

Integrated Care Hub South Tyneside NHS Foundation Trust, South Shields

November 2014



Prepared By
Billinghurst George & Partners



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Introduction

This report has been prepared in accordance with the requirements of The National Planning Policy Framework (Department for Communities and Local Government March 2012) [The Framework] and the Technical Guidance to the National Planning Policy Framework (Department for Communities and Local Government March 2012) [The Technical Guidance]

It is proposed to construct an Integrated Care Hub within the grounds of the existing South Tyneside Hospital on Harton Lane in South Shields.

The site area is less than 1 hectare and therefore, the Environment Agency does not require a Flood Risk Assessment report. This Flood Risk Assessment is required to be submitted with the forthcoming planning application by the local planning authority.

Specific Areas of consultation and information gathered for the preparation of the report are as follows:

- 1 A Topographical Survey has been carried out and is given in Appendix C
- 2 A site visit walk over has been carried out.
- 3 The South Tyneside Strategic Flood Risk Assessment [SFRA] report July 2011
- 4 The South Tyneside Preliminary Flood Risk Assessment report Aug 2011, have been reviewed. Map extracts are included as Appendix D
- 5 A Geoenvironmental Phase 1 Desk Study has been prepared by Solmek dated September 2014.
- 6 A Geoenvironmental Phase II Intrusive ground investigation has been carried out by Solmek dated May 2014.
- 7 The existing site owner has been consulted for information on any known instances of flooding at the existing property.

2.0 Development Description and Location

The proposal is to construct the Integrated Care Hub Unit within the grounds of the existing South Tyneside Hospital on the corner of Harton Lane and McAnany Avenue on an area of Greenfield land that was formally constructed on as part of the original hospital buildings.

The site occupies an area of 0.55 hectares and the National Grid Reference for the centre of the site is E436609, N564474. The site is bounded by Harton Lane to the North West and McAnany Avenue to the North. The southern boundary of the site is the existing hospital access road and car parks. A site location plan is included in Appendix A.

The vulnerability classification for the site is “More Vulnerable” as defined in Table 2 of the NPPF Technical Guidance.

The development is consistent with the Local Development Documents and the Local Planning Authority are consultees during the design development stages. The involvement of the Local Authority in the design development process demonstrates that the Sequential Test has been applied in the selection of this site for this development type.

3.0 Definition of the Flood Hazard

Flooding from the Sea:

The site is 3km from the sea and located at an elevation of approximately 19.0m AOD. It is therefore considered that the site will **NOT** be affected by flooding from the sea.

Flooding from Rivers:

The nearest watercourse is the River Tyne, which is located 2km North of the site.

See Appendix D – ‘SFRA Flood Maps’ which shows the site in relation to the flooding from rivers.

The site is within Flood Zone 1 and therefore the probability of flooding from a river source is **LOW**.

Flooding from Land:

Intensive rainfall, often of short duration, that is unable to soak into the ground or enter drainage systems can run quickly off land and result in localised flooding.

The proposed building finished floor levels will be designed slightly higher than final ground levels. According to the records within the SFRA there are no recorded overland flooding incidents on the site. The majority of the surrounding area is comprised of existing housing and roads which are drained by the existing adopted sewerage system. Therefore overland flows from the adjacent surrounding developed areas are presently collected and accommodated by this existing system. The proposed site has its own drainage system that will drain the impermeable areas to the existing site drainage. The risk of over land flooding from adjacent properties and roads is therefore considered **LOW**.

Flooding from Groundwater:

Groundwater flooding occurs when water levels in the ground rise above surface elevations. It is most likely to occur in low lying areas underlain by permeable rocks.

Intrusive works have taken place and the boreholes indicate that there is approximately 10m of sand and gravel overlain by a thin layer of topsoil. Sands and gravel would provide an ideal medium for infiltration and the knowledge of an aquifer would suggest probability of flooding from groundwater would be **LOW**. A conclusion on the likelihood of flooding from groundwater cannot be determined until a topographical survey and intrusive ground investigation have been undertaken.

Flooding from Sewers:

The sewers in close proximity to the site are located within the Hospital site access road, Harton Lane and McAnany Avenue and therefore any flooding of these sewers would likely be retained within the kerb line and directed to the along Harton Lane. All other sewers are either at a lower level to the site or are unlikely to affect the site due to distance. The risk of flooding from sewers is therefore considered **LOW**.

3.0 Definition of the Flood Hazard

BGP have been advised of the following with regard to flooding occurrences within the Hospital site.

Following a severe downpour in July 2014 isolated incidents within the main part of the hospital complex caused flooding within the hospital building. This in part was due to the amount of rain falling within a short period of time and the internal surface water drainage down pipes and manholes filling up and causing manhole covers to be dislodged. This occurred within parts of the theatre department and accident and emergency. This localised flooding was investigated and noted to be due to the debris in gullies and manholes, which were dry packed from the prolonged period of limited rainfall. These incidents were not due to the pipes design or gradients. It is advised that the areas of flooding were remote from the proposed site for the ICH.

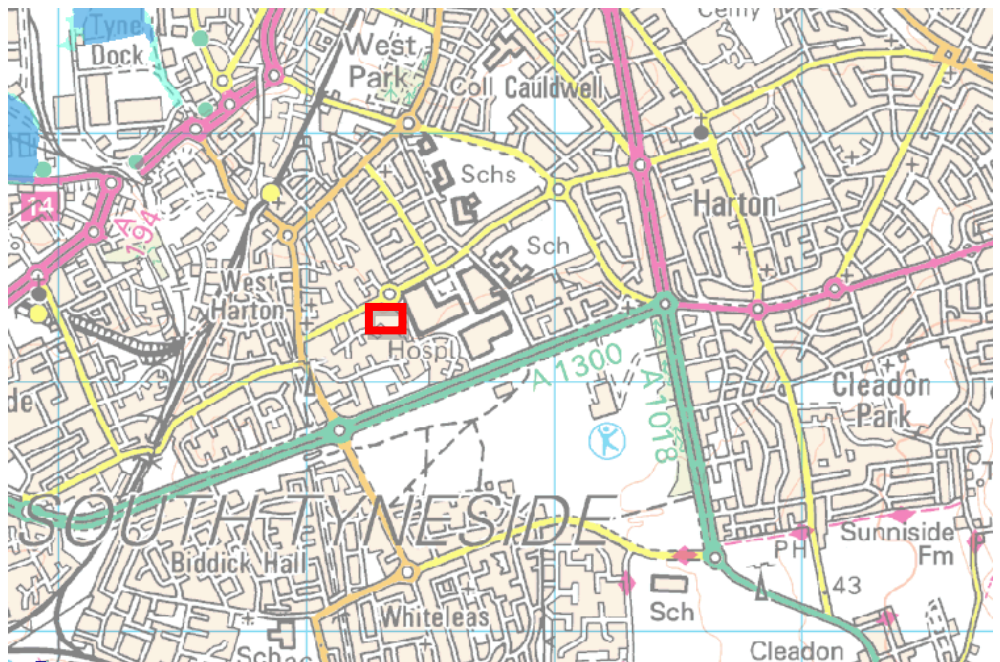
4.0 Probability of Flooding

The South Tyneside Preliminary Flood Risk Assessment report dated Aug 2011, has been examined and the Environment Agency maps reviewed (see Appendix C & D). The site is identified as being in Flood Zone 1.

Flood Zone 1 describes the land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any one year.

The previous section describes other flood hazards and the risk they pose to this project. Therefore the overall assessment of the probability of flooding of the site is **LOW**.

Fig 1
Environment Agency
Flood Risk Map
Location of site



5.0 Climate Change

Sections 11-15 of the Technical Guidance provides information on the impacts of climate change, which include sea level changes, river flash flooding and more frequent high intensity, short-duration rainfall. As concluded previously the risk of flooding from the sea and rivers is low. The risk of flooding from land again is low; both are, therefore unlikely to be affected by climate change.

The South Tyneside SFRA and Preliminary FRA indicate that following an initial analysis this area may not be particularly sensitive to climate change.

6.0 Detailed Development Proposals

Refer to Appendix E for the Proposed Site Layout. The proposal is to build a Integrated Care Hub offering different types of Residential Care with administration and community facilities together with associated access road and car parking. The Unit is a single building housing 30 residential care units, a dementia facility and respite accommodation together with administration. The development site area is approximately 0.55ha.

An Intrusive ground investigation has been undertaken on the site. The Borehole logs and trial pits identified Made ground to a maximum depth of 0.80mbgl, comprising topsoil over clay fill locally gravel fill. Fill materials comprised brick rubble, concrete, ceramics, ash pockets and coal. Natural firm becoming stiff slightly sandy locally indistinctly thinly laminated clay was encountered directly below the made ground to depths of between 6.8 and 7.3mbgl. This overlies stiff locally very stiff sandy slightly gravelly clay to 10.0mbgl. The testing indicates that it does not have the appropriate properties for infiltration and therefore discharging surface water runoff to ground will not be permitted. Surface water storage will need to be provided within either enlarged pipes, a tank, a crate system or similar.

The foul and surface water associated with the development will discharge to the existing sewers within the Hospital Grounds and Northumbrian Water have been consulted with regard to the discharge of both foul and storm water discharges. It is proposed to attenuate the storm water flow prior to discharging into the existing site sewer at an agreed controlled rate of 5 litres / sec,

7.0 Flood Risk Management Measures

As stated in previous sections, the site is not at risk from flooding. It is proposed that all sewers and drains will be will continue to be maintained by the Hospital Trust.

The floor levels of the Care Unit will be designed such that the water flows to the curtilages and will be directed into the sewer system. The discharge rate from the site to the private sewer will be restricted to 5 Litres / sec, with any run-off above this being stored within the on-site attenuation system.

8.0 Off Site Impacts

The proposals for this site should not increase the flood risk elsewhere off site for the following reasons: -

Surface water will be stored within the on-site attenuation system before being discharged at the Greenfield run-off rate.

Residual Risks

Due to the location of the site, the site topography and the proposals to set the building floor levels above the surrounding ground level, it is considered that the residual risks are negligible.

9.0 Conclusions

From the above analysis it can be seen that the risk to the proposed development of residential dwellings on land within the grounds of South Tyneside Hospital is LOW from all forms of flooding as categorised in the Framework and the Technical Guidance and confirms the Flood Zone designation for the site.

The proposed uses of land are appropriate in this zone. (Tables 1 & 2 the Technical Guidance).

This report has been prepared with reference to the information available at the time of writing. The summary and recommendations may be revised upon receipt of additional or further information.

Report No: 14T638 / FRA001 Rev B
Report Title: Proposed Integrated Care Hub Harton Lane South Shields

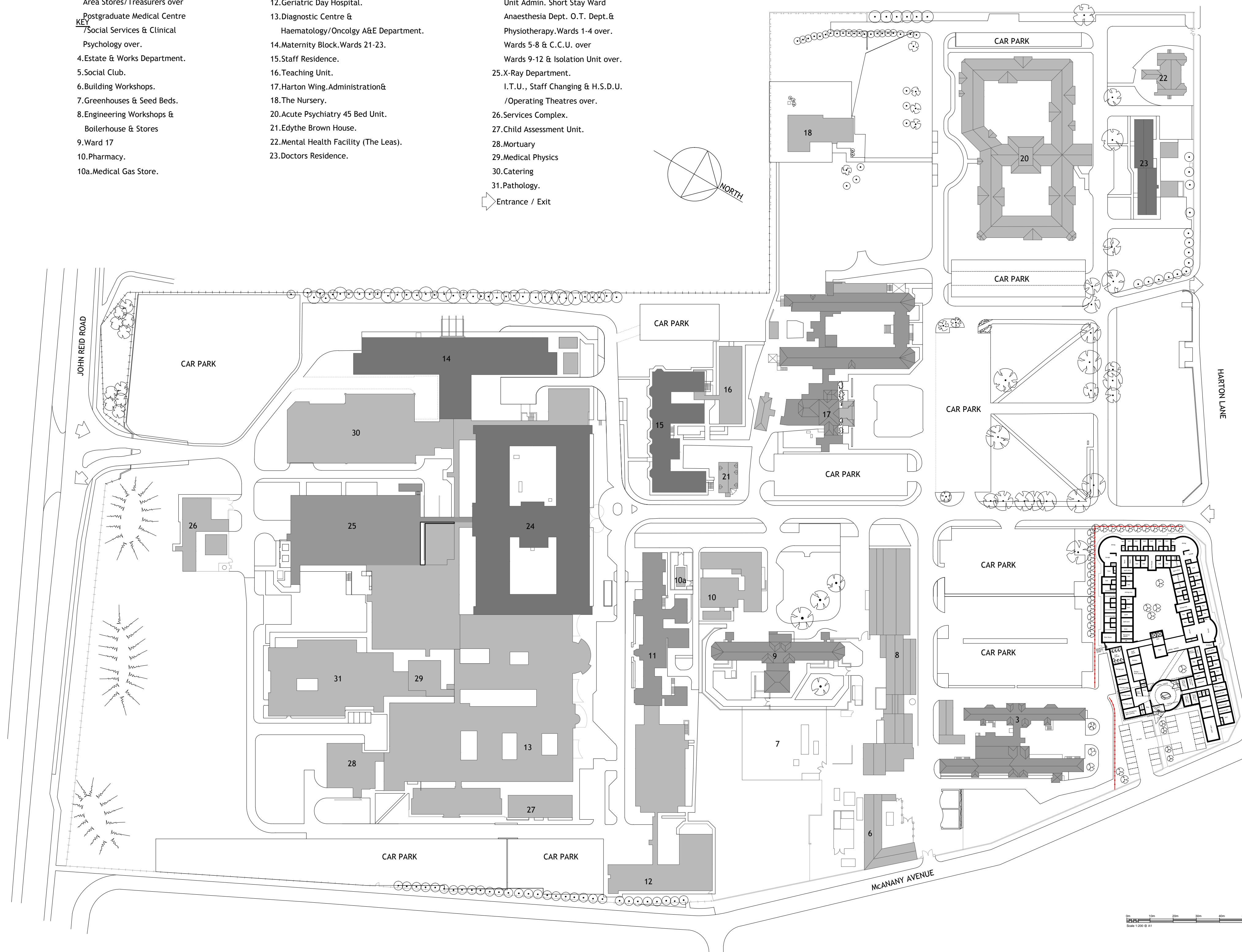
Prepared by: J Conway BSc C Eng MICE
Date: 21 November 2014





Appendix A – Site Location Plan

3. East Block
Area Stores/Treasurers over
Postgraduate Medical Centre
KEY
Social Services & Clinical
Psychology over.
4. Estate & Works Department.
5. Social Club.
6. Building Workshops.
7. Greenhouses & Seed Beds.
8. Engineering Workshops &
Boilerhouse & Stores
9. Ward 17
10. Pharmacy.
10a. Medical Gas Store.
11. Ward 19/Ward 18 over. Ward 20.
12. Geriatric Day Hospital.
13. Diagnostic Centre &
Haematology/Oncology A&E Department.
14. Maternity Block. Wards 21-23.
15. Staff Residence.
16. Teaching Unit.
17. Harton Wing. Administration &
18. The Nursery.
20. Acute Psychiatry 45 Bed Unit.
21. Edythe Brown House.
22. Mental Health Facility (The Leas).
23. Doctors Residence.
24. Ingham Wing. Main Entrance
Unit Admin. Short Stay Ward
Anaesthesia Dept. O.T. Dept. &
Physiotherapy. Wards 1-4 over.
Wards 5-8 & C.C.U. over
Wards 9-12 & Isolation Unit over.
25. X-Ray Department.
I.T.U., Staff Changing & H.S.D.U.
/Operating Theatres over.
26. Services Complex.
27. Child Assessment Unit.
28. Mortuary
29. Medical Physics
30. Catering
31. Pathology.
Entrance / Exit



Rev B - : 2014.02.12 : DS : Updated following user comments
Rev A - : 2014.02.05 : DS : Updated following user comments

Issue Purpose: PRELIMINARY

P+HS Architects
The Old Station Station Road Stokesley TS9 7AB
Queens House 34 Wellington Street Leeds LS1 2DE
Studio 14 Blackstock Mews London N4 2BT
01642 712684 0113 245 4332 0207 288 1232



www.pandhs.co.uk

Client	South Tyneside NHS Foundation Trust	Issued From	Stokesley
Project	South Tyneside General Hospital - Integrated Care Hub	Date	Jan '14
Title	Proposed Site Plan	Scale	1:1000
		Drawn	DS Auth DS

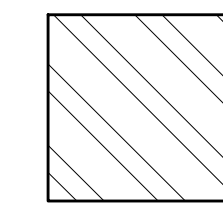
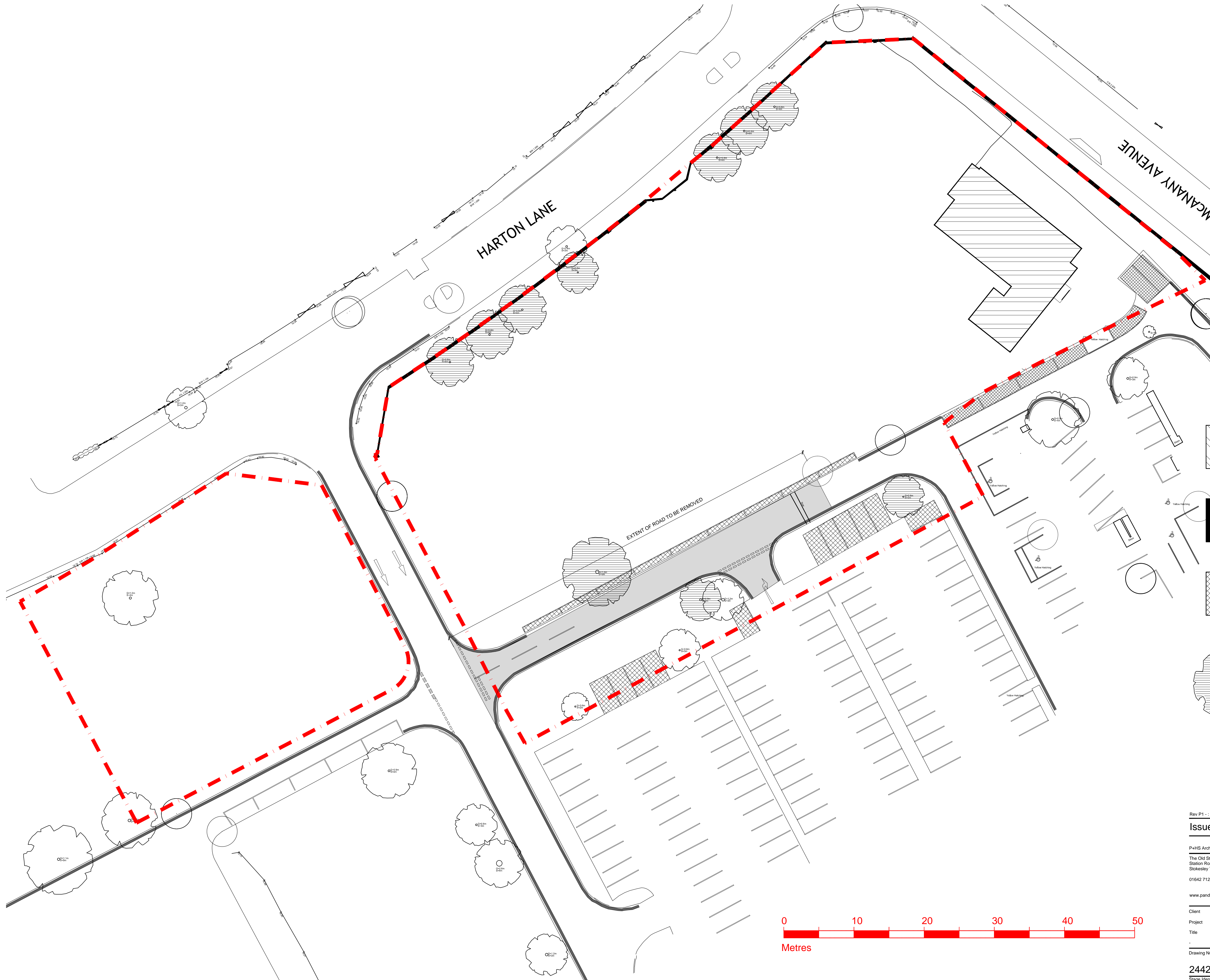
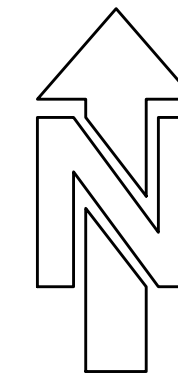
Drawing Number 2442 - D - 00 - 001 - B
Revision
Do not scale from this drawing. Work to
figures dimensions, and any discrepancy
to be reported to the Architect.
Refer to larger scale drawings where
available. © P+HS Architects Limited



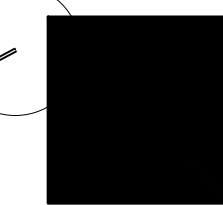
Appendix B – Topographical Survey



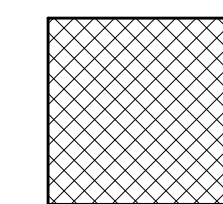
Appendix C – Existing Site Layout



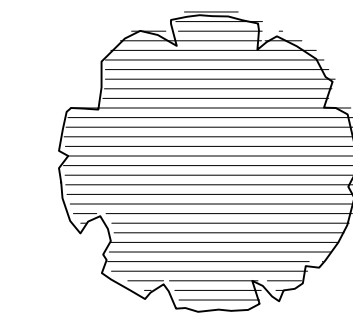
Existing building shown hatched to be demolished as part of proposed scheme



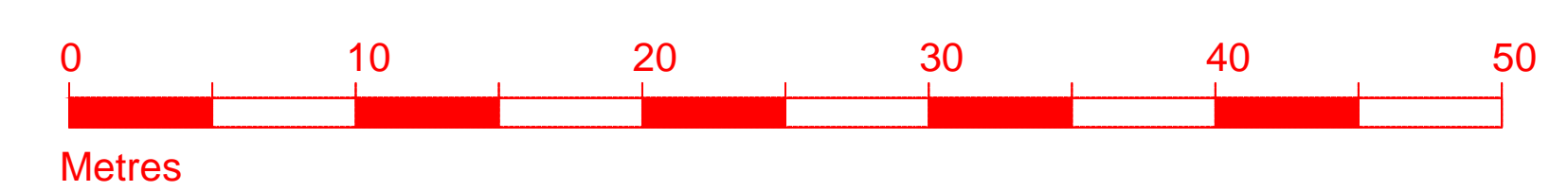
Existing Boundary Wall shown hatched to be demolished as part of proposed scheme



Existing Car Parking spaces shown hatched to be removed and relocated as part of proposed scheme



Existing trees shown hatched to be removed as part of proposed scheme



Rev P1 - 2014.10.01: CL: DS - Updated further to show additional staff car parking provided.

Issue Purpose: PRELIMINARY

P+HS Architects		
The Old Station Station Road Stokesley TS9 7AB 01642 712684	Queens House 34 Wellington Street Leeds LS1 2DE 0113 246 4332	Studio 14 Blackstock Mews London N4 2BT 0207 288 1232
www.pandhs.co.uk		



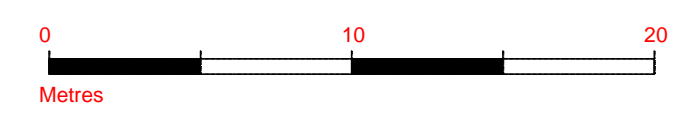
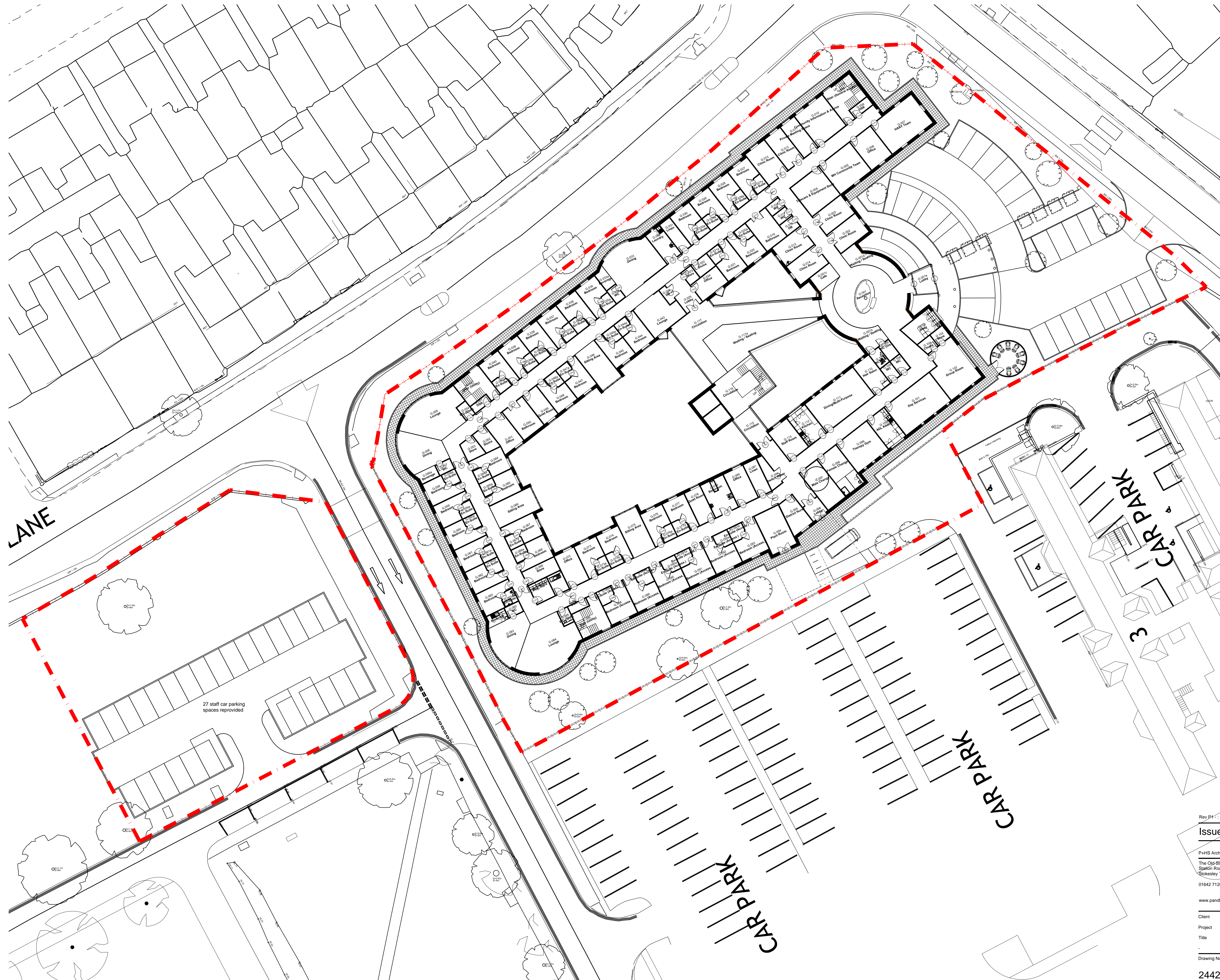
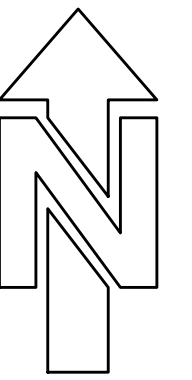
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Project	South Tyneside General Hospital - Integrated Care Hub	Date	Sept 14
Title	Existing Site Plan	Scale	1:250@A1
Drawn	CL	Auth	DS

Drawing Number: 2442 - D - 90 - 001 - P1
 Stage Identification: Design - D Construction - C

Do not scale from this drawing. Form to figure dimensions, and any discrepancy to be reported to the Architect.
 Refer to larger scale drawings where available. © Pandhs Architects Limited



Appendix D – Proposed Site Layout



Rev P1 - 2014.10.01: CL: DS - Updated further to show additional staff car parking reprovided.

Issue Purpose: PRELIMINARY

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Queens House, 34 Wellington Street, Leeds LS1 2DE
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Client	South Tyneside NHS Foundation Trust	Issued From	Stokesley
Project	South Tyneside General Hospital - Integrated Care Hub	Date	Sept 14
Title	Proposed Site Plan	Scale	1:250@A1
		Drawn	CL Auth DS

Drawing Number: 2442 - D - 90 - 002 - P1
 Revision: P1
 Stage Identification: Design - D Construction - C

Do not scale from this drawing. Work to original dimensions and any discrepancy to be reported to the Architect.
Refer to larger scale drawings where available. © P+HS Architects Limited



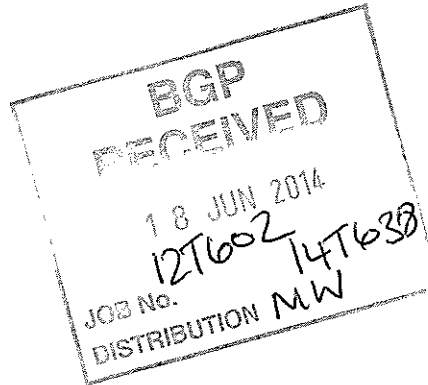
Appendix E – Northumbrian Water Records

Ext: 36603
Direct Line: 0191 419 6603
Email: niki.mather@nwl.co.uk
Our Ref: 14NO2F092F
Your Ref:

Leat House, Pattinson Road, District 15,
Washington, Tyne & Wear, NE38 8LB, UK
Telephone: +44 (0) 845 604 7468
Fax: +44 (0) 191 419 6768
Website: www.nwl.co.uk

Tuesday, 17 June 2014

Billingham George & Partners
Waterloo House
Teesdale South
Thornaby
TS17 6SA



Dear Mr. Mark Wilson,

Re: Pre-Development Enquiry – South Tyneside District Hospital, South Shields

Further to the Pre-Development Enquiry regarding the above proposed development received at this office 7th April 2014, I am now able to provide the following response.

The following has been based upon the information in your completed application form and accompanying correspondence. Therefore, should any of the information now be different, please ensure that you inform Northumbrian Water Ltd of the changes as further Network Modelling may be required and our response may also change, leading to this response being invalid.

In making our response Northumbrian Water assess the impact of the proposed development on our assets and assess the capacity within Northumbrian Water's network to accommodate and treat the anticipated flows arising from the development. We do not offer comment on aspects of planning applications that are outside of our area of control.

I have enclosed for your information a scaled extract showing the position of the existing water / wastewater networks and associated assets. Please note that the information shown in this plan should be regarded as approximate and is intended for guidance only. The actual position of any water mains or sewers shown on the plan must be established by taking trial holes in all cases.

Appropriate method statements and risk assessments must be provided to Northumbrian Water to gain approval for any trial hole investigations at least 5 working days in advance of starting any work onsite.

Also enclosed is our extract showing locations within the approximate vicinity of this site that have, from our records, experienced flooding. This has been provided to demonstrate the known flood risks within the vicinity which have been considered as part of our assessment on this enquiry.

We have also carried out a review of your application and can confirm the following:

Sewerage and Sewage Treatment

Northumbrian Water would ask that you please separate the foul and surface water flows in accordance with Part H of the Building Regulations prior to the final connection to the public sewer.

- Foul Water Discharge

The foul flows generated by the proposed development can discharge without restriction into the existing 225mm combined sewer within Harton Lane via manhole 5404, as proposed.

Any existing connection's from the site should be utilised where possible.

- Surface Water Discharge

The surface water flows generated by the development could be permitted to discharge to the 225mm combined sewer within Harton Lane via manhole 5404. However, the final discharge from the development into this sewer must be restricted to 5 l/sec with on-site storage provided to cater for the additional flows. This figure is based on ex greenfield run-off for the grassed area/s plus 50% of the brownfield rate for the ex/former buildings & hardstand areas within the site.

It should be noted that the above option should only be considered if the developers investigations prove that infiltration drainage methods are not feasible.

- Sewage Treatment Capacity

The Sewage Treatment Works to which this development finally discharges to is able to accept the additional flows.

Water Efficiency Information

Water efficiency information can be found on our website by following the web link below:

http://www.nwl.co.uk/using_water_wisely.pdf

or alternatively, the Environment Agency also provides useful information by following the next web link:

www.environment-agency.gov.uk/subjects/waterres/287169/?version=1&lang=e

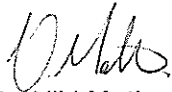
Please note that this response is valid for 1 year only and you should resubmit your proposals should this period lapse prior to your development beginning.

This response is not an approval of your sewer connection. Prior to making the connection you must submit a completed application form along with the necessary supporting documents for the connection to be approved. Further details regarding making a new sewer connection along with the relevant application forms can be found on our website at:

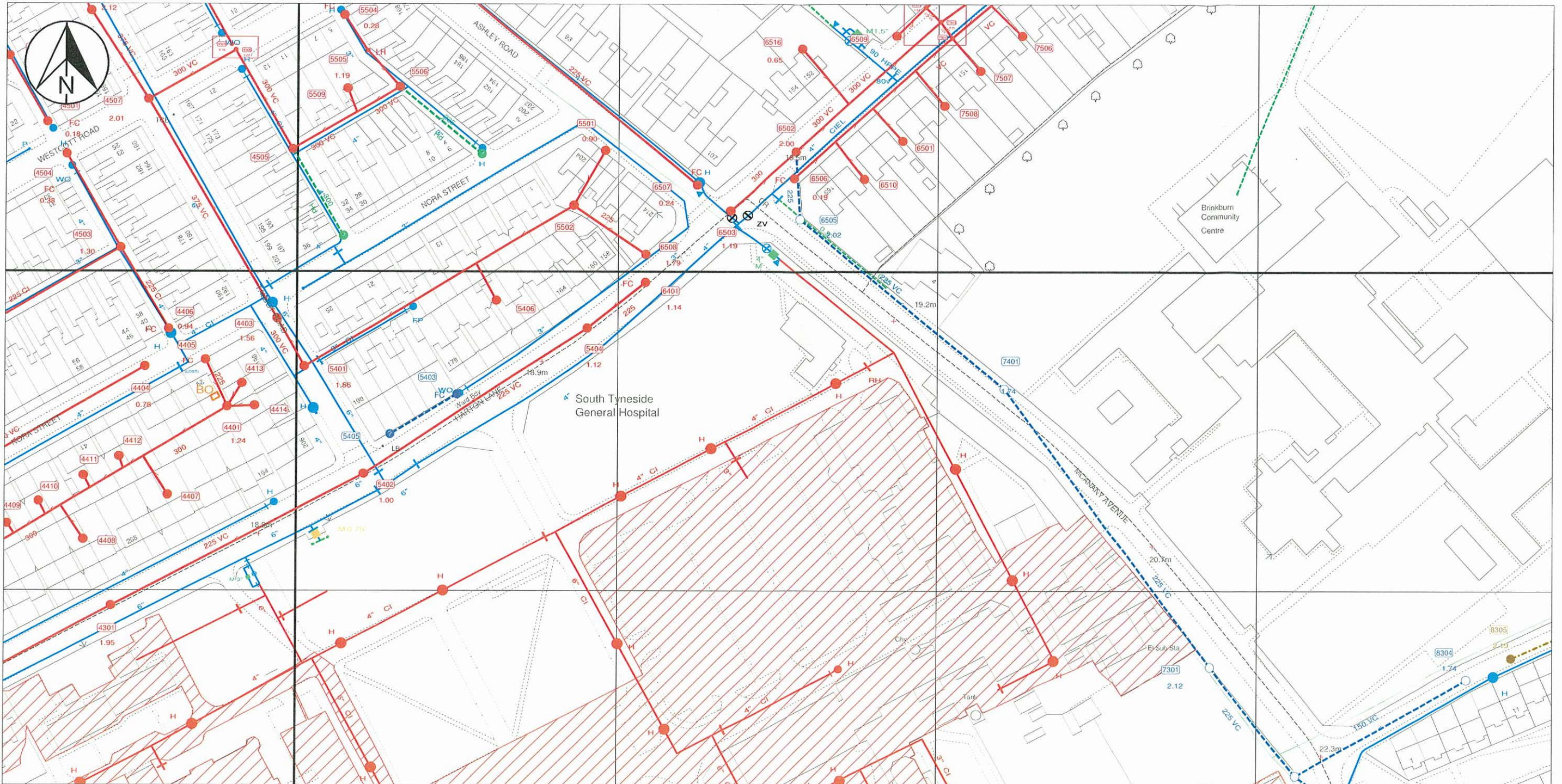
<http://www.nwl.co.uk/business/dev-sewerage-services.aspx>.

Should you require any further assistance or information, then please do not hesitate to contact me at niki.mather@nwl.co.uk or alternatively on 0191 419 6603, please quote our reference number above in any future correspondence.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Niki Mather', written in a cursive style.

Mr. Niki Mather
Technical Support Advisor
New Development



Waste Water - Combined Foul Surface Treated Eff Untreated Eff Overflow	NWL Responsibility Combined Foul Surface Trade Eff Watercourse	Private/Non NWL Combined Foul Surface Trade Eff Watercourse	Proposed Combined Foul Surface	Water Network - Distribution Treated Raw Fire Supply Private	Network Types AB Asbestos Abandoned Out of Comm
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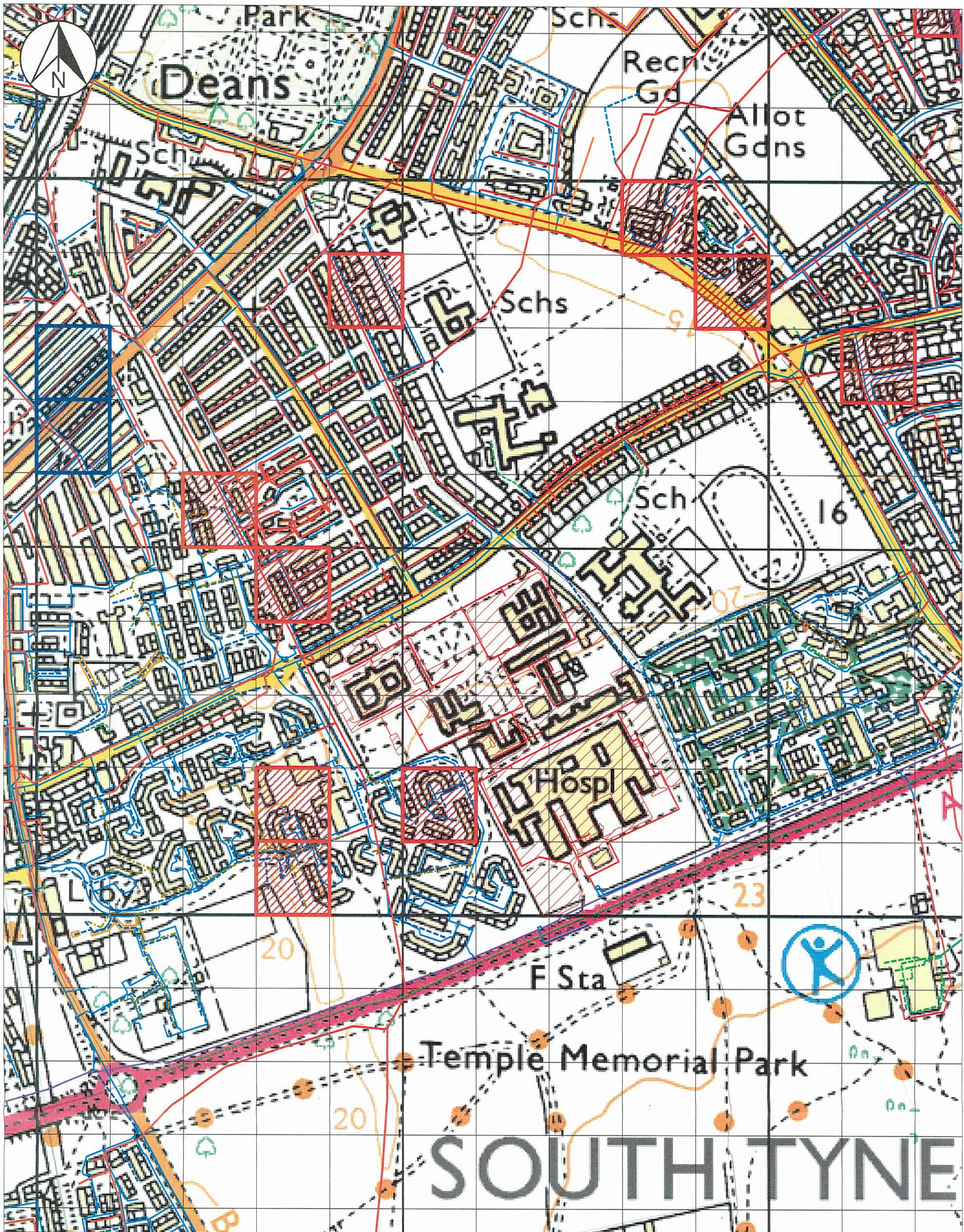
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Map Sheet : NZ3664SE
 Top Right : 436892, 564584

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**NORTHUMBRIAN
WATER**

User : CAPEL

Date : 02/05/2014 09:24:38

Title :

Map Sheet : NZ3664

Bottom Left : 435955, 563567

Top Right : 437264, 565237

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 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, its 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. Private connections are not 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: 0845 717 1100

50 m





Appendix F – Proposed Drainage layout

Notes

All levels shown are in metres and are relative to site datum.

Invert levels of all existing chambers and connection points are to be confirmed and engineer advised prior to commencement of any Drainage Works.

Concrete slab is required to all gully leads and to all pipes in highways/hardstanding where cover to pipe <1200mm.

All pipes to be either extra strength V.C. to BS 65 or concrete pipes Class 120 to BS 5911 except where noted to be ductile iron for discharges >50°C as specified by M&E consultant. Ductile iron pipes to use Nitrile gaskets (operating temp up to 45°C, intermittent 95°C) and be connected into manholes using a socket spigot rocker pipe.

All RW/P / pop up positions must be confirmed with architects details.

All existing drainage that is not to be used in the proposed scheme to be grubbed up and removed from site in accordance with current best practices.

Connection to existing sewers by contractor

Attenuation tank sized using WinDes by MicroDrainage. Tank to be manufactured & supplied by others. Actual product will be determined by the available depth following information on invert levels of discharge manholes as requested.

All manhole and inspection chamber covers within the secure area are to be locked and sealed

Preliminary Drainage design is based on FFL of 19.55, and an estimated outfall manhole invert level of 17.07.

Manhole invert levels are to be confirmed prior to finalising the drainage design.

Attenuation tank is sized on 1 in 30yr storm plus and allowance of 30% for climate change, in the absence of other instruction.

S.H.E.

Do not excavate until all underground services have been identified and marked out. Refer to service providers drawings and to the utilities survey drawings. Unknown underground services may exist. Check for services by carrying out a scan with a cable avoidance tool. (CAT Scan)

Legend

- F1 Foul Water drain
- S1 Surface Water Drain
- Existing Combined Sewer
- Drainage pop up (shown indicatively - to be located by Architects)

Preliminary for Information	MW	P1	03/10/14
AMENDMENT	BY	REV	CHK
Rev P = Preliminary	T = Tender	C = Construction	AB = As Built

In instances where this drawing completes or partly completes a contract, Billingham George & Partners will consider that its product has been validated, unless in a period not exceeding 90 working days, the client advises to the contrary.

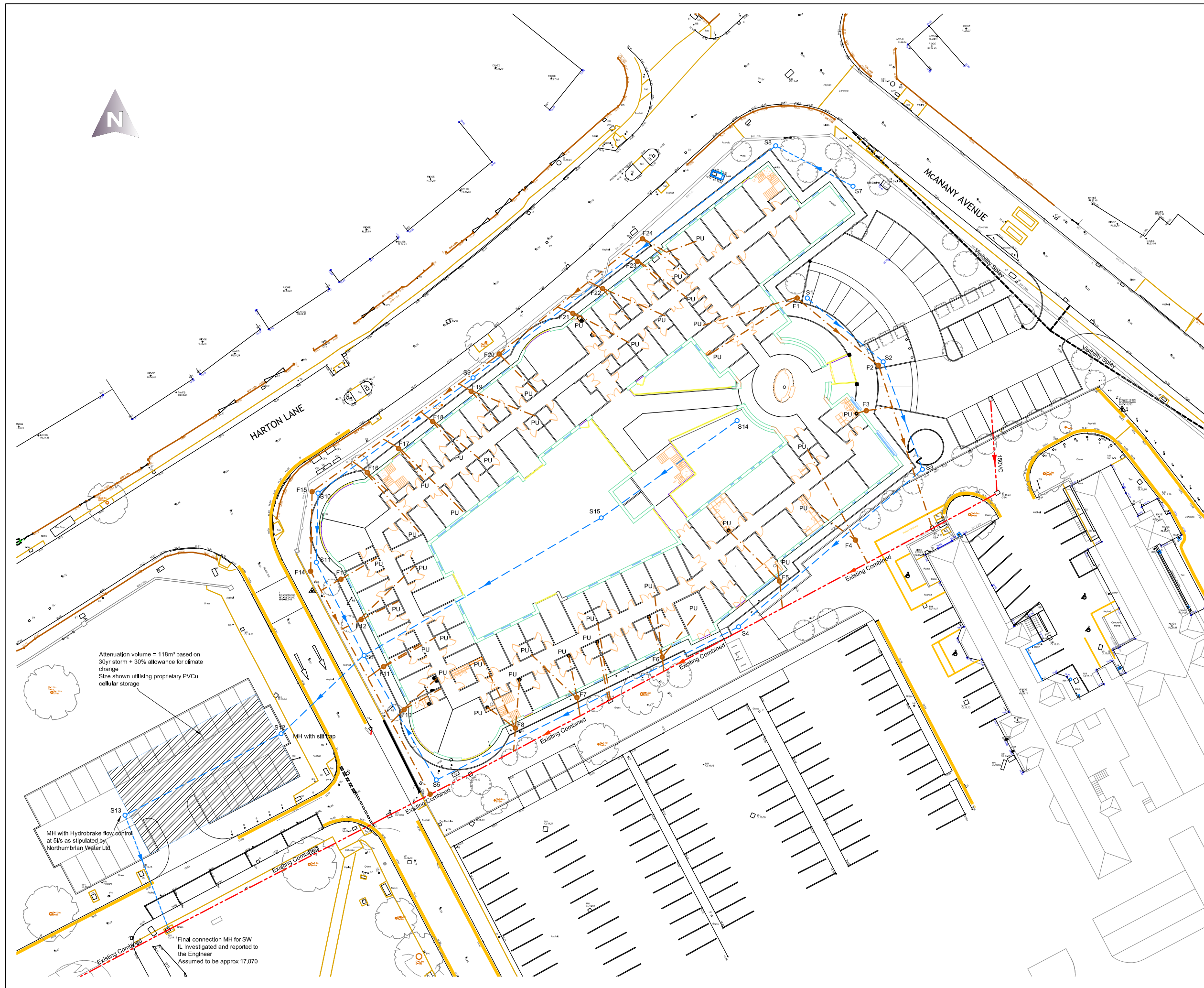
Client
South Tyneside NHS Foundation Trust

Project
South Tyneside General Hospital Integrated Care Hub

Drawing Title
Proposed Drainage Layout

Drawn	MW	Date	02/10/2014
Checked		Date	
Scale	1:250	Original Size	A1

Billingham George & Partners
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Attenuation volume = 118m³ based on 30yr storm + 30% allowance for climate change
 Size shown utilising proprietary PVCu cellular storage

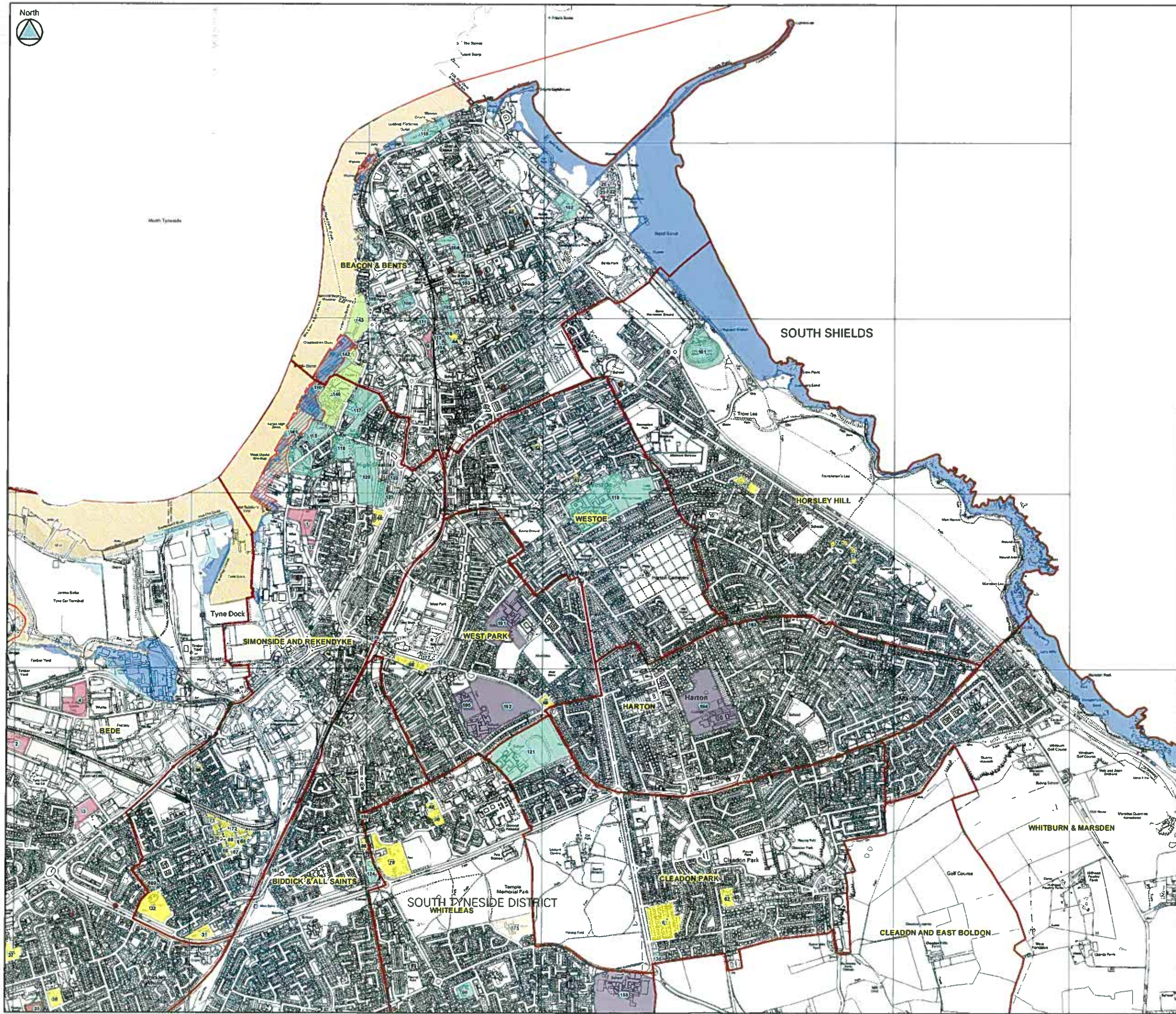
MH with Hydrobrake flow control at 5l/s as stipulated by Northumbrian Water Ltd

Final connection MH for SW IL Investigated and reported to the Engineer Assumed to be approx 17.07



Appendix G Strategic Flood maps and Reference Documents

The National Planning Policy Framework March 2012	Communities and local Government
The Technical Guidance to the National Planning Policy Framework March 2012	Communities and local Government
Flood Risk Assessment Guidance Note 1	Environment Agency
South Tyneside Strategic Flood Risk Assessment July 2011	JBA
South Tyneside Preliminary Flood Risk Assessment Aug 2011	



KEY PLAN



USER NOTES

This map has been produced in accordance with PPS25: Development and Flood Risk.

This map indicates key results of the South Tyneside SFRA. It includes the location of Main Rivers, Flood Zones, including areas of Functional Floodplain (as defined in Annex D Table D 1 of PPS25), within the local authority area. Also shown are the allocated (or potential) development sites.

PPS25 defines three basic Flood Zones; Flood Zones 1, 2 and 3. These correspond to areas of low, medium and high flood risk, respectively. The Flood Zones used are the Environment Agency's Flood Map (version 3.17 issued in March 2010). They indicate the extent of flooding from fluvial and tidal sources. The extent of flooding does not take the flood limiting effect of flood defences into account. The Flood Zone maps do not take other forms of flooding, or the impact of climate change into account.

This map also identifies all historical flood records collected during consultation for the South Tyneside SFRA. Key stakeholders included:

- Environment Agency
- South Tyneside Council
- Highways Agency (none identified)
- Tyne and Wear Fire and Rescue Service

Historical records were provided for all sources of flooding including; Main River, surface water and ground water flooding incidents between 2005, and 2009. All historical flood records collected have been provided in the South Tyneside SFRA Historical Flood Register. The register should be updated along with the SFRA.

This map should be used by Planners and developers to undertake the Sequential Test.

Legend

- Main River
- Wards
- Functional Floodplain
- Flood Zone 3
- Flood Zone 2
- Economic
- Gypsy and Traveller and Travelling Showpeople
- Housing
- Mixed Use
- Multiple Options
- SHLAA
- Social, Community and Leisure

Historical Flooding Records

- Tyne and Wear Fire and Rescue Records
- STC Historical Flooding Records
- EA Historical Flood Outline

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Rev	Modification	Date	Drawn	Checked	Approved
C	Tidal FZ 3b amended	14 01 20 11	TS	HK	HK

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for

South Tyneside Council
 STRATEGIC FLOOD RISK ASSESSMENT
 PPS25 FLOOD ZONE MAP

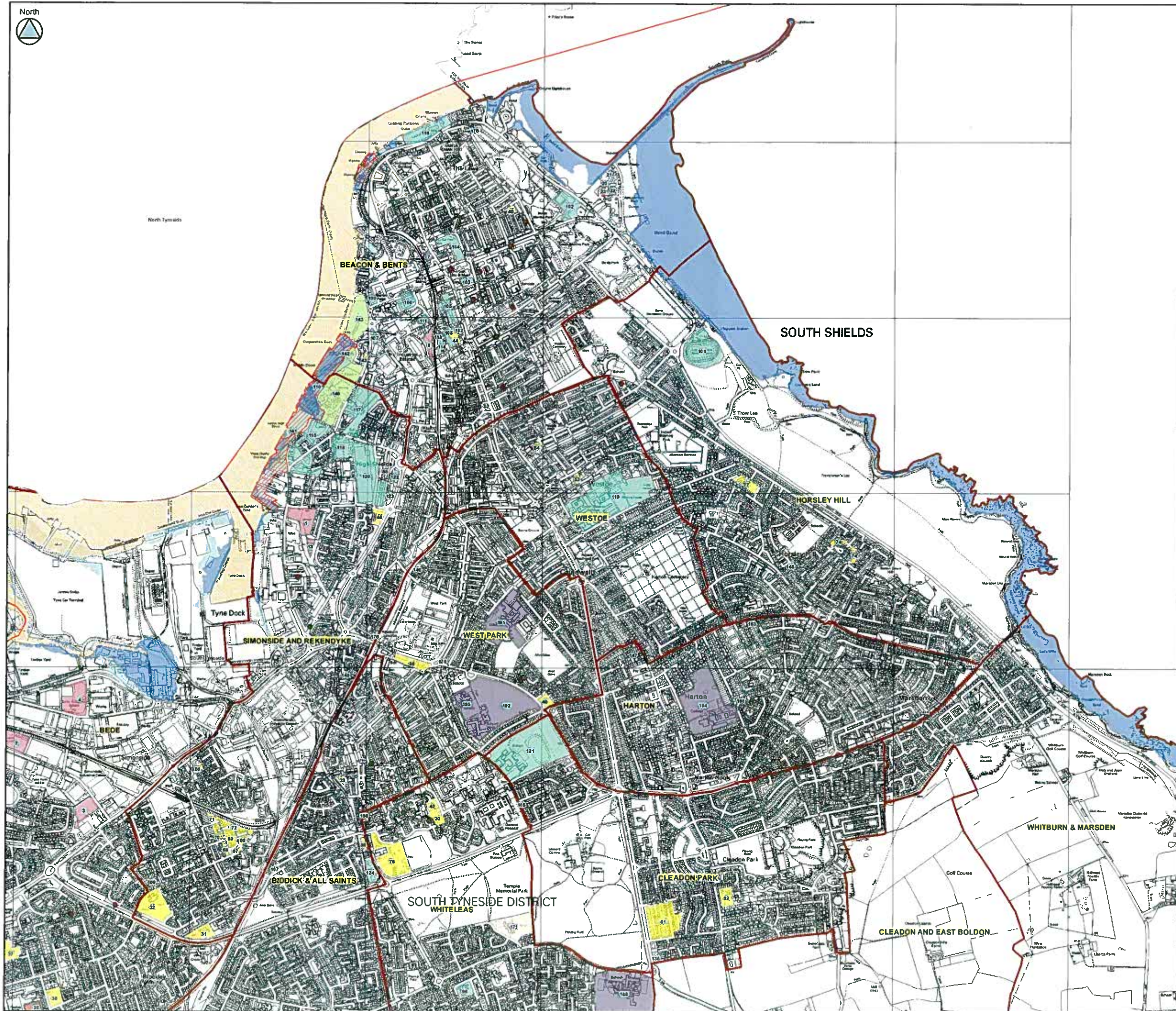
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T Sherwood	H Keeble	H Keeble	8 February 2011

Digital File Name: PPS25 FLOOD ZONE MAP-002 MXD
 Drawing Number: Sheet No. Status: Rev

2009s404-002 2 of 18 FINAL



KEY PLAN



USER NOTES

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This map should be used by Planners and developers to undertake the Sequential Test.

Legend

- Main River
- Wards
- Functional Floodplain
- Flood Zone 3
- Flood Zone 2
- Economic
- Gypsy and Traveller and Traveling Showpeople
- Housing
- Mixed Use
- Multiple Options
- SHLAA
- Social Community and Leisure

Historical Flooding Records

- Tyne and Wear Fire and Rescue Records
- STC Historical Flooding Records
- EA Historical Flood Outline

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Rev	Modifications	Date	Drawn	Checked	Approved
C	Tidal FZ 3b amended	14.01.2011	TS	HK	HK

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STRATEGIC FLOOD RISK ASSESSMENT
PPS25 FLOOD ZONE MAP

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Digital File Name: PPS25 FLOOD ZONE MAP-002.MXD
 Drawing Number: 20090404-D002 Sheet No: 2 of 16 Status: FINAL Rev: C



TYNEMOUTH

VEHICLE FERRY FROM NEWCASTLE TO	
Bergen	27 hours
Stavanger	19-20 hours
Göteborg	26½ hours
Amsterdam	16 hours
Kristiansand	18 hours
Haugesund	22½ hours

KEY PLAN



USER NOTES

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Legend

- Main Rivers
- Wards
- Functional Floodplain
- Flood Zone 2
- Flood Zone 3
- Open Space Sites

Historical Flooding Records

- Tyne and Wear Fire and Rescue Records
- STC Historical Flooding Records
- EA Historical Flood Outline

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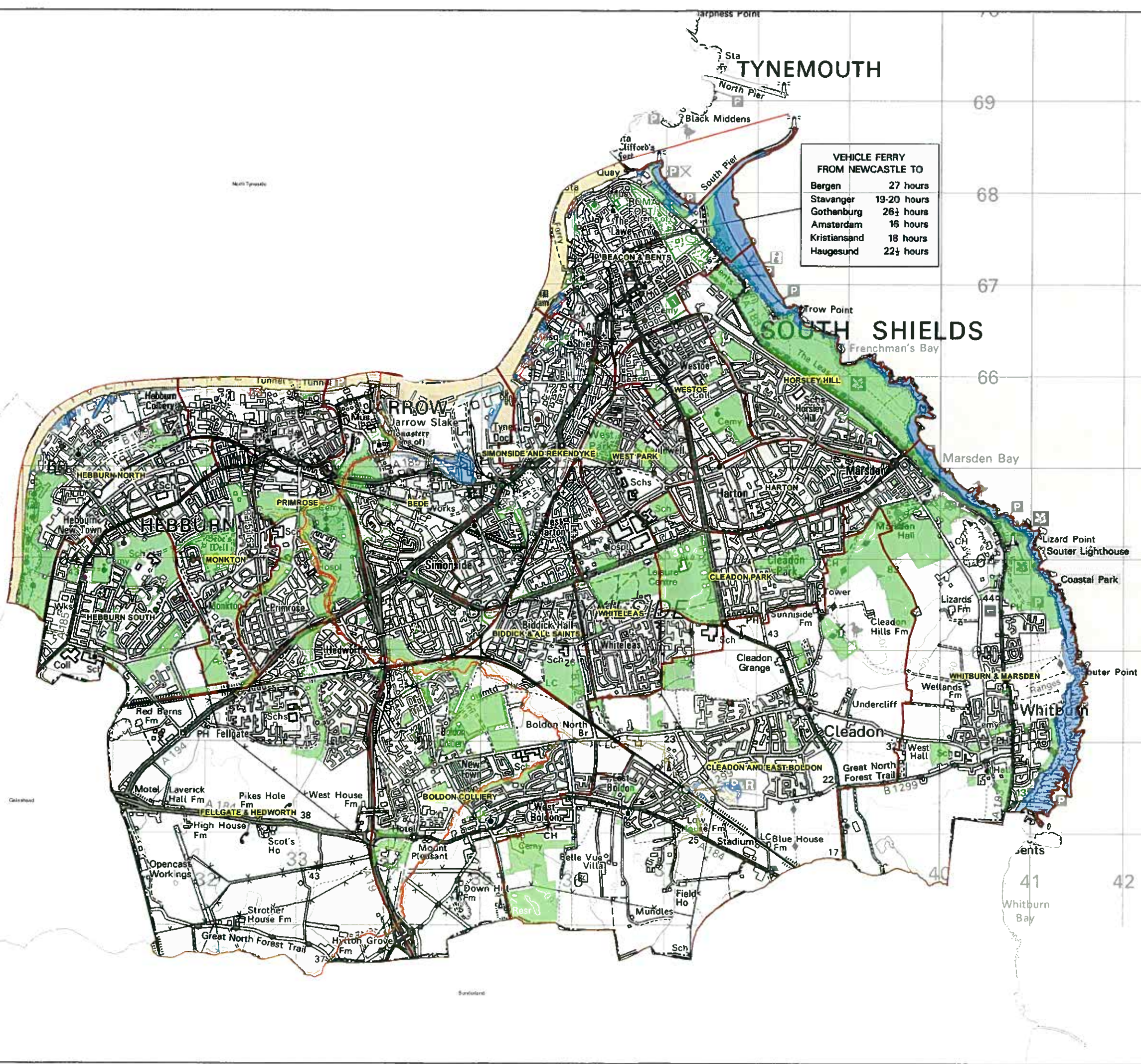
South Tyneside Council

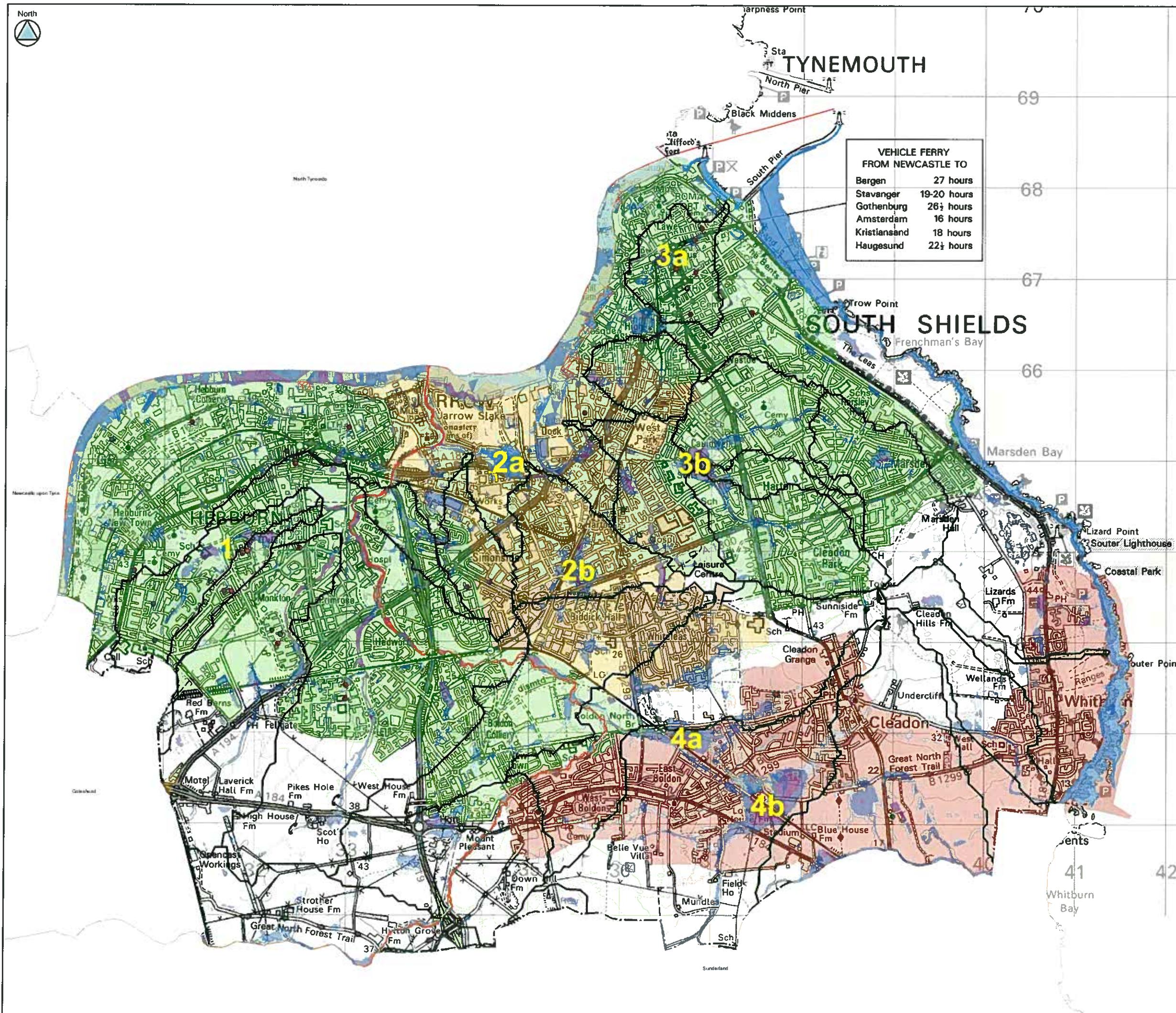
STRATEGIC FLOOD RISK ASSESSMENT

OPEN SPACE SITES

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Digital File Name:	OPEN SPACE MAP @14 MXD			
Drawing Number:	Sheet No	Status:		Rev.
2009s0404-D014	14 of 18	FINAL		2





VEHICLE FERRY FROM NEWCASTLE TO	
Bergen	27 hours
Stavanger	19-20 hours
Gothenburg	26½ hours
Amsterdam	16 hours
Kristiansand	18 hours
Haugesund	22½ hours

KEY PLAN



USER NOTES

This map has been produced in accordance with PP25: Development and Flood Risk.

The Town and Country Planning (General Development Procedure) (Amendment) (No. 2) (England) Order 2006 introduces the concept of Critical Drainage Areas as 'an area within Flood Zone 1 which has critical drainage problems and which has been notified... [to]... the Local Planning Authority by the Environment Agency'.

The Critical Drainage Areas shown on this map have not been defined using the above definition from The Town and Country Planning (General Development Procedure) (Amendment) (No. 2) (England) Order 2006. Instead they have been arbitrarily defined by highlighting the areas within the highest risk Flood Zones, Surface Water Vulnerability Classification, Historical Flooding, NWL flood risk classification or a combination of these sources of flooding.

List of Acronyms:
EA = Environment Agency
FEH = Flood Estimation Handbook
STC = South Tyneside Council
NWL = Northumbrian Water Limited

Legend

Main River	Surface Water Vulnerability - More Vulnerable
FEH Catchment Boundaries	Intermediate Vulnerability
Functional Floodplain	Less Vulnerable
Flood Zone 3	
Flood Zone 2	
Critical Drainage Area	
Historical Records of all Sources of Flooding	NWL Flood Risk Status - High
Tyne and Wear Fire and Rescue Records	Medium
STC Historical Flooding Records	Low or No DGS Records
EA Historical Flood Outline	

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for

South Tyneside Council
STRATEGIC FLOOD RISK ASSESSMENT
CRITICAL DRAINAGE AREAS

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		Checked	H Keeble	8 February 2011
		Approved	H Keeble	8 February 2011

Digital File Name:	CRITICAL DRAINAGE AREAS 013 MXD	Status:	FINAL	Rev:	2
Drawing Number:	2009a0404-D013	Sheet No.:	13 of 16		