

SUBJECT
Park and Ride Scheme- Redcar

DATE
8/9/2022

DEPARTMENT
SER Leeds

COPIES TO
David Shea- Atkins
Heather Overhead Lichfields

TO
Lauren Carr Duffy- STDC

OUR REF
10035117-AUK-XX-XX-CO-ZZ-0582-01-P&R GI Memo

PROJECT NUMBER
10035117

FROM
Darren Calvert

South Tees Development Corporation are submitting a planning application for the construction of a new Park and Ride facility at Trunk Road, Redcar. The site of the new Park and Ride facility is currently occupied by a number of landscaped mounds. A separate planning application has been submitted for the removal of the mounds with the material to be reused as engineering fill elsewhere on Teesworks. This investigation is therefore targeted at assessing the soils which will remain in situ beneath the current mounds, for this reason it may be necessary to complete the investigation in a phased approach as site clearance proceeds.

A ground investigation is proposed to obtain geotechnical information on ground conditions and to confirm the environmental status of soil and groundwater beneath the site.

Scope of investigation

The proposed ground investigation will include the following elements

- Utility Clearance exercise,
- Excavation of 52 no trial pits,
- Drilling of 3 no cable percussion boreholes with rotary follow on;
- Collection of samples for geotechnical and environmental lab analysis,
- Ground gas monitoring (3 occasions)
- Groundwater monitoring (1 occasion).

Exploratory Location	Depth	Purpose
TP201-224, 301-311 PLT 201-204, 301-309	3-4m	Confirm shallow ground conditions Obtain shallow soil samples for lab testing. Carry out CBR testing for pavement design
BH201-BH203	10-15m	Confirm depth of drift deposits Install shallow gas wells (3 no) Install groundwater wells in superficial aquifer (3 no) Obtain 5m of rock core Install monitoring well in bedrock aquifer Carry out <i>in situ</i> strength testing (SPT) Inform foundation design for new structures.

Samples of soil and groundwater will be collected and analysed for a suite of contaminants considered suitable for the site's former use. This testing suite has been developed based on guidance included in relevant DoE Industry profiles, and on our experience of testing soils and groundwater from across the Teesworks site. The full testing suite is appended. It is anticipated that 58 soil samples (1 per trial pit, 2 per borehole) and six water samples (2 per borehole) will be analysed.

As required by the Environment Agency's Land Contamination Risk Management strategy, on completion of the laboratory testing an interpretative report will be prepared including a Generic Qualitative Risk Assessment (GQRA). This GQRA will assess the risk to human health and environmental receptors which may be posed by the development. Should the GQRA identify unacceptable risks, further assessment (a Detailed Quantitative Risk Assessment) or remedial strategy will be developed and submitted to Redcar and Cleveland Borough Council for review. If required, the remedial strategy will detail works to be carried out to further assess or mitigate any identified risks, together with a methodology to validate how such works have been completed successfully.

Enc. Testing Suite

Exploratory Hole Schedule

Exploratory Hole Location Plan

Soil Analysis

Determinant	Limit of detection required (mg/kg unless otherwise stated)	Accreditation required
All Samples		
Arsenic	1	MCERTS
Boron (water soluble)	0.2	MCERTS
Cadmium	0.2	MCERTS
Chromium (total)	1	MCERTS
Hexavalent Chromium	1	MCERTS
Copper	1	MCERTS
Iron	1	MCERTS
Lead	2	MCERTS
Manganese	1	MCERTS
Mercury	0.5	MCERTS
Nickel	2	MCERTS
Selenium	1	MCERTS
Vanadium	1	MCERTS
Zinc	2	MCERTS
pH	0.1 pH unit	MCERTS
TOC	0.1 %	MCERTS
Phenol (monohydric)	0.5	MCERTS
Thiocyanate	1	MCERTS
Total Cyanide	1	MCERTS
Free Cyanide	1	MCERTS
Speciated PAH (US EPA 16 priority compounds)	0.02	MCERTS
TPH CWG (inc. BTEX banding)	0.01 (bands C5-8) 1 (bands C10-44)	MCERTS
Asbestos Screen and Identification		MCERTS
As Required		
Asbestos quantification	0.001 %	ISO 17025
Based on PID screen/site observation		
VOC	0.02	MCERTS
SVOC	0.1	MCERTS

Groundwater Analysis

Determinant	Limit of detection required (µg/l unless otherwise stated)	Accreditation required
All Samples		
Arsenic	<1	UKAS
Boron	<1	UKAS
Cadmium	<1	UKAS
Chromium (total)	<1	UKAS
Hexavalent Chromium	<1	UKAS
Copper	<1	UKAS
Ferrous Iron	<0.1	UKAS
Lead	<1	UKAS
Manganese	<1	UKAS
Mercury	<1	UKAS
Nickel	<1	UKAS
Selenium	<1	UKAS
Vanadium	<1	UKAS
Zinc	<1	UKAS
pH	+/- 0.1 pH unit	UKAS
Dissolved Organic Carbon (DOC)	<3	UKAS
Phenol (monohydric)	<0.1	UKAS
Thiocyanate	<1	UKAS
Total Cyanide	<5	UKAS
Free Cyanide	<3	UKAS
Speciated PAH (US EPA 16 priority compounds)	<0.082	UKAS
TPH CWG (inc. BTEX banding)	<50	UKAS
VOC	<3	UKAS
SVOC	<5	UKAS
Ammoniacal Nitrogen (as N)	<0.2	UKAS
Sulphate	<2	UKAS

Exploratory Hole Schedule

Sequence	Loc_Type	BH_ID	Easting	Northing
Now	BH	SHO-AUK-BH201	457857	524329
Now	BH	SHO-AUK-BH202	457947	524416
Now	BH	SHO-AUK-BH203	458034	524372
Now	TP	SHO-AUK-TP201	457584	524253
Now	TP	SHO-AUK-TP202	457627	524272
Now	TP	SHO-AUK-TP203	457670	524292
Now	TP	SHO-AUK-TP204	457719	524312
Now	TP	SHO-AUK-TP205	457792	524262
Now	TP	SHO-AUK-TP206	457851	524132
Now	TP	SHO-AUK-TP207	457804	524346
Now	TP	SHO-AUK-TP208	457871	524390
Now	TP	SHO-AUK-TP209	457922	524313
Now	TP	SHO-AUK-TP210	457936	524280
Now	TP	SHO-AUK-TP211	457948	524241
Now	TP	SHO-AUK-TP212	457975	524346
Now	TP	SHO-AUK-TP213	458004	524265
Now	TP	SHO-AUK-TP214	458033	524372
Now	TP	SHO-AUK-TP215	458046	524300
Now	TP	SHO-AUK-TP216	457989	524436
Now	TP	SHO-AUK-TP217	458035	524454
Now	TP	SHO-AUK-TP218	458144	524461
Now	TP	SHO-AUK-TP219	458186	524443
Now	TP	SHO-AUK-TP220	458186	524361
Now	TP	SHO-AUK-TP221	458181	524288
Now	TP	SHO-AUK-TP222	458142	524217
Now	TP	SHO-AUK-TP223	458200	524247
Now	TP	SHO-AUK-TP224	458290	524265
Now	PLT	SHO-AUK-PLT201	457762	524312
Now	PLT	SHO-AUK-PLT202	457847	524376
Now	PLT	SHO-AUK-PLT203	457905	524402
Now	PLT	SHO-AUK-PLT204	458177	524230

Sequence	Loc_Type	BH_ID	Easting	Northing
Post-mound	TP	SHO-AUK-TP301	457820	524308
Post-mound	TP	SHO-AUK-TP302	457879	524249
Post-mound	TP	SHO-AUK-TP303	457894	524196
Post-mound	TP	SHO-AUK-TP304	457967	524377
Post-mound	TP	SHO-AUK-TP305	458012	524227
Post-mound	TP	SHO-AUK-TP306	458044	524415
Post-mound	TP	SHO-AUK-TP307	458078	524260
Post-mound	TP	SHO-AUK-TP308	458145	524260
Post-mound	TP	SHO-AUK-TP309	458161	524379
Post-mound	PLT	SHO-AUK-PLT301	457868	524288
Post-mound	PLT	SHO-AUK-PLT302	457903	524342
Post-mound	PLT	SHO-AUK-PLT303	457955	524204
Post-mound	PLT	SHO-AUK-PLT304	457991	524302
Post-mound	PLT	SHO-AUK-PLT305	458005	524395
Post-mound	PLT	SHO-AUK-PLT306	458055	524344
Post-mound	PLT	SHO-AUK-PLT307	458155	524415
Post-mound	PLT	SHO-AUK-PLT308	458166	524330
Post-utility	TP	SHO-AUK-TP309	458095	524196
Post-utility	TP	SHO-AUK-TP310	458093	524392
Post-utility	TP	SHO-AUK-TP311	458123	524441
Post-utility	PLT	SHO-AUK-PLT309	458076	524450