



Miller Homes North East

Victoria Road West, Hebburn

FLOOD RISK ASSESSMENT AND DRAINAGE STRATEGY

July 2016

Head Office: Suite 7D, Netherton Park, Stannington, Northumberland, NE61 6EF

Yorkshire: 2A St Martin's Lane, York, YO1 6LN

ISSUE SHEET

Prepared	Date		Checked	Date
JM	27 07 16		AL	29 07 16
-	Initial Submission			29 07 16

This document has been prepared solely as a Flood Risk Assessment for Miller Homes North East regarding the proposed scheme at Victoria Road West, Hebburn. Queensberry Design Ltd accepts no responsibility or liability for any use that is made of this document other than by the Client for which it was originally commissioned and prepared.

Head Office:

Queensberry Design Ltd
Suite 7D
Netherton Park
Stannington
Northumberland
NE61 6EF
T:01670 789 834

Yorkshire Office:

Queensberry Design Ltd
Blake House
2A St Martin's Lane
York
YO1 6LN
T:- 01904 500 662

CONTENTS

1. Introduction.....	4
2. Site Description.....	5
3. Strategic Flood Risk Assessment	8
4. Catchment Flood Management Plans	11
5. STC Surface Water Management Plan	12
6. Flood Risk Assessment.....	13
7. Summary of Flood Risk	23
8. Proposed Development.....	24
9. Management of Surface Water	29
10. Preferred Drainage Solution.....	31
11. Conclusion	35

APPENDICES

Appendix 1 – Topographical Survey

Appendix 2 – Northumbrian Water Limited Correspondence

Appendix 3 – Environment Agency Correspondence

Appendix 4 – South Tyneside Council Correspondence

Appendix 5 – Masterplan Site Layout

Appendix 6 – Drainage Strategy

1. Introduction

- 1.1 Queensberry Design Ltd has been commissioned by Miller Homes North East to undertake a Flood Risk Assessment (FRA) for a proposed residential development off Victoria Road West, Hebburn.
- 1.2 This FRA has been produced to demonstrate how flood risk from all sources of flooding, and flood risk to others from the development will be managed, in order to satisfy the requirements, set out in '*National Planning Policy Framework, and Technical Guidance to the National Planning Policy Framework*'.
- 1.3 A full assessment of the flood risk to the site and consideration of the surface water management as a result of the development is to be considered in this investigation.
- 1.4 Consultation has been undertaken with the Northumbrian Water Limited (NWL), Environment Agency (EA) and South Tyneside Council (STC) including inspection of their Strategic Flood Risk Assessment (SFRA) and Surface Water Management Plan (SWMP).
- 1.5 Data has also been gathered from a number of other sources including; aerial photographs, Ordnance Survey (OS), the British Geological Society (BGS), National Soil Resources Institute (NSRI), aerial photographs, Sewers for Adoption, SuDS Manual (C753), Ordnance Survey (OS), The River Tyne Catchment Flood Plan and anecdotal evidence obtained from the internet.

2. Site Description

- 2.1 The site, a former Siemens Industrial facility, is located to the west of Victoria Road West and approximately 0.8 miles from Hebburn town centre and approximately 4.2m from Gateshead at National Grid Reference (E 430410, N 563538).
- 2.2 At approximately 10.24 ha in size, the Brownfield site is currently accessed off South Drive at the north western corner. The majority of the site is occupied by concrete hardstanding, with soft landscaping along the eastern-most boundary and across the south and south east part of the site. The site is now clear of buildings although floor slabs and several piles of processed demolition rubble and trenches indicate where structures once stood. Mounds of demolition material are located in the south and south west where semi-mature trees and shrubbery are also present. Mature trees also border parts of the western edge of the site.
- 2.3 Residential properties are present beyond the north boundary fronting Parkside and South Drive to the north west. Victoria Road West is present at the eastern boundary with residential properties beyond while commercial buildings lie to the south. At the western boundary lies the Tyne and Wear Metro railway line, beyond which grassed public open space is present as levels fall towards the River Tyne.
- 2.4 The location of the development is shown in Figure 1a, with a detailed location of the site shown in Figure 1b.

Site Levels

- 2.5 A topographical survey was carried out by Land Surveys Ltd in August 2014 and can be viewed in Appendix 1.
- 2.6 Existing levels indicate that the site is fairly level in topography, notably due to the large former structures, with a gentle fall from east to west. The eastern portion of the site is raised whilst levels beyond the northern and western boundaries fall towards the River Tyne.
- 2.7 A series of mounds are present on site formed by the stockpile of industrial rubble likely from the demolition process where the highest ground levels are recorded at 52.12 AOD. Following removal of these mounds the site high points are located to the east of the site where the highest ground levels are recorded at 46.03 AOD adjacent the existing highway.

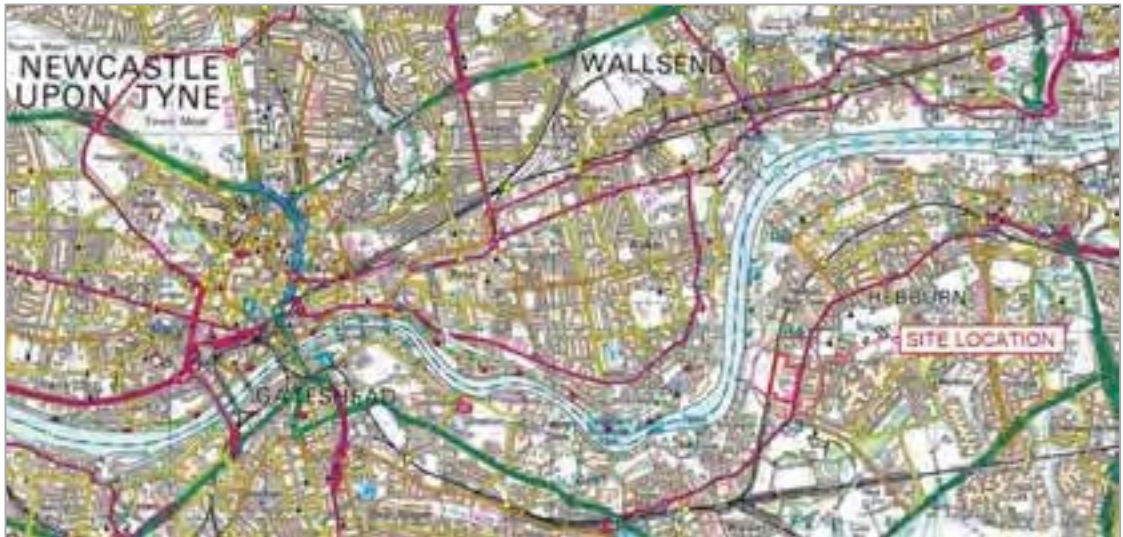
The site low point is located at the centrally adjacent the north western corner of the site at 42.00 AOD.

Hydrology

- 2.8 The site is located within the EA defined Northumbria River Basin Management Plan with the nearest EA classified surface watercourse being the River Tyne located approximately 350m west of the site at its closest point. The River Tyne is classified as a Main River. An unclassified watercourse known as 'Cutthroat Dean' is located approximately 40m south west of the site which flows north east into the River Tyne. Cutthroat Dene is located within dense tree coverage.

Existing Drainage Infrastructure

- 2.9 Existing public sewerage infrastructure is present within the vicinity of the site, which is described below and can be seen in Appendix 2 of this report.
- 2.10 An existing 225mm diameter combined public sewer is present beyond the eastern boundary flowing from south to the north parallel to Victoria Road West. Storm flows from south of the site discharge into this combined sewer at MH 5203. The 225mm diameter combined sewer diverts west through South Drive and is upsized to a 300mm diameter and subsequently a 450mm diameter pipe as flows pass west under the existing Railway line.
- 2.11 Running parallel, a second combined sewer is present within South Drive, a larger 600mm diameter sewer which also passes underneath the existing railway line. The sewers passing under the railway line are laid under agreement L.N.E.R and Hebburn U.D.C (no.99 in Hebburn Agreements) as denoted on NWL public sewerage records. The two combined systems join at MH2702 and flows fall west via the 600mm diameter sewer towards a flow interceptor at MH0703. An overflow system is present which flows to a headwall into the River Tyne.
- 2.12 The properties fronting Parkside, north of the site, are serviced a separate storm and foul drainage network which discharges into the combined public sewers at MH 4706.
- 2.13 Records indicate no existing public sewerage present to the south or west of the site. It is anticipated that the commercial buildings directly beyond the southern boundary are facilitated by a private drainage network not conveyed on NWL public records and includes an outfall to Cutthroat Dene.



2.14 Figure 1a –Site Location, Ordnance Survey

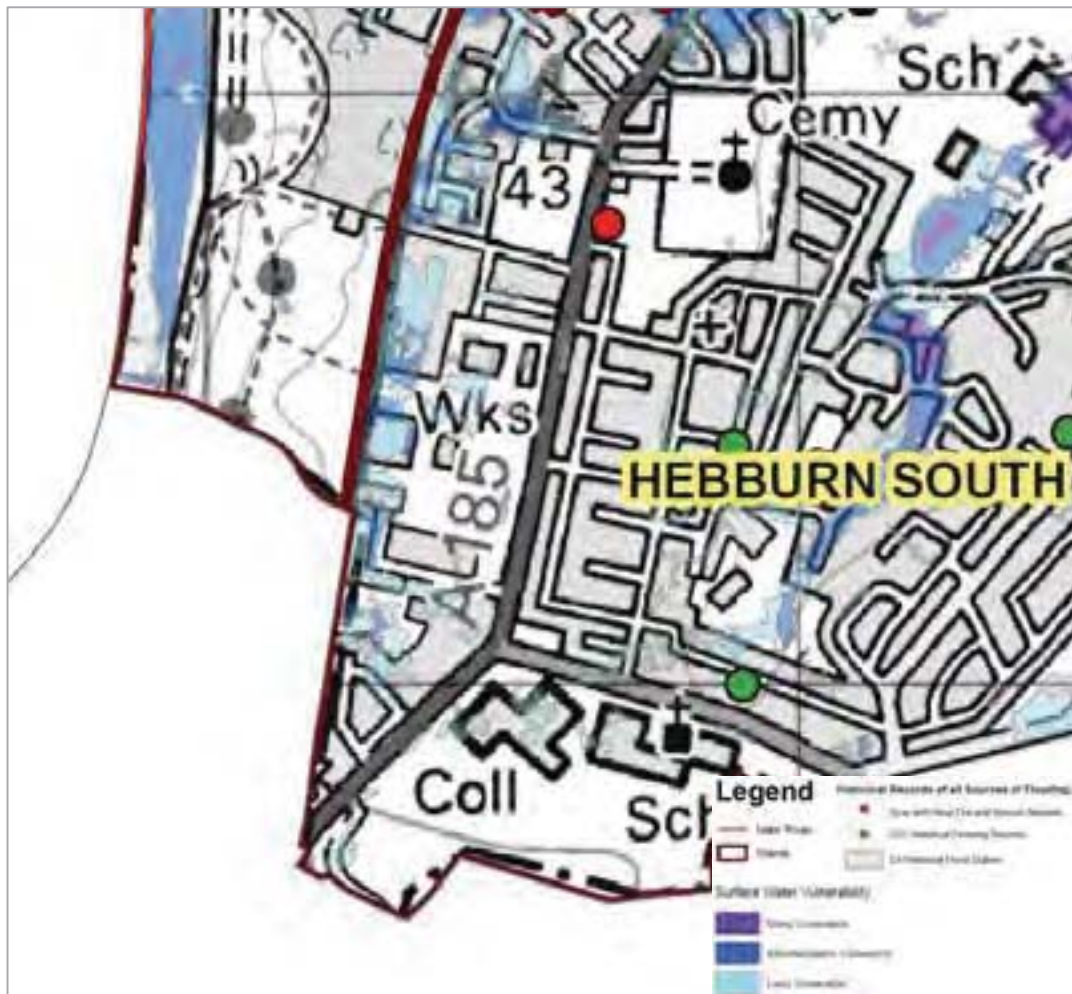


Figure 1b – Detailed Site Location, Aerial Image

3. Strategic Flood Risk Assessment

- 3.1 JBA Consulting completed the Level 1 and Level 2 Strategic Flood Risk Assessment (SFRA) for South Tyneside Council in February 2011. The SFRA considers the risk of flooding within the borough and provides an overview of risk from coastal waters, groundwater, sewers and surface water runoff.
- 3.2 A Level 1 SFRA provides the foundation of this evidence base. It relies on existing flood risk information and the Environment Agency Flood Map is the main source of fluvial and tidal flood data.
- 3.3 The Level 2 SFRA provides the LPA with a more detailed understanding of flood hazards. It includes assessment of flood depths, velocities and residual risks such as those associated with defence breach or overtopping scenarios.
- 3.4 The SFRA denotes specific sites across the borough with a reference number which is cross referenced within the report. The southern portion of the site is denoted as area '14'.
- 3.5 Inspection of the SFRA flood risk maps indicates that the site is situated in Flood Zone 1 and is not located in the immediate vicinity of any historical flooding locations. A Tyne and Wear Fire and Rescue flooding incident is located in the ground of Hebburn Cemetery to the north east of the site. The site is denoted as having low NWL Flood Risk status.
- 3.6 The SFRA does not cover reservoir failure and highlights that EA flood maps should be sought to determine risk of reservoir breach however the probability of such an event occurring is small.
- 3.7 The development site is not located within a flood hazard or flood warning zone, with the Tidal Climate Change Sensitivity data indicating no risk of flooding from the adjacent River Tyne.
- 3.8 Groundwater flooding is not identified as a major risk within the South Tyneside Area and the report indicates that the site is likely underlain by slowly permeable seasonally wet slightly acid but base rich loamy soil which will impede natural drainage potential.
- 3.9 The 'Areas Naturally Vulnerable to Surface Water Flooding' map indicates that the eastern portion of the site is intermediately vulnerable to surface water flooding.

3.10 An extract of the SFRA Surface Water flood map can be found in Figure 2a.



3.11 Figure 2a – STC Strategic Flood Risk Assessment - Areas Naturally Vulnerable to Surface Water Flooding

STC Preliminary Flood Risk Assessment

3.12 Following on from the Strategic Flood Risk Assessment (SFRA) for South Tyneside Council in February 2011; STC prepared a Preliminary Flood Risk Assessment (PFRA) in response to the Flood Risk Regulations (2009) and the Flood and Water Management Act (2010), providing greater depth to the data collated during the SFRA.

3.13 The legislation defines certain local authorities, such as South Tyneside Council, as Lead Local Flood Authorities (LLFAs) for the purpose of Flood Risk Management regarding surface water, groundwater, ordinary watercourses and canals. Whilst the EA is responsible for producing assessments in relation risk from to The Sea, Main Rivers and Reservoirs.

- 3.14 The adjacent River Tyne is classified as a Main River and is not subject to the report.
- 3.15 The report highlights that the slowly permeable clay soils present through the South Tyneside Area impede natural drainage and during periods of heavy rainfall the subsoils tend to become waterlogged.
- 3.16 It is referenced that there is no locally available data which provides evidence on future groundwater flood risk across South Tyneside and concludes that there is no evidence of historic groundwater flooding in within South Tyneside.
- 3.17 In conflict with the SFRA a Tyne and Wear Fire and Rescue Service historic flood incident is recorded in the vicinity of Victoria Road West at the sites eastern boundary. This historic event is not recorded on the associated flood maps forming the Strategic Assessment. It is noted that in relation to historic flooding events there is generally a lack of satisfactory information and so no historic flood events are considered to have 'significant harmful consequences'.
- 3.18 Surface water flooding at the western boundary is denoted as being of 'shallow depth'.

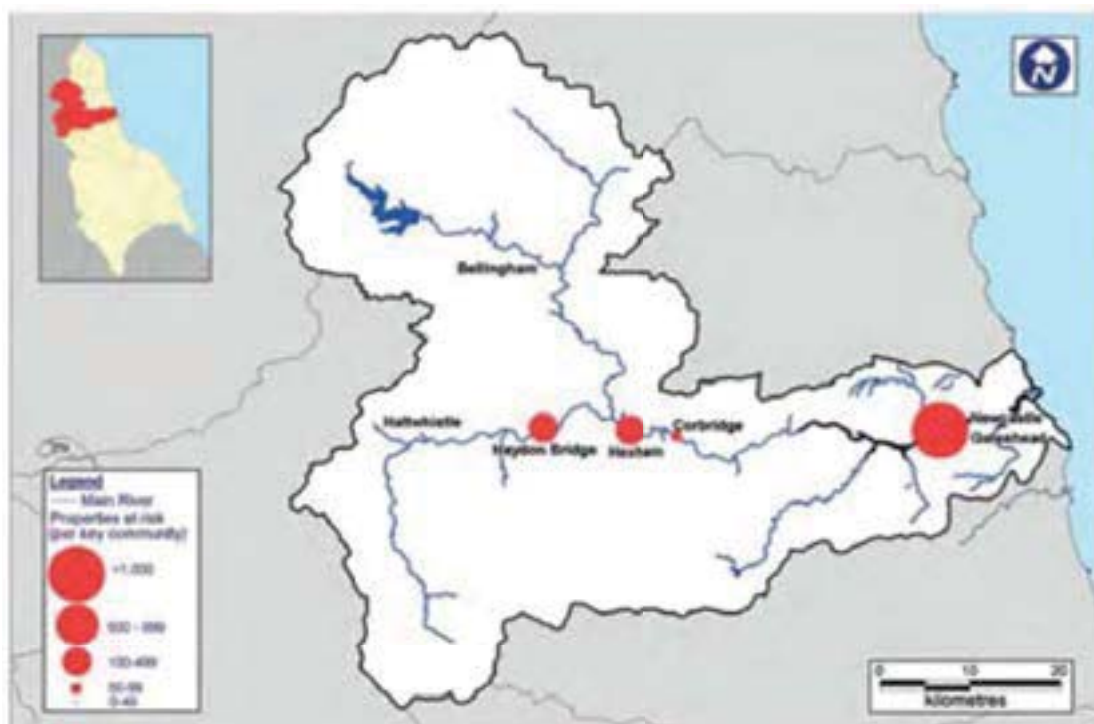
4. Catchment Flood Management Plans

4.1 The Environment Agency has produced Catchment Flood Management Plans (CFMP) across England and Wales. These reports are strategic plans in which aim to understand the key contributors to flood risk and seek to identify and agree policies for sustainable flood risk management across a river catchment for the next 50-100 years.

4.2 The Tyne Catchment Flood Plan was produced by the Environment Agency in 2009.

4.3 The River Tyne is tidally influenced from Wylam to the coast.

4.4 The Lower Tyne Catchment is identified as having low, moderate or high flood risk. With flooding coming from the River Tyne and Ouseburn and tributaries as well as the risk of tidal flooding from the Tyne Estuary, including tide-locked drains. Surface water flooding is also reported within the catchment.



4.5 Properties at risk of flooding in the Tyne Catchment

5. STC Surface Water Management Plan

- 5.1 In late 2012 Royal HaskoningDHV was appointed by South Tyneside Council to produce a Surface Water Management Plan (SWMP), following significant storm events on both 28th June and 5th August, when heavy rainfall caused flooding to residential and commercial properties across the borough.
- 5.2 The SWMP provides both an overview of the surface water flood risk in the whole of South Tyneside and further information on specific flood hot spots which were investigated in greater detail including mitigation measures. The SWMP has been produced with reference to Defra's SWMP guidance.
- 5.3 Hebburn is denoted as a 'hot spot' zone due to the number of historic flooding events in the area however the report concludes that no further investigation is required as NWL are considering local sewerage flooding incidents within their Hebburn Sustainable Sewerage Study.

6. Flood Risk Assessment

- 6.1 National Planning Policy Framework requires that: “A site-specific flood risk assessment must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.” *NPPF March 2012 par 102 p24.*
- 6.2 A site-specific flood risk assessment is required for proposals of 1 hectare or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency); and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding. *NPPF March 2012 footnote 20 p24.*
- 6.3 The Planning Practice Guidance was published in March 2014. The new Guidance is intended to reflect and support (but not replace) the National Planning Policy Framework (the NPPF) published on 27 March 2012 and the core policy principles of the presumption in favour of sustainable development, the introduction of neighbourhood planning and recent changes in legislation.
- 6.4 The publication contains a section regarding Flood Risk and Coastal Change and states that the tests as set out in the NPPF should be followed and where the tests are not met national policy is clear that new development should not be allowed. In summary, the key elements of the policy are designed to ensure that if there are better sites in terms of flood risk, or a proposed development cannot be made safe, it should not be permitted.

Sources of Flooding

- 6.5 Flood risk has been assessed from the following sources; tidal and fluvial, surface water and flooding from the land, groundwater, sewer flooding and artificial sources (i.e. canals, reservoirs etc.).

Tidal and Fluvial Flooding

- 6.6 Inspection of the EA flood map indicates that the site is located within flood zone 1 and so is considered to have the lowest probability of flooding from rivers and the sea. Flood zone 1 has a flooding probability of 1 in 1000 in any one year (0.1%). The site is illustrated in the EA flood map in Figure 3a.
- 6.7 The EA have been contacted regarding any information relating to known flood events in the area. A response is awaited at the time of writing. A copy of the initial correspondence can be found in Appendix 3.



6.8 Figure 3a – Environment Agency Flooding from Rivers and Sea Flood Map

- 6.9 The Lower Tyne Catchment is identified as having low, moderate or high flood risk. With flooding coming from the River Tyne and Ouseburn and tributaries as well as the risk of tidal flooding from the Tyne Estuary, including tide-locked drains.
- 6.10 Tidal Climate Change Sensitivity data within the SFRA indicates that the site is at no risk of flooding from the adjacent River Tyne.
- 6.11 The risk of flooding from this source is expected to be LOW.

Flood Warning Areas

- 6.12 The Environment Agency flood warning maps have been inspected as shown in Figure 3b below.
- 6.13 Records indicate that the site is not located within a flood warning area.



6.14 Figure 3b – Environment Agency Flood Warning Map

Groundwater

- 6.15 Groundwater flooding is caused by water originating from beneath the ground surface from permeable strata through a natural process, usually after periods of higher than average rainfall.
- 6.16 Inspection of the EA groundwater map indicates that the site is located in the vicinity of a minor aquifer with high vulnerability as shown in figure 4a. The site is not within an Environment Agency Source Protection Zone (SPZ).
- 6.17 Finding from the SFRA and PFRA indicates that groundwater flooding is not a significant flood risk within the South Tyneside area.
- 6.18 An intrusive ground investigation was carried out by WSP in August 2015 to determine site specific conditions. In addition to the ground investigation works by WSP a desk study of the National Soil Resources Institute Geology (NSRI) map was carried out, as shown in figure 4b.
- 6.19 Ground investigations confirm that site is underlain by drift deposit comprising Glacial Till (Pelaw Clay Member). Deposits of glacial till are classified as Unproductive Strat, which reflects their predominately clay composition. Glacial Till is not classified by the Environment Agency as an aquifer suggesting that they represent deposits with low permeability that have negligible significance for water supply or river base flow. This is corroborated by NSRI data which suggest the loamy and clayey soils on-site will be of impeded drainage potential, restricting the movement of groundwater.
- 6.20 The Glacial Till overlying Pennine Middle Coal Formation (mudstone, siltstone, sandstone and coal seams) classified as a Secondary A Aquifer. Secondary A Aquifers are defined as permeable layers capable of supporting water supplies for base flow rather than strategic scale.
- 6.21 Groundwater strikes were recorded during the investigation but no overall flow direction could be determined and it is considered that the groundwater is a perched body which is trapped within the granular Made Ground or perched above low permeability cohesive deposits.
- 6.22 Perched water represents a collection of groundwater above the water table in the unsaturated zone. The groundwater is often trapped above an impermeable soil layer

forming a lens of saturated material in the unsaturated zone. The saturated zone that may be recharged by percolation from nearby surface water or other perched water zones.

- 6.23 It is anticipated that these levels represent perched water levels and are not indicative of a continuous groundwater table.
- 6.24 Without mitigation, the flood risk from groundwater is considered LOW.
- 6.25 The installation of appropriate underground private and adoptable drainage systems on site will help to address the perched water on the site. It is likely that the bedding requirements for the adoptable, as well as private, storm and foul will lower the risk of flooding from this source.



6.26 Figure 4a – Environment Agency Groundwater Map



6.27 Figure 4b – National Soil Resources Institute (Soilsmap) Map

Sewer Flooding

- 6.28 Within the STC Surface Water Management Plan Hebburn is denoted as a 'hot spot' zone due to the number of historic flooding events. The report highlights that NWL are considering local sewerage flooding incidents within their Hebburn Sustainable Sewerage Study.
- 6.29 Northumbrian Water has been consulted regarding any known sewer flooding events in the vicinity of the site. A copy of the correspondence is included in Appendix 2.
- 6.30 The response from NWL consists of an OS based plan which highlights the location of known internal and external property flooding caused by sewer incapacity.
- 6.31 NWL categorise the risk as:
- Reported flooding - indicated as a blue shade.
 - Reported flooding during extreme event - indicated as a red shade.
- 6.32 NWL records indicate that there has been no record of past sewer flooding on site or in the immediate vicinity.
- 6.33 Significant flood risk is not expected from this source and therefore can be considered as LOW.

Overland Flow

- 6.34 Flooding from overland flow can become a risk to any development if flooding occurs at a higher level than the development site. Topographical data indicates that possible flood risk from overland flows would occur from beyond the eastern boundary.
- 6.35 South Tyneside Council was contacted to enquire about any known flooding incidents in the vicinity of the site. A response is awaited at the time of writing. A copy of the initial correspondence can be found in Appendix 4.
- 6.36 The EA provide surface water flood risk information via an online interactive map, which quantifies the level of flood risk. An extract of the surface water flood map is illustrated in Figure 5.

- 6.37 Analysis of the EA flood maps identifies that the majority of the site is classified as very low risk, where chance of flooding is less than 1 in 1000 (0.1%), this correlated with the location of the former structures across the site.
- 6.38 Victoria Road West located to the east and at higher ground level than the development site is not denoted as being at risk of surface water flooding.
- 6.39 Parkside beyond the north eastern boundary is denoted as being of medium surface water risk with a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%) however levels within the site are at higher ground level which would inhibit a natural overland flow route.
- 6.40 Within the site; low level surface water flooding is indicated in the locations of the former access and hardstanding drive ways through the former commercial facility.
- 6.41 Given that the land at higher ground level to the east is not identified as having an existing surface water flooding issue the risk to development from overland flows can be considered as low however flood risk can be further reduced by employing mitigation measures into design.
- 6.42 Development of the site will be including the re-engineering of levels will require a positive drainage network – collecting rain water and facilitating transportation of flows offsite to the outfall.
- 6.43 Re-development of site levels will involve the removal of the existing access and drive ways with the introduction of new highway infrastructure with a positive highway drainage system to facilitate drainage mitigating any existing standing water issues present with the existing design.
- 6.44 The positive drainage regime incorporated will also provide betterment to the lower lying land to the west, notably the existing railway track as by default this will prevent the site from being able to generate flows with the ability to pass to the low points without obstruction.
- 6.45 In addition to the design principles outline above the risk of flooding from this source can be further reduced with the following mitigation measures:
- 1) Any land drainage which may be encountered during the development should be repaired and diverted through the site, using its existing outfall where possible.

- 2) Additional land drainage / infiltration trenches can be installed at site boundaries to collect any overland flow and protect the properties at a lower level.
- 3) Proposed levels should consider existing flow paths, allowing flow to pass the site.
- 4) Proposed floor levels should be a minimum of 150mm above external ground level.
- 5) Construction of new 'Sewers for Adoption' compliant drainage network.

6.46 Significant flood risk is not expected from this source and therefore can be considered as LOW.



6.47 Figure 5 – Environment Agency Surface Water Flood Risk Map

Land Drainage

6.48 In the event of any land drainage being discovered during excavations on site, it is recommended that the drain is repaired or diverted. Should this not be possible due to layout constraints, then it is recommended that the land drain is further investigated by the development engineer, to determine if the drain is still required post development.

6.49 Significant flood risk is not expected from this source and therefore can be considered as LOW.

Artificial Sources

6.50 Inspection OS and EA maps indicate the development is located in an area which is not at risk of flooding from reservoir failure. The site is illustrated in the EA flood map in Figure 6.

6.51 The SFRA, although it does not specifically cover the risk of reservoir failure, it does indicate that the likelihood of such an event is small.

6.52 Flood risk is not expected from this source and therefore can be considered as LOW.



6.53 Figure 6 – Environment Agency Reservoir Flood Risk Map

7. Summary of Flood Risk

7.1 Table 1 below summarises the sources of possible flooding which have been investigated, and indicates any mitigation requirements.

Flood Risk Source	Current Risk Level	Mitigation Requirement during detailed design	Risk Level following Mitigation
Tidal and Fluvial Flooding	LOW	Development is located in Flood Zone 1.	LOW
Groundwater	LOW	Not Required. The installation of appropriate drainage will help address the perched water on the site. It is likely that the bedding requirements for the adoptable, as well as private, storm and foul will lower the risk of flooding from this source.	LOW
Sewer Flooding	LOW	Not Required.	LOW
Overland Flow	LOW	New sewer network will direct flows into the storage system. Any land drainage encountered during construction is to be repaired. The design of proposed levels should consider existing flow paths, allowing flow to pass harmlessly through the site. Proposed floor levels are to be a minimum of 150mm above ground level. Construction of new 'Sewers for Adoption' compliant drainage network.	LOW
Land Drainage	LOW	Not Required. Any land drainage encountered during construction is to be repaired.	LOW
Artificial Sources	LOW	Not Required.	LOW

7.2 Table 1 – Summary of Flood Risk

8. Proposed Development

- 8.1 Miller Homes North East proposes to develop the site for residential use with the construction of approximately 334 dwellings.
- 8.2 The total site is approximately 10.24 ha in size which will comprise of residential dwellings, car parking and highways.
- 8.3 A copy of the proposed masterplan layout can be viewed in Appendix 5.

Planning Context

- 8.4 The EA flood maps for the region show that the proposed development sits within development is within FLOOD ZONE 1, which has a low probability of flooding 1 in 1000 in any one year (0.1%). This is illustrated in Figure 7.
- 8.5 The proposed development will comprise residential dwellings. Therefore, in accordance with NPPF tables 1 and 2, the residential development is classified as 'more vulnerable' as illustrated in Figure 8.
- 8.6 The classification parameters are illustrated in Figure 9 and 10.
- 8.7 Thus, given that site is situated in FLOOD ZONE 1 and the vulnerability classification in accordance with the NPPF compatibility matrix, the scheme is classified as appropriate for development and an Exception Test is not required.

Table 1: Flood zones

<p>Zone 1 - low probability</p> <p>Definition This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).</p> <p>Appropriate uses All uses of land are appropriate in this zone.</p> <p>Flood risk assessment requirements For development proposals on sites comprising one hectare or above the vulnerability to flooding from other sources as well as from river and sea flooding, and the potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new development on surface water run-off, should be incorporated in a flood risk assessment. This need only be brief unless the factors above or other local considerations require particular attention.</p> <p>Policy aims In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of sustainable drainage systems.</p>
<p>Zone 2 - medium probability</p> <p>Definition This zone comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year.</p> <p>Appropriate uses Essential infrastructure and the water-compatible, less vulnerable and more vulnerable uses, as set out in table 2, are appropriate in this zone. The highly vulnerable uses are <i>only</i> appropriate in this zone if the Exception Test is passed.</p> <p>Flood risk assessment requirements All development proposals in this zone should be accompanied by a flood risk assessment.</p> <p>Policy aims In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development, and the appropriate application of sustainable drainage systems.</p>
<p>Zone 3a - high probability</p> <p>Definition This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.</p> <p>Appropriate uses The water-compatible and less vulnerable uses of land (table 2) are appropriate in this zone. The highly vulnerable uses should not be permitted in this zone. The more vulnerable uses and essential infrastructure should <i>only</i> be permitted in this zone if the Exception Test is passed. Essential infrastructure permitted in this zone should be designed and constructed to remain operational and safe for users in times of flood.</p> <p>Flood risk assessment requirements All development proposals in this zone should be accompanied by a flood risk assessment.</p> <p>Policy aims In this zone, developers and local authorities should seek opportunities to:</p> <ul style="list-style-type: none"> • reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage systems. • Relocate existing development to land in zones with a lower probability of flooding; and • Create space for flooding to occur by restoring functional floodplain and flood flow pathways and by identifying, allocating and safeguarding open space for flood storage.

<p>Zone 3b - the functional floodplain</p> <p>Definition This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. But land which would flood with an annual probability of 1 in 20 (5%) or greater in any year, or is designed to flood in an extreme (0.1%) flood, should provide a starting point for consideration and discussions to identify the functional floodplain.</p> <p>Appropriate uses Only the water-compatible uses and the essential infrastructure listed in table 2 that has to be there should be permitted in this zone. It should be designed and constructed to:</p> <ul style="list-style-type: none">• remain operational and safe for users in times of flood;• result in no net loss of floodplain storage;• not impede water flows; and• not increase flood risk elsewhere. <p>Essential infrastructure in this zone should pass the Exception Test.</p> <p>Flood risk assessment requirements All development proposals in this zone should be accompanied by a flood risk assessment.</p> <p>Policy aims In this zone, developers and local authorities should seek opportunities to:</p> <ul style="list-style-type: none">• reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage systems;• relocate existing development to land with a lower probability of flooding.
--

8.8 Figure 7 – Definition of Flood Zones (TG-NPPF)

Table 2: Flood risk vulnerability classification

<p>Essential infrastructure</p> <ul style="list-style-type: none"> • Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. • Wind turbines.
<p>Highly vulnerable</p> <ul style="list-style-type: none"> • Police stations, ambulance stations and fire stations and command centres and telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent⁴. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as “essential infrastructure”).
<p>More vulnerable</p> <ul style="list-style-type: none"> • Hospitals. • Residential institutions such as residential care homes, children’s homes, social services homes, prisons and hostels. • Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels. • Non-residential uses for health services, nurseries and educational establishments. • Landfill and sites used for waste management facilities for hazardous waste⁶. • Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
<p>Less vulnerable</p> <ul style="list-style-type: none"> • Police, ambulance and fire stations which are not required to be operational during flooding. • Buildings used for shops, financial, professional and other services, restaurants and cafes, hot food takeaways, offices, general industry, storage and distribution, non-residential institutions not included in “more vulnerable”, and assembly and leisure. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment works which do <i>not</i> need to remain operational during times of flood. • Sewage treatment works (if adequate measures to control pollution and manage sewage during flooding events are in place).

Water-compatible development	
•	Flood control infrastructure.
•	Water transmission infrastructure and pumping stations.
•	Sewage transmission infrastructure and pumping stations.
•	Sand and gravel working.
•	Docks, marinas and wharves.
•	Navigation facilities.
•	Ministry of Defence installations.
•	Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
•	Water-based recreation (excluding sleeping accommodation).
•	Lifeguard and coastguard stations.
•	Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
•	Essential ancillary sleeping or residential accommodation for staff required by uses in this category, <i>subject to a specific warning and evacuation plan</i>

8.1 Figure 8 – Flood Risk Vulnerability Classification (TG-NPPF)

Table 3: Flood risk vulnerability and flood zone ‘compatibility’

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	*	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	*	*	*

Key: ✓ Development is appropriate.
* Development should not be permitted.

8.2 Figure 9 – Flood Risk Vulnerability and Flood Zone Classification (TG-NPPF)

9. Management of Surface Water

Existing Drainage Regime

9.1 The existing site is brownfield with an approximate hardstanding area of 5.76 ha. Areas of soft landscaping are present throughout the scheme in addition to the impermeable surfaces.

9.2 Modified rational method has been used to estimate the existing run off rate from the brownfield site:

Area x 2.78 x 50mm

9.3 This equates to the site having an existing brownfield discharge rate of 800 l/sec.

Possible Drainage Solutions

9.4 In accordance with Building Regulations and NPPF the disposal of surface water has been considered in the following order of priority;

An adequate soakaway or some other infiltration system; or, where not reasonably practicable,

A watercourse, or where not reasonably practicable,

A sewer

Infiltration

9.5 Inspection of the NSRI records and findings from WSP during the ground investigation indicates that the natural ground is expected to consist of Glacial Till with clayey soils of low permeability.

9.6 Therefore, it is considered unlikely that flows could be disposed of directly to the ground through infiltration.

Discharge to a Watercourse

9.7 Ordnance data and Environment Agency maps indicate that the River Tyne is located approximately 350m west of the site.

- 9.8 Review of the existing topography indicates that the existing watercourses can provide a viable gravity drainage measure to dispose of surface water flows.

Discharge to Public Sewers

- 9.9 Existing public storm sewerage is present to the north and east of the site however due to the presence of a viable watercourse solution, discharge to the public sewerage network would not be preferred.
- 9.10 A new storm outfall to the River Tyne would allow surface water to be removed from the NWL combined sewer network in South Drive, which follows NWL policy and is relevant to the findings in the Surface Water Management Plan which highlights the issue of historic sewer flooding in Hebburn area.

10. Preferred Drainage Solution

- 10.1 The preferred drainage strategy will involve disposal of surface water utilising the River Tyne to the west of the site.
- 10.2 A copy of the proposed drainage strategy can be viewed in Appendix 6.
- 10.3 The strategy requires input from the landscape architect and consultation with South Tyneside Council and Environment Agency to proceed to detailed design.

Storm Drainage

- 10.4 It is proposed to discharge site flows at an unrestricted rate direct to the tidally influenced section of the River Tyne which is to be agreed with the EA and STC, but follows principles relating to tidally dominant rivers.
- 10.5 Water quality will be assessed and mitigated following the index approach outlined within The SuDS Manual Ciria C753.
- 10.6 All new adoptable standard surface water drainage is to be designed in accordance with 'Sewers for Adoption' and ensure that no flooding occurs during the critical 1 in 30 year storm event.
- 10.7 Sewers for Adoption acknowledges that during extremely wet weather, the capacity of surface water sewers may be inadequate, and that checks should be made to ensure an adequate level of protection against the flooding of properties internally is achieved. This will be demonstrated with the provision of flow path diagrams.
- 10.8 A detailed design is required to determine the final surface water drainage scheme.

Attenuation Requirements

- 10.9 The proposed drainage regime will consist of a direct discharge route to the tidally influenced River Tyne at an unrestricted discharge rate and will their not require on site attenuation.

Sustainable Drainage Solutions (SuDS)

- 10.10 As part of the drainage regime SuDS measures can be incorporated into the regime to mitigate against pollution and improve water quality. Detailed design of the surface water drainage system will be required to assess the viability of numerous SuDS solutions.
- 10.11 It has been established that infiltration may not be a feasible solution for the disposal of surface water from the development subsequent to detailed ground investigation works, which may discount a number of SuDS options. The topographic levels will facilitate a gravity drainage system and there are no constraints to the implementation of SuDS.
- 10.12 Possible SuDS features which can be considered are outlined in the Ciria SuDS Manual Matrix in Figure 10.

Component type	Description	Collection mechanism	Design criteria						Further information (Chapter ref)
			Water quantity (Chapter 2)			Water quality (Chapter 4)	Amenity (Chapter 5)	Biodiversity (Chapter 6)	
			Peak runoff rate	Runoff volumes					
			Small events (interceptions)	Large events					
Rainwater harvesting systems	Systems that collect runoff from the roof of a building or other paved surface for use	P		●	●		●		11
Green roofs	Planted soil layers on the roof of buildings that store and slow runoff	S	○	●		●	●	●	12
Infiltration systems	Systems that collect and store runoff, allowing it to infiltrate into the ground	P	●	●	●	●	●	●	13
Proprietary treatment systems	Subsurface structures designed to provide treatment of runoff	P				●			14
Filter strips	Grass strips that promote sedimentation and filtration as runoff is conveyed over the surface	L		●		●	○	○	15
Filter drains	Shallow concrete-filled trenches that provide attenuation, conveyance and treatment of runoff	L	●	○		●	○	○	16
Swales	Vegetated channels (sometimes planted) used to convey and treat runoff	L	●	●	●	●	●	●	17
Detention systems	Shallow landscaped depressions that store runoff to pond temporarily on the surface, before filtering through vegetation and underlying soils	P	●	●	●	●	●	●	19
Trees	Trees with soil-filled tree pits, tree planters or structural soils used to collect, store and treat runoff	P	●	●		●	●	●	18
Permeous pavements	Structural paving through which runoff can soak and subsequently be stored in the sub-base beneath, and/or allowed to infiltrate into the ground below	S	●	●	●	●	○	○	20
Attenuation storage tanks	Large, below-ground voided spaces used to temporarily store runoff before infiltration, controlled release or use	P	●						21
Detention basins	Vegetated depressions that store and treat runoff	P	●	●		●	●	●	22
Ponds and wetlands	Permanent pools of water used to facilitate treatment of runoff - runoff can also be stored in an attenuation zone above the pond	P	●			●	●	●	23

Key
P = Peak, L = Lateral, S = Surface, ● = Likely valuable contribution to delivery of design criteria, ○ = Some potential contribution to delivery of design criteria, if specifically included in the design.

10.13 Figure 10 – SuDS Component Delivery Design Criteria – Ciria SuDS Manual (C753)

- 10.14 It is proposed to incorporate a series of swales throughout the scheme located at the low side of shared and private drives to assist with drainage. A swale is dry during dry weather but wet in weather, with flows passing slowly over the grass surface. The grass slows down and filters surface water flows. Sediment is deposited while oily residues and organic matter are retained to be broken down in the top layer soil and vegetation.
- 10.15 Water gardens will also be incorporated to assist with highway drainage. The specific locations are subject to detailed drainage design and engineering feasibility constraints and will be discussed further with the Council during the application’s determination.
- 10.16 Due to the direct outfall to the River Tyne the use of SuDS will not be required for attenuation volume but will improve water quality.
- 10.17 Landscape architect input will be required prior to detailed design to confirm SuDS locations and design.

Climate Change

- 10.18 Climate change guidance was updated on 19th Feb 2016, and requires the development to consider allowances of both +20% and +40%
- 10.19 A 40% increase in rainfall due to climate change will be considered to determine exceedance flow routes. This will be demonstrated with the provision of flow path diagrams.

Parameter				
Period/Epoch	1990 to 2025	2025 to 2055	2055 to 2085	2085 to 2115
Peak Rainfall Intensity	+5%	+10%	+20%	+30%
19 th Feb 2016 Change				
Period/Epoch	2010 to 2039	2040 to 2059	2060 to 2115	
Peak Rainfall Intensity	+10%	+20%	+40%	

Surface Water Simulation

- 10.20 A detailed surface water drainage network model will be simulated to demonstrate how the flows from the site are to be managed.

Flow Paths

- 10.21 Assessment of overland flow paths as a result of flooding during extreme events will be undertaken during the detailed drainage design. The flow path analysis must demonstrate that the development does not increase flood risk to existing or proposed properties.

Surface Water Separation

- 10.22 Providing a new storm outfall to the River Tyne would allow surface water to be removed from the NWL combined sewer network in South Drive, which follows NWL policy and is relevant to the findings in the Surface Water Management Plan which highlights the issue of historic sewer flooding in Hebburn area.

Foul Drainage

- 10.23 It is proposed to discharge foul flows to the existing public sewerage network to the north of the site in consultation with NWL.
- 10.24 All new adoptable foul sewerage is to be designed in accordance with 'Sewers for Adoption'.

11. Conclusion

Flood Risk

- 11.1 There is low risk of flooding from fluvial sources with a probability of 1 in 1000 in any one year (<0.1%). The proposed development is classified as 'more vulnerable' and is located within FLOOD ZONE 1, therefore the development is suitable within this flood zone in accordance with NPPF. Employment of the mitigation measures stated in this report will ensure that the development will be safe, and is suitable in this location.
- 11.2 Flood risk from all sources has been considered, and with mitigation where necessary it has been established that these sources do not pose a risk to the development.

Surface Water Management

- 11.3 Management of the surface water flows have been considered in accordance with Building Regulations H3 Section 3.
- 11.4 Storm flows should discharge direct to the tidally influenced section of the River Tyne to the west of the site at an unrestricted rate.
- 11.5 Climate change guidance was updated on 19th Feb 2016, and requires the development to consider allowances of both +20% and +40%.
- 11.6 All new adoptable standard surface water drainage is to be designed in accordance with 'Sewers for Adoption' and ensures that no flooding occurs during the critical 1 in 30 year storm event.

Foul Drainage

- 11.7 Foul flows will discharge to the exiting public sewerage network to the north in consultation with NWL.
- 11.8 All new adoptable foul sewerage will be designed in accordance with 'Sewers for Adoption'.

Appendix 1 – Topographical Survey

LEGEND

———	Kerb / Hard Edge
———	Change of Surface
———	Wall
———	Retaining Wall
———	Fence
———	Building
———	Hedge
———	Path
———	Break of Slope

BOL	Bollard	KO	Kerb Outlet
BH	Borehole	LP	Lamp Post
BM	Bench Mark	MH	Manhole
BS	Bus Stop	MK	Marker
BT	Telecom cover	DK	Drop Kerb
EP	Electric pole	TL	Traffic Lights
ER	Earthing rod	PI	Pipe
FH	Fire Hydrant	RE	Rodding Eye
GU	Road Gully	SV	Stop valve
GAS	Gas cover	RS	Road Sign
IC	Inspect. cover	TP	Telecom pole
STN	Survey station	SP	Sign Post

NOTES

- 1 Location of detail elevations indicated by the cross.
- 2 The grid is in OS coordinates derived by GPS on stations 1 and 2.
- 3 All values in metres.



Rev.	Desc.	By	Date

CLIENT
BGP

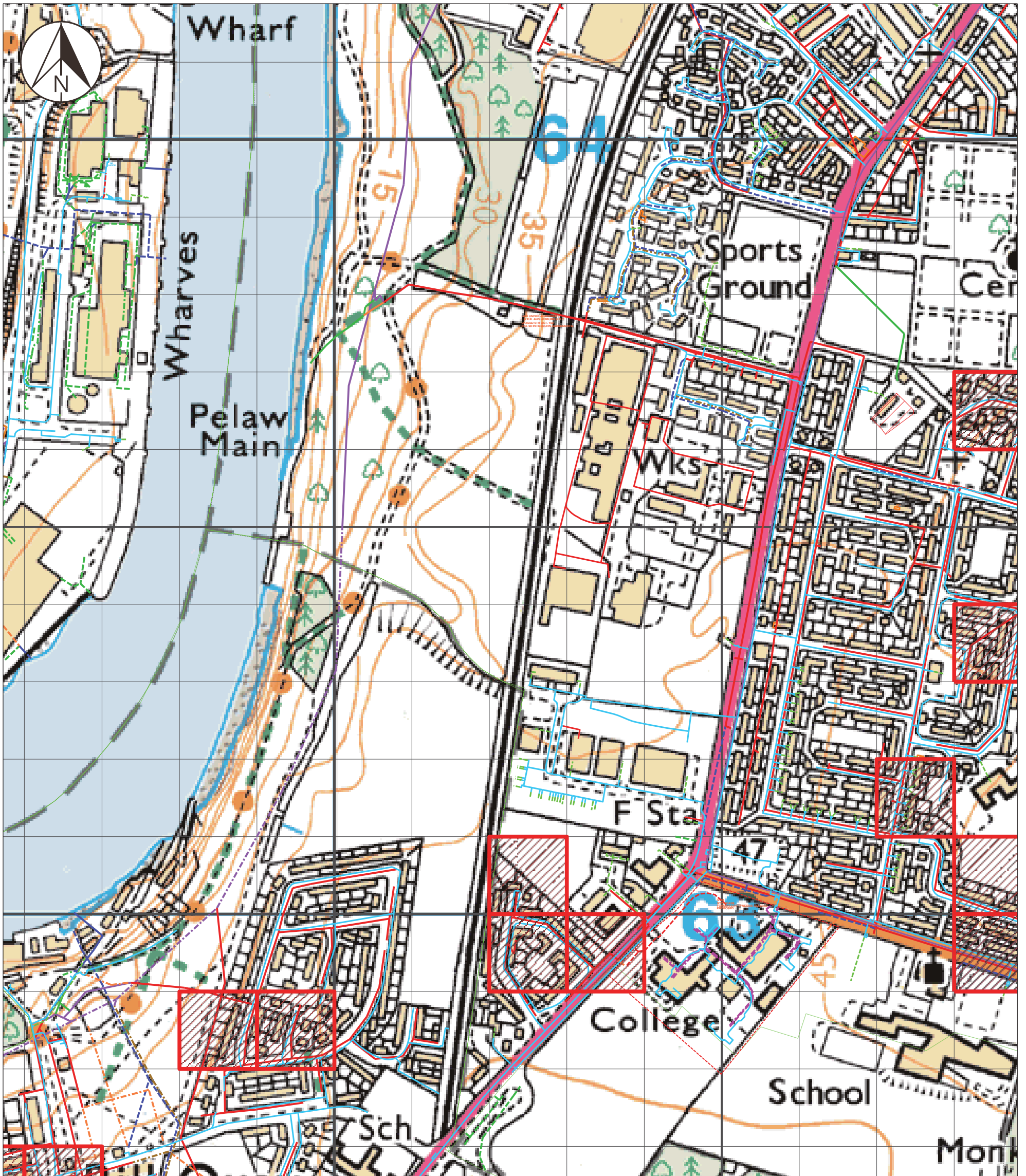
TITLE
Siemens Hebburn

DWG. REF.

Scale	1/500 AD	Date	7/8/14	Ref.	
E Orig	1/1m CAD	N Orig		Size	
Survey	SG	Drawn	SG	Check	SG

LAND SURVEYS LTD.
GREENRIDGE
OSCE
NEWCASTLE UPON TYNE NE20 0AU
TEL : 01670 775088
MOBILE : 07820 215443
E-MAIL : steve@landsurveysltd.co.uk
WWW.landsurveysltd.co.uk

Appendix 2 – Northumbrian Water Limited Correspondence



Waste Water -		Private/Non NWL		Proposed		Water Network -		Network Types		AB Asbestos	
Combined	—	Combined	—	Combined	—	Distribution	—	AB Asbestos	XXXX	Out of Comm	----
Foul	----	Foul	----	Foul	----	Treated	—	Abandoned	----		
Surface	----	Surface	----	Surface	----	Raw	—	Out of Comm	----		
Treated Eff	—	Trade Eff	—			Fire	—				
Untreated Eff	—	Watercourse	----			Supply	—				
Overflow	—					Private	----				



User : BOWMS

Date : 28/07/2016 10:01:35

Title :

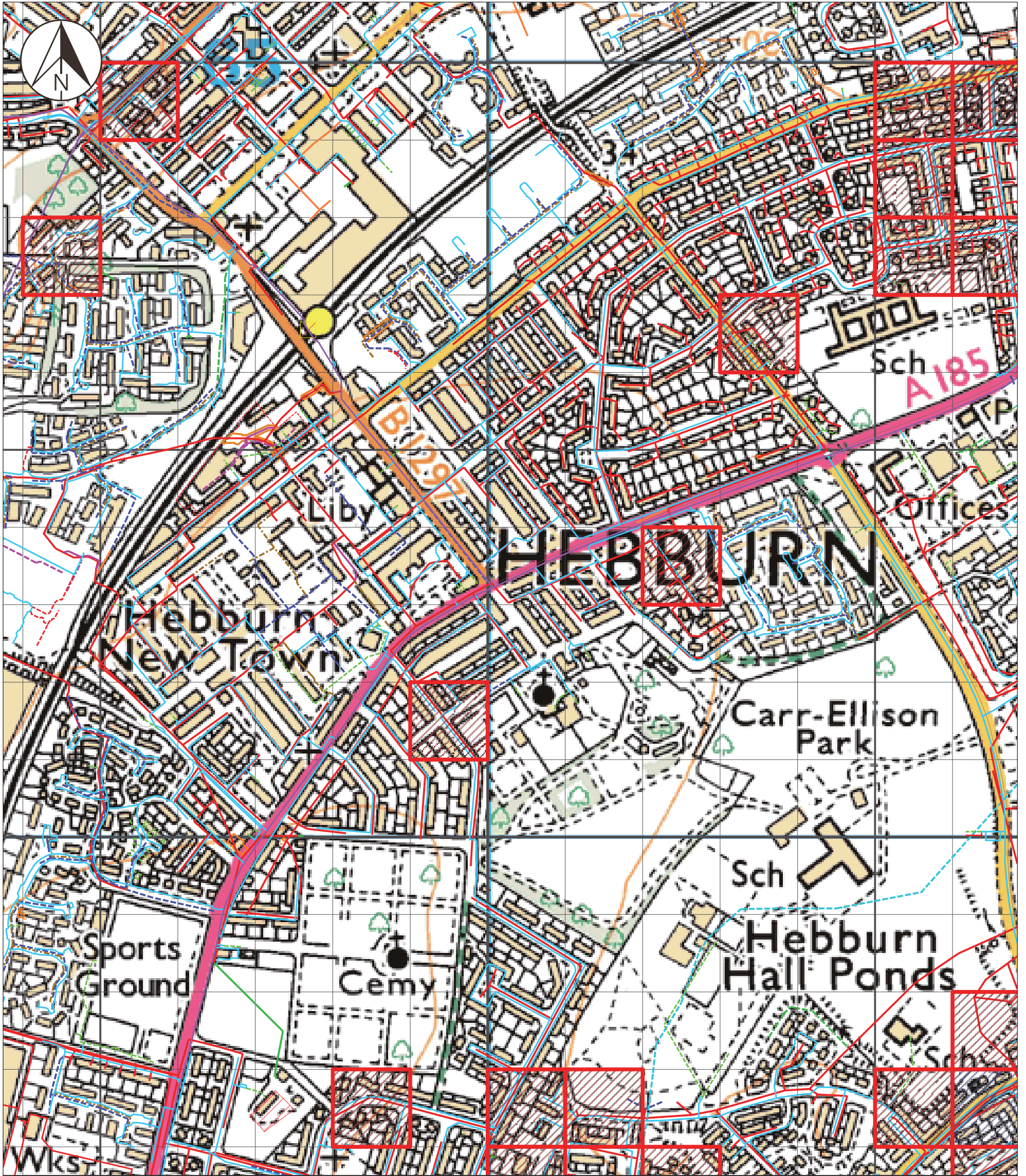
Map Sheet : NZ3063

Centre Point : 430227,563418

Paper / Scale : A3@1:5015

The material contained on this plot has been reproduced from an Ordnance Survey map with permission of the controller of H.M.S.O. Crown Copyright Reserved. Licence No.100022480. The information shown on this plan should be regarded as approximate and is intended for guidance only. No Liability of any kind whatsoever is accepted by Northumbrian Water, it's servants or agents for any omission. The actual position of any water mains or sewers shown on the plan must be established by taking trial holes in all cases. In the case of water mains Northumbrian Water must be given two working days notice of their intention to excavate trial holes. With effect from 1 October 2011, private lateral drains and sewers automatically transferred to Northumbrian Water under a scheme made by the Secretary of State pursuant to section 105A Water Industry Act 1991. These former private drains and sewers together with existing private connections may not be shown but their presence should be anticipated. WARNING...Where indicated on the plan there could be abandoned asbestos cement materials or shards of pipe. If excavating in the vicinity of these abandoned asbestos cement materials, the appropriate Health & Safety precautions should be taken. Northumbrian Water accepts no liability in respect of claims, costs, losses or other liabilities which arise as the result of the presence of the pipes or any failure to take adequate precautions. Emergency Telephone Number: 0345 717 1100





Waste Water - NWL Responsibility		Private/Non NWL		Proposed		Water Network - Network Types		AB Asbestos	
Combined		Combined		Combined		Distribution		AB Asbestos	
Foul		Foul		Foul		Treated		Abandoned	
Surface		Surface		Surface		Raw		Out of Comm	
Treated Eff		Trade Eff				Fire			
Untreated Eff		Watercourse				Supply			
Overflow						Private			



User : BOWMS

Date : 28/07/2016 10:06:33

Title :

Map Sheet : NZ3164

Centre Point : 431029,564321

Paper / Scale : A3@1:5015

The material contained on this plot has been reproduced from an Ordnance Survey map with permission of the controller of H.M.S.O. Crown Copyright Reserved. Licence No.100022480. The information shown on this plan should be regarded as approximate and is intended for guidance only. No Liability of any kind whatsoever is accepted by Northumbrian Water, it's servants or agents for any omission. The actual position of any water mains or sewers shown on the plan must be established by taking trial holes in all cases. In the case of water mains Northumbrian Water must be given two working days notice of their intention to excavate trial holes. With effect from 1 October 2011, private lateral drains and sewers automatically transferred to Northumbrian Water under a scheme made by the Secretary of State pursuant to section 105A Water Industry Act 1991. These former private drains and sewers together with existing private connections may not be shown but their presence should be anticipated. WARNING...Where indicated on the plan there could be abandoned asbestos cement materials or shards of pipe. If excavating in the vicinity of these abandoned asbestos cement materials, the appropriate Health & Safety precautions should be taken. Northumbrian Water accepts no liability in respect of claims, costs, losses or other liabilities which arise as the result of the presence of the pipes or any failure to take adequate precautions. Emergency Telephone Number: 0345 717 1100



Appendix 3 – Environment Agency Correspondence

From: James Mason - Queensberry Design Ltd
To: GALECKS@environment-agency.gov.uk
Cc: "Hunter, Sarah"
Subject: EA - Flood Risk Victoria Road East, Hebburn
Date: 29 July 2016 09:23:00
Attachments: [OS.PDF](#)
[Aerial.pdf](#)
[544-MIL-SD-10.01F - Masterplan as Proposed.pdf](#)
[Miller Homes - Siemens Factory Hebburn - Off Site Drainage Topographical....pdf](#)
[image003.png](#)

Hi Gemma,

We have been appointed to carry out a flood risk assessment, relating to a possible development at the attached location. The proposed residential development is to land off Victoria Road East, Hebburn. I have attached a copy of the proposed layout as well as a topographical survey, for your information and reference.

Site Locations - (E 430410, N 563538).

We would be very grateful for any information you have relating to the site.

- Are you aware if the site has been known to flood in the past?
- The EA maps show the site as located within the FZ 1 area. Can you confirm that this is the case please?
- The EA flood maps also indicate that pockets of the site is at low risk of surface water flooding. Can you also confirm that this is the case and if so provide any further details regarding this?
- Inspection of the SFRA indicates that the site is not at risk of flooding from the River Tyne.
- We would look to discharge site flows to the tidally influence section of the River Tyne to the West
-

If you have any other additional information Gemma that may assist with the FRA that would be great.

Kind Regards,

James Mason

Design Engineer
Queensberry Design Ltd

T:- 01670 789834

F:- 01670 789861

E:- james.mason@queensberrydesign.co.uk

W:- www.queensberrydesign.co.uk



Civil
Transportation

Structural
Flood Risk

Architectural
Code BREEAM

NORTH EAST (Head Office)
Suite 7D, Netherton Park, Stannington, Northumberland, NE61 6EF
[Telephone: 01670 789834](tel:01670789834)
[Fax: 01670 789861](tel:01670789861)

YORKSHIRE & NORTH WEST
Blake House, 2A St Martin's Lane, York, YO1 6LN
[Telephone: 01904 500 662](tel:01904500662)
[Fax: 01670 789861](tel:01670789861)



Help the environment, do you really need to print this E-mail?

The Information in this e-mail is confidential and for use by the addressee(s) only. It may also be privileged. If you are not the intended recipient please notify us immediately on +44 (0) 1670 789834 and delete the message from your computer: you may not copy or forward it, or use or disclose its contents to any other person.

We do not accept any liability or responsibility for: (1) changes made to this email after it was sent, or (2) viruses transmitted through this email or any attachment.

Appendix 4 – South Tyneside Council Correspondence

From: James Mason - Queensberry Design Ltd
To: michelle.hogg@southtyneside.gov.uk
Subject: STC - Flood Risk Victoria Road East, Hebburn
Date: 29 July 2016 09:21:00
Attachments: [OS.pdf](#)
[image003.png](#)
[Aerial.pdf](#)
[544-MIL-SD-10.01F - Masterplan as Proposed.pdf](#)
[Miller Homes - Siemens Factory Hebburn - Off Site Drainage Topographical Survey 24-06-2016.pdf](#)

Hi Michelle,

We have been appointed to carry out a flood risk assessment, relating to a possible development at the attached location. The proposed residential development is located west of Victoria Road East, Hebburn.

I have attached a copy of the location plan and site layout, for your information and reference. We have also attached a copy of the topographical survey.

Site Locations - (E 430410, N 563538).

We would be grateful for any information in regards to past flooding at the site or in the vicinity to assist with the flood risk assessment.

We have also written to Northumbrian Water, and the Environment Agency for any potential flood risk information.

We have consulted the SFRA and EA surface water flood maps which indicate that the western portion the site is subject to surface water flooding.

The topographical data indicated that levels fall from east to west and so any possible overland flooding from beyond the site would be via the eastern boundary. No surface water flooding issues are denoted on Victoria Road East.

Within the STC Preliminary Flood Risk Assessment, a Tyne and Wear Fire and Rescue Service historic flood incident is denoted adjacent the western boundary. This flooding event is not identified in the SFRA. Could we confirm this please? The SFRA does not indicate any historic flooding events in the sites immediate vicinity .

If you have any additional flood risk information for the site that would be a great help.

Kind Regards,

James Mason

Design Engineer
Queensberry Design Ltd

T:- 01670 789834

F:- 01670 789861

E:- james.mason@queensberrydesign.co.uk

W:- www.queensberrydesign.co.uk



Civil
Transportation

Structural
Flood Risk

Architectural
Code BREEAM

NORTH EAST (Head Office)
Suite 7D, Netherton Park, Stannington, Northumberland, NE61 6EF
Telephone: 01670 789834
Fax: 01670 789861

YORKSHIRE & NORTH WEST
Blake House, 2A St Martin's Lane, York, YO1 6LN
Telephone: 01904 500 662
Fax: 01670 789861



Help the environment, do you really need to print this E-mail?

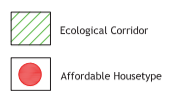
The Information in this e-mail is confidential and for use by the addressee(s) only. It may also be privileged. If you are not the intended recipient please notify us immediately on +44 (0) 1670 789834 and delete the message from your computer: you may not copy or forward it, or use or disclose its contents to any other person.

We do not accept any liability or responsibility for: (1) changes made to this email after it was sent, or (2) viruses transmitted through this email or any attachment.

Appendix 5 – Masterplan Site Layout

Do not scale from this drawing. Only figures dimensions are to be taken from this drawing. The contractor must verify all dimensions on site before commencing any work on this drawing. The contractor must report any discrepancies to POD DEVELOPMENTS LTD before commencing work. If any drawing exceeds the quantities shown on this drawing, POD DEVELOPMENTS LTD is to be informed before the work is started. On-site Survey Information is used as POD DEVELOPMENTS LTD drawing. POD DEVELOPMENTS LTD is not responsible for the accuracy of information relating to any third party data, or omitted information of the information supplied to this drawing. The contractor must ensure that the drawing is used for the purposes of the design and construction of the project. The drawing is the property of POD DEVELOPMENTS LTD. The drawing is to be used for the purposes of the design and construction of the project. The drawing is to be used for the purposes of the design and construction of the project. The drawing is to be used for the purposes of the design and construction of the project.

REV	DATE	NOTES
A	11/07/16	Layout amended to reflect consultation comments
B	11/07/16	Layout amended to remove driveway access from rear garden
C	14/07/16	Layout and housing mix amended
D	20/07/16	Layout amended to suit planning and highway constraints
E	25/07/16	Layout and housing mix amended
F	28/07/16	Layout amended. Notes kept above at 1:1 scale, but storage areas and public space



SCHEDULE OF ACCOMMODATION – LAND OF VICTORIA ROAD WEST, HEBBURN 25/07/16

House Type	House Type	Description	No	Parking	Stores	Space	sq.ft	Total
AFFORDABLE	HT2	2 BED SEMI TERRACED HOUSE	67	PS	2	3	837	56079
	HT3	3 BED SEMI TERRACED HOUSE	17	PS	2	3	985	16743
2 BEDROOM	APARTMENT	2 BED APARTMENT	18	PS	2	3	623	11214
	YARD	2 BED TERRACED HOUSE	11	PS	2	3	657	7227
3 BEDROOM	TOLKIN	3 BED TERRACED HOUSE	16	PS	2.5	5	892	14272
	TWEED	3 BED DET HOUSE	8	IG	2	5	892	7136
	CHWELL	3 BED DET HOUSE	8	IG	2	5	967	7736
	WPLING	3 BED DET HOUSE	10	SG	2	5	1027	10272
	HARDWICKE	3 BED TERRACED HOUSE	22	PS	2.5	5	1000	22000
	LARKIN	3 BED DET HOUSE	10	IG	2	5	980	9800
4 BEDROOM	ESK	4 BED SEMI DET HOUSE	31	SG	2	6	1105	34255
	TRAYERS	4 BED DET HOUSE	17	IG	2	6	1265	21505
	HUGHAN	4 BED DET HOUSE	7	SG	2	6	1264	8648
	STEVENSON	4 BED DET HOUSE	6	OG	2	7	1408	8448
	MITFORD	4 BED DET HOUSE	12	SG	2	7	1388	16656
THESLE	4 BED DET HOUSE	43	IG	2	7	1343	58507	
5 BEDROOM	BUTTERMERE	5 BED DET HOUSE	13	IDG	2	8	1509	19617
	JURA	5 BED DET HOUSE	18	IDG	2	9	1679	30222
TOTAL			334				360937	
GROSS SITE AREA ACRES		10.24	ha			ac	26.30	
PUBLIC OPEN SPACE		1.03	ha			ac	2.56	
NETT SITE AREA ACRES		9.21	ha			ac	22.76	
COVERAGE SQ.FT./ACRE							19818.85	



LAND OFF VICTORIA ROAD WEST, HEBBURN, SOUTH TYNESIDE

Masterplan as Proposed

POD DEVELOPMENTS LTD

Miller Homes Planning

1:500 A0 06:16 MC CVB

544-MIL SD-10.01 F