SPORTS COMPLEX – TEMPLE PARK, SOUTH SHIELDS
UTILITIES ASSESMENT

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Document Control Sheet

Sports Complex – Temple Park, South Shields
Utilities Assessment

Project No: **JCC17-051**

Document Ref: **JCC17-051-(C) 02**

Report Description: **Utilities Assessment**

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Document History:

Revision	Status	By	Date	Checked	Signed	Authorised	Signed
00	Planning	A.Webb	14/08/2017	Alex Short	A.Short.	Kris Haigh	

C O N T E N T S

APPENDICIES

1. INTRODUCTION

1.1 BACKGROUND

James Christopher Consulting were appointed by Tolent Living to undertake a utilities assessment to supplement the Planning Application for the proposed sports complex development on the site of Temple Park, South Shields, NE34 8QN.

The proposal is for the construction of a Sports Complex comprising of Club House including changing room's, squash courts, toilets and a Bar/Function Room as well as associated highway, boundary, hard and soft landscaping works including the construction of Rugby and Cricket pitches as well as Tennis Courts

The aim of this report is to assess the foul and surface water requirements for the proposed development as well as obtaining and analysing the existing utility apparatus plans. The report will identify apparatus within the site boundary that may have easements or require diversions and identify possible connection points. This report does not comment on the existing capacity of public utility apparatus.

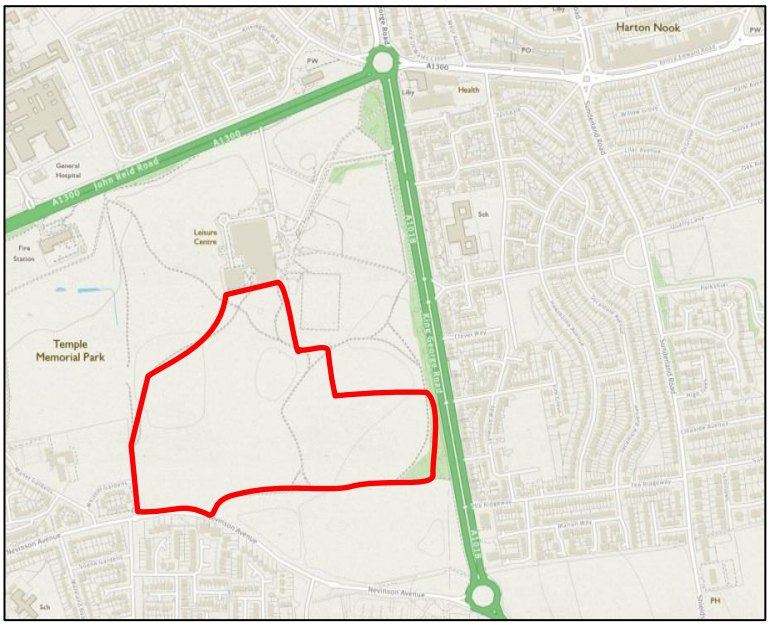


Figure 1.1 Ordnance Survey Map – Site Location

1.2 EXISTING SITE

The site is located in Westoe, a small borough of South Shields. The site has no previous use other than a green space for the local community this classifies it as a Greenfield site. The site is located at NGR NZ 37180 63525.

The site area measures approximately 15.67 hectares with the natural topography appearing to fall East to West by approximately 2.7m and South to North by approximately 2.2m.

The closest watercourse is the River Tyne which is approximately 3.1km from the Northern Boundary at the closest point.

The site is currently served by a 300mm combined system which runs from Southern Boundary through the Centre of the site and leaving at the Northern Boundary, which is owned and maintained by Northumbrian Water Ltd.

2 FOUL DRAINAGE

It is proposed to a foul water drainage system serving dwellings to collect domestic used water and discharge it to the NWL sewerage network.

2.1 PROPOSED FOUL DRAINAGE CALCULATIONS

The following discharge rates have been used for the purpose of these calculations and are based upon the guidance contained within Building Regulation Approved Document H and BS EN 12056-2.

The rates are applicable to common sanitary fittings and appliances:

- Washbasins – 0.6 litres / second
- WC – 2.5 litres / second
- Kitchen Sink – 1.3 litres / second
- Urinal – 0.8 litres / second
- Dishwasher – 0.8 litres / second
- Shower – 0.6 litres / second

The development proposes for the construction of a Sports Complex. Calculations have been completed based on Tolent Living ltd Drawing 17-006 (ST) SK02 Proposed Sketch Floor Plans. The drawing is still at the feasibility stage and, therefore, is subject to change.

Discharge Rate Calculations

Frequent Use (K) = 0.7

•	31No. Washbasins	- 18.6 l/s
•	33No. WC	- 82.5 l/s
•	2No. Kitchen Sink	- 2.6 l/s
•	7No. Urinal	- 5.6 l/s
•	2No. Dishwasher	- 1.6 l/s
•	40No. Showers	- 24 l/s
	Total	- 134.9 Discharge Units

Total discharge units for areas with frequent use = **134.9 DU**

0.7 x square root of 134.9 = **8.130 litres / second**

2.2 SEWER CONNECTION

Based on an initial review of existing site levels and the NWL sewer plans, there are 2 No. feasible connections available for the proposed foul drainage. The connection points would be via existing Manholes 3501 or 3601 running through the middle of the site via the 300 mm Combined Sewers. A Surface Water Manhole can be seen at the South West corner of the site within Nevinson Avenue but due to the site topography this manhole is not thought to be suitable, surface water flows would be able to discharge via gravity into the Combined Sewer running through the site at the same locations as the Foul Water.

There is a requirement to agree foul flows with Northumbrian Water Ltd prior to connection to the public system. Northumbrian Water Ltd would be consulted as to whether they can accommodate the calculated foul peak flow rate into their adopted system. In order to obtain a direct connection to the public sewer system we would be required to lodge an application to the local sewer network provider, Northumbrian Water (NWL) via a pre-development enquiry in order for them to consider discharge into their network.

3 SURFACE WATER DRAINAGE

It is proposed to provide a surface water drainage system serving roofs, roads, footpaths and all hard standing areas. The total area of the proposed new development is 15.67ha. The risk of surface water flooding of the site and the wider area will be mitigated by restricting the discharge flow rate to that of the previous site use runoff and attenuating flows in exceedance.

3.1 SUDS METHODOLOGY

The following methodology was used to produce a SUDS strategy:

- Calculate pre-development/Greenfield runoff, using the method outlined in the Institute of Hydrology Report 124.
- Calculate the required post development attenuation/storage required for the critical storm with a return period of 30 years.
- Test the sensitivity of the site by investigating the volume of runoff produced during storms with a return period of 100 year plus 30% allowance for climate change.
- Attenuation provided to ensure that no road/property/overland flooding occurs for a 30 year return period storm. No property flooding should occur as a result of runoff from a 100 year (plus 30% allowance for climate change) return period storm.

The potential methods of discharge in order of preference are:

- Discharge via infiltration
- Discharge to watercourse
- Discharge to sewer

A ground investigation is yet to be carried out for the site, from reviewing British Geological Society and The National Soil Research Institute information the site appears to be slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils suggesting that infiltration will be an unlikely discharge method.

South Shields is within the catchment of the River Tyne which is approximately 3.1km from the site. The site generally falls from East to West and South to North. The surface water on site is not thought to be positively drained and historically prior to any developments would have drained via groundwater flows to the River Tyne and the North Sea.

As the site would previously drain to the River Tyne, it is unfeasible to discharge surface water flows to the existing watercourse due to the distance from the site boundary and the existing Developments that separate the site from any nearby watercourses.

To ensure the water quality entering the Sewer System does not have a detrimental impact to the environment the design will look to incorporate source control features to provide a suitable level of treatment. The level of treatment is required to be proportional to the level of risk. For the proposed site it is generally considered that for rooftop drainage requires one level of treatment and access roads require two levels of treatment.

3.2 PROPOSED DRAINAGE

It is proposed to provide a surface water drainage system serving roofs, roads, footpaths and all hard standing areas. The total area of the proposed new development is 15.67ha with an approximate impermeable area of 1.0ha. The risk of surface water flooding of the site and the wider area will be mitigated by restricting the discharge flow rate to that of the previous site use runoff and attenuating flows in exceedance.

The Greenfield runoff for the area has been calculated using the method outlined in Institute of Hydrology report 124 (calculations carried out using MicroDrainage). This method is only accurate for areas greater than 50ha. Therefore, the Greenfield runoff for 50ha has been calculated and factored down to provide a flow rate per ha.

The following design inputs were used based on information within MicroDrainage:

Return Period	=	100 year
Area	=	50 ha
SAAR	=	654
Soil Index	=	0.300
Region	=	3

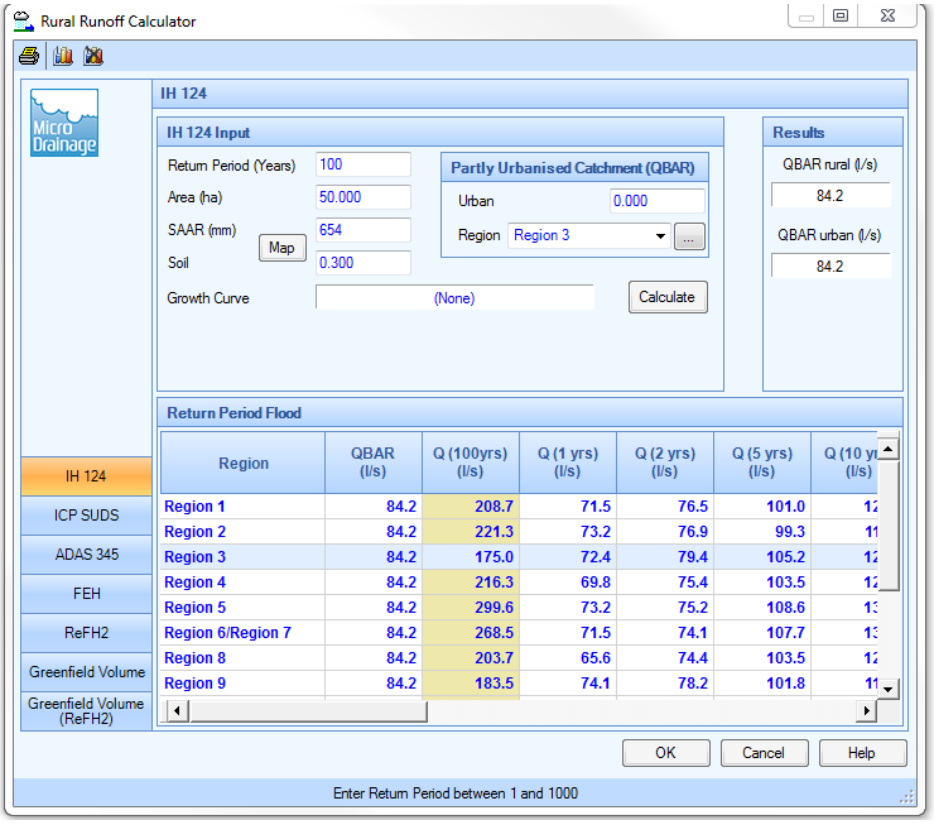


Figure 3.1 Rural Runoff Calculator Results

Based on a the assumed Impermeable Area of 1.0ha the following Greenfield run off rates for the following return period events have been calculated:

- QBar 1.684 l/s
- 1 in 1 year 1.448 l/s
- 1 in 30 year 2.958 l/s
- 1 in 100 year 3.500 l/s

As the site is not understood to be positively drained, based on the topography it would historically drain to the River Tees. It is proposed to direct flows into the existing NWL combined sewer on site and restrict them to a discharge rate of 5 l/s. This proposal will be submitted to NWL via a Pre-Development Enquiry Application.

MicroDrainage has been used to estimate the surface water attenuation requirements for a 1 in 30 year return period event, with the discharge restricted to a discharge rate of 5 l/s.

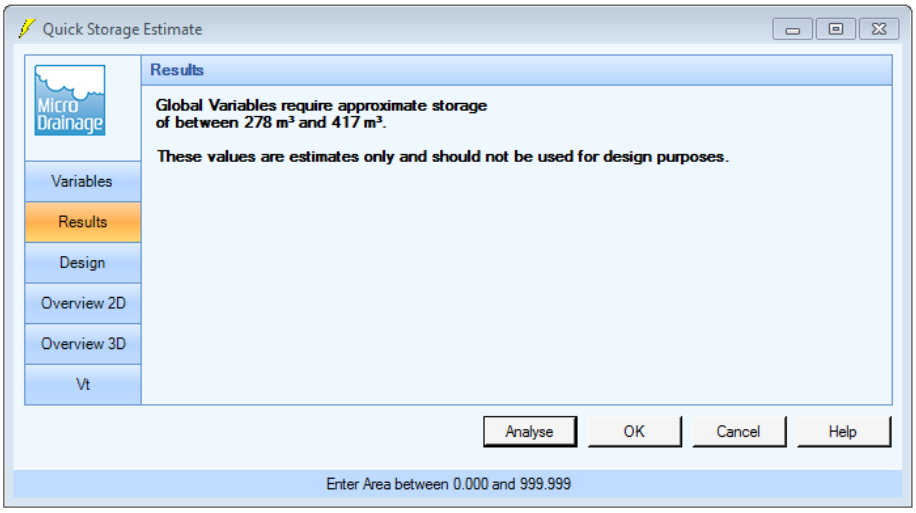


Figure 3.2 Quick Storage Estimate Results

3.3 SURFACE WATER DRAINAGE SUMMARY

Based on the investigation carried out to date the surface water drainage strategy can be summarised as:

- Flows will be collected from rooftops, roads, footpaths and all hard standing areas and conveyed via gravity. All flows will be conveyed by the drainage network and will not infiltrate into the ground.
- The flows will discharge to an existing NWL surface water network.
- The flows will pass through appropriate SuDS source control.
- A flow control device will restrict flows from the development to 5 l/s.
- An application will be made to NWL for the adoption appropriate sewerage.
- Surface water flows will pass through catch pits to collect any silt within the network.
- Peak flows in excess of discharge rates during storms up to 1 in 30 years will be attenuated below ground within the network.
- Peak flows in excess of discharge rates during storms up to 1 in 100 years, plus 30% for climate change, will be attenuated on site to ensure there is no flooding of buildings or flooding off site.

4 EXISTING PUBLIC UTILITIES

4.1 NORTHUMBRIAN WATER LTD - SEWER NETWORK

An extract from the Northumbrian Water Asset plans has been provided, and included within **Appendix A.**

The nearest sewer a 225mm combined network is shown to be running directly through the site before leaving the site boundary under the existing football pitch. A 300mm Surface Water sewer is shown within Nevinson Avenue at the Southern Boundary of the Site. The plans also indicate the proposal for the construction of a new 225mm Surface Water sewer within King George Road, private drainage is also visible around the existing leisure centre.

The plans indicate that no other apparatus is found within the proposed site boundary.

4.2 NORTHERN POWER GRID - ELECTRICAL NETWORK

An extract from the Northern Power Grid apparatus plans has been provided, and included within **Appendix B.**

A cable is visible on the plans entering the site at the South Western boundary corner and Leaving again at the Southern Boundary. The leisure centre also has an electrical connection although this is not shown to enter the development boundary. Cables are also visible supplying the Residential properties surrounding the site.

The exact size of the cable will need to be confirmed by Northern Power Grid.

The plans indicate that no other apparatus is found within the proposed site boundary.

4.3 NORTHERN GAS NETWORKS - GAS NETWORK

An extract from the Northern Gas Networks mains records has been provided, and is included within **Appendix C**.

Low pressure gas apparatus can be found at the Southern Boundary of the site within Nevinson Avenue. Beyond the Eastern Boundary of the site there is a low pressure main that supplies the residential properties to the East. There doesn't appear to be any gas apparatus which directly crosses the site that is likely to require any diversion works.

4.4 BRITISH TELECOM – TELECOMMUNICATIONS NETWORK

An extract from British Telecom apparatus plans has been provided, and included within **Appendix D**.

BT Assets can be found at the Southern Boundary of the site within Nevinson Avenue. Beyond the Eastern Boundary of the site there are also cables supplying the residential properties to the East. There doesn't appear to be any further BT Assets around the site that is likely to require any diversion works other than the supply to the Leisure centre which is not included within the development Boundary.

4.5 NORTHUMBRIAN WATER LTD – WATER SUPPLY NETWORK

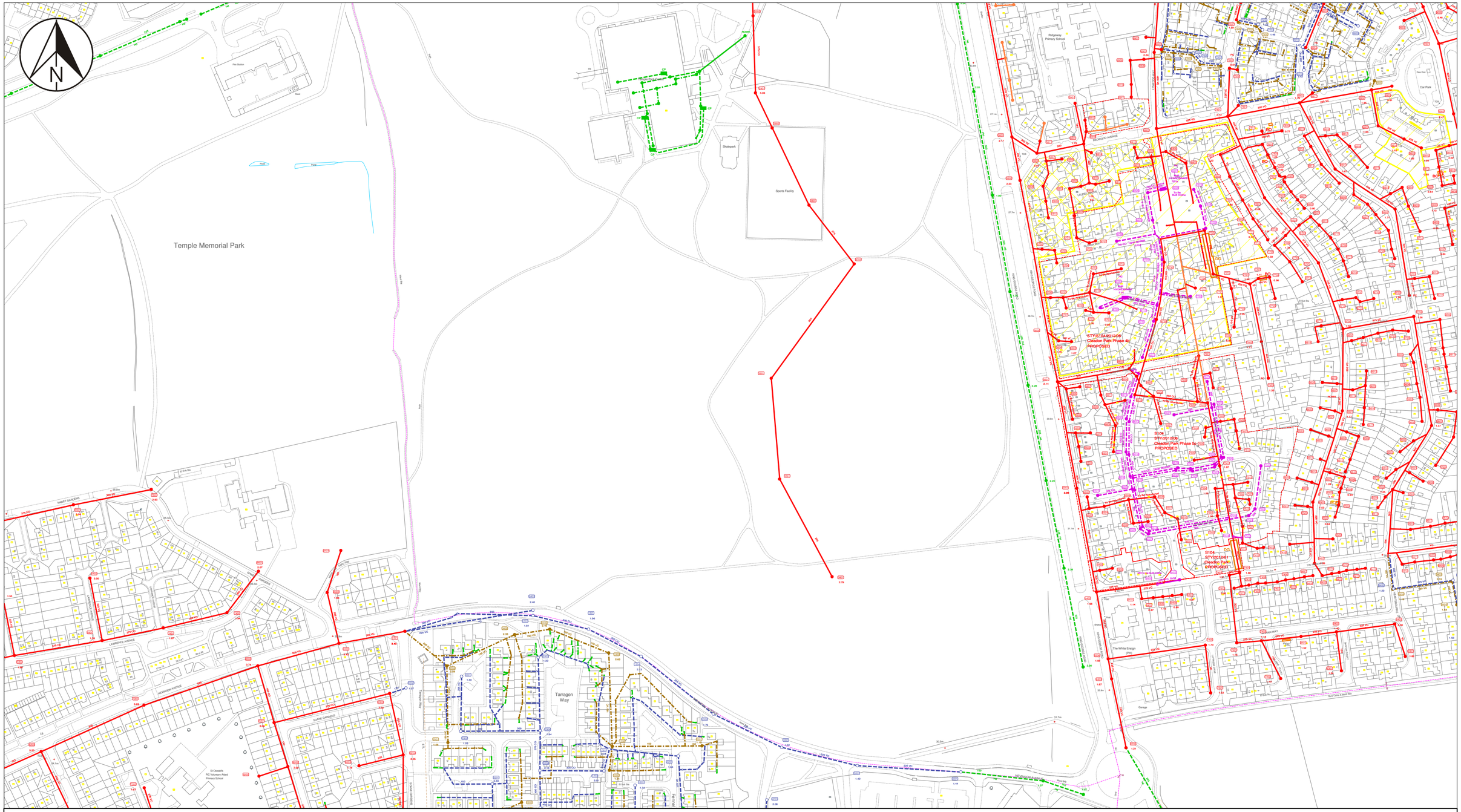
An extract from Northumbrian Water Supply Networks Asset plans has been provided, and included within **Appendix E**.

6" distribution mains can be found at the Southern Boundary of the site within Nevinson Avenue. Beyond the Eastern Boundary of the site there is also a 6" distribution line supplying the residential properties to the East. There doesn't appear to be any other NWL pipes around the site that is likely to require any diversion works other than the Fire lines to the Leisure centre which is not included within the development Boundary.

The plans indicate that no other apparatus is found within the proposed site boundary.

APPENDIX A

NORTHUMBRIAN WATER LTD SEWER NETWORK ASSET PLAN



NWL Responsibility

Combined	
Foul	
Surface	
Treated Eff	
Untreated Eff	
Overflow	

Private/Non NWL

Combined	
Foul	
Surface	
Trade Eff	
Watercourse	

Proposed

Combined	
Foul	
Surface	

Annotations

- Abandoned
- Rising Main
- Direction of flow
- Backdrop

Symbols

- Chambers
- Inlet/Outlet
- Treatment Works
- Pumping Station
- Capped End
- Balancing Pond
- Termination Node
- Rodding Eye
- Unknown End
- Attribute Change
- Air Valve
- Property Connection
- Lamp Hole
- Hatchbox
- Dual Usage Chamber

User : LANGP

Title :

Date : 03/08/2017 16:31:37

Centre Point : 437265,563629

Map Sheet : NZ3763NW

Paper / Scale : A2@1:2500

25 m

APPENDIX B

NORTHERN POWER GRID ELECTRICAL NETWORK APPARATUS PLAN


DATA ON THIS SEGMENT IS MAINTAINED AT A LARGER SCALE
SOUTH SHIELDS LEISURE SS.
MANET GARDENS S.S.
TARRAGON WAY SS
TEMPLE PARK SS
TURNER AVE SS
DATA ON THIS SEGMENT IS MAINTAINED AT A LARGER SCALE
NZ 366638
NZ 368638
NZ 370638
NZ 372638
NZ 374638
NZ 366636
NZ 368636
NZ 370636
NZ 372636
NZ 374636
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NZ 366630
NZ 368630
NZ 370630
NZ 372630
NZ 374630

APPENDIX C

NORTHERN GAS NETWORKS MAINS RECORDS PLAN

Title:	**Gas Plan**
Scale:	1:5000
User ID:	AWebb
Date:	18/04/2017
Grid Ref:	437269,563722

Internal Use Only

Low Pressure
Medium Pressure
Intermediate Pressure
Regional High Pressure
Abandoned Pipe 1
Abandoned Pipe 2

Some exarmples of Plant Items:

Valve | Depth of Cover | Syphon | Diameter Change | Material Change

1:500: 0 2.5 5 10

1:1250: 0 5 10 20

1:2500: 0 10 20 40

Scale in metres

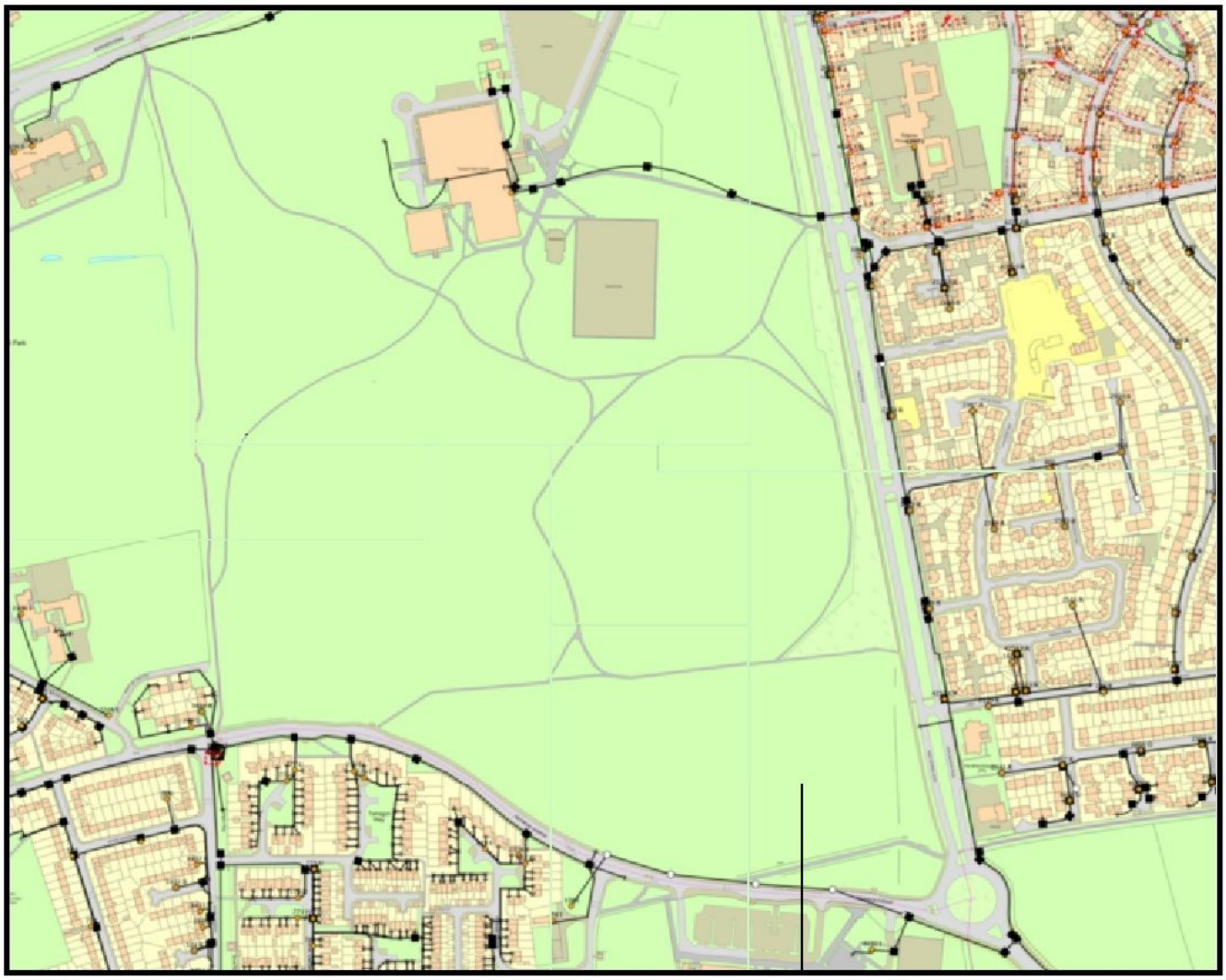
This plan shows those pipes owned by Northern Gas Networks or the relevant Gas Distribution Network in their roles as Licensed Gas Transporters (GT). Gas pipes owned by other GTs, or otherwise privately owned, may be present in this area. Information with regard to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections, etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Northern Gas Networks, the relevant Gas Distribution Network, or their agents, servants or contractors for any error or omission. Safe digging practices, in accordance with HS(G)47, must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

Northern Gas Networks

APPENDIX D

BRITISH TELECOM APPARATUS PLAN

Maps by email Plant Information Reply



IMPORTANT WARNING

Information regarding the location of BT apparatus is given for your assistance and is intended for general guidance only. No guarantee is given of its accuracy. It should not be relied upon in the event of excavations or other works being made near to BT apparatus which may exist at various depths and may deviate from the marked route.

openreach

CLICK BEFORE YOU DIG

FOR PROFESSIONAL FREE ON SITE ASSISTANCE PRIOR TO COMMENCEMENT OF EXCAVATION WORKS INCLUDING LOCATE AND MARKING SERVICE

email cbyd@openreach.co.uk

ADVANCE NOTICE REQUIRED
(Office hours: Monday - Friday 08.00 to 17.00)
www.openreach.co.uk/cbyd

KEY TO BT SYMBOLS

DP	Pole
Planned DP	Planned Pole
PCP	Joint Box
Planned PCP	Change Of State
Built	Split Coupling
Planned	Duct Tee
Inferred	Planned Box
Building	Manhole
Kiosk	Planned Manhole
Hatchings	Cabinet
	Planned Cabinet

Other proposed plant is shown using dashed lines.
BT Symbols not listed above maybe disregarded.
Existing BT Plant may not be recorded.
Information valid at time of preparation

openreach
a BT Group business

BT Ref : WIK09598X
Map Reference : (centre) NZ3723163276
Easting/Northing : (centre) 437231,5632
Issued : 15/08/2017 09:59:16

WARNING: IF PLANNED WORKS FALL INSIDE HATCHED AREA IT IS ESSENTIAL BEFORE PROCEEDING THAT YOU CONTACT THE NATIONAL NOTICE HANDLING CENTRE. PLEASE SEND E-MAIL TO: nnhc@openreach.co.uk

APPENDIX E

NORTHUMBRIAN WATER LTD SUPPLY NETWORK ASSET PLAN


Temple Memorial Park
Skatepark
Sports Facility
Playing Field
Pond
Pond
Path
Path
Path