



Appendix B
Greenfield Runoff Rates and Storage
Volumes

Print

Close Report



Surface water storage requirements for sites

www.ukuds.com | Storage estimation tool

Calculated by:	<input type="text" value="Hari Mehta"/>
Site name:	<input type="text" value="Green Lithium"/>
Site location:	<input type="text" value="Teesside"/>

This is an estimation of the storage volume requirements that are needed to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). It is not to be used for detailed design of drainage systems. It is recommended that hydraulic modelling software is used to calculate volume requirements and design details before finalising the design of the drainage scheme.

Site Details

Latitude:	<input type="text" value="54.60386° N"/>
Longitude:	<input type="text" value="1.14219° W"/>
Reference:	<input type="text" value="157681075"/>
Date:	<input type="text" value="Mar 30 2023 10:08"/>

Site characteristics

Total site area (ha):	23.5
Significant public open space (ha):	0
Area positively drained (ha):	23.5
Impermeable area (ha):	23.5
Percentage of drained area that is impermeable (%):	100
Impervious area drained via infiltration (ha):	0
Return period for infiltration system design (year):	10
Impervious area drained to rainwater harvesting (ha):	0
Return period for rainwater harvesting system (year):	10
Compliance factor for rainwater harvesting system (%):	66
Net site area for storage volume design (ha):	23.5
Net impermeable area for storage volume design (ha):	23.5
Pervious area contribution to runoff (%):	30

* where rainwater harvesting or infiltration has been used for managing surface water runoff such that the effective impermeable area is less than 50% of the 'area positively drained', the 'net site area' and the estimates of Q_{BAR} and other flow rates will have been reduced accordingly.

Design criteria

Climate change allowance factor:	1.3
Urban creep allowance factor:	1
Volume control approach	Use long term storage
Interception rainfall depth (mm):	5
Minimum flow rate (l/s):	2

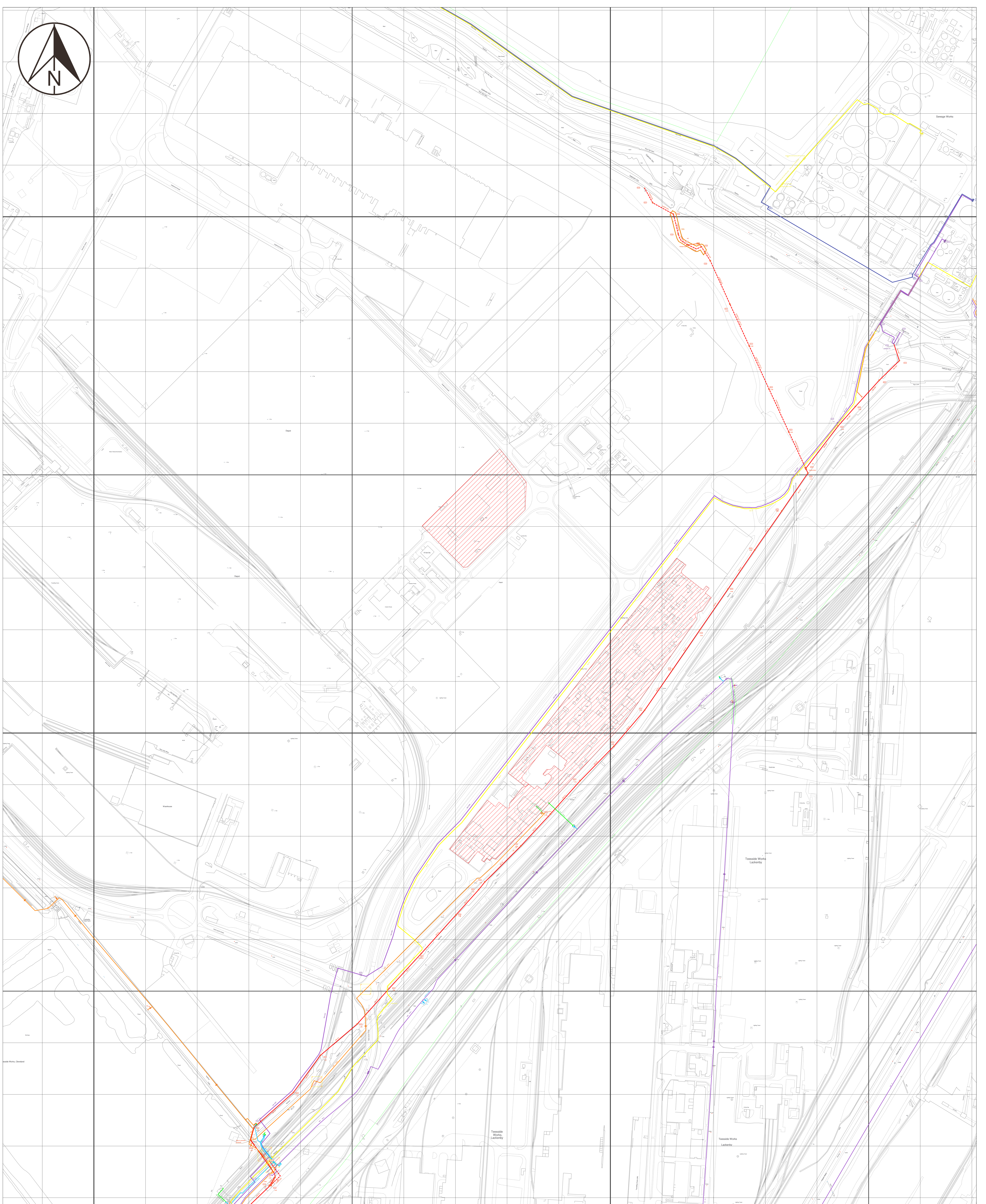
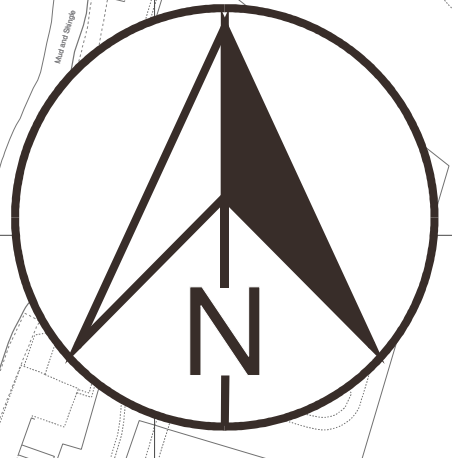
Methodology

esti	IH124	
Q_{BAR} estimation method:	Calculate from SPR and SAAR	
SPR estimation method:	Calculate from SOIL type	
Soil characteristics	Default	Edited
SOIL type:	4	4
SPR:	0.47	0.47
Hydrological characteristics	Default	Edited
Rainfall 100 yrs 6 hrs:	--	61
Rainfall 100 yrs 12 hrs:	--	77.38
FEH / FSR conversion factor:	1.06	1.06
SAAR (mm):	597	597
M5-60 Rainfall Depth (mm):	17	17
'r' Ratio M5-60/M5-2 day:	0.3	0.3
Hydrological region:	3	3
Growth curve factor 1 year:	0.86	0.86
Growth curve factor 10 year:	1.45	1.45
Growth curve factor 30 year:	1.75	1.75
Growth curve factor 100 years:	2.08	2.08
Q_{BAR} for total site area (l/s):	94.18	94.18
Q_{BAR} for net site area (l/s):	94.18	94.18

Site discharge rates	Default	Edited	Estimated storage volumes	Default	Edited
1 in 1 year (l/s):	81	81	Attenuation storage 1/100 years (m ³):	14372	14372
1 in 30 years (l/s):	164.8	164.8	Long term storage 1/100 years (m ³):	4731	4731
1 in 100 year (l/s):	195.9	195.9	Total storage 1/100 years (m ³):	19103	19103

This report was produced using the storage estimation tool developed by HRWallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at <http://uksuds.com/terms-and-conditions.htm>. The outputs from this tool have been used to estimate storage volume requirements. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

APPENDIX 9.2: Northumbrian Water Water Network



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

User : BOWMS

Date : 17/08/2022 12:21:05

Map Sheet : NZ5523SE

Title :

Centre Point : 455766,523244

Paper / Scale : A0@1:2500



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, 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. 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

25 m

APPENDIX 9.3: DRAINAGE PLAN WITH SITE LAYOUT



SUBSTATION

DABHOLM Rd.

DABHOLM Rd.

DABHOLM Rd.

TEESPORT Rd.

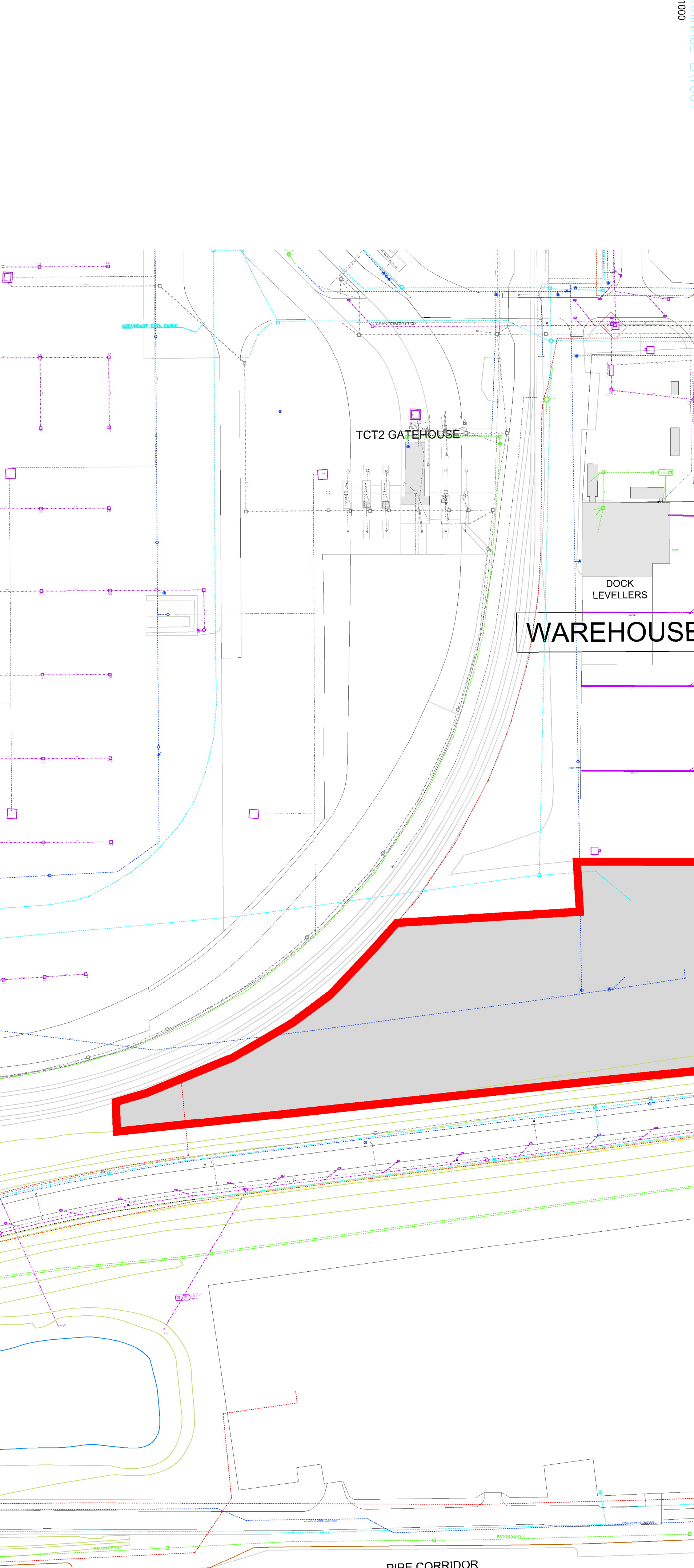
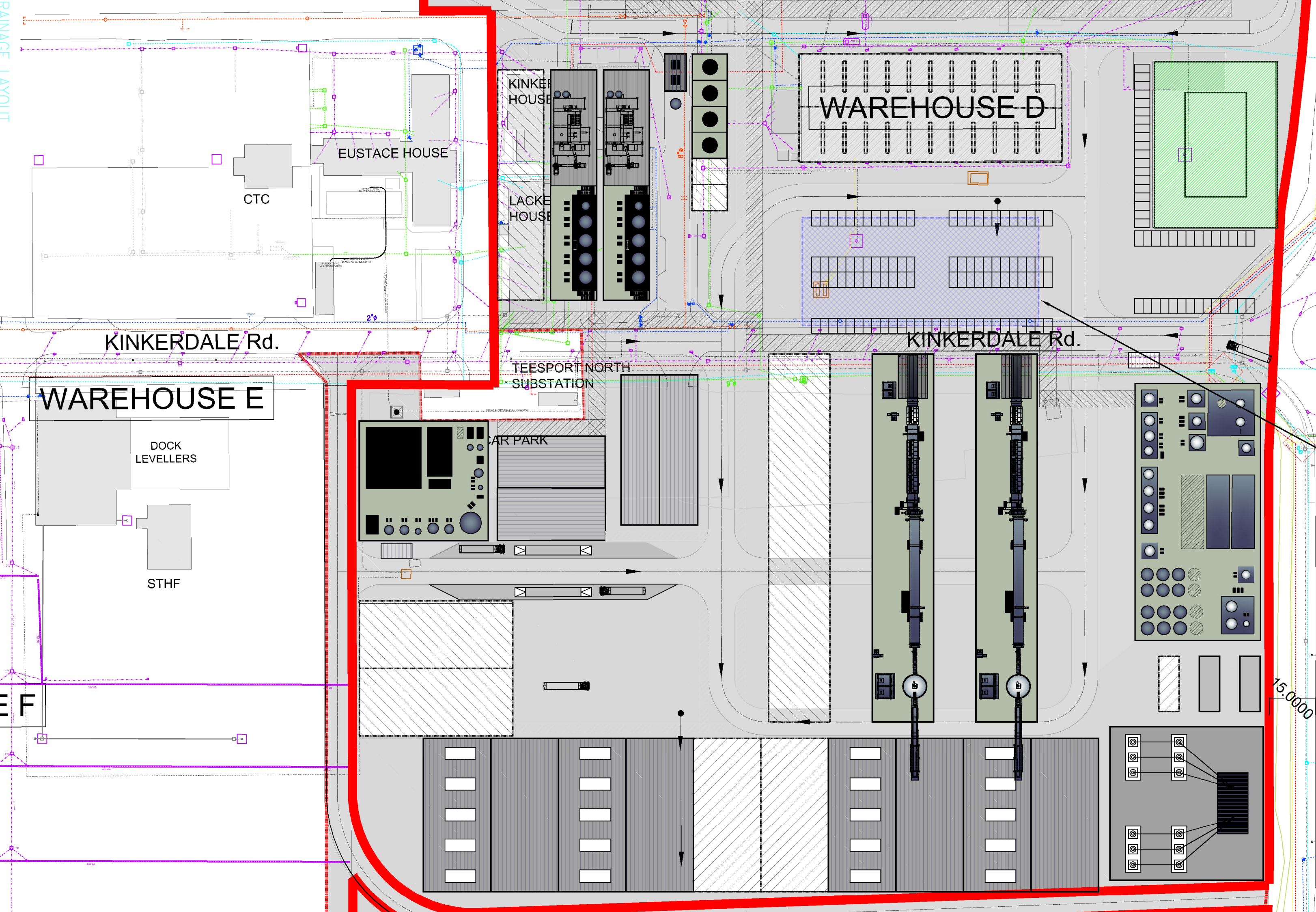
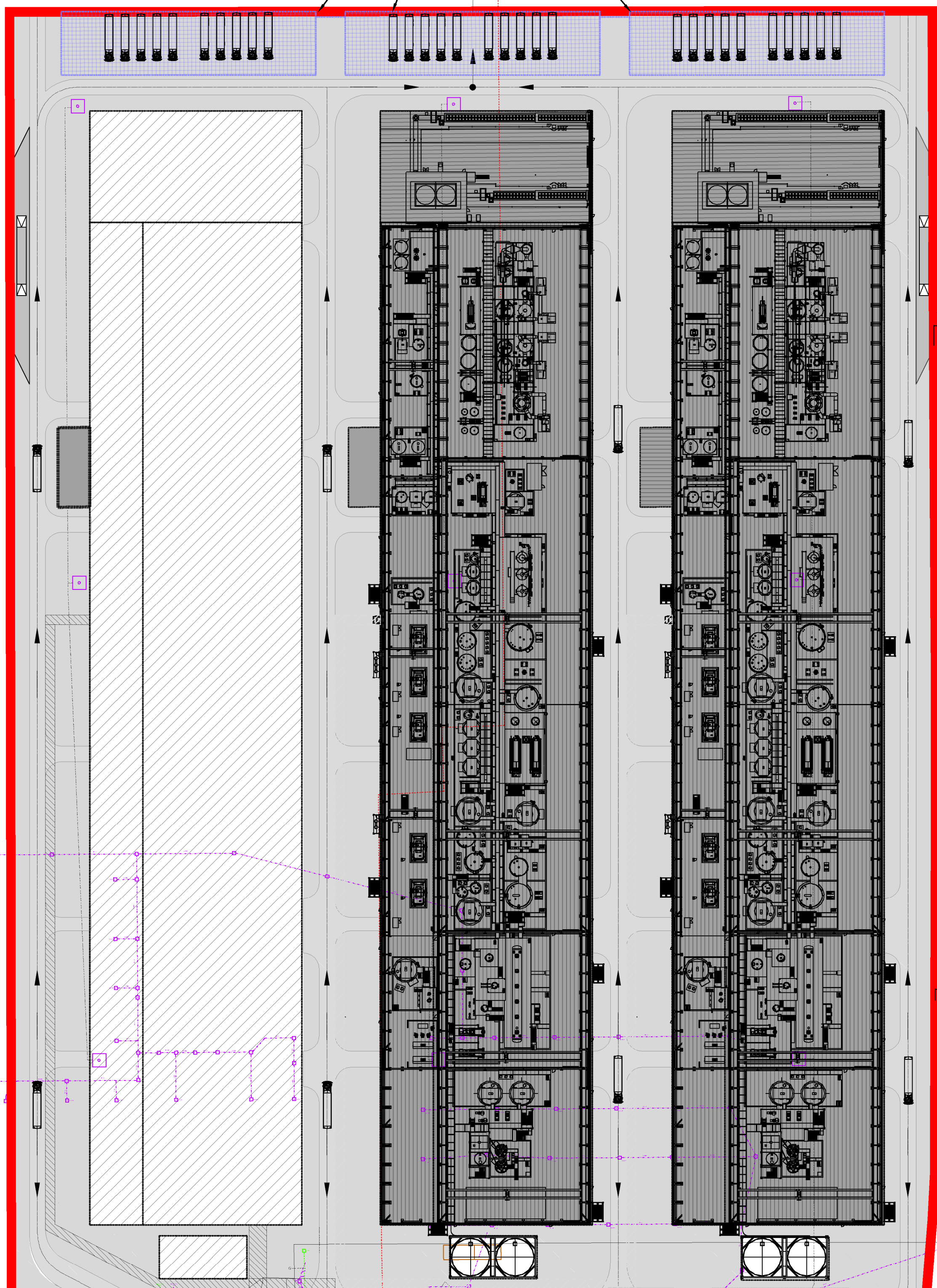
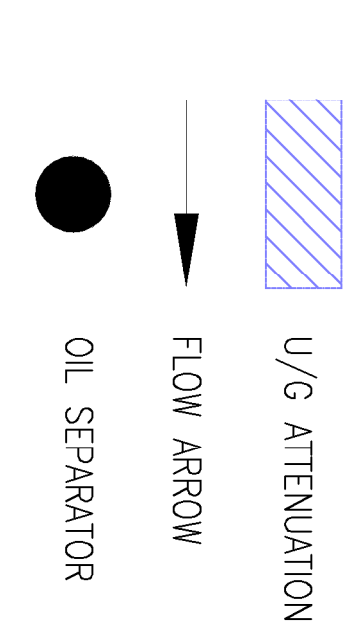
PIPE CORRIDOR

STORMWATER ATTENUATION STRUCTURE SIZED TO ALLOW FOR STORM EVENTS GREATER THAN 100 YEARS RETURN PERIOD PLUS 50% CLIMATE CHANGE RISK. FLOWMETER STORAGE VOLUME: 8500m³

STORMWATER ATTENUATION STRUCTURE SIZED TO ALLOW FOR STORM EVENTS GREATER THAN 100 YEARS RETURN PERIOD PLUS 50% CLIMATE CHANGE RISK. FLOWMETER STORAGE VOLUME: 4600m³

STORMWATER ATTENUATION STRUCTURE SIZED TO ALLOW FOR STORM EVENTS GREATER THAN 100 YEARS RETURN PERIOD PLUS 50% CLIMATE CHANGE RISK. FLOWMETER STORAGE VOLUME: 8500m³

- NOTES**
1. IT IS ASSUMED THAT ALL SITE AREAS NORTH OF THE KINKERDALE ROAD BUILT-UP ARE WAREHOUSES AND THAT THE SUD PROCESS TOWN WILL BE BUILT SOUTH OF THE WAREHOUSES.
 2. AT FINAL DESIGN, SINCE THE FEASIBILITY OF USING RUNOFFWATER AS PROCESS WATER WILL BE TREATED ON SITE AND WILL HAVE A CLOSED DRAINAGE SYSTEM.



REV	DATE	ISSUED FOR USE	DESIGNED	CHECKED	APPROVED	CUSTOMER	REF. DRAWING NO.	REFERENCE DRAWING TITLE	WORLDWIDE PROJECT NO.	SCALE	ENGINEERING AND PERMIT STAMPS (As Required)	CUSTOMER	PROJECT TITLE	REV
A	06/03/23	ISSUED FOR USE	AD	ADP	DM	ENG DM	APPROVED	CUSTOMER	REF. DRAWING NO.	1:1000		GREEN LITHIUM	GREEN LITHIUM REFINERY PROJECT PRELIMINARY PLANT DRAINAGE PLAN	A
PLOT DATE & TIME: 6/3/2023 11:26:36 AM SAVE DATE & TIME: 6/3/2023 10:55:34 AM USER NAME: adam.dey LOCATION: C:\USERS\ADAM.DEY\ONE DRIVE - WORLEY\DESKTOP\GREEN LITHIUM\GREEN LITHIUM - DRAINAGE-REVA.DWG														

APPENDIX 9.4: NORTHUMBRIAN WATER POINT OF ENQUIRY

Ext: 36603
Direct Line: 0191 419 6603
Email: developmentenquiries@nwl.co.uk
Our Ref: 302608
Your Ref:

Monday, 05 September 2022

Wood Consulting
elena.gilaunon@woodplc.com

Dear Elena Gil Aunon,

Re: Point of Connection Enquiry – PD Ports, Tees Dock Road

Further to the Point of Connection Application for the above site, received 16th August 2022, we are now able to provide the following response.

We have based our response on the information in your application and accompanying correspondence. Therefore, should any of the information now be different, then you must ensure that you inform us of any changes as further Network Modelling may be required and our response may also change, leading to this response being invalid.

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

Enclosed in this response is a scaled plan showing the **approximate** position of the water and sewerage networks within the vicinity of this site.

Appropriate risk assessments and method statement's (RAMS) must be provided to us prior to gaining approval for any trial hole investigations to determine the actual line and depth of our water network, at least 5 working days in advance of starting any work onsite.

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

Water Network

A new water supply can be made available for this development from the 450mm DICL distribution network located on Tees Dock Road and we can confirm that there will be no abnormal costs incurred.

Should you wish to proceed with a Water Mains Requisition to gain a quotation for an associated water mains and services design, then you must confirm this in writing. As a result of which you will be asked to provide further information including the proposed scaled site layout and the chemical analysis from the ground investigation report.

For further information or assistance on a Water Mains Requisition, please contact our New Development Water team on 0345 609 4639 or alternatively via an email to newdevelopmentwater@nwl.co.uk.

Please note Northumbrian Water Limited only guarantee a minimum pressure of 15m in respect to potable water for both domestic and non-domestic use. Suitable high level storage should be installed to flats over 2 stories in accordance with the Water Supply (Water Fittings) Regulations 1999.

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.

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

Yours sincerely,

Mr. N.Mather

Mr. Niki Mather
Technical Support Advisor
Developer Services (Asset Protection)

APPENDIX 9.5: NORTHUMBRIAN WATER FOUL DISCHARGE AMOUNTS



Sewer Connection
ESC-00230

New Contact New Note Edit

Chatter isn't enabled or the user doesn't have Chatter access.

DETAILS RELATED

Existing Sewer Connections Name ESC-00230	Direct/Indirect Direct
Application APP-0001960	Connection Type New Manhole
Manhole No.	Combined
Connection Diameter (mm)	Foul 1
Sewer Connection Type Foulwater	Surface Water 0
Discharge Rate 0.25	
Type Proposed	
Drained Impermeable Area (Ha)	
Surface Water Prop Discharge Rate (l/s)	
Surface Water Proposed Usage (l/s) 0.00	
Foul Water Proposed Usage (l/s) 0.16	
Foul Water Proposed Discharge Rate (l/s) 0.14	
Developer Proposing to Connect To Existing sewer	
Created By Elena Gil Aunon, 29/09/2022, 17:14	Last Modified By Elena Gil Aunon, 11/11/2022, 12:10