riots, acts of terrorism, regulations or orders of any Government, agency or subdivision thereof.

14 Variation of Contract

The Contract and its provisions shall only be capable of amendment by a written agreement signed by the parties.

15 Termination

This Contract may be terminated at any time, without cause, by the Contractor or the Authority serving 30 days notice in writing on the other party.

The Authority reserves the right to terminate the Contract forthwith if at any time it considers that the Contractor is in material or serious breach of his obligations under the Contract or that any terms and conditions of the Contract are not being performed in a proper and businesslike manner or to the true intent and meaning of the same.

The termination of the Contract shall have no effect upon the accrued legal rights and obligations under this Contract between the parties.

Annex 1: Geographical extent of modelling required for Ashburton Level 2 Strategic Flood Risk Assessment



Annex 2: Chuley Road, Ashburton – Details of site

Site owner	Multiple ownership
Developer interest (if applicable)	There is developer interest in the larger sites
Site name	Land at Chuley Road
Site address/location	Land at Chuley Road, Ashburton
Grid Reference	SX756695
Total site size	3.54 hectares
Estimated developable area	2.1 hectares (60% of site)
Site context	
<p>The site lies on the south-east side of Ashburton. It extends from Whistley Hill on the north-east side to Chuley Bridge on the south-west. To the south-east it is bounded by the A38(T) with the main urban area of Ashburton lying to the north-west. The site lies within the proposed draft settlement boundary for Ashburton.</p>	
Site planning history	
<p>The site has multiple owners and occupiers and a substantial planning history on individual sites.</p>	
Constraints	
<p>Chuley Road sits between the main town centre area of Ashburton and the A38 dual carriageway. The area is currently in mixed commercial and residential use. The site is centred on the former Ashburton railway, the main land uses are vehicle repair garages, a caravan sales site, office buildings, small light industrial units, a large agricultural wholesaler and several residential properties. There are also several parking areas and compounds on the site.</p> <p>The northern end of the site falls within the Ashburton conservation area. A large portion of the site falls within flood risk zone 3. An area of TPO has been excluded from the potential allocation and sits between the site and the A38.</p> <p>At the far southern end of the site Bullivers Way, a popular footpath enters the area. Part of the Tucker store site adjoins the recreation ground and the cemetery of St Andrews church. To the north of the site development of housing is currently underway on the site of the former cattle market.</p> <p>There is one listed building within the site (a railway goods shed), though a number of other buildings including the engine shed and buildings alongside Prigg Meadow are notable heritage assets.</p> <p>Site currently has a number of poor quality buildings and poor quality public realm. Potential to improve character and appearance of area (including conservation area and setting of conservation area).</p>	
Sustainability	
<p>The site is in a central location in a Local Centre (classified settlement) very close to town centre shops and access to public transport.</p>	
Comments/Conclusions	
<p>Site currently has a range of uses and a mix of buildings which are heritage assets as well as a number which impact negatively upon the character and appearance of the area. Flood zone, however already in use (therefore not functional flood plain).</p>	

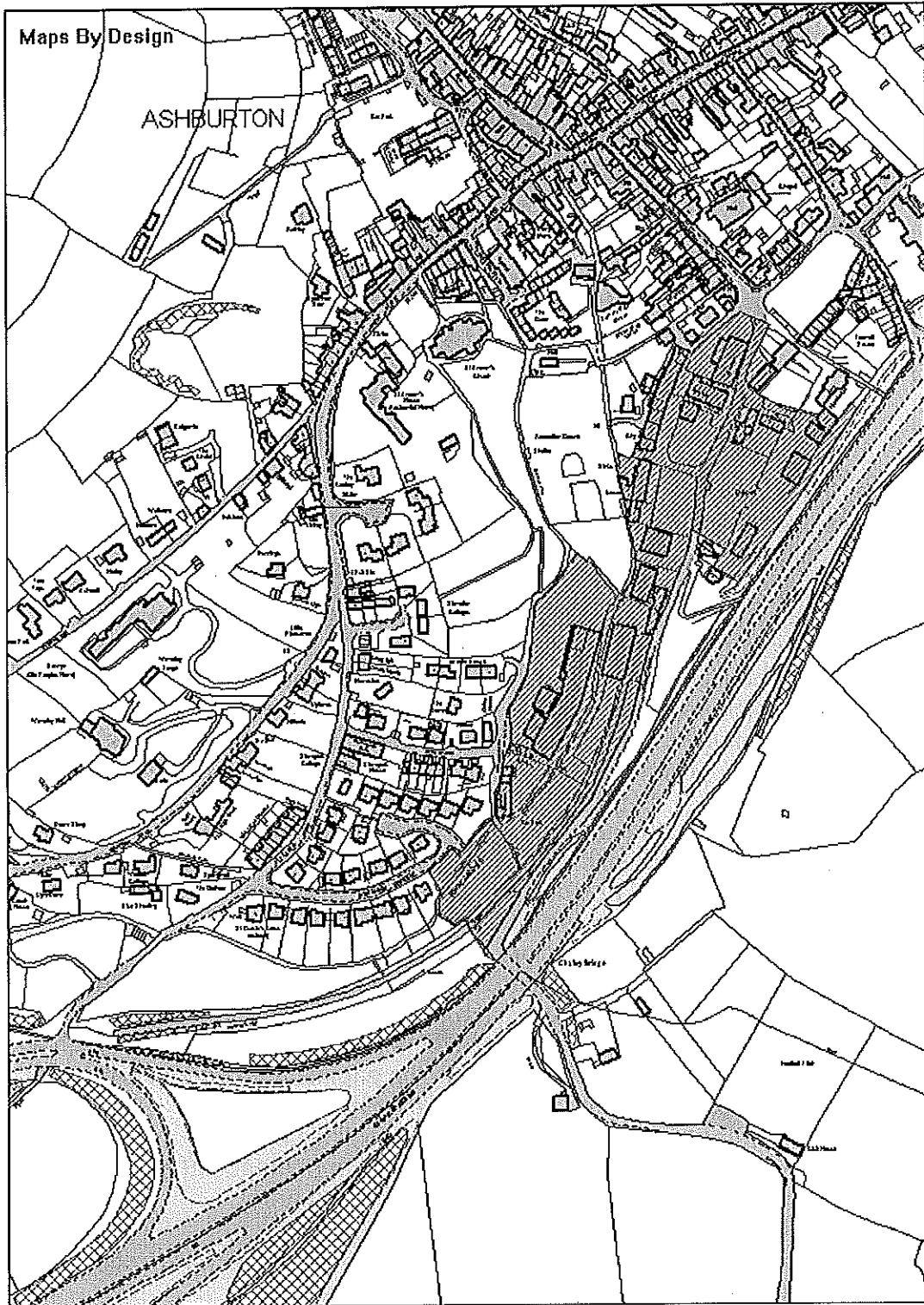


Figure 1: Site at Chuley Road, Ashburton

Extent of Masterplan area



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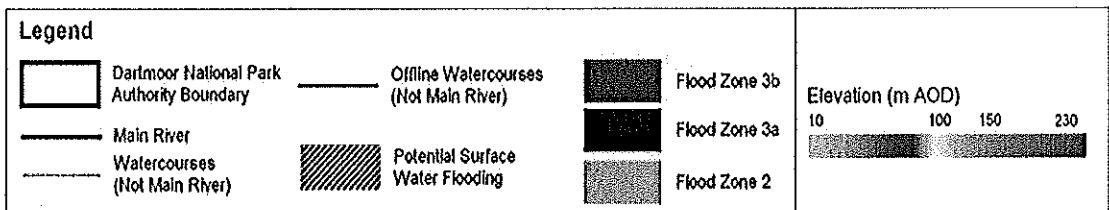


Figure 2: Ashburton Flood Risk Zones

[Extract from *Dartmoor National Park Authority Level 1 Strategic Flood Risk Assessment* November 2010]



**Figure 3: Aerial view of site
Proposal ASH2 - Development Management and Delivery DPD May 2012)**

© Cities Revealed aerial photography copyright. The GeoInformation Group 2010

ANNEX 3 – Development plan context

The adopted *Core Strategy* (section 3.5.1) says the following about Ashburton:

“An ancient stannary town, historically its prosperity was based on tin mining and the woollen industry. It has retained its medieval street layout and has a fine range of historic buildings. Today Ashburton is a thriving small town and District Centre offering a good range of services and a vibrant town centre with a selection of shops, cafes and pubs. Ashburton’s vision looks to:

- ♦ sustain the vibrant local service economy*
- ♦ enhance opportunities for business and commercial development*
- ♦ improve parking and traffic management in the town centre*
- ♦ provide a wider range of accommodation opportunities to meet the needs of local people*
- ♦ conserve the town’s distinctive character and heritage as a Stannary town.”*

The *Development Management and Delivery DPD* (as submitted to the Secretary of State) says the following about development at Chuley Road, Ashburton:

“3.2.9 The redevelopment of the Chuley Road area offers an opportunity to conserve and enhance this former railway site. The development should provide for a green pedestrian link between Bulliver’s Way and the Recreation Ground as well as providing public open space where possible. Its important role as an employment area should be sustained, albeit with commercial uses more suited to its central location. The development will provide an opportunity for new housing in the town centre, a proportion of which should be affordable housing to meet the local need in Ashburton. The development should also provide sufficient car parking to meet the needs of the current and new commercial and residential uses, as well as providing further town centre public car parking.

Proposal ASH2

An area of land 3.5 ha in extent at Chuley Road, Ashburton, is identified for redevelopment for mixed use. Development in this area may include

- a) housing, including a proportion of affordable housing subject to further assessment of viability;**
- b) Commercial uses comprising principally business use (B1), financial and professional services (A2), shops (A1), and restaurants and cafés (A3).**

Development of this site should:

- i) meet the parking needs of existing and new commercial and residential uses, and provide further public car parking to serve the centre of Ashburton;**

- ii) conserve and enhance the site's railway heritage;*
 - iii) provide a pedestrian link between Bulliver's Way and the Recreation Ground;*
 - iv) be supported by a detailed Flood Risk Assessment.*
- Proposals at ASH2 should accord with a comprehensive masterplan for the entire site prepared in association with the local community, relevant stakeholders and the Authority.*

Dartmoor National Park Authority



Standard Clauses Contracts for Consultancy Services

1 Definitions

In these General Conditions of Contract the following terms shall have the following meanings:

"Authority" Dartmoor National Park Authority

"Consultant" Parsons Brinckerhoff

"Contract" This contract for the provision by the Consultant of consultancy services to the Authority

"Responsible Person" David Lillington, Forward Planning Officer

"Specification" The Invitation to Tender issued by the Authority on 8 January 2013 seeking consultancy services

2 Provision of the Services

The Consultant shall perform work under the contract in accordance with the Specification together with such written or oral instructions as may from time to time be given by or on behalf of the Authority.

The Consultant warrants that he shall perform the Contract with all due skill, care and diligence, and in accordance with good industry practice and legal requirements

Any failure to provide correctly formatted, accessible copies of reports, text, drawings, illustrations, plans and other documents in a Microsoft Office compatible electronic format capable of further editing (not read only) shall be taken to be a failure to deliver proper performance under this contract.

Where any conflict arises between these General Conditions of contract, the provisions of the contract, the Specification, or the Consultant's quotation, the provisions shall apply in the order of precedence specified in the contract

3 Quality and Description

The Consultant's work shall conform as to the quantity, quality and description with the particulars stated in the Specification;

The Authority reserves the right to amend the Specification, including the substitution, deletion and/or addition of conditions and requirements, **PROVIDED**

ALWAYS that no amendment shall be made without the Consultant first being afforded the right to make representations to the Responsible Officer **AND** also given the opportunity to indicate whether there will be a supplemental charge in respect of any additional work consequent upon the proposed amendment which the Consultant believes was not in the contemplation of the parties at the date of signing this contract

4 Invoicing & Payment

Unless otherwise agreed in writing, the amount to be paid and dates of payment shall be as specified in the contract, within 30 days of receipt of a written invoice, however, it shall remain open for the parties to agree other arrangements for invoicing and payment, for example: to provide for an inception payment, stage payments and/or retentions.

5 Confidentiality

The Consultant shall not disclose to any person, firm or company any information of a confidential nature obtained in any work under this Contract and for the avoidance of doubt this obligation of confidentiality shall continue beyond the termination of this contract, without limit of time.

6 Conflict in Interest

The Consultant agrees and undertakes that for the duration of this Contract he shall not engage in, undertake or accept any work from any other client which would have potential for any conflict in interest. In the event that a situation of potential or actual conflict of interest arises, the Consultant undertakes to notify the Responsible Officer as soon as reasonably practicable.

7 Assignment or Sub-Contracting

The Consultant shall not assign, sub-rogate or transfer the Contract or any part or parts thereof to any other person, firm or company, except with the prior written consent of the Authority

8 Intellectual Property Rights

For the avoidance of any doubt it is hereby agreed and declared that all data, text, illustrations, information, correspondence and all documents acquired, created or otherwise obtained in any work under this contract ('the work') shall be the sole property of the Authority, who shall be free to use the work as it sees fit. This excludes third party data which has been obtained under license.

The Consultant agrees and undertakes that he/she will not use the Authority's organisational name, logo or other identifying mark without prior written approval from the Responsible Officer.

9 Data Protection Act 1998

In respect of any "personal data" which may come into his possession through its work on this contract, the Consultant shall comply in all respects with the provisions of the Data Protection Act 1998 and will indemnify the Authority against

all actions, costs, expenses, claims, proceedings and demands which may be brought arising from the use, disclosure, transfer or other processing of personal data by the Consultant or any person employed by the Consultant or acting on the Consultant's behalf (whether with or without the knowledge of the Consultant)

10 Freedom of Information

This Contract shall be subject to the provisions of the Freedom of Information Act 2000 and the parties acknowledge that the Authority shall comply in all respects with the provisions of the Act and in particular shall communicate to any persons making a request under the Act all and any information contained in or relating to this Contract where required by and in accordance with the provisions of the Act

11 Health & Safety at Work

The attention of the Consultant is directed particularly to the responsibilities of employers under the Health and Safety at Work Act 1974 (as amended) and Codes of Practice issued by the Health and Safety Executive. The Consultant shall at all times be responsible for ensuring safe systems of work, suitable and safe equipment and a safe working environment for all activities coming under the scope of this contract.

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13 Corruption

The Authority shall be entitled to cancel the Contract and to recover from the Consultant the amount of any loss resulting from such cancellation if the Consultant (whether personally or through any person acting on his/her behalf) shall have:

- offered or given or agreed to give any person any payment, gift or inducement in relation to the obtaining or execution of the Contract
- offered or given or agreed to give any person any reward or consideration of any kind for doing or forbearing to do, or for having done or forborne to do any action in connection with the Contract
- or for showing or forbearing to show favour or disfavour to any person in relation to the Contract
- committed any offence under the Bribery Act 2010, Prevention of Corruption Acts 1889 & 1916 or shall have given any fee or reward the receipt of which is an offence under Section 117(2) Local Government Act 1972

14 Force Majeure

Neither the Authority or the Consultant shall be liable to the other for any delay or failure by either party to perform its obligations under the Contract if any such

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The termination of the Contract shall have no effect upon the accrued legal rights and obligations under this Contract between the parties.

17 Limitation of Liability

Notwithstanding any provision in this Contract, the Consultant shall have no liability, whether in contract, tort or otherwise, for loss of use, loss of contract, loss of profit, or indirect or consequential loss or damage of any kind howsoever arising, and other than in the case of death or personal injury the Consultant's total liability hereunder for legally enforceable and mitigated direct losses shall not exceed ten times the Contract price.